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**Instrumental or Experimental: A History of U. S. Naval Air Stations  
in Europe during World War I**

by

**Elizabeth Bentley Brouelette**

**A dissertation submitted in partial fulfillment of the requirements  
for the degree of**

**Doctor of Philosophy**

**University of Washington**

**1996**

Approved by   
Chairperson of Supervisory Committee





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## Doctoral Dissertation

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**University of Washington**

**Abstract**

**Instrumental or Experimental: A History of U. S. Naval Air Stations in Europe during World War I**

**by Elizabeth Bentley Brouelette**

**Chairperson of the Supervisory Committee: Professor Jon Bridgman  
Department of History**

At the turn of the century, the United States Navy found itself participating in an explosive naval armaments race. Germany and England were its strongest rivals. Greater emphasis on emerging technologies was transforming the nature of naval warfare. Improved steam engines, thicker armor plating, larger guns and improved firing controls were soon joined by submarines, dirigibles and airplanes. As military applications were devised for these new weapons, a decided shift away from the previous emphasis on "capital" ships resulted.

The outbreak of World War I provided a dramatic opportunity to test the effectiveness of the newest technologies. Germany's destructive success with U-boats against the Allied forces and the subsequent entrance of the the United States military forces into the war set the stage for U. S. naval aviation to attempt a grand experiment overseas.

When the United States Government declared war with

Germany on 6 April 1917, Navy aviation, including Marine air power had a total strength of 48 officers and 239 enlisted men, 54 airplanes, 1 airship, 3 balloons and 1 air station. By 11 November 1918, the number of men involved in naval aviation had increased to 6,716 officers and 30,693 men. In addition, the Marine Corps aviation program contributed another 282 officers and 2,180 men to the Navy totals. Between the two branches there were 2,107 assorted aircraft, 15 dirigibles and 215 kite balloons and free balloons.

More than twenty air stations were established throughout France, England, Ireland and Italy, creating both a strong physical and psychological presence. The largest undertaking by naval aviation forces was in France. Twelve stations were planned and six became fully operational during the war, adding a strong element to coastal defense for the French. Just two stations were established in England. Killingholme was an operational air station, while Eastleigh served as a supply station for the Northern Bombing Group. The four stations established in Ireland so deterred the Germans that submarine sightings along the Irish coast were reduced to virtually zero. The two air stations in Italy provided needed assistance in preventing German and Austro-Hungarian air and submarine attacks emanating from across the Adriatic Sea at Pola.

## TABLE OF CONTENTS

	Page
List of Maps.....	iii
Chapter 1: Whence Naval Aviation .....	1
Notes to Chapter 1 .....	34
Chapter 2: The Growth of United States Naval Aviation, 1911-1914 .....	37
Notes to Chapter 2 .....	64
Chapter 3: The Threshold of War .....	66
Notes to Chapter 3 .....	85
Chapter 4: Naval Aviation Overseas, 1914-1917 .....	88
Notes to Chapter 4 .....	113
Chapter 5: United States Naval Aviation in Europe .....	115
Notes to Chapter 5 .....	144
Chapter 6: A Call to Action .....	149
Notes to Chapter 6 .....	166
Chapter 7: The Air Stations in France .....	169
Notes to Chapter 7 .....	223
Chapter 8: Marine Corps Aviation and the Northern Bombing Group .....	230
Notes to Chapter 8 .....	249
Chapter 9: The Air Stations in England .....	254
Notes to Chapter 9 .....	263
Chapter 10: A Plan for Ireland .....	265
Notes to Chapter 10 .....	295
Chapter 11: The Air Stations in Ireland .....	297
Notes to Chapter 11 .....	344

Chapter 12: The Air Stations in Italy .....	348
Notes to Chapter 12 .....	379
Chapter 13: A Lasting Legacy .....	383
Notes to Chapter 13 .....	402
Bibliography .....	404

## List of Maps

Number	Page
6.1 German Submarine Bases.....	165
7.1 American And French Air Stations...222	
9.1 Air Stations in England.....	262
11.1 Air Stations in Ireland.....	343
12.1 Air Stations in Italy.....	378

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## Chapter 1

### Whence Naval Aviation

At the turn of the century, the United States Navy found itself participating in an explosive naval armaments race. Germany, soon to be its fiercest enemy, and England, destined to rely on America as its savior, were its strongest rivals in this competition. Technological evolution fostered significant development in the last two decades of the 19th century. A greater appreciation of the steam engine coupled with the engineering of thicker armor plating and the production of larger guns with improved firing control systems succeeded in transforming the nature of naval warfare and the United States Navy found itself caught up in this relentless tide of change.

The American legacy of using naval ships for commerce raiding and coastal defense, a strategic technique forged during the American Revolution, was supplanted by the European emphasis on fleet battles featuring the new, so-called "capital ships." These great new battleships, with their escort ships, the destroyers and cruisers, became the new core of maritime forces. Gone were the days when America could have scattered little fleets of frigates positioned throughout the oceans to protect its acquisitions and

small communities of Americans abroad. The competitive nature of the navies world-wide, particularly Great Britain, Germany and Japan, fostered the construction of ever larger, faster, more heavily armored and armed capital ships.

Alfred Thayer Mahan, an American naval officer, historian and theorist stood at the forefront of this transition. His influential works The Influence of Sea Power upon History, 1660-1783, published in 1890, and the two volume The Influence of Sea Power upon the French Revolution and Empire, 1793-1812, published in 1892, were destined to become required reading for naval officers world-wide. Mahan's theories focused on how the strength of a nation's navy affected said nation both internally and externally. A nation's international reputation and the measure of respect it garnered from foreign nations was influenced by the size and abilities of its navy. A truly great nation would have a dominant naval fleet, capable of defeating any opponent's fleet on the high seas. A country's economic growth would easily be influenced and enhanced by escalation of naval construction. In Mahan's opinion, the fleet of Great Britain was the model to be emulated.

Great Britain's mastery of the seas could be traced all the way back to the Anglo-Dutch Wars of 1652-74. In crushing the Dutch

fleet, Britain established an hegemony, occasionally unsuccessfully challenged by France, that lasted until 1902. By then, Kaiser Wilhelm II had succeeded in strengthening the abilities of Germany's fleet to the point where it posed a serious threat to Britain. In fact, the threat of the revamped German Navy was so great that it forced England to modify the global positioning of its ships and bring many of its capital ships back to home waters.

The strengthening of the German Navy also had repercussions for the United States. While the United States, as well as Great Britain, possessed greater material wealth than Germany, neither country had developed the particular efficiency to coordinate and utilize their resources as well as the German government had. Germany also had the additional advantage of having Austria as a staunch ally. Mahan noted that Germany had a tradition of state control which the people accepted, and perhaps expected, which in his opinion constituted a "great element of force."<sup>1</sup>

For the United States, the growing power of the German Empire and the concomitant development of its Imperial Navy became a source of concern. The United States was vulnerable to attack only from the sea and in order to protect its borders, its navy had to be at optimal strength and its military leaders in a cooperative frame of

mind. The political implications of a prepared navy were inescapable, too, as Mahan pointed out that a powerful presence upon the seas was necessary to “sustain our external policy, of which at the present moment there are two principal elements; namely the Monroe Doctrine and the Open Door [Policy].”<sup>2</sup> Sustaining the external policies of the United States, both inherently connected to the oceans surrounding it, mandated that naval power be real and formidable.

While supporting and building up the Navy had always had political aspects, the increasing abilities of the ships to range far and wide in comparatively short amounts of time heightened its importance and raised the stakes of Congressional involvement as public awareness grew. In order to provide security for newly acquired overseas possessions and lucrative trade routes, shipping capabilities had to continue to be expanded. Such capabilities included more than just speed and distance. The total number of ships available and their armament strength were also key factors.

As expansion of the fleet required money, appropriations from Congress had to be procured. Competition among bureaus and their affiliated staff and line officers for ever greater shares of those allocations complicated developments. When aircraft technology

arrived on the scene, competition between bureaus over who would control aviation and oversee funds for its development intensified.

These rivalries foreshadowed an even greater one that would erupt less than two decades later between air admirals and battleship admirals. The introduction of aircraft into the armaments scheme of the Navy fueled a bitter debate over whether some sort of aircraft carrying ship or battleships should be the capital ships of the Navy.

The interest in the potential uses of aviation was not confined to military personnel. A considerable amount of theorizing and experimentation had been taking place in the private sector for over a century. Indeed, military and civilian aviation fortunes had been intertwined since a French infantry major accompanied Pilatre de Rozier on the first free balloon flight over Paris in late November 1783. Military authorities were attentive to, and occasionally participated in, the successes and failures of civilians, and their attitudes and opinions were formed and influenced by what they learned.

Within the Navy Department, lines were drawn almost as soon as experiments began. On the one side were those who believed aviation to be a technology worth embracing and pursuing for its

enormous potential. On the other stood those who believed that, while aviation was an interesting sport, no aspect of it provided any possible military advantage or value. Whether one believed aviation had potential or not, trying to determine a mission for naval aviation before World War I was almost strictly a philosophical and intellectual exercise.

The outbreak of World War I and Germany's successful U-boat campaign prompted a nascent realization on the part of early naval aviators that the optimum mission for aircraft might be anti-submarine work from land bases scattered throughout Europe. The Allies suffered extraordinary shipping losses to the U-boats and could find no ready remedy themselves to conquer this scourge. The Army-Air Corps was not trained and equipped to fly over water. Navy battleships were vulnerable to torpedoes and had difficulty tracking and destroying submarines. In theory, a ship capable of carrying aircraft could send up planes both for scouting and defensive purposes. Because no such "aircraft carriers" existed, the immediate solution was the strategic location of land bases throughout Europe to assist in containing the U-boat menace and protecting allied shipping. It was during this trial by fire that the effectiveness and significance of the designated role played by

aircraft would determine the outcome of the argument between the air and fleet admirals. And all the while, military and civilian aviation enthusiasts continued their experiments, ensuring that this new technology would evolve into a sophisticated, necessary part of modern warfare.

Given the philosophical dichotomy of the contemporary United States military view of aviation at the turn of the century and its basis in civilian activity, the beginning of this story must therefore lie in civilian pursuits of gravity defying aircraft. Within this context, balloons and airships join airplanes as objects of interest as the developments in ballooning foreshadowed and in many ways influenced the great strides soon to be made with planes.

Although the first public balloon flight was not made until 1783, 3rd century BC Greek mathematician and inventor Archimedes is credited with identifying the fundamental natural law that would eventually allow the Montgolfier brothers and others to launch balloons into the atmosphere. The principle of nature uncovered by Archimedes, now known as the Archimedes' principle, is the natural law of buoyancy. The law of buoyancy states that "any object floating upon or submerged in a fluid is buoyed upward by a force equal to the weight of the displaced fluid."<sup>3</sup> As an object sinks, the

relative pressure increases on the under side of that object causing it to rise, as long as the object weighs less than the fluid surrounding it. If the object weighs more than the fluid it is displacing, the object continues its descent. An object weighing the same amount as the fluid that is displaced is said to have reached equilibrium, and thus will remain motionless.

Thus, to understand the fundamentals of ballooning, one must remember that air acts as, and is in fact, fluid. In order for a balloon to achieve lift, or buoyancy, the gas used to send it aloft must be less dense than the atmosphere surrounding it. Heated air, hydrogen and helium are all gases that fulfill the requirements of being "lighter than air." Centuries would pass before other theorists would build on the work of Archimedes and give serious thought to defeating gravity and actually making something fly.

The idea of launching something into the air, and speculation on what would happen to it, can be traced to the 17th century when Isaac Newton first postulated the laws of motion and Daniel Bernoulli applied those theories to fluids (which air is) in particular. Newton's theories on how forces affect bodies in motion or at rest and the closely related concept of fluid friction, or viscosity, defined as the resistance of air or any other fluid to

motion, form the underlying principles of aerodynamics. In turn, the definition of aerodynamics is “the study of the flow of air and other gases and of the forces acting on bodies moving through the gases.”<sup>4</sup>

Without an understanding of the essential concepts of aerodynamics, flight, both the heavier-than-air and the lighter-than-air kind, is impossible.

The four forces that act on a body in flight, operating as two opposing pairs, must be accounted and compensated for before flight can be achieved. The four forces are the two aerodynamic forces of drag and lift, and thrust and gravity. The forces are paired with thrust working against drag and gravity pushing down against lift.

An aircraft initially achieves motion by overcoming the resistance of air, also called drag, by means of propellers and engines. This force of drag is caused by the viscosity of air acting on various parts of the craft, causing it to slow down and ultimately stop if unaided by a means of the opposing force of thrust. A system of propellers and engines was used by the first aviators to achieve the amount of thrust necessary to maintain the craft in a forward motion of sufficient speed to allow the force of lift to come into play.

It is lift, also defined as upward force, that actually permits

flight. In order to create sufficient lift, which is a value larger than the aircraft's total weight, wings must be designed to allow for greater pressure to build up on the bottom of the wing while simultaneously keeping pressure on top of the wing low. This means that the upper surface of the wing must be curved or tilted to such an angle as to allow air to travel across it faster and in so doing reduce the amount of pressure relative to the under side of the wing. The upward force created on the under side of the wing must be substantial enough to overcome the force of gravity and permit flight.

Another century would pass before aviation pioneers were able to work out all of the intricacies of the laws of aerodynamics and actually launch a craft into the air. The men who experimented with the earliest balloons became the first to conduct practical tests of the theories of Archimedes, Newton and Bernoulli.

Europeans lay claim to being the first to successfully launch a lighter-than-air craft into the atmosphere. In fact, during the year 1783, the industrious French experimented with both manned and unmanned balloons filled with heated air and hydrogen. Helium was not discovered until 1895. Even then, although considerably less flammable than hydrogen, helium was too expensive to be a viable

fuel source for balloons until after the end of World War I. Helium also proved to have limitations in the amount of lift it was able to provide.

Hot air buoyed the first unmanned balloon sent up in public in the French town of Annonay by Joseph and Etienne Montgolfier on 5 June 1783. The prototype balloon was a linen and paper affair that held 23,308 cubic feet of air, attained a height of 5,906 feet and floated a distance of one mile from its starting point.<sup>5</sup> The first unmanned flight by a hydrogen inflated balloon occurred on 27 August in Paris, launched by chemist J. A. C. Charles.

The courageous Pilatre de Rozier and the Marquis d'Arlandes took the first manned flight in a hot air balloon on 21 November, floating from the center of Paris out the suburbs without mishap. Non other than American Benjamin Franklin was on hand to witness this historical event. Charles followed suit in December when he and an assistant named Noel Robert took a ride in a hydrogen filled balloon from Paris to Nesle, a sixty-five mile trip. From then on, experimentation with balloons developed and spread rapidly throughout the rest of Europe.

Balloon mania came to America in 1793 when Frenchman Jean-Pierre Blanchard, a member of the two-man team that had been the

first to successfully pilot a balloon across the English Channel in 1785, gave a demonstration in Philadelphia. Among the members of the audience stood a who's who of American political history, for John Adams, Thomas Jefferson, James Madison, James Monroe and American President George Washington were in attendance.<sup>6</sup>

While these balloonists, or "aeronauts," continued to perfect the features and capabilities of their craft, an important variation on their construction and method of movement was introduced. As balloons were notoriously subject to the whims of the prevailing winds, a new approach was taken utilizing propulsion as a means to control their speed and direction. Frenchman Henri Giffard took a cigar-shaped balloon and equipped it with a propeller and a light-weight three horse-power steam engine.<sup>7</sup> Although his flight in this craft was successful, steam engines ultimately proved to heavy for the airships. However, the very idea of using some kind of engine in conjunction with balloons led to a surge of experimental activity and it wasn't long before the right combination of airship design and appropriate engine was successfully implemented, most notably by Count Ferdinand Zeppelin, about whom more will be said later.

The continuing experimentation with balloons and airships did not escape the attention of military authorities. The initial use of a

manned balloon in conjunction with military conflict occurred in 1794 when a small group of French revolutionaries went aloft to view troop movements at Maubeuge, near the Belgian border.<sup>8</sup>

Balloons would appear overhead sporadically in times of war during the next century: 1) Over Venice in 1849; 2) During the American Civil War from 1861-1865; and 3) During the siege of Paris in 1870-1871. Even then, their usefulness remained marginal and any bombs dropped from them were largely ineffective. The real emergence of a lighter-than-air craft as a viable aerial weapon did not come until 1900.

It is an interesting historical footnote that concern over aerial warfare predated the successful development of the Zeppelin airships. At the first Hague conference in 1899, participants from twenty-four nations agreed not to launch projectiles or bombs from balloons. Although no Zeppelins or airplanes existed at the time, one could logically infer that the provision would extend to any aerial craft. However, the successful flight of the first Zeppelin in 1900 brought an abrupt change in attitude. By the second Hague conference in 1907, the military aircraft clauses were found to be unacceptable by many of the major powers. Expedience and available resources, coupled with beliefs and ambitions concerning possible results

would eventually determine how each country used wartime aerial power.<sup>9</sup>

The development of the Zeppelin airships gave Germany a psychological and, briefly, a technological advantage. In less than two decades, Zeppelins went from novelties above the German landscape to messengers of death and destruction in the skies over London. On 2 July 1900, Count Ferdinand von Zeppelin made his first flight with a rigid airship, soaring over Lake Constance with four passengers in his 420-foot long, 38-foot wide airship composed of an aluminum trussing covered with linen and silk treated with a water-proofing compound. Zeppelin had first become entranced with the idea of going aloft when he served as a German Army military observer during the Civil War and witnessed Professor C. T. S. Lowe direct artillery fire on the Confederate lines from a captive balloon. A later ride in a free balloon over St. Paul, Minnesota resulted in the determination to build a practical dirigible that could be steered through the sky.

Although he did not invent the first engine-powered airship, Zeppelin is credited with advancing the technology beyond basic scientific calculation and experimentation. Zeppelin's first airship was officially known as "Luftschiff Zeppelin 1 (L.Z.1.)." Subsequent

Zeppelins were given similar designations and numbered chronologically for identification purposes, and to distinguish them from airships developed by competing companies. Count Zeppelin almost abandoned his quest when L.Z.1. proved structurally unsound shortly after three successful flights. He sold the L.Z.1. for scrap aluminum in October 1900. Zeppelin's trial flights had, however, captured the imagination of the German people, particularly the King of Wurttemberg who set up a state lottery and collected 124,000 marks, which he then turned over to Count Zeppelin to fund another airship. From then on, Zeppelin never lacked sufficient funds to construct subsequent airships.

The events in Germany did not go unnoticed by others in Europe or across the ocean who had an interest in aviation. The successful development of the Zeppelins sparked an interest that went far beyond floating serenely above the countryside. The ideological differences concerning the use of aircraft that had surfaced at the Hague Conferences had left some lingering doubts as to the feasibility of just continuing to watch aviation developments. Not being in the forefront of such developments was beginning to appear to be a dangerous choice.

Accordingly, between 1908 and 1913 a competition began

among Europe's more advanced military organizations who had decided that aviation was a technology worth pursuing for its combat potential. These rivalries caused a growth in military aviation development that mushroomed to surpass the comparatively feeble American beginnings. France and Germany each spent about \$22 million dollars developing an aerial force of some kind. The Russians, similarly interested, but not quite on pace with France and Germany invested approximately \$12 million dollars into their own venture. Even tiny Belgium came up with \$2 million dollars to start its own aviation program. In light of how much the other countries invested in their fledgling aviation programs, Great Britain did a very surprising thing. When the first 2,500 pounds, or about \$12,500, invested in an experimental prototype resulted in a resounding failure in 1908, all funding for aviation ventures was suspended for two years.<sup>10</sup> By 1911 money from the government began to flow to aviation once again, spurred no doubt, at least in part, by the strides being made by rival nations.

The American government was just a little less reluctant to spend money on aviation than Great Britain was. During the years 1908-1913, the total U. S. outlay for aviation was just \$430,000. The Navy was the late arrival to the field of U. S. military aviation.

The Army Signal Corps purchased its first plane in 1909, after having created, at least on paper, an Aeronautical Division in 1907. The Navy did not order a plane until 8 May 1911. Because of the rampant skepticism among senior officers, interest was slow to develop. Six individuals had the perseverance to surmount the physical and philosophical obstacles facing the development of military aviation in the United States and generate sufficient interest to secure financial support. These men were: Professor Samuel P. Langley, Secretary of the Smithsonian Institute, civilian aviation pioneers Glenn Curtiss, Wilbur and Orville Wright and Eugene Ely, and Navy Captain Washington Irving Chambers.

As an aggregate, their activities and experimentation resulted in government funding for further testing and development of early aircraft. Tenaciously they recruited the support of others and, eventually, money was appropriated for the purchase of planes for military use. Ultimately, this corps of aviation pioneers brought about the establishment of an aviation program for the navy.

Professor Langley's experiments were the first to rouse a flicker of interest in the Navy Department. In 1898, then Assistant Secretary of the Navy Theodore Roosevelt tried, albeit unsuccessfully, to bring Langley's flight experiments to the

attention of his superiors. Langley had successfully flown an airplane model equipped with a steam engine and demonstrated the inherent stability and equilibrium of the craft on 6 May 1896. Roosevelt believed that Langley's machine, if properly developed, offered possibilities as scouts and reconnaissance for troops. Even with his limited vision of the potential aviation held for the military, Roosevelt, in a farsighted yet premature endeavor, recommended the appointment of a board to study the potential military applications of Langley's invention.

Although no board was commissioned at that time to study military potential for Langley's invention, his activities out on the Potomac River were stirring interest in other quarters. In addition to attracting the press and the general public, the Army Board of Ordnance and Fortifications was drawn to Langley's experiments. On 6 June, 1902 Congress allocated this branch \$100,000 to pursue tests to find the most effective guns, small arms, projectiles, torpedoes, armor plates and other engines and implements of war for military use. As Langley's invention fell under the heading of engines of war, the Board of Ordnance used its discretion and allocated one-half of this total, \$50,000, to support Langley's attempts to build a man-carrying flying machine.

Major newspapers followed Langley's activities very closely. The reading public was fascinated by his attempts at flight, although most journalists were less than kind in their coverage as they chronicled his successes and failures out in the Potomac River. On 8 August 1903 Langley's crew attempted to fly their first model aircraft. This archetype had four delicate wings, two on each side in tandem and braced with fine external wires, attached to a central, keel-like frame. It weighed 26 pounds and measured 16 feet in length. Instead of having a steam engine, the model was equipped with a gasoline driven motor. The headlines for the 9 August 1903 New York Times trumpeted failure: "Airship as a Submarine: Langley Machine Makes Brief Flight Over the Potomac." The lead-in for the story read: "The model of the Langley flying machine was launched into the air and landed in the water at 9:35 o'clock this morning at Widewater, Virginia. The flight was a failure, but the machine was in the air thirty seconds and traveled 1,000 feet."<sup>11</sup> Undaunted, and countering the assertion of the press, Chief Assistant Charles Manly of the Langley expedition proclaimed the experiment entirely successful, declaring that all the data which the machine was designed to furnish had been obtained. This was only the beginning.

The next phase of experimentation involved the construction

and testing of the "Aerodrome," a fourfold scale of the original model, now designed to carry a man. This craft used a five-cylinder gasoline engine that weighed in at 125 pounds, considerably lighter than any steam engine of the day. The output was 53 horsepower at 930 revolutions per minute. The entire aircraft, including its pilot weighed 830 pounds and had a wing area of 1,040 feet.

Despite exhaustive efforts, the Aerodrome did not live up to expectations. Two flight attempts, one on 7 September 1903 and the other on 8 December 1903, met with failure. After the second smash up the craft sustained too much wing damage for further tests. Langley was low in spirit and out of funds. The Aerodrome was stored, engine and frame intact, at the Smithsonian Institute until 1914 when the Curtiss Company rebuilt it and launched it on a successful flight. The irony of the entire episode is that the defect that led to Langley's failure occurred not in the airplane, but in the apparatus used to launch the plane. As one historian has noted, had Langley's experiment not suffered from this glitch, a success here would have predated that of the Wright brothers.<sup>12</sup>

The repeated and discouraging failures of the Aerodrome during the summer of 1903 began to raise doubts as to the propriety of spending more money on it. A few members of Congress, astutely

sensing general dissatisfaction with Langley's abortive experiments, began to publicly decry further appropriations on his behalf. One of the more vicious attacks came in the New York Times on 24 January 1904. The headline read: "House Stirred Over Novels and Airships; Charge Made that War Department Wastes Money on Them; ...Langley's Scheme Ridiculed." The vituperation was prompted by discussions of the Army Appropriation Bill in the House of Representatives on 23 January 1904.

In light of Langley's persistent failures, several representatives, including Eugene Robinson of Indiana believed that the Army should cease giving part of their appropriations to Langley for further experimentation. Congress had not sanctioned spending over \$200,000 on Langley's venture and some members felt that the War Department had overstepped its bounds in funding this "collapsed airship project."<sup>13</sup> Representative Robinson was so incensed by the amount spent on Langley's experiments that he sought to prevent any such future "frivolous" discretionary spending by the War Department. He argued that the appropriation bill should be specific and limit the use to which the sums appropriated might be put so that in the future no officers charged with the expenditure of public money would be hypnotized by a dreamy professor into

spending money on a project with no apparent utility to it. <sup>14</sup> Recoiling from this public vituperation, the War Department ceased using money from its lump sum appropriation to fund further aviation experiments by Langley. Crushed, Langley drifted out of the public eye. Within two years he was dead.

Interest in aviation did not disappear, however. The War Department and the Navy Department shifted their attentions to the Wright brothers. Without headlines or great fanfare, Orville Wright had successfully made his first powered flight on 17 December 1903 at Kitty Hawk, North Carolina. Orville and his brother Wilbur worked tirelessly on their machines. They tinkered with their designs, materials and controls until they were ready to succeed where Langley had failed. On 17 September 1908, at Fort Meyer, Virginia Orville Wright demonstrated the ability of his airplane to a group of government officials.

Two naval officers were in attendance, Lt. George C. Sweet and Naval Constructor William McIntee. Both men were impressed by what they saw and they forwarded a favorable report to the Navy Department. Unfortunately, the report failed to stimulate interest in the upper ranks. A conservative tradition among the Navy's senior officers precluded an enthusiastic reception for this new

technology. Admiral George van Deurs, career Navy man and early naval aviation historian, summed up early skepticism this way:

[Aviation's] contemporary performance was so strange and unique as to be hardly credible to conservative naval officers. The elder of these officers, exercising the great power of seniority, had trained in sail and had only recently accepted the steam engine. Those who sought to become fliers had much to overcome in the way of inertia, professional conservatism and closed minds.<sup>15</sup>

The Navy Department officially preferred to quietly await further development of the airplane in the private sector before committing either men or money to the venture. This did not mean, however, that there was absolutely no interest in aviation among the ranks.

Indeed, those who watched aviation's military development closely were no doubt fascinated by events in northern Africa late in 1908. During Italy's war with Turkey, Italian pilots were credited with many of military aviation's "firsts:"

On October 22, Captain Carlo Piazza flew his Bleriot XI on a reconnaissance of Turkish positions, the first operational flight undertaken by a military aircraft. That same day, on another reconnaissance flight, a Captain Moizo's Nieuport was hit by enemy ground fire, another first. On November 1, a Lieutenant Gavotti flew the first bombing sortie ever in a flying machine. Reaching Turkish positions near Tripoli, he plucked four 4.5-pound bombs from a leather bag, placed the bombs on

his knees, fitted them with detonators he had in his pocket, and lobbed them over the side of his craft onto the Turkish positions below.<sup>16</sup>

Even though the Italian aviators produced no decisive triumph during their endeavors, the fact that they seriously pursued their aviation experiments and remained at the forefront of aviation development cannot be ignored.

On 16 August 1909, the Navy rejected a request from the Bureau of Equipment to advertise for the construction of two airplanes: "The Department does not consider that the development of an aeroplane has progressed sufficiently at this time for use in the Navy."<sup>17</sup> Always in the back of everyone's mind was the big red flag of appropriations. How efficiently the Navy Department operated, and whether there was sufficient interest and financial support for such an undertaking as adding an aviation wing was truly a function of how generous, or parsimonious, Congress was each year in its appropriations. In 1909 the Navy Department had an annual budget of \$130,000,000 with which to maintain 163 vessels of various sizes and employ 55,000 men.<sup>18</sup>

Since little credence was given to any potential wartime use for aviation, no great push to spend money on it yet existed. Those

who saw no present military value in airplanes doubtless lacked the desire or ability to even imagine any future viability, let alone be willing to allocate monetary resources towards its development. About the only use conceded to these contraptions and the men who wanted to fly them was as scouts for ground troops. As for using planes for bombing, Secretary of the Navy George von L. Meyer, a wealthy and influential Bostonian who held rather archaic views, quite simply stated that "the rules of chivalrous warfare would preclude such barbarity."<sup>19</sup> Senior navy officials remained content to watch developments in aeroplane technology.

The Army Signal Corps, not quite as pessimistic as the Navy, had quietly created an Aeronautical Division in 1907. Although a certain amount of reluctance remained, the Signal Corps purchased its first plane from the Wright brothers on 2 August 1909, though without great fanfare. The Signal Corps was now in a position to test the possibilities for the use of airplanes in maneuvers and any potential armed conflict.

This development did not escape officials at the Navy Department. Early in 1910, the Navy assigned Captain Washington Irving Chambers, Assistant Aid for Materiel, to attend air shows as an official observer. At the air shows competitors tested the latest

airplanes and established speed and endurance records. Increasing correspondence initiated by private citizens who were avid flying enthusiasts prompted a reaction from the Department. In September 1910, Chambers was given the additional duty of responding to their numerous inquiries. Thus, somewhat by default, Chambers became both the official monitor of, and departmental liaison for, continuing developments in aviation for the cautious Navy Department.

Chambers was delighted with his new duties and became a catalyst in the Navy's experiment with aviation. He found his civilian friends' fervor for flight highly contagious. Unfamiliar with the principles of plane construction and the science of aeronautics, Chambers was nevertheless enthusiastic, if unimaginative, about the potential development of this new technology. Inadvertently, however, Chambers created a temporary barrier to the development of ideas for airplanes' uses by advising that the pursuits of aviation be channeled solely into developing the capabilities of scout planes and nothing more. He acknowledged the future possibilities for the use of planes in armed conflict, such as bombers and long range reconnaissance, but felt such development was far too advanced for any practical pursuits of the present.

Fortunately for the future of naval aviation, Captain Bradley A.

Fiske proved a successful foil to Chambers on this issue. Fiske, a new member of the General Board, also happened to be an inventor and a dreamer.<sup>20</sup> Without even having laid eyes on an airplane in flight, Fiske had the temerity to present to the General Board a proposal calling for no less than four hundred airplanes, to be located at four scattered naval air stations, for use in the defense of the Philippines should the Japanese try to land ships there. As at that time the Navy had no planes and no pilots, Fiske's plan received no support. Considered almost preposterous when first suggested, Fiske's proposal, in retrospect, seems a prescient prophesy of what was to come in World War II.

Another supporter of naval aviation was Assistant Secretary of the Navy Beekman Winthrop. Winthrop assigned Chambers and two other liaison officers to be official observers at the International Air Meet at Belmont Park, New York, on 22 October 1910. There Chambers met, for the first time, Glenn Curtiss and Eugene Ely. They met again on 3 November at another air show at Halethorpe Field near Baltimore. Chambers had by then become so firmly convinced that the Navy needed to begin its own development of aviation, and establish an aeronautics branch and national laboratory, that he redoubled his efforts to find a way to expedite the process. It was at

the Halethorpe air show that Chambers and Ely planned for Ely's unprecedented flight from the deck of the cruiser USS Birmingham on 14 November 1910.

The Navy had no aircraft carriers as yet, and, in fact, would have none until 1922. Therefore, plans for the flight included building a wooden platform 57 feet long on the forecastle of the Birmingham, an American light cruiser. It was only 37 feet above sea level. Ely was to fly a 50-horsepower, Model D Curtiss biplane. On the appointed day, Ely successfully launched his plane from the deck of the Birmingham and the venture marked the beginning of a close working relationship between Curtiss' airplane company and the United States Navy. Not only did the Curtiss Company become a primary supplier of airplanes to the Navy, it also assumed the crucial responsibility of training the first naval aviators. Thus, the role played by the Curtiss Company in the development of naval aviation was pivotal.

Even so, the success of Ely's flight failed to generate significant interest among senior officials in the Department. Much to Chambers' disappointment, the Navy Department rejected another request by Chambers for funds to procure planes. Before Chambers would be successful obtaining planes for the Navy, he had to

overcome his worst hindrance-the strong rivalries that had quietly begun to fester among the various bureau chiefs who vied for control of aviation once the Navy Department had indicated official support and appropriated the initial funds for the endeavor.

Thus, not only was Chambers fighting the inherent conservative inertia of the Navy Department, he was also caught in bitter personal and psychological feuds circulating among the various bureaus with an interest in aviation. The bureaus which became deeply involved in the feud over control of aviation were the Bureau of Steam Engineering, the Bureau of Construction and Repair and the Bureau of Materiel, of which Chambers remained the Assistant Aide. The bureau chiefs were in charge of the disbursement of Congressional allocations to their individual bureaus. They were responsible only to the Secretary of the Navy, to whom they acted as advisors in their respective areas of expertise.

To further complicate the situation, Admiral George Dewey's General Board, another advisory body to the Secretary, drew considerable fire from the ever-jealous bureau chiefs whose own rivalry would be set aside to present a united front in opposition to any Board recommendations when that body proffered itself as aviation's champion. The power to determine the naval application of

airplanes, and thus the additional appropriations, would be the spoils of the victor in this skirmish.

Although Secretary Meyer was at this time beginning to promulgate a reorganization of the Navy Department and eradicate the competition, anarchy and petty jealousies of the individual bureaus, his views on aviation were still detrimental to its development. He believed that aviation would prove a suitable mode of transportation in the future, but foresaw no military applications for airplanes. Thus, the circumvention of Secretary Meyer presented yet one more problem. Chambers found a ready ally in Assistant Secretary Winthrop who could act with all the power of the Secretary himself when the latter was away. Winthrop's ability to assume this power periodically was perhaps one of the most fortuitous elements in aviation's development at this time. As one historian has noted, "most of the pioneering moves which required the Secretary's approval were signed 'Winthrop, acting.'"<sup>21</sup>

Tension mounted over the control of aviation while Secretary Meyer was absent on an inspection trip. A critical juncture was reached when the bureau chiefs of Engineering and Construction began to denigrate the General Board's advisory status with imputations that the members lacked sufficient knowledge and

expertise to handle a study of aviation and its potential uses. At the same time, aides were seeking to stall any and all involvement with aviation until the technology of aeronautics had advanced further.

“Acting” Secretary Winthrop sought to deter any further difficulties among both Department detractors and the bureau chiefs by shelving the paperwork forwarded by the aides and announcing that Capt. Chambers had been assigned the duty of advising the Navy Department on aviation matters. Furthermore, if the Bureaus of Engineering and Construction and Repair wanted to have a say in the matter, they should each detail a man to work with Chambers. Lt. H. N. Wright, from Engineering, and Naval Constructor William McIntee from Construction and Repair were given these assignments. In spite of this elevation into the midst of aviation matters, Chambers still had no real official power in relation to any decision making concerning naval aviation. He answered inquiries, tried to mediate inter-bureau disputes and issued reports on the developments in aviation. Both the Secretary of the Navy and the General Board could disregard those reports at will.

Not to be dissuaded, Chambers and Curtiss “undertook a series of dramatic experiments...to prove the adaptability and usefulness of the aeroplane to the Fleet.”<sup>22</sup> Proving that planes could land and

take off from ships at sea was the primary objective. This would show that planes were not helpless if land proved too far away from the ship's location at sea. Success here would open up an avenue to demonstrate the potential value of planes in accompanying the Fleet.

With Navy officials dragging their heels against acceptance of aviation, Curtiss came up with a strategy to gain more allies within the Department. To the everyday physical risk of flying, Curtis added an entrepreneurial risk. Curtiss and the Navy struck a gentlemen's agreement wherein Curtiss agreed to undertake the training of several Navy officers without charging for his services. Still no money had been allocated for naval experimentation with flight and these initial efforts were made without official recognition of this venture. Curtiss gambled his reputation on the success of this experiment. Successful training of the Navy men would garner the attention of the senior officials who could, in turn, bring pressure to bear on Congress for the allocation of funds for the further development of aviation.

Langley's fiasco and the Congressional hostility evident in the press against the wasteful spending on such a venture were still relatively fresh in people's minds. With Congressional support, Navy officials would be less reluctant to sanction experimentation funded

with Navy appropriations. Curtiss would then reap his rewards by way of becoming a contractor to the Navy and his company would supply the necessary planes. Curtiss took the chance and the pay off was big.

Curtiss' first naval pupil was Lt. Theodore G. Ellyson, USN. Ellyson reported to Curtiss' aviation camp at North Island, near San Diego, California in December 1910. The Navy Department had allowed Ellyson's flight training only because Curtiss was offering his services for free, as agreed. A still skeptical Navy Department was not going to pressure Congress for allocations until the usefulness of aviation had been proven beyond doubt. Chambers was out to remove all doubt as to the value of aviation for the Fleet. Whether planes would only be suitable as scouts, or, indeed, prove capable of a more offensive role, remained to be seen.

## Notes to Chapter 1

<sup>1</sup>Captain Alfred T. Mahan, Naval Strategy, Compared and Contrasted with the Principles and Practice of Military Operations on Land (Boston: Little, Brown, and Company, 1911), p. 110.

<sup>2</sup>ibid. For those rusty on the topics of American foreign policy at the turn of the century, the Monroe Doctrine, actually the annual message of President James Monroe to the United States Congress on 2 December 1823, outlined three essential points that later became the paramount doctrine of United States foreign policy (though never formally ratified). In short, the three parts were: 1) That America should never become a colony of a foreign power; 2) Americans should be wary of any attempt by European powers to extend their spheres of influence near the United States; and 3) America should not get involved in any disputes among the European powers. The Open Door Policy was promulgated by Secretary of State John Hay in the years 1899 and 1900 in two statements which concerned the preservation of American economic interests in China. The first sought to preserve equal economic access and treatment in China for all citizens, merchants and industrialists. The second note urged that all foreign powers assist in the preservation China's government and territory.

<sup>3</sup>Groliers Multimedia Encyclopedia, Grolier Electronic Publishing, 1996.

<sup>4</sup>Groliers Multimedia Encyclopedia, Grolier Electronic Publishing, 1993.

<sup>5</sup>The Montgolfier brothers also apparently provided the amazing spectacle of sending barnyard animals skyward for King Louis XVI and Marie Antoinette in September 1783. The point of the experiment was to test breathing capabilities up in the atmosphere.

<sup>6</sup>Roger E. Bilstein, Flight in America (Baltimore: The Johns

<sup>7</sup>Ibid.

<sup>8</sup>James R. Whelan, Hunters in the Sky: Fighter Aces of World War II (Washington, D.C.: Regnery Gateway, 1991), p. 3.

<sup>9</sup>Arch Whitehouse, The Zeppelin Fighters (New York: Doubleday & Co., Inc., 1966), 23.

<sup>10</sup>James R. Whelan, Hunters in the Sky: Fighter Aces of World War II (Washington, D. C.: Regnery Gateway, 1991), p. 4. All figures for approximate expenditures by the countries listed during the years 1908-1913 were taken from here.

<sup>11</sup>New York Times, 9 August 1903, p. 11.

<sup>12</sup>Captain W. H. Sitz, USMC, A History of United States Naval Aviation: Technical Note No. 18, Series of 1930 (Washington: Government Printing Office, 1930), p. 2.

<sup>13</sup>New York Times, 24 January 1904, p. 9.

<sup>14</sup>New York Times, 24 January 1904, p. 9.

<sup>15</sup>George van Deurs, Wings for the Fleet: A Narrative of Naval Aviation's Early Development, 1910-1916 (Annapolis: United States Naval Academy, 1966), Preface.

<sup>16</sup>James R. Whelan, Hunters in the Sky: Fighter Aces of World War II (Washington, D. C.: Regnery Gateway, 1991), p. 5.

<sup>17</sup>Martin Caidin, Golden Wings: A Pictorial History of the United States Navy and Marine Corps in the Air (New York: Random House, 1960), p. 5.

<sup>18</sup>Wayne A. Wiegand, Patrician in the Progressive Era: A Biography of George von Lengerke Meyer (New York: Garland Publishing Inc., 1988).

<sup>19</sup>van Deurs, p. 5. Meyer considered airplanes to be a suitable new mode of transportation. Any potential naval use completely eluded his thoughts.

<sup>20</sup>van Deurs, p. 15. Fiske had experimented with radio before Guglielmo Marconi, the Italian inventor of the first wireless telegraph. He had also developed a telescopic gun sight and an optical range finder. In 1912, Fiske would be granted a patent on a torpedo plane.

<sup>21</sup>Ibid., p. 14.

<sup>22</sup>John Elliot, "Navy Aviation History 1912-1939," Naval Aviation history office, Washington Navy Yard, Washington, D. C., pp. 6-7.

## Chapter 2

### The Growth of United States Naval Aviation, 1911-1914

A month after Ellyson reported to Curtiss' aviation camp, on 18 January 1911, Eugene Ely accomplished the incredible when he became the first pilot to successfully land an airplane on the deck of a ship at sea. The vessel chosen for this feat was the cruiser USS Pennsylvania, then anchored in San Francisco, which had a special wooden landing platform 120 x 32 feet constructed on its stern. A 15-foot, 30 degree sloping ramp was built on the after end of the platform to prevent the aircraft from hitting the stern. Wooden guard rails were built on either side of the platform to prevent the aircraft from falling overboard. At the forward end of the platform, a canvas barrier was rigged to stop the plane from hitting the ship's superstructure, should it overshoot the short deck. Not content with just his spectacular landing that day, and although he had already shown that a plane could take off from the deck of a ship at sea, Ely reaffirmed that ability by taking off from the deck of the Pennsylvania and returning to shore.

On 26 January, Curtiss took off from shore, landed beside the Pennsylvania, was hoisted aboard, and then deposited back into the water. From there, he returned to shore. With proof that airplanes

could either land on deck or be hoisted aboard, enough of the reluctance from senior officers dissipated to give Chambers a real chance to prove the worth of aviation. With the help of Curtiss, Ely and Ellyson, Chambers inched ever closer to his goal, in spite of a slightly underhanded attempt by Curtiss to limit his new pupil's expertise in the art of flying and turn it to his own advantage.

When Ellyson reported to Curtiss' training camp, Curtiss intended to train Ellyson not only in the fundamentals of flying in general, but specifically in the operation and construction of Curtiss aircraft. With no reference to the use of Wright planes, Curtiss revealed this limitation in Ellyson's training in a letter to the Secretary of the Navy in April 1911. He proclaimed Lt. Ellyson "competent to care for and operate Curtiss aeroplanes."<sup>1</sup> Of course, it was in Curtiss' best interest to teach Navy men to fly only his planes. Whether any Navy officials were aware at the time of the crucial differences between Curtiss' planes and those which the Wright brothers were constructing is a point of conjecture.

The differences between the Wrights' and Curtiss' planes were centered around their stability in flight and the manner in which the wings were manipulated by the pilot to negotiate a mid-air turn for the craft. The Wright designs suffered from a static instability in

the box kite-like wings which meant they had to be constantly controlled by the pilot in order to stay aloft. In contrast, Curtiss' designed a slow, steady two-seater which remained stable in flight. The Wright planes relied on a method known as "wing warping" to control turning their craft. To achieve a turn, the rear edges of the wings and rudder had to be deflected using a system of wires controlled by the pilot. Curtiss took wing warping a step further when he invented ailerons for his planes. Ailerons were actual flaps built into the trailing wing edges which could be manipulated by the pilot to control rolling and banking on turns.

If other senior officials held the misconception which Chambers held that flying was like learning to ride a bicycle-once you learned you never forgot, and the basics of all bicycles were the same-then they were indeed oblivious to the fact that pilots taught to fly by Curtiss could fly only planes made by Curtiss. Curtiss, of course, was never able to establish a monopoly on airplane construction, as the Wright brothers held the most valuable patents. Curtiss actually had to modify his construction principles in order not to infringe upon those patents. Even then, the Wrights took Curtiss to court for patent infringement, claiming his ailerons were based on their wing warping technique , and won their case.

Although the personal feud between Curtiss and the Wright brothers divided the civilian aviation community until 1917, Navy officials preferred to remain above this fray. As far as the Department was concerned, Curtiss and Wright planes could be operated side by side, and naval aviators would be expected to know how to operate both.

The Naval Appropriations Act of 1911-12, approved on 4 March 1911, guaranteed that naval aviators would be exposed to both Curtiss and Wright aircraft. All of Chambers' efforts finally won him the funds he had so valiantly fought for. Naval aviation received \$25,000 of the year's appropriations for the purchase of three airplanes, two from Curtiss, the A-1 and the A-2, and one from the Wright brothers, the B-1.

The Navy Department contracted with the Wright brothers for planes and training within days of the granting of the appropriations. The first formal offer from the Wrights came on 9 March 1911. The Wrights offered to train one pilot if the Navy Department agreed to buy one Wright plane for \$5,000. The Department balked at this deal as Curtiss had agreed to train a pilot for free, with no contingencies in the agreement. In light of this, the Wrights modified their proposal and, in return, the Navy sent Lt. John Rodgers to Dayton to

train with the Wright Company gratis.

In the competition to supply planes to the Navy, Curtiss had achieved a slight edge. The Navy's first plane was Curtiss' A-1 Triad amphibian, ordered on 8 May 1911 at a cost of \$5,500. The second and third acquisitions were a Curtiss land plane and a Wright land plane. Attention seemed riveted on the Triad, however, it being the first official airplane for the Navy Department. The A-1 Triad boasted a remarkable structural composition. Among its more important construction materials could be found rubberized linen, sail cloth, bamboo and wire. These materials, augmented by others as time went on, long comprised the fundamentals of early airplane design. The incessant vibration found in the early planes continually jarred loose even the tightest of parts. It was not uncommon to find some rather odd elements added to the frame, or to the internal workings of the machines' engines. Something as insignificant as a stick of chewing gum could make the difference between flying or being forcibly grounded. To say that these early flying machines were temperamental and tricky to operate would be putting it mildly. The early airplanes tested the courage, patience and devotion of the pilots during the many trials of early flight. Under the circumstances, Curtiss doubtlessly experienced a personal

satisfaction in that it was in the A-1 that Lt. Ellyson qualified for his Aero Club of America license on 26 July 1911.

With that first aviation appropriation came a reassignment for Chambers. Effective 13 March 1911, Chambers was ordered to the Bureau of Navigation whence he was to devote his attention exclusively to aviation and the attendant bureau rivalries. Chambers now had the money he needed to get an aviation program going, but he still lacked complete support from the Navy Department. Although Chambers was directed to coordinate all aviation activities, he was given no staff, no assistant and no set of operative procedures. He did not get the Office of Aeronautics he had requested and he had no official title. The head of the Bureau of Navigation even refused to give him an office, suggesting that he work at home. Although the Navy Department had designated funds for an embryonic aviation program, no prestige, or perhaps even genuine faith or interest accompanied it. Chambers found his position tenuous at best.

Although Chambers failed to establish an Office of Naval Aeronautics, he was far from idle. In the three years that were to elapse before naval aeronautics was given an official designation Chambers brought together and inspired a group of men who were to become the nucleus of the aviation program. Chambers spent the

latter part of 1911 funneling more men into pilot training and helping establish a naval aviation experimental facility near the Naval Academy in Annapolis, Maryland. While these arrangements were being made, Curtiss got yet another aviator to train at his Hammondsport facility, Lt. (jg) John H. Towers, who would become Naval Aviator #3 following Ellyson and Rodgers at numbers 1 and 2 respectively. For Towers, this was but the beginning of an illustrious aviation career during which he would become Chief of the Bureau of Aeronautics during World War II and a four star admiral.

In August 1911, the three fledgling naval aviators were ordered to Greenbury Point to help establish a naval aviation school and continue experiments there, at what was officially being called the Engineering Experiment Station, Naval Academy, but was otherwise known to its inhabitants as the Aviation Camp. With the acquisition of three planes, instructors to train pilots and the opening of a training facility at Greenbury Point near Annapolis, Chambers had successfully placed aviation on the path to becoming a world class air power.

The aviation program got its first engineering and maintenance officer on 10 October 1911, when Assistant Naval Constructor

Holden C. Richardson was detailed to the Washington Navy Yard. Future Naval Aviator #4, Ensign Victor D. Herbster arrived at Greenbury Point on 8 November 1911 to begin his training. By the end of December, the cold and wet winter weather of the area prompted a temporary move of naval aviation to the west coast. Curtiss had offered property on North Island, near San Diego, California, as a site for a new aviation camp and the Department had responded by ordering the aviators and their equipment shipped west.

By spring 1912 the aviators had returned to Annapolis. Their ranks slowly increased as two men from the United States Marine Corps and three from the Navy arrived to undergo training. Lt. Alfred A. Cunningham, USMC, future Naval Aviator #5, and Lt. Bernard L. Smith, USMC, arrived on 22 May. Cunningham had been experimenting on his own at the Marine Corps Barracks at the Philadelphia Navy Yard while his Navy counterparts had been developing their own program. Cunningham had a personal agenda in his approach to aviation. He was looking to establish a separate air arm for the Marine Corps.

In fact, Cunningham's ambitious plans for a Marine air arm led to one of the most elaborate experiments for aviation prior to World War I. The Marine Corps as a whole was suffering from an identity

crisis. Modern warship technology largely eliminated, or made superfluous the Corps' traditional missions of providing ships' policemen and sharpshooters for the fighting tops aboard the outmoded sailing ships. A much broader range of capabilities by these new battleships engendered a reassessment of naval strategies and the role of the Marine Corps.

Emphasis now turned toward seeking out and destroying the enemy battle fleet far from American shores. Such distant operations would entail either the establishment of permanent bases in potential overseas theaters, or the creation of a line of support vessels. As the United States had very few overseas possessions, the feasibility of establishing permanent bases was nonexistent and this situation virtually dictated the adoption of the large train of support vessels. In the event of war, the Fleet would have to secure temporary advance bases at which to leave the train while the fighting ships sought the enemy. Advance bases would also serve to cut down the size of the supply train.

The Marine Corps, already a part of the naval establishment, was the logical organization to perform this advance base mission. On 6 October 1900, the newly formed General Board recommended to the Secretary of the Navy that the Marine Corps be assigned the

advance base mission and begin organization and training. On 22 November, Marine Corps Commandant Charles Heywood formally accepted the mission. He did caution, however, that it would take some time to carefully work out the details of this new mission.

Heywood's prediction was borne out. For the next eight years the advance base idea received sporadic attention as efforts to establish an advance base school and battalion on the east Coast failed. Failure stemmed from the reluctance to relieve the Marines from their duties as ships' detachments and guards at the navy yards. In 1908, two senior officers very publicly emerged on opposite sides of the new mission debate. Captain William Fullam headed a faction that sought the removal of the Marines from their traditional duties in order to form them into advance base and expeditionary battalions which could accompany the Fleet on their own transports. President Theodore Roosevelt agreed with Fullam and issued an executive order to that effect in November, effectively removing 2500 Marines from ship duties.

Immediately, the current Marine Corps Commandant George F. Elliot and his staff jumped into the fray, fearing for the existence of the Corps and seeking a reversal of Roosevelt's order. The Elliot faction countered the Fullamites' assertion that warship

detachments served no military purpose. Elliot argued that service on board warships strengthened Marine Corps ties with the Navy and helped prepare the Marines for advance base work. The Elliot faction's greatest fear was that the Marine Corps would cease to be a separate entity. Roosevelt spread additional alarm with his proposal to incorporate the Marine Corps into the Army. Elliot and his group judiciously championed their cause during the Congressional hearing on the Naval Appropriations Bill of 1909. With neither Congress nor the Navy Department favoring Roosevelt's scheme, Congressional members agreed with Elliot's opinion and the Marines returned to their ships' duties as the policy was reinstated in the appropriations act of 1909. The way was being cleared to incorporate the new mission and still carry out the old ones.

Four more years elapsed before anything remotely resembling a permanent advance base force was established. A permanent advance base school was not firmly established until 1911, when the school reestablished at Newport in 1910 moved to better facilities in Philadelphia. Despite constant disruptions caused by assignment of units to expeditionary duty, the school managed to develop a systematic curriculum for its students. Lieutenants Alfred

Cunningham and Bernard Smith, soon to be the Marine Corps' first and second pilots respectively, were among the first officers assigned to the Advance Base School at the Philadelphia Navy Yard. It was from there that both men reported to the Annapolis aviation camp.

The General Board, the Navy War College and the Marine Advance Base School worked together to define the theoretical structure of an advance base force. In 1912, a detailed outline of the components of an advance base force was developed and served as the basis for planning by both the Navy Department and the Marine Corps:

An advance base force would consist of a Marine brigade divided into two 1,300 man regiments. The first of these regiments, known as the fixed defense regiment, would consist of artillery companies armed with large caliber warship guns and engineer, signal, searchlight and mining companies with the mission of defending the base against attacking warships. The second, or mobile, defense regiment, composed of infantry reinforced by field gun and machine gun units, had the mission of repulsing enemy landing forces. Both regiments, and particularly the fixed defense regiment, should be kept fully organized, equipped and trained, ready to embark on their own transports and sail with the Fleet in the first days of war.<sup>2</sup>

The advance base concept found strong support with both the Navy

and the Marine Corps, even as implementation remained slow. Manpower and equipment remained in short supply, but the necessary elements steadily evolved.

Aviation also began to command some attention and men like Commandant Biddle were not oblivious to its potential role in the advance base concept. The assignment of Cunningham, Smith and Sergeant James MaGuire to aviation was a manifestation of the development of a new line of thinking regarding the role aviation could play in the redefined mission.

Even though aviation was not yet specifically included in the advance base mission as then outlined, the men involved were given a chance to show their potential worth to the Fleet. Assignment of the entire Aviation Camp to Guantanamo Bay, Cuba in January 1913 for exercises with the Fleet was in keeping with the idea of a combined effort. The pilot training and continued experimentation of aircraft's capabilities were to be put to the test. This unprecedented inclusion of the aviators was momentous. Successful participation in the annual maneuvers would justify continued development of naval aviation. The maneuvers offered the chance to prove that planes could play a dynamic role in the operations of the fleet.

Accordingly, the aviators established three major goals for

this exercise: 1) To prove the suitability of the airplane as a scout against movements of an enemy; 2) Further test aircraft efficiency in detecting submerged submarines and mines; and 3) To indoctrinate as many Fleet officers as possible to the potential of the aircraft integrated with the Fleet.<sup>3</sup>

Although more senior officers began to see aviation as potentially useful to the Fleet, few could envision planes doing anything but scouting patrols. The maneuvers only reinforced this commonly held belief. Submarine detection abilities proved mixed and varied with the clarity of the water and the color of the submarines. Several officers took advantage of the indoctrination flights offered and were shown the usefulness of the airplane and its relative safety firsthand. Lt. Towers gave flights to as many officers as he could. In addition to these indoctrination flights for senior officers, check flights for potential aviation candidates were conducted. A lucky few even received actual flight training during the maneuvers. The aviation section impressed many and the coming year saw much improvement in the support offered to the venture by the Navy Department.

Growing interest in aviation fostered closer scrutiny of the aircraft and the burgeoning awareness of its potential sparked

greater activity. Naval aviation began its slow transition from interesting experiment to integrated unit within the Navy Department. The politics of aviation began to evolve toward something more substantial than the inter-bureau bickering that had characterized it. The existing peripatetic organization was increasingly unsatisfactory. The men at Annapolis needed influential representation to assist them in making naval aviation a political and physical reality. Expansion of the program and organizational change were sorely needed. There were immediate problems to solve, and infinitely more to address in the near future. The Department of the Navy needed to establish its official position on the organization of aviation.

Congress and the Navy Department began more aggressive policy making in March 1913. The Naval Appropriation Act for the fiscal year 1914, passed on 4 March, introduced three novel concepts that gave naval aviation, including Marine aviation, official recognition. The first provision limited to thirty the number of officers who could be detailed to aviation. The second provision excluded more senior officers from duty involving actual flight. This restriction stipulated that no officer above the rank of Lieutenant Commander in the Navy, or Major in the Marine Corps, could be

detailed to actual flight duty. The third provision established flight pay for the first time. Officers detailed as actual fliers were authorized a thirty-five percent increase of base pay for the duration of their actual flight detail. The pilots were given this extra flight pay when it became apparent that insurance companies denied many aviators life insurance policies.

The next major policy change was designed to put an end to the inter-bureau competition for control of the aircraft section, and facilitate a moderate expansion of naval aviation. Navy General Order Number 41 divided aviation responsibilities among three bureaus. It made the Bureau of Construction and Repair responsible for planes, hangars and launching gear. The Bureau of Engineering was to provide aircraft engines, radios, generators and lighting equipment. Instrumentation, personnel, training and operations were the responsibility of the Bureau of Navigation. A dozen officers were scheduled for flight training and several new planes were ordered from both the Curtiss and the Burgess aircraft companies.

On 31 August 1913, the General Board recommended the formal creation of a naval air service. Specifically, the Board called for an efficient air service, to be directed from within the Navy Department by an officer with full authority on questions of

personnel and procurement. The designated officer was to hold the rank of Captain. These recommendations were made after the Board had conducted a major study of both United States and foreign aeronautics. The Board also requested appropriate funding in the military budget for the coming year to finance bases, training, schools and aircraft purchases.

Secretary of the Navy Josephus Daniels responded to the Board's suggestion for the establishment of a Naval Aeronautic Service in October 1913 by creating his own special board, the Chambers Board, to investigate the feasibility of such a service and draw up a comprehensive plan for its organization. The first real program for naval aviation included a suggestion for a guiding policy: "Superiority must be maintained in all matters of aerial equipment, and must not be confined to aeroplanes alone. Adequate sea power cannot be maintained by force of arms unless adequate superiority is maintained over the whole sphere of aerial development."<sup>4</sup>

Expanding aviation and integrating it with the Fleet was the Board's core recommendation. The other recommendations included:

- 1) Establishment of an Aeronautic Center at Pensacola for flight and ground training and for the study of advanced aeronautic engineering.
- 2) Establishment of a central aviation office under the

Secretary to coordinate the aviation work of the Bureaus.

3) Assignment of a ship for training in operations at sea and to make practical tests of equipment necessary for such operations.

4) Assignment of one aircraft to every major combatant ship.

5) Expenditure of \$1,297,700 to implement the program.<sup>5</sup>

Chambers barely had time to savor what secretly must have felt like a personal victory when he was notified that he faced mandatory retirement. His devotion to establishing naval aviation had kept him ashore too long and without adequate time on sea duty he was not promotable.<sup>6</sup> Captain Mark L. Bristol, USN, was handed the aviation baton on 17 December 1913.

To Bristol fell the unenviable task of continuing to coordinate the activities of the various Bureaus in an effort to advance aviation. His efforts doubtlessly received a boost when Navy Secretary Daniels, increasingly impressed with aviation's potential, moved the fledgling aviation section from the Bureau of Navigation to the Division of Operations in the Office of the Secretary of the Navy less than a month after Bristol assumed his new role. He found allies in the new Chief of the Bureau of Construction and Repair,

Rear Admiral David W. Taylor, and Lt. Commander Henry C. Mustin, a naval gunnery expert and aviation enthusiast whom Bristol recruited for his scientific and strategic abilities. Secretary Daniels would remove all official doubts as to the future of Naval aviation when he formally created the Office of Naval Aeronautics in the Division of Operations under the Secretary of the Navy on 1 July 1914.

The Chambers Board also included in its recommendations two provisions that applied specifically to the Marines involved in aviation. The Board advised the creation of a separate section of six aircraft to function as an advance group whose mission was to establish an advance base ashore. In addition, the Board recommended that a Marine officer be appointed as a member of the staff of the new Director of Aviation. Navy and Marine aviation were starting to get some specific attention, but implementation of the recommendations remained slow.

Marine pilots Lt. Bernard L. Smith and Lt. William M. McIlvain were assigned to the First Marine Advance Brigade late in December 1913 when Marine Corps aviation received a major boost with an assignment to maneuvers in Culebra, Puerto Rico in January 1914. On 10 January, Secretary Daniels removed any remaining official doubts about naval aviation when he proclaimed that “the science of aerial

navigation has reached a point where aircraft must form a large part of our naval force for offensive and defensive operations.”<sup>7</sup>

The Atlantic Fleet’s annual winter maneuvers were held at Culebra. This action would be the Marine Corps’ first full-scale advance base exercise. The inclusion of the First Advance Base Brigade introduced a new dimension to the maneuvers. For the first time, aviation would test its compatibility with ground forces and provide air support. Achieving the complete integration of air and ground forces was vital to the future development of the advance base concept. Conversely, the establishment of a permanent, recognized Advance Base Force was critical to the future existence of Marine aviation. The trial of an air-ground advance base force at Culebra in 1914 was portentous for the future. Although no one quite realized it at the time, the Advance Base Brigade with its air support was to prove the forerunner of the modern Fleet Marine Force in 1933.

The Culebra exercise was more than a critical test of the organization and capability of the advance base force to perform its mission of the seizure and defense of advance bases. It was also a rehearsal for probable wartime operations to counter German plans for naval operations against the United States. Military leaders had

long believed that Germany would be a potential foe, and as such, Germany was designated a probable enemy. The scenario developed for the exercise, in which an aggressor force would attack the Marines' position on the island, was derived from the assumption that in a naval war with Germany, seizure of Culebra would be one of Germany's earliest moves. The inclusion of airplanes offered some interesting possibilities for reconnaissance and air support for the ground troops. For aviation, successful participation in the exercise would ensure it a role in future maneuvers, generate more interest in potential wartime use and facilitate more rapid development. Successful air-ground coordination offered potential benefits to both forces.

For their role in the simulated attack, the Marine aviators Smith and McIlvain flew scouting and reconnaissance missions for the island defenders. The Marine pilots also made the indoctrination of Marine officers to the value of aviation both in aerial reconnaissance and in a supporting role for the ground forces one of their primary objectives. Daily, the fliers took brigade officers up for a first-hand look. The pilots also made some other important contributions to the effort. In addition to the flights over the Fleet and the plotting of mine fields at Great Harbor, a reconnaissance of

the Island of Vieques was conducted, resulting in a map of the approaches, possible landing beaches, roads and trails, and the general nature of the island's topography.

In evaluating the exercise, the umpires declared the defending force the "winners." The Marines had demonstrated their ability to organize an advance base force on short notice and carry out their assigned mission. The possibilities for coordination of land, sea and air forces received greater recognition as the successful integration of the air and ground forces introduced the basic concepts which would govern the future evolution of amphibious doctrine. Aviation found new allies among the senior officers present. The most important product of the Culebra maneuver of 1914 was the establishment of a permanent Marine Advance Base Force. Although the two regiments of the brigade would be diverted to expeditionary duty in Veracruz, Haiti, the Dominican Republic and Cuba, the force would remain in continuous existence until replaced by the East Coast Expeditionary Force following World War I.

While Smith and McIlvain were in Culebra, Towers moved the balance of naval aviation to the new Aeronautic Station at Pensacola. The entire aviation unit, in addition to Smith, McIlvain, the ten enlisted Marines and the two planes with them in Culebra,

consisted of seven airplanes, nine officers (six fliers and three students), twenty-three enlisted men, stores, spare parts and canvas hangars.<sup>8</sup> Although Pensacola was designated an official air station, there remained more bureaucratic red tape to cut through before operations could run smoothly. The political maneuvering for control of the aviation section presented almost a greater problem than the unreliable airplanes and the poor condition of the abandoned navy yard that was now the site of the new air station.

Things did not go smoothly for the U. S. Naval Aeronautic Station, Pensacola. To begin with, there was no commanding officer. The Aviation Unit, with its nine officers, twenty-three enlisted men and seven airplanes arrived aboard the old battleship USS Mississippi and the collier Orion in January 1914.<sup>9</sup> Lt. Commander Mustin was officially in command of the Mississippi and the men aboard, including the aviation contingent. However, whether intentionally or by administrative oversight, he was not given official command of the station. He had no legal authority ashore, and thus was only nominally in charge of aviation at Pensacola. Orders for Mustin to command the station never materialized, and it is unknown whether Bristol, by now openly feuding with Mustin over the direction of aviation, even tried to secure such orders.

The administration at Pensacola was complicated and in worse shape than the town, which recently had been swept by a hurricane. In addition to having no commanding officer, the navy's only air station had no accounting number, no money allocated for any purpose, no lights, no power and no fresh water.<sup>10</sup> The requisitions and pay for the Mississippi's contingent came from a paymaster in South Carolina. The Navy Bureau of Yards and Docks sent a civil engineer to keep an eye on the activities of Mustin and his men on the land they occupied without authority.<sup>11</sup> To further complicate matters, the station was already occupied by a Marine Corps brigade using it as an advance base. The brigade occupied what serviceable brick structures there were, and the commandant responsible for their quarters was in Key West. The aviators cleared debris from a section of the south beach and pitched their canvas tents to house their planes.

Bristol arrived in February. He and Mustin were at odds almost from the start. Bristol continually undermined Mustin's attempts to get the air station on firmer administrative ground, and the men did not like his brusque manner. Bristol refused to grant Mustin flight orders. He also rejected Mustin's belief that an air commander should be an experienced aviator to efficiently and intelligently

guide the development of aviation. Mustin was in fact a very experienced pilot, but he sought the sanctions and security of official flying status.

Towards the end of February, at the conclusion of the Culebra exercise, the Marine pilots and their planes rejoined the men at Pensacola and became, once again, undifferentiated members of naval aviation. Although Smith and McIlvain returned from their Caribbean interlude convinced of the importance of developing a Marine aviation force trained to operate with ground troops, Towers ended all discussion by pointing out the immediate needs of the air station. He then set them to work training new pilots. Work at Pensacola continued uninterrupted only until April, when trouble flared in Mexico. Operations at the station came to a standstill. Towers, Smith, Ensign Godfrey de C. Chevalier, twelve mechanics, a flying boat and a hydroplane, all together designated the First Aviation Section, were ordered to set sail for duty at Tampico aboard the Birmingham on 11 April. The very next day, Mustin loaded five hundred Marines, the two remaining serviceable aircraft and all of the Navy aviation officers except McIlvain aboard the Mississippi and headed for Veracruz.<sup>12</sup> Pensacola was all but deserted. McIlvain remained behind with eleven enlisted men and one broken airplane.

Tampico proved uneventful for the First Aviation Section and they soon sailed to Veracruz and joined Mustin's aviation camp there. Veracruz, too, proved relatively uneventful for the fliers. They departed on 13 June and left barely a trace of their presence. The Mississippi had been sold to Greece in the interim. It was to be replaced by the U. S. S. North Carolina, a more modern armored cruiser, better suited for use with planes. It was due more to fortunate circumstances than Navy Department favor that aviation was presented with the new cruiser. Aviation was still greeted mostly with raised eyebrows of skepticism, but the North Carolina had been the only replacement ship available at the time.

The contingent aboard the North Carolina, anchored at the Virginia Capes, was awaiting orders to return to Pensacola when, on 28 July 1914, Austria declared war on Serbia. Germany's declaration of war on Russia on 1 August resulted in orders for the North Carolina to sail for Boston and unload all of its aviation gear in preparation for transporting troops to Europe to protect American interests. Though he surrendered command of the ship to Captain Joseph W. Oman, Mustin remained on board as the executive officer. Smith and several of the aviators, minus McIlvain and a small contingent who were to remain at Pensacola, also stayed with the

North Carolina, but without any planes.

## Notes to Chapter 2

<sup>1</sup>Caidin, Golden Wings, p. 5. Curtiss' final verdict is hardly surprising as he had only stated that he would train Navy men to fly Curtiss planes.

<sup>2</sup>Graham Cosmas and Jack Schulimson, "Continuity and Consensus: The Evolution of the Marine Advance Base Force, 1900-1922," from David H. White and John W. Gordon, eds., Proceedings of the Citadel Conference on War and Diplomacy, 1977 (South Carolina: The Citadel Development Foundation, 1979), pp. 32-33.

<sup>3</sup>John Elliot, "Naval Aviation History 1912-1939," Naval Aviation History office, Washington Navy Yard, Washington, D. C., p. 17.

<sup>4</sup>John Elliot, "Naval Aviation History 1912-1939," Naval Aviation History Office, Washington Navy Yard, Washington, D. C., p. 20.

<sup>5</sup>United States Naval Aviation, 1910-1980, Washington, D. C.: Government Printing Office, 1981, p. 9.

<sup>6</sup>Oddly enough, Chambers actually remained on active duty for six more years. He refused, however, to give up all association with aviation. Although removed as officer-in-charge of aviation, Chambers stayed involved with research and experiments.

<sup>7</sup>United States Naval Aviation, pp. 9-10.

<sup>8</sup>Elliot, p. 21.

<sup>9</sup>*Ibid.* The contingent that arrived at Pensacola constituted the entirety of naval aviation, with the exception of the Marine pilots

and men and their planes operating with the Fleet at Culebra.

<sup>10</sup>George van Deurs, Wings for the Fleet: A Narrative of Naval Aviation's Early Development, 1910-1916 (Annapolis: United States Naval Institute, 1966), p. 107.

<sup>11</sup>Ibid.

<sup>12</sup>Ibid., p. 108.

## Chapter 3

### The Threshold of War

In 1914, the internal struggle between line and staff officers in the Navy Department was still going strong. Change loomed with the inauguration of Woodrow Wilson and his new Cabinet. The specter of Theodore Roosevelt hovering above the Navy Department and overshadowing the office of the Secretary of the Navy quickly faded. Josephus Daniels, the new Secretary of the Navy, emerged from the shadows a staunch proponent of a large, more powerful Navy. He overcame the inertia and indifference of the reigning Democrats and successfully reintroduced the two-dreadnoughts-a-year policy that had been abandoned. Daniels entered the yearly monetary contests with Congress over appropriations with gusto. His programs for the Navy were ambitious and when Wilson finally shed his preference for isolationism and turned to preparedness in July 1915, Daniels was ready to take advantage of it.

Wilson directed his Secretaries of War and Navy to draw up plans for increased armaments. Shedding his preference for a little Navy, Wilson finally gave in to the champions of a large Navy. Those champions of the Navy were a striking mix of the top ranking Democrats and Republicans in the House and Senate. In the House

Naval Affairs Committee, Chairman Lemuel Padgett of Tennessee forged a bond with Republican Thomas S. Butler of Pennsylvania. In the Senate Naval Affairs Committee, the leading duo was Democrat Claude A. Swenson and Republican Henry Cabot Lodge. Lodge and Swenson were standing in for ailing chairman Ben Tillman. Daniels tactfully used this conciliation between the party leaders to secure passage of his bills for increased naval spending. Aviation was a direct beneficiary of Daniels' success.

Although the United States was not a party to the initial hostilities overseas, the Navy Department lost little time in dispatching a handful of aviators to France to investigate developments. Mustin, Smith and Lt. P. N. L. Bellinger were sent to Paris in July to tour aircraft factories and aerodromes. Although their visit lasted a mere two days, less than a month later the Navy began to assign permanent aviation assistants to the Naval Attaches in Paris, London and Berlin. Smith was detached from the North Carolina the end of August 1914 with orders to report to Paris as the Assistant Naval Attache. Smith's duties in this capacity provided him with the opportunity to gather much valuable information that would be useful when the United States actually did enter World War I. Smith spent nearly three years in Paris. He

visited the Western Front and witnessed the current uses of aviation under battle conditions. The British and French trusted him implicitly and he secured complete information for the United States.<sup>1</sup> The ground work that would be needed to effectively utilize and organize naval aviation overseas in World War I slowly took shape.

While the men aboard the North Carolina were awaiting their next assignment, Fiske was working to get Secretary Daniels to authorize the establishment of an office of naval aeronautics under the Division of Operations. The much needed reorganization of naval aeronautics was initiated on 1 July 1914 with the formal creation of the Office of Naval Aeronautics.<sup>2</sup> No specific powers or responsibilities were delineated, however. Pensacola also finally got its first official Officer-in-Charge when Lt. Kenneth Whiting, USN, took over duties as head of the Aeronautic station in November.

Bristol continued to vigorously champion the development of aviation throughout November. Returning from his October trip to San Diego with its dual purpose of allowing him to observe what the Army was doing with aviation, and staying out of the way of Fiske, Bristol worked to get Daniels' approval on yet another reorganization of the aviation section. Animosity between Fiske and

Daniels was growing over their respective perceptions of Navy preparedness. Bristol sought to secure his own position in the aviation organization and wanted no part of their argument. At Bristol's request, Daniels signed a memo to the Department to augment development of the Aeronautic Service and the station at Pensacola.

This directive established several important precedents and cut through an enormous amount of the red tape that had plagued naval air operations up until then. The senior aviator at Pensacola was placed in command of all activities at the air station. The various bureaus involved in aviation activities were directed to allot funds for the operation of the station. The pilots still aboard the North Carolina in Europe were recalled to duty at Pensacola. Bristol was named Director of Naval Aeronautics and left his dependent position at Fiske's desk for an office of his own.<sup>3</sup>

In the meantime, Fiske appeared before the House Naval Affairs Committee and expressed his discontent over the present organization and direction of naval aviation. He still had in mind a large, powerful air arm and he believed that such an organization required the forceful direction of a Chief of Naval Operations, not a variety of aides to the Secretary of the Navy. Congress was duly

convinced, but Daniels circumvented Fiske by choosing Captain W. S. Benson as the first Chief of Naval Operations (CNO). To add insult to injury, Fiske's ideas of combat planes were set aside by newly promoted Rear Admiral Benson, Chief of Naval Operations. Fiske was sent, powerless, to the Naval War College.<sup>4</sup> The creation of the office of the CNO was considered "the most important institutional innovation in the Navy Department since the creation of the new bureaus in 1842, as well as the outstanding achievement of the preparedness movement during the winter of 1914-1915."<sup>5</sup>

The development of naval aviation stepped up its pace. Mustin returned to Pensacola in January 1915 as officer-in-charge, replacing the more junior Whiting. Mustin had his work cut out for him restoring order to the station. More student pilots were arriving at Pensacola and their training needed to be organized. The station itself was in need of repair and a few of the pilots who had been virtually deserted there during the course of the previous year needed to be sobered up. Discipline returned to the camp. In May, Cunningham, who had temporarily left aviation due to his fiance's

wishes, returned to flying and was assigned to Pensacola for retraining.

Reorganization efforts also focused on establishing seniority among the pilots in the unit. Throughout 1915, and for a few years following, confusion over the exact designation of the pilots, their precedence and qualification procedures resulted in the issuing and reissuing of ranking numbers designating the men on flight status with the Navy. Standardization of the training program and establishing seniority seemed almost impossible. When all of the perplexing arguments were resolved, the official designation for the pilots was Naval Aviator. This designation applied to both the Navy men and the Marines. The correct numbering of all the men took a bit longer to resolve as some, like Cunningham, had joined aviation early, left for a while, and then returned to active flying. Qualifications were continually revised. Cunningham, for instance, was initially awarded pilot certificate number 14. When the list was reevaluated in 1919, Cunningham was permanently designated Naval Aviator #5.

Clearing up the confusion of the numbering system established clear seniority in the aviation program. The development of standardized training procedures and specified levels for pilot

proficiency ensured that future additions to the list were made in a equitable manner. This would be particularly important to the Marines whose name would appear on the list because it would more closely represent their aviation experience.

Acceleration of the war in Europe prompted Secretary Daniels to write to the Secretary of War with a unique proposition on 17 August 1915:

It is desired to train a limited number of naval aviators to fly land-machines, in order to provide for Advanced Base Operations of the Navy, and to have officers of the Marine Corps so trained that they will be available when the Marines are acting with the Army.<sup>6</sup>

The Army approved such an arrangement and Mustin nominated McIlvain and Chevalier for this duty. For unknown reasons, the orders for the two Marines never went through and almost a year elapsed before a Marine was sent for land-based flight training. The final, successful push to get the Marines flying land planes came from Secretary Daniels when he wrote to Major General Commandant George Barnett on 7 June 1916:

It is desired that the Major General Commandant submit from time to time recommendations relative to the organization of aeronautic units for the advance base organizations of the Marine Corps...It is believed that these organizations should be such as to provide for the operation of both land and water aeroplanes and also kite

balloons.<sup>7</sup>

Compatibility and integration with the advance base force remained the main concerns.

A National Advisory Committee for Aeronautics was established to both review and encourage new developments in aviation. A memorandum on the "Proposed Organization for Aeronautics in the Marine Corps," dated 24 June 1916 was issued by the Navy Department. Projections for the course Marine aviation would take were laid out with considerable attention given to organization and development in conjunction with the advance base force at Philadelphia. Central to the entire plan for the organization of Marine aviation was the establishment of an aeronautic section at the Philadelphia Navy Yard. The memo went on to list the equipment and personnel needed to operate the aviation section. It detailed the course of flight instruction necessary to qualify the aviators. It specified that Marine aeronautical equipment would be purchased from the Navy Aeronautic Appropriation and lent to the Corps' aviation section as the Marines had no money allocated for aviation. It also provided for equipment repair. Lastly, administration of the aviation section was given to Marine Corps Headquarters. The Navy's aeronautic organization would assume only general supervision of

the Marines. The exception to this would be the direct responsibilities of the bureaus in charge of supplying aeronautic material in accordance with the plans approved by the Navy Department.<sup>8</sup> It was Cunningham who eventually became the first Navy or Marine officer to be ordered to learn to fly land planes at the Army Aviation School at San Diego on 30 June 1916.

The assignment of the two Marines to fly land planes became the first step in transitioning Marines out of strictly water-based flying. Cunningham had wanted a separate air arm for the Marines all along and was greatly pleased at the developments. If the Marines successfully flew land-based planes, in addition to sea planes, in support of their ground units, their continued existence would be all but guaranteed. The Marine Corps would be officially given permission to develop its own air arm in March 1917 when the Navy Department agreed to have a U. S. Marine Corps Flying Field established at Philadelphia for the purpose of training Marines in land flying. Cunningham was to command it.

Barnett concurred on almost all of the recommendations put forth in the memo. The modifications he felt were necessary to the program as outlined were included in a report to Secretary Daniels on 5 July 1916. Barnett believed that four water planes were

necessary, and the personnel involved in the program should number ten officers and forty men. He wanted all officers and men trained at the Aeronautic Station at Pensacola, and one out of every four Marine officers qualified at Pensacola sent to the Army Flying School for instruction in land flying. Finally, there should be assigned to the advance base force two additional land planes to supplement the sea planes in base defense and land activities.<sup>9</sup>

Meanwhile the political and economic aspects of aviation controlled by Congress were gradually improving. During the discussions for appropriations for fiscal year 1917, congressional members made it clear that aviation was more than an interesting experiment. No longer was a token sum sloughed off to airplane development. Heavily influenced by the Civilian Industrial Preparedness Committee, a group of prominent civilians who believed that America's entrance into the war was inevitable, Congress allocated \$3,500,000 to naval aviation in the Naval Appropriations Act of 29 August 1916. Other stipulations in the Act affected the size and organization of aviation for the Navy. The limits on the number of personnel in both the Navy and the Marine Corps who could be assigned to aviation were raised. The Navy could have 48 officers and 96 men assigned and the Marine Corps was

allowed 12 officers and 24 men. The establishment of a larger "Naval Flying Corps" composed of 150 officers and 350 men was requested.<sup>10</sup> Active aviators received increases in both their pay and allowances. Benefits paid to surviving next of kin of pilots killed on duty also increased.

Duly equipped with adequate funds to begin establishing an adequate naval aviation program, senior officials turned their attention to finding the best man to oversee development of naval aviation bases. By November of 1916, Cunningham had become the recognized expert on the establishment of aviation bases. Accordingly, on 8 November, Rear Admiral J. M. Helm of the Commission on Navy Yards and Naval Stations wrote to Commandant Barnett to request that Cunningham join the commission to assist in the selection of sites for aviation bases on the Pacific Coast. Cunningham stayed with the commission until January 1917 when the momentum for starting the Marine aviation unit at Philadelphia grew to such proportions that he was ordered there to oversee the job.

On 3 March 1917, Cunningham joined the Philadelphia Marine Barracks to establish and equip the Aviation Company, Marine Corps Advance Base Force. The Aviation Company was the first independent

Marine aviation organization, independent of even the Philadelphia Marine Barracks. Authority had been secured for Marines to command Marine aviation. No longer undifferentiated individuals in the naval aviation program, Marine aviators would now be trained for their role in the Corps' advance base mission. Nonetheless, Marine aviators would continue to rely on the Navy for all aeronautic equipment and all Marine aviators were still officially designated Naval Aviators.

While Cunningham was advancing the organizational aspect of Marine aviation, an argument over the relative maneuverability of land and sea planes was being resolved at Pensacola. Rejecting the mathematical calculations of a Naval Constructor who "proved" a sea plane could not be looped, Lt. Francis T. Evans, USMC, set out to defy the critics. He also succeeded in discovering a basic flight principle which would save the lives of many pilots, and earn him the Distinguished Flying Cross retroactively in 1936 for this discovery.

Evans introduced spin-recovery, the answer to a safety problem that had plagued aviation since its inception. With no known recovery technique, an inadvertent spin usually resulted in the loss of both pilot and plane. On 13 February 1917, Evans did the

impossible:

On a routine flight over Pensacola Bay in a new N-9 seaplane, he decided to try...At an altitude of about 3500 feet, he put the plane into a dive to pick up speed for getting "over the top" of the loop maneuver. He lost too much speed on the way up and the plane stalled and went into a spin. Evans, without realizing he was in a spin, instinctively pushed his control wheel forward to regain airspeed and controlled the turning motion of the spin with the rudder. Recovering from the spin, he climbed back up and tried again, stalling spinning and recovering until he finally managed to complete the loop with out a stall. To make sure he had witnesses, he then flew over the sea plane hangars and repeated the whole show.<sup>11</sup>

Spin-recovery became a prerequisite for pilot qualification. The increasing capabilities of aircraft would not go unnoticed.

The sums appropriated for aviation became substantial in 1917. In addition to the regular appropriation for the fiscal year, three additional appropriations were made for naval aviation throughout the year. The first, in April, provided for another \$3,000,000 to be added to the \$3,500,000 already appropriated during fiscal year hearings. "The Deficiency Act of June 15 added another \$11,000,000, and this was further increased by \$45,000,000 on 6 October 1917.<sup>12</sup>

Concern over U-boat activity in the Atlantic intensified, creating fear of a possible invasion of the eastern coast of the

United States. Within two weeks of Germany's unrestricted U-boat declaration, the President and the Secretary of the Navy had appointed a joint Army-Navy Board on Aeronautics to investigate possible sites along the east coast to construct air stations equipped to conduct defensive patrols.<sup>13</sup> The Secretary also instructed the Board to consider two other aspects of this burgeoning aviation program and render an opinion on them. Specifically, Daniels wished to know whether the Board would recommend that such stations be established and run independently by the Army or the Navy. Or, should operating these proposed stations be a joint endeavor? Second, Daniels inquired as to what the Board's recommendations on the equipping of these stations would be. What type of aircraft and how many were envisioned at each location?<sup>14</sup>

The Board responded with a report issued on 14 February 1917. Included among its recommendations was the thought that such coastal patrol stations should be jointly operated by detachments from each the Army and the Navy. All decisions concerning the number and composition of forces necessary, as well as the number and type of airplanes to be assigned to the stations, would also be

made jointly.<sup>15</sup>

Twelve possible sites were suggested for air stations, eight on the Atlantic coast and four on the Pacific coast. For the Atlantic coast stations, the Board recommended construction begin as soon as possible and in a vicinity practical to the following locations: Chesapeake Capes; Block Island; Panama Canal Zone, New York; Boston; Delaware Bay; and Frenchman's Bay in Maine. On the Pacific coast, San Francisco, Puget Sound, San Diego and Hawaii should all be host locales for air stations.<sup>16</sup>

The Secretary of the Navy considered the Board's recommendations in conjunction with another report submitted on 5 February 1917 by the Chief of Naval Operations, containing his own ideas for patrol stations on the East Coast. Ultimately, eight stations were chosen from the combined recommendations for the Atlantic side. These were: Chatham, Montauk, Rockaway, Cape May, Hampton Roads, Key West, Galveston and Coco Solo, in the Panama Canal Zone. Construction on all stations except Galveston commenced almost immediately after President Wilson declared war on Germany. Work on the Galveston station was postponed until 1918.

On the west coast, only San Diego received permission for

construction of an air station. Plans for the other three western stations were postponed indefinitely. Ultimately, San Diego served only as a training station and not as an active patrol station.

These preliminary measures taken to establish air stations stateside were an important precursor to the planning and construction of American air stations in Europe. Burgeoning interest in developing American naval aviation led to the appointment of another joint Army and Navy Board. This second Board was assembled and sent to Europe to investigate the possibilities for patrol stations abroad.

The rapid military expansion brought on by declaration of war against Germany in April affected the air arms of both the Navy and the Marines Corps. Increases in both manpower and equipment were sought. The Director of Naval Aviation, Captain Noble E. Irwin, and Lt. Commander Towers coordinated preparations for the proposed expansion of the aviation program. Both the Navy and the Marine Corps began to draw upon their respective Reserve Aviation forces recently instituted by Acts of Congress, and set up the necessary training facilities at Army and Navy bases.<sup>17</sup>

Congressional members with an interest in naval aviation continued to advocate advancement. Aside from the purely monetary

aspects of funding naval aviation, there was a decided interest in ensuring the procurement of planes and the necessary peripheral equipment. In this endeavor, the Congressmen were joined by prominent civilians. To facilitate expansion of aircraft supplies, an Aircraft Production Board was established in May 1917. Formed at the behest of Charles D. Walcott, then secretary of the Smithsonian Institution and chairman of the National Advisory Committee for Aeronautics, the Board was to be charged with overseeing the quantity of aircraft produced, coordinating efforts between the Army and the Navy, and "determining specifications and methods of inspection for all aircraft...for the two services."<sup>18</sup>

Although the Board was initially given no powers greater than "conferring and advising," its influence soon grew to pseudo-legislative proportions. In light of that fact, Congress eventually granted the Board legislative standing on 1 October 1917, but imposed some strict limitations.<sup>19</sup> The limitations effectively kept the Board in an advisory capacity only, with no independent contractual powers of its own.

The Secretary of War and the Secretary of the Navy also convened one other board to study possible standardization of

aircraft designs and specifications. This body was designated the "Joint Technical Board on Aircraft, Except Zeppelins."<sup>20</sup> This Joint Board found itself in the same position as the Aircraft Production Board. Without any legislative power it could not enforce its views and findings, only advise. In spite of this limitation, the Joint Board found that its recommendations did, in fact, exert a considerable amount of influence on those who did have the power to affect legislative outcomes and aircraft procurement. Naval aviation now had allies and believers in the upper ranks of the government. The money and man power were available. The United States had declared war on Germany. The Allies needed help and naval aviation was ready to move.

At this time, inter-allied communications on the development of aviation also began in earnest. In May 1917, British and French War Missions arrived in Washington, D. C. seeking help for their beleaguered armed forces. In public statements to the press the members of these missions beseeched the United States to develop a great aviation program to assist in the containment and eventual destruction of the German empire. Of course, the single imperative target of the moment was the insidiously destructive fleet of U-boats operating beneath the surface of the Atlantic.

Concentration on the destruction of Germany's submarine force logically devolved to the expertise found in the Navy Department. The most effective way to destroy enemy submarines involved the use of both ships and aircraft. Ships the Navy had. Airplanes and men trained to fly them were in short supply. Even then, the majority of the planes which the Navy did have were hopelessly outdated and unsuitable for more than training purposes. The inferiority of American aircraft had to be remedied at once.

## Notes to Chapter 3

<sup>1</sup>Edwin N. McClellan, "Flying Leathernecks," Edwin N. McClellan Papers, Marine Corps Museum, Washington, D. C., p. 7.

<sup>2</sup>John Elliot, "Navy Aviation History 1912-1939," Naval Aviation History Office, Washington D. C., p. 26.

<sup>3</sup>George van Deurs, Wings for the Fleet: A Narrative of Naval Aviation's Early Development, 1910-1916 (Annapolis: United States Naval Institute, 1966), pp. 124-25.

<sup>4</sup>Ibid., p.125.

<sup>5</sup>Robert W. Love, Jr. The Chiefs of Naval Operations(Annapolis: Naval Institute Press, 1980), p. 5. Love quotes historian William R. Braisted, author of The United States Navy in the Pacific, 1909-1922 (Austin: University of Texas P., 1971).

<sup>6</sup>Edwin N. McClellan, "Marine Corps Aviation," June 20, 1931, Edwin N. McClellan Papers, Marine Corps Museum, Washington, D. C., p. 18. It was also suggested that no more than two officers be detailed at any one time. The earliest the men would be available was 1 October.

<sup>7</sup>Edwin N. McClellan, "Marine Corps Aviation," Marine Corps Gazette, February 1932, p. 46.

<sup>8</sup>Donald W. Mitchell, History of the Modern Navy (New York: Alfred A. Knopf, Inc., 1946, pp. 46-47.

<sup>9</sup>Ibid., p.47.

<sup>10</sup>United States Naval Aviation, 1910-1980, Washington, D. C.: Government Printing Office, 1981, p. 15. A Naval Reserve Flying

Corps was also established. The Civilian Industrial Preparedness Committee was also responsible for the creation of the Council of National Defense.

<sup>11</sup>John Condon, "75th Anniversary of Naval Aviation Commemorative Collection: U. S. Marine Corps Aviation Monograph, The Early Years: 1912-1941," Naval Aviation History Office, Washington, D. C., p. 7.

<sup>12</sup>Captain Archibald D. Turnbull, USN and Lt. Commander Clifford L. Lord, USNR, History of United States Naval Aviation, New Haven: Yale University Press, 1949, p. 107. It is interesting to note that the April sum was to be spent at the discretion of the President. The Secretary of the Navy had final say in the disbursement of the June appropriation.

<sup>13</sup>The members of the Board were: Brigadier General George O. Squire, Chief Signal Officer, U. S. Army; Captain Hugh Rodman, U.S.N.; Captain J. S. McKean, U.S.N.; Captain George R. Marvell, U.S.N.; Major Stanley D. Embick, C.A.C.; and Major Dan T. Moore, General Staff.

<sup>14</sup>A letter from the Secretary of the Navy to the Army and Navy Board on Aeronautics, 12 February 1917. Found in "The Infancy of Naval Aviation," p. 20. Author unknown. National Archives, RG45, Box 910, Folder 7.

<sup>15</sup>"Report of Board on Coastal Air Stations," by the Army and Navy Board on Aeronautics, 14 February 1917. Found in "The Infancy of Naval Aviation," p. 21. Unknown author. National Archives, RG45, Box 910, Folder 7.

<sup>16</sup>ibid.

<sup>17</sup>Edna Loftus Smith, Marine Corps Reserve Aviation 1916-1957 (Washington: Government Printing Office, 1959), p. 2. The Naval

Reserve was created by Act of Congress on 3 March 1915. A Marine Reserve was created on 29 August 1916, of which a reserve Flying Corps was authorized as Class 5.

<sup>18</sup>Turnbull and Lord, p. 108. The Board was to be headed by Howard E. Coffin. The Navy's representative was Rear Admiral David Taylor.

<sup>19</sup>ibid., p. 109. The Board could continue to make recommendations, but still could not enter into any contracts on its own authority. The Board was also redesignated the Aircraft Board. Two additional officers were added to support Taylor's efforts: Captain Noble Irwin and Lt. Commander A. K. Atkins.

<sup>20</sup>ibid., p. 110. This board was created in May 1917 at the request of Charles Walcott.

## Chapter 4

### Naval Aviation Overseas, 1914-1917

Although Count Ferdinand Zeppelin once toyed with the idea of giving Germany a technology that would afford military supremacy and perhaps nullify the strength of the British Navy, he did not advocate the use of his airship as a long-range military weapon once development reached its peak. The responsibility for the militarization of the Zeppelin airship fell to two other men, Dr. Hugo Eckener and Commander Peter Strasser. Count Zeppelin had first approached Eckener to help publicize his airships by publishing articles in the Frankfurter Zeitung. Although initially skeptical of the experiment, Eckener was soon captivated and eventually became an airship captain for the German Navy. Strasser was a very ambitious young naval officer who had been trained to fly airships by Eckener. His enthusiasm for the dirigible knew no bounds and he became almost fanatical about their development. Both Strasser and Eckener became very powerful figures in what soon developed into the Naval Airship Service.

It should be noted that the German Army also employed Zeppelins. It was the Navy that appeared to have the most enthusiastic participants in this new endeavor, although not much

greater luck in using them. The Navy's first two and the Army's first three Zeppelins were destroyed in crashes or by fire within months of their delivery. The Navy had only one airship, the L.Z.3., in service when Eckener joined Strasser as a military airship captain. Although the Army eventually successfully operated some airships, their men were never as well trained or as genuinely delighted to be involved in the continued development of this new technology as their counterparts in the Navy. Despite their airship losses, with such leaders as Eckener and Strasser and almost unlimited funding from Kaiser Wilhelm, the strengthening and success of the German Naval Airship Service was all but guaranteed.

In fact, Strasser and Eckener became touted as aerial warlords, shunting aside Count Zeppelin, who was close to eighty years old by this time and not actively working on airship designs any longer. By the time World War I started, propagandists had built the image of the Zeppelin into that of a decisive military machine capable of annihilating England. The German public gullibly swallowed the propaganda revolving around airship raids over London and its vicinity, as apparently did the British. Arch Whitehouse, in his book The Zeppelin Fighters, colorfully describes how the civilian population in Britain came to believe airships would soon fill their

skies:

Great Britain had been the target of German propaganda for several years. The penny-a-liners had drenched the popular press with frightening articles that presaged these dreaded attacks on cities and towns. Hack writers had loaded the book stalls with melodramatic volumes devoted to airship attacks from across the North Sea.<sup>1</sup>

After being inundated with the wild literature of fantastic airship stories, it is little wonder that Englishmen around the country, and Londoners in particular, fully expected to be raided by airships the very first night of the war. According to historian Whitehouse, Hugo Eckener had devoted a great deal of energy to inflating the stature and usefulness of airships as military tools of destruction. The steadily growing number of German airships and the increasingly large numbers of men being trained to handle them in Germany added fuel to the speculation. The great sums of money spent on building airships, the mere sight of one or two of the craft in the skies over the countryside and the firm belief that Germany was a nation of aggressors were more than enough to send imaginations running wild.

The German military leaders moved a bit slower in accepting the wild claims of the airship propagandists. The Army and Navy staffs were hesitant to trumpet this new technology as a great

weapon to add to their arsenal. Their British counterparts in the War Office expressed similar doubts as to the utility of airships in war. They were even more skeptical of airships than they were of heavier-than-air craft.

Meanwhile, Strasser persisted in advocating the the military use of Zeppelins. In many ways, the story of Zeppelins in World War I is the story of Strasser's military career. In spite of poor weather conditions and an increasingly prepared defense put up by the British, Strasser made the most of every opportunity to get his Zeppelins up into the air. Even when the German Army Airship Service, in September 1916, canceled all future raids over England due to the enormous losses sustained, Strasser and his Naval Airship Service persisted.<sup>2</sup> Strasser either chose to ignore, or just flatly enjoyed defying, the great improvement in Britain's defense measures.

Strasser's persistence rested in a firmly held belief in the psychological advantage the airships offered. He argued that the disruption of transportation, the dread of the airships overhead by the British working classes, and the necessity of assigning considerable armament and military personnel to the defense were sound reasons for continuing attacks. It was true that the

formidable Home Defense organization employed a significant number of men for anti-aircraft defense, an estimated 17,341 officers and men. "There were twelve Royal Flying Corps squadrons, comprising some 200 officers, 2,000 men and 110 aeroplanes. The anti-aircraft guns were manned by 12,000 officers and men who might have been profitably employed in France."<sup>3</sup>

Even if Strasser was right about the psychological impact of his airships, it was apparently not enough to stifle the development of British defense tactics. The men who were flying for the Royal Naval Air Service (R.N.A.S.) were becoming increasingly more skilled and their machines more advanced. The same was true of the men who operated the anti-aircraft guns below. Inclement weather coupled with greater British efficiency should have signaled the end of Strasser's program, but he still refused to yield. In the end, Strasser, like so many of his airship captains, was destined to meet his death in a flaming Zeppelin that crashed to earth, the victim of British air defense.

Why the R.N.A.S. and the R.F.C. were unable to shoot down all of the Zeppelins right from the beginning was due to both the lack of technological sophistication and an institutionalized division of labor. Strategic aviation in Britain was divided into two distinct

organizations with little or no overlapping. There was a military arm trained and equipped for the requirements of the Army in the field, and a naval arm designed to cooperate with the Grand Fleet. With each branch assigned different responsibilities and problems to solve, cooperation was minimal. When war became imminent the Army wing, the R.F.C., was assigned an offensive role out with the ground troops, away from London. The Navy wing, the R.N.A.S., was given the mission of the defense of all of Britain. Under such arrangements, the R.N.A.S. was primarily responsible for handling the Zeppelin menace. The German presence in Belgium made adequate defense all the more imperative.

An initial problem was the technological inferiority of the airplanes of that time, which meant that the Zeppelins could attain higher altitudes than the airplanes. Hydrogen gas was flammable, but bullets piercing the envelope were not always enough to ignite the airships. Indeed, some airships seemed impervious to even the heaviest fusillade. Dropping incendiary bombs from above the airships seemed to be the only guaranteed method of destroying them, but the inability to out gain the airships in altitude was a decisive deterrent to this tactic.

A lack of useful gun sights also impaired the ability of many of

the pilots to even correctly take aim against the monstrous airships, much less hit them. The imprecision in firing caused the waste of quite a bit of ammunition. The inaccurate gunfire from the anti-aircraft artillery on the ground added to the waste of ammunition. In addition, lack of proper training in height-finding and enemy identification caused considerable danger to the aerial Home Defense forces. Uncertainty over exactly who was flying above them caused the ground artillery troops to fire on their own pilots on several occasions.

In all fairness to the British defenders, it must be noted that the Zeppelin commanders and crews were similarly guilty of imprecision and uncertainty when conducting their raids. For all the damage that they did do, the German Zeppelins could have done considerably more had they had proper navigational training and equipment. The number of erroneous bombings and false claims was later revealed to be astounding. Some reports were rendered in good faith, while others were purposely fabricated to conceal misjudgment, error and just plain bad luck. Being subject to the effects of the wind, it was not uncommon for Zeppelins to be blown off their course by many miles. Meteorological forecasting was inadequate. Heavy clouds rendered navigation difficult as landmarks

could be obscured, making visual readings impossible. Many times, Zeppelin crews weren't exactly sure where they had dumped their bomb loads. There were also countless numbers of bombs dropped into the sea when airships failed to reach their objectives and were thus reluctant to return with full payloads.

By late 1916, the combination of the deaths of some of Germany's best dirigible pilots and a more effective Home Defense which destroyed ever greater numbers of airships over England, the Zeppelin menace began to fade. Although Zeppelins continued to operate until the Armistice, they ceased to be a major factor in the war. In the end, however, their statistics and legacy deserve notice. In their detailed study of British home defense against German air raids, The Air Defence of Britain, 1914-1918, authors Christopher Cole and E.F. Cheesman conclude that between 1915 and 1918 a total of 277 German Zeppelins participated in 54 raids on Great Britain. During those raids, 196 tons of bombs were dropped which caused 557 fatalities, injured 1358 and caused material damages of more than 7.5 million dollars.<sup>4</sup> Such activities influenced the military and government leaders of Britain to instigate changes in their deployment of men and armaments. The formulation of new policies and their tactical repercussions were felt not only on the

home front, but also on the Eastern and Western Fronts as men and machines had to be pulled in to fight the aerial menace over England.

Once the Zeppelins ceased to be a constant threat over London, a great shift in strategy occurred. The Lloyd George government allowed the air defenses which had been built up at great cost during the Zeppelin campaign to run down to a dangerous extent because of urgent demands for replacements for overseas commands and supply difficulties. London fell for the lull which soon proved to be only the eye of the storm. After eight months that calm was rudely shattered when the German Army, taking over the aerial offensive role from the Navy, conducted a raid in broad daylight with a squadron of their new Gotha heavy bombing airplanes. Their targets were in southeastern England, including London and some coastal towns. From May to August, eight daylight raids were carried out by the daring Gotha pilots.

The coming of the Gotha raids was a result of a dramatic new change in the tactics and strategy used by German aviators. When World War I began, men who flew airplanes were loners, used to pursuing their experiments on their own. Tactics and strategy were vague notions and evolved on an individual basis. With no prior experience to base anything on, each individual pilot was left to

innovate on his own. Since the Americans did not enter the war until 1917, it would have to be said that all early developments in tactics and strategy specific to warfare belong to the German, British and French fliers as they were the most active. By mid-1916 the best of the German pilots began to see the value of having planes fly in formation and attack in groups. Maneuvering in a cluster with other pilots offered better opportunities for protection against enemy planes in the event of dogfights.

One of Germany's earliest and best pilots was Oswald Boelcke. As was the case with the other fliers at the start of the war, Boelcke was accustomed to flying on lone patrols and improvising his own attacks and maneuvers. As the airplanes evolved into faster, more powerful and better armed implements of destruction, Boelcke altered his view of how to best use them against the enemy. Boelcke headed the development of the German "Jagdstaffeln," or hunting flights. So great was Boelcke's interest in group flying that he turned out voluminous writings on the subjects of organization and tactics for formation flying. He was also asked by his superiors to compile a basic set of guidelines or rules of engagement for junior and less experienced pilots. Out of this request came the "Dicta Boelcke," seven basic tenets for successful engagement with the

**enemy:**

**1) Always try to secure an advantageous position before attacking. Climb before and during the approach in order to surprise the enemy from above, and dive on him swiftly from the rear when the moment to attack is at hand.**

**2) Try to place yourself between the sun and the enemy. This puts the glare of the sun in the enemy's eyes and makes it difficult to see you and impossible for him to shoot with any accuracy.**

**3) Do not fire the machine guns until the enemy is within range and you have him squarely within your sights.**

**4) Attack when the enemy least expects it or when he is preoccupied with other duties such as observation, photography, or bombing.**

**5) Never turn your back and try to run away from an enemy fighter. If you are surprised by an attack on your tail, turn and face the enemy with your guns.**

**6) Keep your eye on the enemy and do not let him deceive you with tricks. If your opponent appears damaged follow him down until he crashes to be sure he is not faking.**

**7) Foolish acts of bravery only bring death. The Jasta must fight as a unit with close teamwork between all pilots. The signals of its leaders must be obeyed.<sup>5</sup>**

Although modern pilots might scoff at the basic, even juvenile, nature of the tenets and reject them as too obvious, the fact that aviation was in its infancy justified the simple and direct language.

Adopting the strategy of formation attacks using the Gothas once again gave the Germans a sense of military superiority, even though this was once again of a short-lived nature. The German High Command hoped the Gotha strikes would paralyze the British government and population with significant strategic and propagandistic campaigns aimed at intimidating the British into capitulating. At first, the Germans appeared to have their goal within reach. The initial daylight raids caused substantial public bewilderment and resulted in undue fatalities and injury. No air-raid warning systems had been devised, and the sheer novelty of the raids turned civilians into spectators, unaware of their immediate peril.

The Germans were also aided by a British order prohibiting the firing of inland anti-aircraft artillery guns promulgated in March 1917. Without adequate instruction in identifying overhead craft, ground artillery had been unwittingly firing on their own planes. As this order was not rescinded until 7 June, the public raised a storm of protest over the inadequate, and even non-existent, defense of their homes. The feeling of security built up over the departure of the Zeppelins was ruined. Local newspapers took the lead in inflaming public opinion and chastised the government for perceived

military ineptness.

Under the mounting pressure of both the threat of the Gotha bombers and public opinion, the British War Cabinet was compelled to authorize a massive reinforcement of air defense. So urgent was the call that even a detachment of day-fighter squadrons from the Western Front, crucial to aviation activity in France and Flanders, was recalled to London. The greatest strategic outcome of this revamping of air defenses was the fusion of the R.F.C. and the R.N.A.S. into the Royal Air Force, a much-needed reform. This amalgamation of the two air arms was an entirely unintended, unforeseen and deadly consequence for the German High Command. As long as the two British air services had maintained their uncoordinated aerial dichotomy, German planes, Zeppelins and even U-boats had rarely faced a concentrated attack. The creation of the R.A.F., with its unified policy on aerial defense, precipitated the end of the effectiveness of the Gothas in the war and helped turn the tide of the aerial war against the Germans.<sup>6</sup>

The creation of the Royal Air Force laid to rest a fierce rivalry that had been extant between the Army and Navy branches of British aviation even before the beginning of the war. When Louis Bleriot made his historic flight across the English Channel in 1909, British

military and civilian leaders realized that their island was vulnerable to attack from any foreign airplane or airship able to make the crossing. Matters were made worse when those same leaders realized that France and Germany had embraced these new technologies and were at that very moment building up their own forces.

An "Aerial League of the British Empire" came into being in 1910 and its agenda was demanding greater aviation development for Great Britain.<sup>7</sup> The League pressed for greater development of military aviation and decried a government that would allow the Germans to attain supremacy in aviation matters. Pressure from the League mounted after the International Conference on Aerial Navigation was held in Paris in May 1910. The Germans startled conference attendees by seeking strategic concessions to the use of airships over foreign nations. The German contingent advocated allowing airships to fly with impunity wherever they wished and not be treated any differently than a native craft. This idea was appalling to the British leadership and resulted in the establishment of the Advisory Committee for Aeronautics. This committee was composed of "scientists, engineers, and military and naval officers with experience in aeronautics...[assigned] to investigate the

problems concerning the design of flying machines.”<sup>8</sup>

The real reason behind the need to learn aircraft design was the nascent belief that aircraft might shortly become viable military weapons and some British leaders did not wish to be deficient in this arena. Opposition to immediately developing military aviation on a large scale came from senior officers who failed to see any useful role for aircraft in wartime and preferred to see what their rivals came up with first. In fact, the British War Office had begun compiling reports on military developments in rival nations in 1909. They paid particular attention to experiments by the French and German aviation programs. This tact was pursued until 1913.

Another result of the alarm caused by Germany’s increasingly aggressive airship program was the establishment of the Committee of Imperial Defence, in July 1909, “to advise on the defence of ports in Great Britain.”<sup>9</sup> This committee appears to have accomplished little and the Admiralty shortly jumped into the fray with its own conference on how best to protect vulnerable installations from enemy assaults, held in January 1910. The Admiralty sent its recommendations to the War Office, the party responsible for protecting military centers from attacks by air.

The real beginning of a military aviation service in Great Britain was the formation of the Air Battalion of the Royal Engineers in April 1911.<sup>10</sup> Four officers were given permission to take flying lessons at Eastchurch. The Battalion was conceived strictly as a reconnaissance unit for the Army and it lasted but a year. In the meantime, plans were being formulated for air services that would prove useful to both the Army and the Navy.

The Committee of Imperial Defence created a Sub-Committee on Aerial Navigation in November 1911 to investigate all aspects of aviation as it related to the military and to then submit a report of its findings. A Technical Sub-Committee was then charged with facilitating the ideas submitted by the navigation committee. As a direct result of the actions and reports of these committees, the Royal Flying Corps (R.F.C.) was created in April 1912. The R.F.C. was charged with five specific duties:

- 1) Reconnaissance
- 2) Prevention of the enemy's reconnaissance
- 3) Inter-communication
- 4) Observation of artillery fire
- 5) Infliction of damage on the enemy.<sup>11</sup>

All of these duties were anticipated to take place as the aviation unit supported troops on the ground. Maritime use was effectively

screened out at this juncture as was any thought of the potential use of aircraft in an offensive nature.

Naval officials reacted strongly to the virtual dismissal of their interests in aviation. The Navy moved immediately to dissociate itself from military aviation. The Navy declined to have its airmen trained at the Central Flying School, instead sending them to the naval air station at Eastchurch. The Admiralty also refused to receive aircraft from the Aircraft Factory, instead choosing to work with private contractors on an individual basis. The Navy then culminated its separation by shedding the designation "Royal Flying Corps, Naval Wing" and assuming the name "Royal Naval Air Service."

When World War I began, both branches of the military took an immediate interest in the use, albeit limited, of air power. Military aviation remained focused on the defensive aspects of aviation while the Admiralty continued to explore offensive potential. The Army commanders sought to use planes to support their ground troops in strictly tactical maneuvers. The naval leaders had broader ideas on the use of planes and it was naval aviation which proved to be the most innovative, and briefly, the most effective. In fact, it was British naval aviators who first envisioned, and briefly

implemented, a strategic technique that came to be known as strategic bombing. According to Neville Jones, author of The Origins of Strategic Bombing, strategic bombing may be defined as “the direct attack against the most important elements of an enemy’s war-making capacity, for instance, his industries, his communications, and the morale of his civilian population, as opposed to the units and equipment of his armed forces.”<sup>12</sup>

The idea behind effectively using this new technology, according to Admiralty aviation officials, was to broaden the scope of warfare beyond enemy lines. The entire population and production capabilities of a country was at war now, not just the members of the armed forces. In a way, this was a shocking development for the line between civilian and soldier was erased and an entire population faced peril in their own homes. As it turned out, however, the doctrine of strategic bombing remained more of a theoretical threat during World War I than an actual one. It was certainly not for a lack of effort on the part of the British Admiralty, however.

The initial strategy for using airplanes in wartime, championed heavily by the British military branch, called for using planes in a supporting role with the Army. Observation, scouting and possibly dropping a few small explosive devices for harassment

purposes were to be the assigned tasks of aviators. The leaders of the British government gave great weight to this proposed use of aircraft for the strongest proponent of this plan was General Hugh M. Trenchard, a revered military figure and leader of the Royal Flying Corps in-the-Field. In fact, Trenchard was so vehemently opposed to using strategic bombing that he enlisted the aid of Sir Douglas Haig, another prominent military figure, to squash a bold Admiralty attempt to set up a strategic bombing unit in Lorraine.

The great inter-service aviation feud came about when the Admiralty took a great interest in the potential of using aircraft for bombing enemy targets. Consequently, the Admiralty “devoted much effort to the development of both day and night bombers and to the study of bombing techniques.”<sup>13</sup> Naval aviators even received specialized training in navigation and bombing techniques, in addition to their intensive flight training, to prepare them for assignment to bombing units. This training was in stark contrast to the Army fliers who barely received basic flight instruction, much less any kind of navigational training, before being sent off to support the ground troops.

The Royal Naval Air Service did everything within its power to see that its pilots were as well equipped and trained as possible.

Naval aviators carried out the first British air raids against German targets during the war. The Admiralty was even bold enough to formulate a complete plan with French aviation leaders for the systematic bombing of German industrial centers by the end of 1915. Unfortunately, they never got the chance to unleash it.

It is hard to conjecture how different the course of the war would have been had the Admiralty been allowed to pursue, and received whole-hearted support for, its vision of air warfare. As it was, the continued emphasis on offensive activity and the more advanced training in navigation and bomb-dropping drew the attention of the French General Staff early in 1915 when they decided to formulate their own plan for the strategic bombing of Germany. The French leaders sought a way to shatter Germany's monstrous chemical industries and reduce its capacity for making powder and explosives. The Germans had a virtual industrial Goldman in the Mannheim-Ludwigshaven area. Within this region, the most vexing factory for the French was the Badische Anilin and Soda Fabrik, which was situated uncomfortably close to French aerodromes.<sup>14</sup> The great dilemma for the French was that their plans were far in advance of their ability to produce planes capable of long or short distance bombing raids.

At this juncture, the French turned towards England for assistance in aerial matters. They found strong allies within the Admiralty for they shared a common vision of offensive aerial warfare. The initial meeting took place on 17 December 1915 and discussions centered on bombing policies. A plan in which French and Admiralty aviation units would take on the task of destroying German factories by air resulted from a series of meetings. This grand plan was destined to fail, however, when the intense jealousy of British military aviation leaders flared again and remained unchecked. The British military aviation leaders claimed that the Admiralty was doing all it could to interfere with military aviation development. While it was actually the opposite case, with the military seeking to curtail naval aviation development, the military leaders had the weight of their influential leaders, Trenchard, Field-Marshal Sir Douglas Haig and Lieutenant-General Sir David Henderson behind them.<sup>15</sup>

Trenchard and Henderson opposed the use of “their” equipment for long-range bombing in France. They held firm to their position that the first priority for airplane use remained artillery spotting and reconnaissance. Haig flat out did not want British planes diverted to the fronts of French forces in France. He complained

bitterly to all who listened that doing so would jeopardize his own ability to win.

While this internecine warfare flared in Britain, France struggled to keep its aviation program going. France needed British planes for their strategic bombing plans. Their own Farman F40 and Caudron twin-engined G4 were inadequate for their envisioned plans. The French were particularly impressed with the Sopwith 1 1/2 Strutters. They were counting on a significant number of promised British planes to equip their joint base planned at Luxeuil. The interference of Trenchard and Haig dashed their hopes.

Although the French received far fewer planes than they had hoped from the British, and the Admiralty's aerial force continued to dwindle as the military siphoned off their planes, the forces at Luxeuil managed to conduct their first joint raid on a German target on 12 October 1916. The British No. 3 Wing and the French 4th Groupe de Bombardment targeted the Mauser factory at Oberndorf, a round-trip flight of some 230 miles. Oberndorf was actually bombed by maybe twenty planes, but suffered no major damage. Thirty-four French planes and twenty-one British took part. Six French and three British planes failed to return. Of those planes, eight were destroyed in the air by enemy planes and one was brought down by

**German anti-aircraft guns on the ground.<sup>16</sup>**

After Oberndorf, the British and French aircraft forces were able to conduct only eight more raids between them. For much of the time, poor weather proved a great impediment. In addition, the targets the French were now aiming for were much farther to the north than their base at Luxeuil. Therefore, towards the end of October, French naval aviation forces were moved first to Nancy and then to Ochey to put them in range of the German blast furnaces and iron works just to the south of Luxembourg.

The aviation attacks made by the French and British forces revealed to the German military leaders just how vulnerable they were to air strikes. This prompted a change in German strategy for their own home defense. The Germans established their own aerodromes across the lines from Luxeuil and then staggered craft deeper inside their own lines for additional protection. Fighter units were pulled away from the Western Front and elsewhere and spread, thinly, to counter the Allied air raids as best they could.

The Germans gained considerable momentum in March 1917 when the British military succeeded in forcing the Admiralty to issue orders shutting down the naval aviation force at Luxeuil. Naval aviators were assigned to Flying Corps fighting squadrons and their

mission became that of the military fliers. The Admiralty had virtually lost its bid for a strategic bombing force and found its pilots now assigned to flying tactical support for British soldiers on the ground.

A brief reprieve, in the form of a final joint raid took place on 14 April. In reprisal for the torpedoing of two hospital ships, British and French forces totaling forty aircraft flew two bombing raids on the city of Freiburg. Ultimately, however, the dissolution of the British naval aviation unit at Luxeuil left the French aviators underwhelmed. Without their allies in the immediate vicinity, the French lost their access to some of the better trained pilots in the area as well as their best source for the much-needed Sopwith aircraft. Adding this material loss to the adverse weather in that part of the country, the French ability to conduct many bombing missions with their own pilots and equipment was severely curtailed.

The situation of aviation forces in Europe in the spring of 1917 when the Americans entered the war was chaotic. The Germans, in spite of manpower and equipment problems appeared to be getting the upper hand, particularly after the frightening success of their Gotha strikes. The French, too, were struggling to keep their

forces strong, but they were not enjoying a surge of technological triumph and had just lost the direct support of the British naval aviation forces. The competitive jealousy between the British Admiralty and the military was crippling that nation's ability to both present a strong, united defense against their aggressive opponent and, in turn, mount their own successful and decisive offensive. The arrival of the American naval aviation forces threw a new element into the mix. Whether the Americans would just be another chaotic element thrown into the mix, or whether they might prove to be of tremendous value in the Allied aviation effort remained to be seen.

## Notes to Chapter 4

<sup>1</sup>Arch Whitehouse, The Zeppelin Fighters (New York: Doubleday & Co., Inc., 1966), 28.

<sup>2</sup>The Army Airship Service was eventually disbanded during the summer of 1917.

<sup>3</sup>Whitehouse, p. 196.

<sup>4</sup>Christopher Cole and E. F. Cheesman, The Air Defence of Great Britain, 1914-1918 (London: The Bodley Head Ltd., 1984), pp. 448-449. The authors acknowledge that their figures, particularly those concerning damage estimates differ somewhat from the "official history of the war" The War in the Air series by Walter Raleigh and H.A. Jones. However, the extremely detailed approach to their coverage of British anti-aircraft activity against Germany and the fact that their figures are based on the original reports renders their figures highly viable. The United States dollar amount attributed to the damage caused by air raids is only a best guess or approximation. The actual figure stated in the book is 1,527,585 English pounds.

<sup>5</sup>Walter A. Musciano, Eagles of the Black Cross (New York: Ivan Obolensky, Inc., 1965), pp. 60-61.

<sup>6</sup>A good book for reading about the Gothas and their effect on British military policy is C. M. White's The Gotha Summer (London: Robert Hale, 1986.) White details activities month by month for the summer of 1917.

<sup>7</sup>Neville Jones, The Origins of Strategic Bombing (London: William Kimber & Co., Limited, 1973), p. 29.

<sup>8</sup>*ibid.*, p. 33.

<sup>9</sup>Ibid., p. 34.

<sup>10</sup>Ibid., p. 35. The very first attempt in Britain at organized aviation was actually an ill-fated, very short-lived Balloon School.

<sup>11</sup>Ibid., p. 38.

<sup>12</sup>Ibid., p. 13.

<sup>13</sup>Ibid., p. 19.

<sup>14</sup>Ibid., p. 76. Additional sites were the Mauser arms factory at Oberndorf, the powder factory at Rottweil and the Krupp works at Essen.

<sup>15</sup>The machinations of the military leaders to emasculate naval aviation are more complicated than herein described. Chapter 3 of Jones' The Origins of Strategic Bombing describes in great detail how the military aviation leaders got the British government to withdraw support from naval aviation and suspend the Admiralty's plan to help France bomb German factories.

<sup>16</sup>Ibid., p. 114. Because more of the aircraft casualties were of French design, military officials concluded that their planes were not suitable for continued use on long-distance bombing raids. The Sopwiths appeared to be the planes most desirable for this type of offensive activity.

## Chapter 5

### United States Naval Aviation in Europe

The arrivals of the USS Neptune and the USS Jupiter in France in June 1917, marked a turning point both in the history U.S. Naval Aviation program, and in the course of World War I. The United States Navy Aeronautic Detachment No. 1 was about to turn theory into reality. The goal would be to match, and ultimately defeat, the deadly one-two combination of the German air and submarine forces. Expectations for the Detachment's performance were high. Doubtless, the pilots and their ground support crews were filled with equal amounts of anxiety and anticipation. Commander Kenneth Whiting and his staff faced a potentially daunting task of logistics, organization, and training in coordination with their Allied counterparts.

Preliminary training for the men of the Detachment had begun almost from the moment of embarkation in New York. The time in transit across the ocean was not wasted aboard either ship. No laxity could have been afforded as the Detachment was predominately composed of raw recruits who had joined the Navy less than a month before they departed for France. Whiting made sure that his men were "instructed in the rudiments of what every

blue-jacket should know."<sup>1</sup> Each man also learned well the duties of the posted lookout, in addition to gunnery practice from the railings.

Whiting, his officers, Lt. V. C. Griffin, Lt. G. de C. Chevalier, Paymaster Omar D. Conger, Assistant Paymaster F. E. Michel and Dr. A. C. Sinton, Jr., and sixty-three men of the Detachment who sailed aboard the Neptune arrived in St. Nazaire, France on 8 June, 1917. Whiting reported to Lt. Cmdr. W. R. Sayles, Naval Attache, Senior Naval Officer present.<sup>2</sup> From Sayles, Whiting received orders from the French Ministry of Marine that he and his men were to move on to Brest the following day. After a day spent in transit, Whiting's group reached Brest on 10 June. Whiting reported a "very warm and enthusiastic reception from crowds of people in the streets" as "the officers were conveyed to an hotel in an auto mobile flying the American Flag, and the men were escorted to quarters at the Navy Yard, which had been furnished by the French Navy."<sup>3</sup>

In the meantime, Lt. G. C. Dichman was ensuring that his complement of 59 men aboard the Jupiter were getting where they were supposed to be. Although their voyage had been largely unremarkable, once they reached French waters they experienced some minor disturbances. Running twelve hours behind schedule, the

Jupiter failed to make a rendezvous with a French escort slated for four a.m. on 2 June, 1917. A hastily sent radio communication to Brest produced a French destroyer escort, the Fanion, the following day.<sup>4</sup>

A second unsettling event occurred as the small convoy reached the mouth of the Gironde river: "The gunnery officer saw a torpedo pass ahead of the ship about twenty feet-apparently fired from the starboard side and far off[,] as the torpedo was traveling slowly."<sup>5</sup> Dichman was skeptical that a torpedo had actually passed the ship, believing a mistaken porpoise sighting far more likely. Likewise, he remained unconvinced of an enemy presence when yet another "torpedo" was reported to have missed the ship aft.

Unaware of the Jupiter's difficulties, Whiting had turned his immediate attention to making his official calls on local French Navy officials while he waited for the balance of the Detachment to arrive in France. On the morning of 11 June, escorted by a French Captain, Whiting paid his first visit to the Governor of Brest, who, incidentally, was also the Governor of the Port of Brest. Visits to four local ranking Admirals rounded out Whiting's day. These were: 1) The Admiral in Command of the Coast Defense; 2) The Commander of the District Coast Patrol and Aviation; 3) The Commander of the

Navy Yard at Brest; and 4) The Commander of the Aviation Station at Camaret.

Once local courtesies had been extended, Whiting turned his attention to two strategic tasks, the disposition of the First Aeronautic Detachment and the establishment of the Headquarters for U. S. Naval Aviation in France. The entire Detachment was now on French soil. The men who had sailed aboard the Jupiter had arrived at Trompe Loup on 5 June. After spending four days aboard ship awaiting further orders, the men were disembarked and sent on to Bordeaux on 9 June where they were housed in the partially vacated Armament, Maritime, Bettiment, Commerce Barracks.

With his entire Detachment now in France, the next item on Whiting's agenda was a trip to Paris to confer with the senior officials of the French Ministry of Marine. First, however, he saw to the transfer of his men to the French Naval Air Station at Camaret where they would spend the next three weeks before joining the detachment from the USS Jupiter at Tours. Accompanied by Paymaster Omar Conger, Whiting caught a train for Paris on 12 June, arriving at his destination on the morning of the 13th. In Paris, Whiting had six senior officials with whom he needed to establish immediate contact. These were: 1) The American Ambassador to

France; 2) The American Naval Attache; 3) The French Minister of Marine, Admiral Lacaze; 4) The Chief of the French General Staff, Admiral Lebon; 5) The Chief of the Aeronautic Section, Capitaine de Fregate Cazenove; and 6) The Paymaster-in-Chief of the French Navy.<sup>6</sup> After cultivating his preliminary contacts, Whiting was then able to achieve his larger objective of coordinating a series of conferences in which to discuss situating his men and determining suitable locations for American naval air stations. Whiting's most important negotiations were with the Minister of Marine, Adm. Lecaze. Right from the start, the French Minister strove to make Whiting feel comfortable by ascertaining his position and authority relative to both French officials and American Army aviation officials already in France. He was also given a French liaison officer, Captain de Laborde of the Aeronautic Service, whose job was "looking out for the American Naval Aviation in France...and study[ing] questions relative to the organization and utilization of the American Aviators placed at the disposition of the French Navy."<sup>7</sup>

This meant that Laborde was also in a position to facilitate communications between the U. S. Navy and Army aviation forces when necessary. The French had already been cooperating with "the

Colonel Chief of the American Military Mission for Aeronautics." Because of this situation, there appeared to be some assumption that Whiting should be under his command. However, a 10 July letter from Vice Adm. Du Vignaux, General Director of submarine warfare, clarified Whiting's position as far as French authorities were concerned. Whiting "was in high command of American Naval Aviation in France."<sup>8</sup>

Though his welcome was a gratifying one, Whiting realized immediately that his expectations for the deployment of his men did not entirely coincide with those of his hosts. Miscommunication between the French representatives in the United States and their superiors in Paris left the First Detachment in an awkward position. Whiting had brought mostly untrained student pilots and mechanics with him as he had been led to believe that they would be quickly trained in French schools. The true situation was that the French War Ministry, under whose authority pilot training operated, had not been informed accurately of the American needs.

A further problem was that if Whiting continued to insist that his Detachment stay together as a unit during the course of its training, French students currently undergoing training would have to be transferred to other schools. Although the situation was

confusing at best, Whiting and his men did receive an enthusiastic welcome and the French strove to be accommodating in all ways possible.

As plans were formulated, Whiting quickly learned that the French methods of pilot training and support organization were far more sophisticated than those in the United States. For starters, the French Army conducted the pilot training program. Several small schools were scattered around the French countryside. Combined, they produced about 900 trained aviators each month.<sup>9</sup> Contrary to American naval aviation, French fliers learned the art of land flying first. The three reasons given were savings in time and money, and the fact that "Navy pilots are often required to fly land machines on bombing and reconnaissance expeditions along the coast."<sup>10</sup>

Another difference in methodology, which the French authorities proved almost dogmatic on, was the "unbalanced" nature of the First Detachment. The 122 personnel of the Detachment represented a cross section of men typically found in a U.S. naval aviation unit. The student pilots numbered 65 and there were 38 mechanics. The rest of the personnel consisted of yeomen, hospital corpsmen, cooks, messmen and servants. According to French military philosophy, Whiting possessed a mere fraction of the men he needed for a

functional flying unit. Each pilot, said the French, required 10 men to keep him in the air. At least one of those ten must be an observer, "specially trained to observe, drop bombs, operate machine and rapid firing guns, and so forth."<sup>11</sup>

It was a given that mechanics were required in a pilot's support entourage. The French operated separate schools for mechanics and observers. The rest of the pilots' support crews consisted of fabric workers, joiners, chauffeurs, motorboat coxswains, engineers and general helpers.

With this introduction to French organization, the initial conference between Whiting and the French officials in Paris ended with a preliminary agreement to get members of the Detachment off to various training schools as soon as possible. The proper distribution of the widely dispersed Detachment was an organizational challenge. Location assignments were sent to the men commanding the smaller contingents. Pilots, Quartermasters and Landsmen for Quartermasters would go to the Army aviation training base at Tours. Forty-five men were designated as observers and sent to the Naval School at San Raphael.<sup>12</sup> Likewise, those chosen for mechanic duty, primarily Machinist's Mates and Landsmen for Machinist's Mates were also sent to San Raphael.

Lt. Dichman accompanied his group of Quartermasters from aboard the Neptune to Tours on 20 June. His men were quickly divided into classes for training. On 23 June, Lt. Chevalier, Dr. Sinton and Paymaster Michel arrived with a complement of men from aboard the Jupiter. These men were integrated immediately into the classes set up for the men from the Neptune. Dichman reported that the "men seemed to learn the game quickly and were making their solos after 3 or 4 hours of double control instruction."<sup>13</sup> Dichman and Chevalier also went through the pilot training at Tours successfully and earned their French Military Brevets. Dr. Sinton added depth to the entourage by learning the French language.

For the most part, the Americans at Tours encountered nothing but success in their endeavors. Reports indicated that all but three or four of the men assigned to pilot training earned their Brevets. There were, however, three fatalities. One trainee and his instructor failed to pull out of a nose dive. Neither man survived the impact. Another pilot died after his plane collided with another mid-air. The deaths were mourned, but perseverance was very much in evidence. One pilot suffered a cracked jaw during an accident, but returned to the cockpit just two days later with his jaw wired in place.

Tours was just the first stop for the pilot trainees. Once they

earned their Brevets, the men moved on to more advanced training at Hourtin. The men moved on to Hourtin in groups of ten or twelve. The idea here was to move some of the provisions and equipment with each group of men so that by the time the last group was ready to go, everything would be successfully transferred to the next location. Dichman remained at Tours until the last contingent was ready to go on.

The flying school at Lake Hourtin proved to be compact, yet surprisingly well-equipped. Enough buildings had been set up to house administrative offices, a sick bay, separate quarters for enlisted men and petty officers, an officers' club and mess room, and a store room. Although the officers were quartered in town, facilities were set up for them at the school where they were able to change clothes and even sleep when they were unable to return to town for any reason.<sup>14</sup>

For operations, Hourtin had four flying fields, the largest being the primary field and the three smaller ones for auxiliary use. The machine shop at the school was spacious, enabling repairs and rebuilding of planes to be done on site. The men in the machine shop enjoyed the privilege of having a large, fairly well-stocked storehouse of much-needed spare parts. Twelve large wooden

hangars were homes to about 120 Caudron training planes and thirty Farmans and Nieuports.<sup>15</sup>

From Hourtin, the American pilots were divided between San Raphael and Moutchic. San Raphael provided the most advanced training, but was unable to accommodate all of the American pilots at once. Lt. John Callan had been working to build up Moutchic while the men had been doing their preliminary training at Tours. Moutchic initially served as an inactive holding area for the American pilots while they waited for space to open up at San Raphael. Before too long, however, Callan was able to secure a few planes for Moutchic. The remainder of the men then stayed at Moutchic, rather than going on to San Raphael, for their final training, as pilots who had completed their training at San Raphael were then returned to Moutchic as instructors. Lt. Dichman remained at Moutchic as commanding officer after Lt. Callan was transferred to Paris.

While his men were being shuttled through the French training programs, Whiting continued his negotiations with his French counterparts. According to French strategy, the most effective operations against the submarines would be achieved by establishing a network of no less than fifty seaplane stations throughout France. Supplementing the seaplane stations would be an unspecified number

of land plane bases and dirigible and kite balloon stations. The Americans' share in these operations would be manning and operating twelve seaplane stations.

As the point man in France for American naval aviation, Whiting readily appreciated the role his Aeronautic Detachment could play. He believed it quite feasible that American naval aviation forces could indeed operate twelve stations in France and he helped to ensure that the French proposal got to the Navy Department in Washington.<sup>16</sup> As it appeared that the French authorities had preselected the twelve potential American sites, Whiting requested an inspection tour of the proposed locations for his own assessment. He wanted not only to evaluate the sites, but also to get an idea of Allied operations being conducted in the vicinities. The inspection party consisted of Whiting, Capitaine de Vaisseau Laborde of the French Navy, Marine Corps Captain Bernard L. Smith, and Paymaster Omar Conger. The four men left Paris on 18 June and arrived at their first destination, Dunkerque, around noon the following day.<sup>17</sup>

The inspection party made its first call upon Vice Admiral Ronard, Commander of the Coast Defense District in which Dunkerque was located.<sup>18</sup> The inspection party got a close up look at the

German shelling capabilities at their first stop. The Admiral's office building and the population center of Dunkerque offered ample evidence of the pounding that the city had received from the German guns. Exploded shell fragments protruded from the walls and doors. A mirror was pocked and cracked from shrapnel. Several houses in town had been demolished. Surprisingly, however, the damages were not as extensive as might have been expected. The Germans fired a type of shell that exploded only in its direction of travel. This prevented any massive demolition and allowed many houses to remain intact, despite being right next to a house that had been destroyed. There was no evidence to indicate that the shellings had done anything to slow activity in the area. Adm. Ronard held a conference with the visitors and sent them on to the French seaplane station on the eastern side of the harbor.

The French seaplane station was small and operated with minimal, and even obsolete, equipment. It had only three permanent hangars made of wood and stone, and one temporary Bessineau canvas hangar.<sup>19</sup> One small hut served as both the men's quarters and the armory. The rest of the station consisted of "a pigeon loft, a hand derrick, 2 floats 10 ft. by 30 ft., a speed boat, a motor service boat, 3 dinghies, [and an assortment of] passenger automobiles,

lorries and motorcycles."<sup>20</sup>

The station housed twenty-four aircraft of four types: 1) The single-seater Sopwith; 2) The Franco-British-Amalgamated (F.B.A.); 3) The Tellier; and 4) The Diodet-Donnet (D.D.).<sup>21</sup> According to Whiting's report, the Sopwith was considered obsolete. This was an unfortunate situation as the Sopwith had been the primary fighting aircraft for the Allies. The plane's offensive capabilities had held the promise of making it formidable at the war's beginning. It's mounted Lewis gun was synchronized to fire through the rotating propeller blades. The pilot also had use of a Vicker's gun mounted on top of the plane.

Whiting did not have especially kind words for the Sopwith, however, as he offered an evaluation of its current capabilities. He noted that:

[t]he great objection [to using this craft as a fighter] is the speed, but it has also structural weaknesses, notably in the tail[,] which is built as a separate part of the fuselage and joined to it with all the joints in the same plane. These have casualties due to the fuselage breaking in half and tail and wing falling off. The pontoons are not seaworthy, being so constructed that the machine will turn over backwards as soon as it starts to drift astern.<sup>22</sup>

With such a dreary outlook of performance capabilities, it appeared

most unfortunate that of 24 planes at the French station, 14 were Sopwiths.

Of the four types of planes available at Dunkerque, the most popular was the F.B.A., a two-seater with a 150-horsepower Hispano Suiza engine. Though only capable of 90 MPH air speed, the F.B.A. had a range of 6 hours and could carry four one-hundred pound bombs under its wings. Whiting cautiously noted the F.B.A.'s notoriously poor construction, but admitted that the crafts gave excellent performances.

Though perhaps a bit less popular, the Telliers, on the other hand, were known for their sturdy construction and remarkable seaworthiness. This was due to the fact that Tellier planes were actually boats first, planes second. Tellier was the only aircraft company that actually manufactured boats too. Whiting noted that the Telliers looked remarkably similar to the American Curtis flying boats. No comment was offered, however, as to how well the Tellier performed in the air.

The Diodet-Donnets were noted to be similar to the F.B.A.'s. The D.D.'s were smaller, but they used the same size engine as the F.B.A.'s, thereby achieving similar airspeeds. The D.D.'s, however, lacked the other plane's power and patrolling radius.

What the French lacked overall was an airplane capable of competing with the best the German air force had to offer. Since April, the Germans had been embarrassing the allied forces in the area. A new fighter, the Spad, seating two and heavily armed, was defeating everything sent up against it. Not one, but two, machine guns were synchronized to fire forward through the propellers. A third machine gun was mounted aft on a rotating mount. In addition to being extremely fast, the enemy fighter had the added versatility of pontoons. The German plane was, quite simply, the "cock of the walk."<sup>23</sup>

The German air superiority hit hardest one day in April when six French planes went down. With no real opposition, the Germans were able to conduct their routine patrols "from Zeebrugge westward to the barrage (net) from Dover to Dunk[irk.]"<sup>24</sup> It was obvious that the French needed some immediate assistance in at least matching their opponent. Their English allies were unable to provide adequate assistance and a subsequent stop on Whiting's tour would reveal to him why such was the case.

The following day, Whiting paid a visit to the English military residents of the Dunkerque area. Capt. Charles Lamb, Commander of the Royal Naval Flying Corps, had established his headquarters in a

building to the east of the town. He briefed Whiting's party on "the existing situations and events of the past."<sup>25</sup> To supplement his explanations, Lamb produced for inspection several photographs of enemy encampments taken by his increasingly skilled corps of aerial photography specialists. Whiting noted:

Of particular interest were the photographs of the Belgian Coast from Nieuport to the Dutch frontier, showing vividly, and with great definiteness, gun emplacements, hangars, aerodromes, submarines, destroyers and aeroplanes. For instance, in one photograph taken from an altitude of 18,000 ft., there were plainly visible the Zeebrugge mole, the shipping alongside, and a seaplane with twin pontoons, on the wings of which the iron crosses stood out markedly.<sup>26</sup>

Whiting's distinct impression was that the British were far ahead of the Americans in a most important technology.

The next stop on the tour was the British air station at Dunkerque which was adjacent to the French station. The impression Whiting gives is that English operations were on par with those of the French. The equipment lists and make up of the station were very similar to those of the French. Oddly enough, though, Whiting made no note of the actual number or type of planes available at the English station. Little doubt was left, however, of the fact that the English station fared no better against the German fighters than

their counterparts at the French station.

The very day that Whiting and his inspection crew arrived, the English station suffered the losses of two men and three aircraft:

Two Sopwith fighters and one Short bomber were sent out. They encountered some German machines (number unknown [,] but not over four). In a very few minutes one Sopwith went down, the pilot killed. Shortly thereafter the Short was brought down, with the observer killed. The other Sopwith was hit many times and the gasoline gauge was shot away. With gasoline in the gravity tank[,], the pilot managed to make a French torpedo boat destroyer by [sic] which he was brought back to port.<sup>27</sup>

Needless to say, spirits were not high and motivation was stronger than ever to find an appropriate place for the establishment of an American station as quickly as possible.

The French had actually picked a location which they thought would be suitable for the American station nearby. Whiting made a brief inspection of the site and noted its advantages and disadvantages. A seawall, a railroad connection, the presence of a small stone building and plenty of land to work with made the spot "where the innermost channel joins the bight on which are located the British and French bases"<sup>28</sup> very appealing. Equipping the station would, of course, have to be arranged.

The inspection party did not linger in Dunkirk proper, however,

as there was still much to be seen and many sites yet to evaluate. The next stop was St. Pol, barely a mile away to the west from Dunquerque. Here, the French and British had established reserve depots the likes of which Whiting and his party had never seen before. Whiting was awed by the "miles of hangars and thousands of machines."<sup>29</sup> St. Pol served as the renovation and repair station for the entire Royal Flying Corps and for the French planes that patrolled the English Channel. The most disappointing feature about the magnitude of operations in the Dunkerque area was that sheer numbers were not enough to protect the area from the aggressive, and better equipped Germans.

Completing their trip to Dunkerque, Whiting's inspection crew returned to Paris on 21 June. There followed a three-day conference with French officials wherein several important issues were discussed. First on the agenda was the question of when and how construction would begin on the proposed American air station in the Dunkerque area. Neither the Americans nor the French had sufficient men and equipment to make a substantial start. In the end, it was decided that the French would begin construction and do what they could with whatever materials they could find. The only advantage to this plan was that at least what men and material could be

scrounged were already on the right side of the ocean.

The bulk of the meeting was given over to the scheduling of still more inspection tours to find suitable base sites for the Americans on the rivers Gironde and Loire. Additionally, Whiting wanted a tour of the French Flying School on Lake Hourtin at Tours. He wanted the chance to see how well equipped the French training station was and evaluate French training methods.

As both sides seemed to be in accord as to the expedience of getting Whiting on his way, he and Paymaster Conger departed for Tours on 23 June, arriving at their destination on 24 June. Whiting was immensely impressed with what he saw. Every need seemed to be attended to at the small, yet quite complete complex. There were enough buildings and hangars to ensure that the school had ample space to run efficiently. Accommodations were available for administrative offices, shift rooms, separate quarters for enlisted men and petty officers, mess rooms, a club house and a sick bay.<sup>30</sup>

Little seemed to be lacking in the supply, repair and operations areas either. Storage for spare parts was available. A large machine shop catered to the needs of the 120 Caudron school machines and 30 Farmans and Nieuports. A large landing field supplemented by three auxiliary fields provided substantial space for students to practice

their landings and takeoffs.

Leaving Tours late that night, Whiting and Conger headed on to La Rochelle and then La Pallice. Arrangements were made to return and evaluate these two locations following a visit to Fromentine. The commander of the aerial patrol of the local defense district, Capitaine de Vaisseau Stotz, offered his services as escort. The Fromentine site was located "on the strait between the mainland and the southern end of Noirmoutier Island."<sup>31</sup>

The most southern point of the island seemed to hold the greatest promise strategically, logistically and topographically as an air base site. The strategic advantages included a location "within 15 miles of the steamer lane to St. Naire [and] ...easy striking distance of the shoals off of Ile d'Yeux."<sup>32</sup> Logistically, the site had four positive features: 1) The strait was deep enough to allow the passage of vessels drawing 20 feet of water; 2) Telephone and telegraph lines were available to the mainland; 3) The nearby towns of Challans and Beauvoir offered markets for adequate fresh provisions; and 4) At low tide, land transportation to the mainland was possible over a section of the strait that surprisingly and quickly dried out. Topographically, the site required little preparation for use and the tidal changes required that only a short

slip would need to be built.<sup>33</sup>

Whiting's enthusiasm over the Fromentine location did not prevent him from noting several deficiencies as well, however, which ultimately led him to recommend waiting on establishing a base there. While there was nothing wrong with the location from a strategic point of view, some important logistic disadvantages could not be ignored. Foremost was the lack of an adequate supply of fresh water. What was available came from seepage wells dug in the sand. This water, in turn, was not sanitary until it had been boiled. Getting supplies to the site would be handicapped by the mismatched rail gauges of the only train that ran in to Fromentine. Goods would have to be unloaded from the broad gauge train cars in Challans and reloaded into cars running on the narrow gauge track into Fromentine. To make matters worse, this train only made one trip per day into Fromentine.<sup>34</sup>

Whiting's choice was to suspend a decision on Fromentine until he had had the chance to evaluate other potential sites. La Croisic interested him immensely, but his travel plans took him to several other sites first as he and Conger traveled south, back down the coast. Sables d'Olonne held little immediate promise. Returns to La Rochelle and La Pallice yielded no better results. A side trip to

Rochefort to investigate the dirigible station there provided evidence that the non-rigid balloons used for scouting and patrol purposes had potential as convoy escorts for ships moving up and down the coast.

Next on the agenda was a quick trip to scout out a few potential sites for seaplane stations which would be of immense help in planning offensives against the German submarines which preyed on shipping traversing the Gironde river. One site was near St. Trojan, two were near Royan and one was near a lighthouse at the northern end of the Gironde. Of the four, only St. Trojan and the lighthouse locale were viable locations. In fact, St. Trojan was a very exciting prospect from an operational and logistic standpoint and the lighthouse spot showed a bit of potential as well.

The most promising spot was located "on the Ile d'Oleron about 3 miles south of the town of St. Trojan on the Straits of Maumusson about 400 yards to the North-east [sic] of the Life Saving Station."<sup>35</sup> Conditions were most favorable from strategic, logistic and topographical views. Only a mile from the sea, St. Trojan had easy access to the steamer lane coming into the Gironde. The water depth allowed for the entrance of vessels drawing twenty feet and the tide variance was relatively small. Local markets offered an

abundance of fresh foods. Only a very short runway of 100 meters would need to be constructed due to the lay of the land.

Whiting could find very few negative features at the St. Trojan locale. The two biggest concerns were the lack of a really close rail service and the fact that four kilometers of road needed to be constructed. Such an endeavor would require considerable grading and leveling.

A trip up the river to the lighthouse yielded another potential site of operations. As with the St. Trojan tract, the lighthouse vicinity offered an excellent strategic position from which to guard shipping from enemy submarines. Supplying of this location would prove relatively simple as it was only thirty-five miles by water to the United States Naval Base at Pauillac which, wrote Whiting, "at present seems to be the logical distribution point of supplies for the aviation centers."<sup>36</sup> A forest just above the high water mark provided an ample supply of timber.

The drawbacks to this area were similar to those of St. Trojan. Quite a bit of grading and cementing would be required to render the site useful. Again, a long runway, here of about 300 meters, would have to be constructed. Whiting took notes and again reserved his judgment until he could see what else was available in the area.

It did not take long for Whiting to find out that there wasn't anything else available. The remaining two sites near Royan proved vastly disappointing.

Before continuing on to evaluate more potential base sites, Whiting and Conger took a brief tour of the training schools that the French military had already established. The French government had the idea that any American schools built in France would be located near the existent French ones. The first stop of interest was the site recommended by French authorities for the establishment of an "American Flying School" near Lake Hourtin. Pilots would come here for training "in sea planes, flying machines, and rapid firing operation and bombing."<sup>37</sup> The French already had an operational Naval seaplane training base at the lake and they were anxious to have the Americans establish operations nearby.

In Whiting's opinion, however, the area surrounding Lake Hourtin was insufficient to allow for operating what he hoped would be two sizable training stations. Instead, he suggested that the Americans move one lake to the south to see if conditions there would be suitable for an air station. Lake La Canau surpassed expectations as a potential site. Whiting could barely suppress his pleasure when he reported on its features:

The weather is better here than any other place in France, --there are but few houses on the shores of the lake, --on its western side there are high and uninhabitable bluffs which offer a fine background for target practice. The shores of the lake are entirely covered with a good growth of marine pine which offers a more than adequate supply of timber. The surrounding country is but a few feet above the water level so that only a very short run way need be constructed. There is plenty of ground space available for all expansion that could possibly be desired and there is direct connection with Bordeaux by telegraph, telephone, broad gauge railroad, and a straight and very excellent wagon road, by which the distance is 27 miles.<sup>38</sup>

The only preliminary work Whiting deemed necessary was the construction of about a half-mile of road to connect the site with the main road and the clearing of some trees.

The next stop was La Cazau where the French had both an Army Firing School, which also offered seaplane training, and an aerodrome designated for land plane training.<sup>39</sup> Space did not permit Whiting to describe the activities there in his report, but he was favorably impressed. He did note that if the Americans were to establish a base there, a plant would also be necessary to support it.

A potential location for a plant in France turned out to be the next stop on the tour. French officials had selected a site at Pauillac for the Americans to build an air station, but Whiting saw much

more potential for a supply station in that locale. Being situated only 25 miles down the river from Bordeaux and strategically near the Bay of Biscay, Pauillac was ideally situated to be a supply and distribution center for planes and a variety of water vessels operating in the vicinity. Whiting also believed that, should it become necessary, sea planes could be reassembled here after shipment from the United States. The site was also large enough to accommodate any future expansion should operations be established at Pauillac.

As Whiting's tour came to its conclusion with some brief stops at French stations, he made what would be his final stop at a potential site for an American air station in France. La Croisic turned out to have the greatest potential of any site near the Loire River, even Fromentine which up until then had been the front runner in construction recommendations. Whiting was impressed by the strategic, logistic and topographic strengths of the site, and equally pleased by the relative lack of weaknesses.

Perhaps the single most important feature of the location was its proximity to the steamer runs along the Loire. Aerial patrols could easily offer escort services to the shipping filling the lanes. Among its other positive features was an abundance of food under

cultivation in the area and a railroad and roadway which connected "with St. Nazaire and Nantes, and from thence to the whole of France."<sup>40</sup>

A unique aspect of La Croisic was that the site was actually located on two islands surrounded by sea walls. One island was connected to the mainland by a bridge and the two islands could easily be joined by the construction of another bridge. The sea walls precluded the need of building any runways.

Whiting could find very few criticisms for La Croisic other than that some leveling would be required and the relative smallness of the islands might mean that the men would actually be quartered on the mainland. The French were already building the equivalent of a rest stop for planes and pilots at La Croisic. Whiting believed that this was a prime location for an American station and he highly recommended beginning construction there as soon as possible. Even though he recommended La Croisic over Fromentine for initial construction, Whiting nevertheless stressed the importance of also beginning work on a Fromentine station just as soon as men and material were available.

After leaving La Croisic, Whiting returned to evaluate the work begun at Tours. From there he went on to Paris to formulate his

recommendations for the Navy Department. To broaden his perspective, Whiting discussed with French officials their plans for not only for the remainder of 1917, but also for 1918. Using the information he had gathered from his tour of potential American sites and what he knew of the French intentions for construction and operations, Whiting drafted his proposal for American activity in France.

## Notes to Chapter 5

<sup>1</sup>"Report of Operations to Date," July 20, 1917. To SecNav (Operations), from Lt. Cmdr. Kenneth Whiting. National Archives, RG45, Box 910, Folder 9, p. 1.

<sup>2</sup>Ibid.

<sup>3</sup>Ibid.

<sup>4</sup>Lt. V. C. Griffin, USN and Lt. G. C. Dichman, USN, "History of U. S. Naval Aeronautical Detachment," December 3, 1918. National Archives, RG45, Box 910, Folder 9, p. 1.

<sup>5</sup>Ibid.

<sup>6</sup>"Report of Operations to Date," July 20, 1917. To SecNav (Operations), from Lt. Cmdr. Kenneth Whiting. National Archives, RG45, Box 910, Folder 9, P. 2.

<sup>7</sup>Letter to General Staff, Aerial Patrols and Aeronautic Service, Under-Secretary of State for Military Aviation, from The Vice-Admiral, General Director of Submarine Warfare, by order of Ministre de la Marine, 10 July, 1917, found in Thomas T. Craven's "History of Naval Aviation, French Unit," presented 15 February, 1919, p. 10. Washington Navy Yard Annex, Aviation News Section.

<sup>8</sup>Ibid., p. 11. Unfortunately, it is noted that no record was kept in the French Unit of the various details and arrangements made by Whiting. Only generalizations after the fact appear to be available.

<sup>9</sup>Ibid., p. 3. Whiting did not list the schools here, but did say that none could produce more than 100 trained pilots per month. This leaves the impression that there were at least eight or nine separate schools in operation.

<sup>10</sup>Ibid., p. 3. Land machines were preferable on account of their greater weight carrying capacity as compared with seaplanes of the same power.

<sup>11</sup>Ibid.

<sup>12</sup>Ibid. Based upon Whiting's present number of pilots, the French authorities requested that at least 14 be designated for observer training.

<sup>13</sup>Lt. V. C. Griffin, USN, and Lt. G. C. Dichman, USN, "History of the U. S. Naval Aeronautic Detachment," December 3, 1918. National Archives, RG45, Box 910, Folder 9, p. 2.

<sup>14</sup>Lt. Cmdr. Kenneth Whiting, "Report of Operations to Date, July 20, 1917." National Archives, RG45, Box 910, Folder 9, p. 10.

<sup>15</sup>Ibid.

<sup>16</sup>Ibid. p. 4. Marine Lt. Bernard L. Smith personally took a copy to the Navy Department upon his return to Washington shortly thereafter. The original of the report was mailed to the French Naval Attache in Washington with instructions to present it to the Navy Department.

<sup>17</sup>Ibid. Whiting made note in his report of the extensive and unique damage the German bombardment had done to the town of Dunkerque. The German 17-inch guns fired large shells which would be expected to cause considerable damage. In fact, the force of the explosions was expelled in the shells' line of flight and not laterally. This meant that damage was in fact rather contained. Whiting noted blocks in which one house would be demolished and those around it left virtually unscathed.

<sup>18</sup>"Report of Operations to Date," July 20, 1917. To SecNav (Operations), from Lt. Cmdr. Kenneth Whiting. National Archives, RG 45 , Box 910, Folder 9, p. 4. Whiting noted that Ronard was an esteemed hero to the French Navy as he had been "the Commander of the Naval Brigade which held the line at Nieuport and Ramscapelle" and ..."saved Dunkerque and Calais from capture." Ronard's brigade had sustained heavy losses and the unit was functionally disbanded. Material from this chapter was all taken from this report by Whiting as his firsthand account of his own activities seems the most reliable source.

<sup>19</sup>Bessineau hangars were transportable and made out of canvas. They were named for their manufacturer.

<sup>20</sup>Ibid., p. 5.

<sup>21</sup>Ibid.

<sup>22</sup>Ibid.

<sup>23</sup>Ibid. p. 7.

<sup>24</sup>Ibid.

<sup>25</sup>Ibid., p. 6.

<sup>26</sup>Ibid. "From what Captain Lamb said, it is apparent that aerial photography is becoming a science. In his organization he has a complete staff department for this purpose; there are laboratories, chemists, expert observers, aeroplane observers, and a corps of men whose sole duty is that of reading photographs and compiling information therefrom. These men who are very expert, highly technical and very well paid, are considered to be invaluable."

<sup>27</sup>Ibid., p. 7. Upon the return of the one pilot aboard the French

vessel, the English immediately sent out a C.M.B. (Confidential Motor Boat) on a mission to Zeebrugge. Whiting did not actually see this craft, but was given a limited description: a glider that carried one torpedo. Apparently, a couple of C.M.B.'s had recently entered the Zeebrugge mole and successfully torpedoed a German vessel. The craft sent out the day Whiting arrived was evidently ill-fated as it did not return.

<sup>28</sup>Ibid., p. 9.

<sup>29</sup>Ibid., p. 9. The R.F.C. alone had 500 officers and 5000 men stationed in the Dunquerque area.

<sup>30</sup>Ibid., p. 10. The only shortcoming Whiting noted was that the needs of the officers could not be met at the station. Subsequently, the officers had their quarters in town.

<sup>31</sup>Ibid., p. 10.

<sup>32</sup>Ibid., p. 11.

<sup>33</sup>Ibid., p. 11. The daily rise and fall of the tide was an average of 18 feet.

<sup>34</sup>Ibid., p. 11.

<sup>35</sup>Ibid., p. 13.

<sup>36</sup>Ibid., p. 14.

<sup>37</sup>Ibid., p. 15.

<sup>38</sup>Ibid., pp. 15-16.

<sup>39</sup>*Ibid.*, p. 16. Capt. Bernard L. Smith, USMC, had gone through the Army Firing School at La Cazau.

<sup>40</sup>*Ibid.*, p. 17.

## Chapter 6

### A Call to Action

**It may be that mistakes will be made,--probably so,--but the resultant good will far exceed any possible accomplishment to be gained by dilatory tactics having in view absolute ultimate perfection and safety.<sup>1</sup>**

**Lt. Commander Kenneth Whiting, USN**

Getting American aviation activity going in France as a precursor to establishing it in England, Ireland and Italy was of paramount importance to Whiting. He doggedly sent his reports back to the Secretary of the Navy in Washington and constantly updated his recommendations on supplying personnel, planes and equipment as he came to understand circumstances and needs better. He insisted that a definite policy governing what the Americans would do in France was imperative if effective measures were to be taken to combat the ever increasing submarine menace.

The time Whiting had spent touring French stations and studying French operations left very strong impressions on him and his reports back to the Secretary of the Navy were filled with some definite ideas. In fact, Whiting had gone so far as to make tentative promises to the French authorities before he had official permission to do so. French evaluations of the threat posed to Allied shipping by

German submarines concluded that the most effective means of stopping attacks would be to build a minimum of fifty sea-plane stations along the coast of France. As the French harbored serious doubts as to their ability to construct, much less man, equip and operate fifty stations, Whiting was asked whether the Americans might not be able to build and operate twelve of those proposed stations.

While Whiting could not promise that the Americans would be able to commit to twelve stations, he did, without direct authority, agree to begin work on three sea-plane stations and one training school. The stations were to be located at Dunkirk, La Croisic and the St. Trojan area.<sup>2</sup> The school would be at La Canau. Whiting's report submitted in July of 1917 urged the Navy Department to approve his pledge to the French of the four stations, even if twelve was too many for the moment. To that end, he also put in a request for eight hundred additional men to supplement the complement of pilots, observers and mechanics already in France. These men would be the minimum number needed to successfully begin operating the four stations Whiting had promised to the French.<sup>3</sup>

That the Americans needed to act fast to assist the French was buttressed by a follow-up report Whiting sent in August 1917.

In the report Whiting described how desperately the French (and English) needed assistance to combat not only the enemy submarines, but also German air superiority. The core of Whiting's report focused on the type of anti-submarine work American planes operating out of bases overseas could do. Although Whiting divided the operations into five areas, only two were pertinent to the bases in France.<sup>4</sup> These were offensive work east of Calais and offensive and defensive work west of Calais against submarines operating in shallow harbor and coastal waters. Constant patrols around the Calais area would offer protection to the supply and troop ships traveling to France and England.

The Germans were operating two types of submarines around Calais. One type was of six hundred tons or less, armed with guns and torpedoes for straight out attacks on shipping. The other, of similar size, was also equipped with torpedoes and guns, but had the added capability of laying up to eighteen mines per trip. Both types of submarine were stationed at the three main submarine bases of Ostend, Bruges and Zeebrugge. (See Map 6.1, p. 165) A maze of deep canals allowed for some interconnection among the German bases and the submarines ran fearlessly on the surface in several places. One favorite path was to run on the surface to the north and west

within twenty-five miles of Dunkirk. At that point, the U-boats would submerge and go under the barrage operated by the Allies across the English Channel eastward from Dunkirk to just off the English Coast. Once clear, the U-boats were free to commence operations in the Channel and on "into the Irish Sea, the Bay of Biscay and along the Coast of Ireland and the Coast of Spain."<sup>5</sup>

Solving the problem of this relative freedom of the U-boats to operate even in broad daylight was the mission at hand. Since the manpower and equipment to bottle up the harbors out of which the submarines were operating was not available at that time, the next best alternative was to commence offensive bombing operations from the Calais area in an attempt to stop the submarines before they could get out to their regular hunting grounds. This was a feasible alternative because the waterways leading out to the Channel from Ostend and Zeebrugge were full of continually shifting sandbars which made daytime navigation difficult at best, and nighttime navigation all but impossible. When the U-boats ran during daylight hours they were virtually forced to run on the surface. They could submerge to evade attackers, but became relatively easy targets as they could not move from their submerged position without being endangered by the sandbars.

The solution of bombing runs on the submarines and their bases was not quite as easy as it sounded, however. Control of the air, or at least parity, was necessary to make bombing runs. The French had lost control of the air in April. Acknowledging the vital nature of the coast area, England also made a brief attempt to recapture the lost ground. However, the rapid loss of two planes and the obvious inferiority of the remaining British planes to the superior German ones necessitated the recall of the remaining men and aircraft. Recapturing the coast would require the acquisition and/or development of better planes or different techniques.

The English then turned their attention to developing their landplanes, but this was still not an effective solution to the problem as any open water missions invariably resulted in the loss of pilots forced to ditch their unseaworthy airplanes into the water at high speeds. The problem was also exacerbated by the fact that the Germans controlled the Belgian Coast with a series of "powerful land batteries in the dunes."<sup>6</sup> The superiority of the German fighters and the ground protection available was insurmountable for the moment for the Allies. At present, their only recourse was continual testing of fighters to compete with the Germans while they sought assistance from the Americans.

In the meantime, however, Whiting felt that seaplanes could be used to the Allied advantage and he further pressed his argument for the construction of seaplane bases. By building stations along the northern coast of France and the southern coasts of England and Ireland, the Allies could maintain a near constant vigil along the English Channel and effectively limit the destructive power of the submarines lurking below the surface. Additional bases established along the Bay of Biscay and the west coast of Ireland could send out patrols to spot and prevent the mine-laying submarines from fulfilling their tasks. The strategy here, wrote Whiting was to "keep the submarine[s] submerged and distant from the coast for at least one hundred miles. The distance to which the submarine can be driven depends on the radius of action of the seaplane."<sup>7</sup>

To buttress his argument, Whiting offered as proof the accomplishments of the few seaplanes operating from bases along the English and French coasts since the latter part of June. In April, May and early June, the U-boats had been able to sink shipping at embarrassingly close proximity to Allied positions. Having ships destroyed as they were anchored in harbors was not uncommon and attacks regularly occurred within a fifty-mile radius. Since the adoption of aggressive seaplane patrols, the Allies, with American

assistance, had been able to restrict submarine activity to at least fifty, and closer to one-hundred, miles off the coast.<sup>8</sup>

Seaplane use was by no means restricted to defensive operations only. Whiting also envisioned using seaplanes to launch an offensive against enemy shore stations. In fact, he had a grand plan of attack to stop the submarines right in their nests. He breathlessly outlined that plan in his report:

[I]f an offensive against Heligoland was attempted, five hundred bombing seaplanes protected by a sufficient number of fighters will be able to furnish essential fire control and reconnaissance duty and also to bomb the enemy batteries with an effectiveness favorably comparable to the work of the ships guns[,] and with a danger of loss of seaplanes which is almost negligible, as is proven by the work of the British bombing squadrons at Dunkirk, which, during three months, have dropped over one hundred tons of bombs on Zeebrugge, Bruges, and Ostend, damaging places that could not be reached by artillery fire or any other means [sic], with a loss of but one plane.<sup>9</sup>

Whiting acknowledged that all of this activity had taken place at night. However, he also noted that, once control of the air had been regained by the Allies, such operations could easily occur during the day.

Whiting's final argument for the establishment of American seaplane stations in France and England was the opportunity it

offered American pilots to obtain outstanding training in navigating over open water, out of sight of land. These men "will be accustomed to making long flights, to estimating their drift, and will be capable of finding their objective."<sup>10</sup> Land plane pilots were not able to make these claims and often became disoriented on even short trips over open water.

In sum, Whiting believed that the United States held the key to stopping Germany's aggressive attack by air and water. Having an adequate supply of men and materiel, the United States could build and operate strategically located seaplane stations, something no other country was in a position to do.

As a result of Whiting's tireless activity, the Navy Department authorized construction of fifteen U.S. Naval Aviation Stations in France. Whiting was pleased with the decision, but also believed it was necessary to determine a course of action on the additional matters of expansion into other countries, policy, and the supply of personnel and materials as they related to naval aviation. Accordingly, he submitted a series of memoranda beginning in September, 1917, wherein he addressed these issues and offered some recommendations based both on what he knew the circumstances to be and what he anticipated them to be.

Not content with having authorization for air stations in France only, Whiting pressed for a decision on the establishment of bases in England. If the Navy Dept. decided to implement operations in England, Whiting expressed the opinion that the Force Commander should have the authority to determine the scale of such operations.<sup>11</sup> Before too long, decisions would also have to be made regarding American stations in Ireland and Italy as well.

Another issue Whiting considered paramount was "whether or not a sea offensive against German land bases is to be undertaken."<sup>12</sup> An answer in the affirmative to this question would necessitate the organization and training of a large force of men and the amassing of a substantial amount of equipment. A minimum of six to nine months would be required to put together a fully equipped force and ready all necessary ships and planes.

The issue of personnel was a particularly pressing problem as the current training programs had turned out only enough qualified pilots to staff three stations at a minimal level. To keep those pilots and their planes in the air, a large contingent of ground support personnel was also required. Whiting offered up the minimum numbers required for each position at each of the fifteen stations authorized at that time: "Pilots 30, Observers 45,

Mechanicians 50, or a total of 360 Pilots, 540 Observers, and 600 Mechanics."13

Such numbers did not represent a final solution to the personnel problem, however, as various forms of attrition would require a steady supply of trained replacement personnel. In addition to any vacancies caused by accidents, American personnel might be lost to the American stations due to emergency situations arising at the Allied stations which required additional personnel not readily available from another source. It was rapidly becoming apparent that the Allied forces manning the French and English stations were thinning more rapidly than they could be replaced, and American pilots and observers would have to be siphoned off to keep them operational.

The Allied forces were having a particular problem finding qualified men to train as pilots and observers. In the three years of fighting the Allies had lost many of their "best" men, those who had enthusiastically joined the armed forces and were the most physically and mentally capable. The Americans, only having recently joined the war, had yet to suffer casualties to such an extent. While they might be as yet untrained, at least there was the promise of a steady supply of able-bodied young men enthusiastic about flying.

That the U.S. Navy had already sent over the First Aeronautic Detachment at the request of the French government offered some proof to this theory.

Whiting proposed a unique solution to finding personnel suitable for helping the French get and keep their planes in the air. Recruiters should be sent to the seaplane factories and engine manufacturers in the United States. Although these men were exempt from the draft by presidential order, they could serve as non-combatants at the French seaplane assembly stations.<sup>14</sup> Other recruiting sources would also be needed, but this could provide a start.

The shortage of personnel was mirrored by a shortage of available raw materials for French forces, which, by extension, would also present a problem for American forces when they came to establish a presence in France. Whiting wrote:

The principal shortage is in wood, [specifically] mahogany and walnut for propeller blades, spruce and ash for wing and boat construction, and three-ply birch for boat covering. There is also a shortage of tools, machinery [and] fuel engines due in part to the German possession of the iron and coal mines in the north of France, but probably more due to the fact that at the beginning of the war all skilled workmen were called to the colors. Many were killed and wounded, some have been called back, and the remainder are still with the army.<sup>15</sup>

Because the French were at such a disadvantage in their supplies of raw materials, and also finished goods, the Americans would have to coordinate a steady supply for themselves and their allies.

While the Navy had many years' worth of experience to draw on in orchestrating the supply needs of its fleet, Whiting noted, "to one episode only could we look for guidance in the supply of aerial forces participating in a naval offensive."<sup>16</sup> That "one episode" occurred in Vera Cruz in 1914. Comparing that occasion with what the U.S. aerial forces were shortly going to face, and using it as any kind of example, was ludicrous, however. The entire "air force" participating in the Vera Cruz operations had consisted of two naval hydroplanes "attached to and based on the old battleship Mississippi...operating from a temporary camp on a protected beach [which] made a number of scouting flights for the information of our invading forces."<sup>17</sup> In essence, then, providing for and maintaining a substantial fleet of planes was an entirely new game.

Whiting had some general ideas on implementing a supply system for airplanes. There were basically two alternatives as he saw it. Each would require a two-step, cooperative approach. Under ideal circumstances, planes would have their body and wing

structures fitted and entirely constructed in the United States. The planes would then be broken down only into wing and fuselage sections and shipped to France. The French, then, would be responsible for reattaching the wings to the fuselages and then installing engines which would also have been pre-built in the United States.

Given the dearth of shipping space available, however, the more probable scenario was the second alternative. This approach still involved making all of the parts, including the engines, in the United States, but the parts would be shipped in boxes, packed as compactly as possible, to be completely reassembled in France. By Whiting's estimate, "parts of fifty sea-planes in the knockdown shape may be shipped in the same space as would be required if the boats and wing sections [for considerably fewer] were shipped complete[,] ready for assembling in France."<sup>18</sup>

Even before a method of shipping was contemplated, however, there was the issue of the assembly plants themselves, both in the United States and France, that had to be addressed. Here was where the 500-man service corps, exempt from combat, could be utilized. One central plant in the United States could be staffed by the service corps whose sole purpose then would be to turn out planes

for military use.<sup>19</sup>

Choosing a suitable site for a plant in France was more complicated because battles were being fought in that country. Plans had to take into account the necessity of receiving supplies shipped from the United States. Therefore, only a coastal site somewhere between Dunquerque and the border of Spain could be realistically considered. After careful consideration, Pauillac, near Bordeaux, was selected:

The plant would serve a further purpose as a depot for salvage of wrecked machines and building of new machines from the recovered parts, and for the making of such repairs as cannot, in the ordinary course[,] be completed at a station within 24 hours, which is the policy found by both British and French to be the best, as the result of three years['] experience.<sup>20</sup>

Whiting hoped that the necessary coordination between the United States and France could be achieved.

Coordination with the Allies fell to the lead supply man for the U.S. Navy, Paymaster Omar Conger. The Paymaster General in Washington, D.C., had authorized Conger to act as his personal representative in dealings with the French supply authorities. Without a formal supply structure in place, and also without specific instructions as to how to do his job, Conger arrived in

France armed only with "the greatest possible latitude in the procurement of supplies and expenditure of funds."<sup>21</sup> So broad, in fact, was Conger's latitude in securing and paying for supplies "that[,] as far as the Navy Department was concerned[,] requisitions might be considered approved when drawn."<sup>22</sup> Such authority was unprecedented, but then so were the conditions the Americans were confronting overseas.

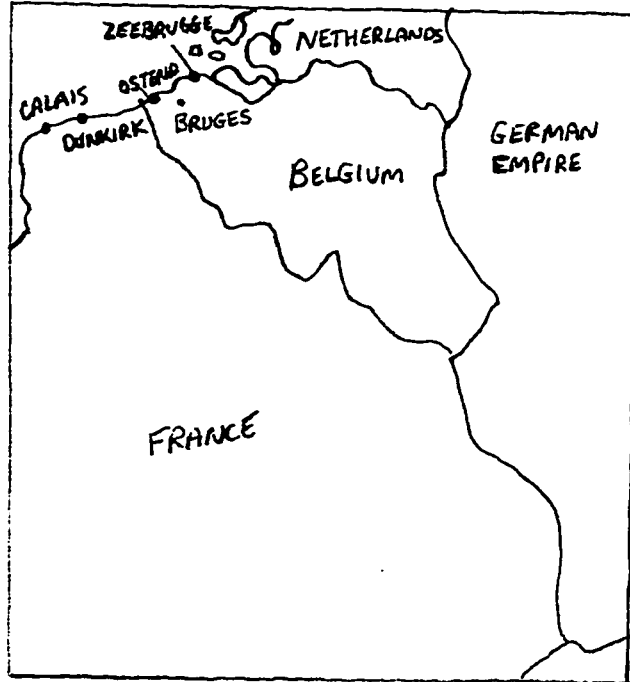
Once Pauillac was selected as a central supply base, a formalization of procurement procedures became slightly more feasible. The task assigned to the men to be stationed at Pauillac was daunting. Their challenge:

The procurement of the vast quantities of structural materials for the stations to be built by American labor, the surly of a force grown now from 129 to a prospective three thousand officers and men, the berthing and discharge of vessels, the warehousing and transportation of supplies by rail and water for 500 miles along the French coast, the procurement of motor trucks and motor boats, the arrangement for an uninterrupted supply of gasoline and oils, the providing by purchase or by cession of the great list of aeronautic materials required in the operation of our stations pending arrival from the United States of our own equipment...<sup>23</sup>

As the scope of American operations broadened, supply became an ever trickier proposition.

Each day brought new challenges, but nothing appeared to be, nor was deemed, impossible. Even as the number of bases expanded beyond the boundaries of France and into England, Ireland and Italy, the supply organization evolved to such an extent that almost all demands were met. By the end of World War I, the American supply organization was serving twenty-eight stations. These stations were manned by twenty-thousand officers and men who operated an assortment of aircraft, including seaplanes, dirigibles and kite balloons.

All of this was accomplished, Whiting noted, with a " ...policy throughout [that] was per force one of expediency and that in no instance was it possible to formulate supply methods or to complete plans for supply until after the station or project which it was destined to serve was agreed upon and awaiting the supplies needed for its construction or operation."<sup>24</sup>



Map 6.1: German Submarine Bases

Note: Map is not to scale and is for illustrative purposes only.

## Notes to Chapter 6

<sup>1</sup>"Report of Operations to Date, 20 July, 1917," by Lt. Cmdr. Kenneth Whiting. National Archives, RG 45, Box 910, Folder 9, p. 20.

<sup>2</sup>*Ibid.*, p. 19. The selection of St. Trojan as a station site was not firm. Another option was to locate the station at a lighthouse at the northern entrance of the Gironde river.

<sup>3</sup>*Ibid.*, p. 19. With roughly 200 men to be stationed at each base, Whiting felt that there was a minimum number of officers needed. Each station should have four, and preferably six, flying officers. There should also be a medical officer and a supply officer to take care of ground details.

<sup>4</sup>"Information and Suggestions for the Use of Seaplanes, 26 August, 1917," by Lt. Cmdr. Kenneth Whiting. National Archives, RG 45, Box 910, Folder 9, p. 7. The other three classes of seaplane work Whiting listed were: 1) Offensive and defensive work in the Mediterranean; 2) Offensive and defensive work against submarines operating in the Atlantic Ocean westward to the shores of the United States; and 3) Offensive bombing against enemy land bases.

<sup>5</sup>*Ibid.*, p. 1.

<sup>6</sup>*Ibid.*, p. 2.

<sup>7</sup>*Ibid.*, p. 4.

<sup>8</sup>*Ibid.*, p. 5. Whiting noted that by using larger seaplanes, such as the H-12 type or others of equal size and carrying capacity, the submarines could be driven at least one hundred and fifty miles from shore. Whiting also advocated the use of dirigibles for locating mines and dropping bombs.

<sup>9</sup>Ibid., p. 6. Of course, there were no immediate plans for such an offensive. At present, there was also the problem of distance to overcome. Heligoland and Wilhelmshaven, two major German submarines bases, were just too far from England and Dunkirk for seaplane attacks. Two solutions were possible. One was to try and build a base for larger seaplanes in either Holland or Denmark. The other was to essentially come up with an aircraft carrier for seaplanes. Whiting projected that at least fifteen to twenty such ships would be required.

<sup>10</sup>Ibid., p. 7.

<sup>11</sup>Lt. Commander Kenneth Whiting, U.S.N., "Memorandum of September 16, 1917, as to Policy, Personnel, and Material apropos of Seaplanes." National Archives, RG 45, Box 910, Folder 9, p. 1.

<sup>12</sup>Ibid.

<sup>13</sup>Ibid., p. 2.

<sup>14</sup>Ibid., p. 3. The French had found that allowing men to perform tasks for which they were trained, while allowing them to be non-combatants, was a mutually satisfying situation. They had made such an arrangement with lumberjacks in Southern France, for example.

<sup>15</sup>Ibid., p. 3. By citing fuel engines in his list of equipment, Whiting was probably referring to engines of a type other than those used in airplanes. Possibilities would include engines for generators and motor boats.

<sup>16</sup>Lt. Commander Kenneth Whiting, U.S.N., "Supply." Date unknown. National Archives, RG 45, Box 910, Folder 4, p. 1.

<sup>17</sup>Ibid.

<sup>18</sup>Whiting, "Memorandum of September 16, 1917," p. 4. Whiting also noted that, given space requirements, the only real choice was component shipping.

<sup>19</sup>Always in the back of Whiting's mind was the fact that the Army had to be supplied with planes, too. That the Army's needs seemed to always take precedence over the Navy's was a bit of a sore spot. In fact, the Army had proposed "the formation of a syndicate of French aeroplane manufacturers which is to take over and enlarge and reorganize some of the existing factories near Paris, and build other factories. The purpose of this syndicate will be, not to build aeroplanes, but merely to put together aeroplanes from parts which are cut and shaped in the United States." Due to competition, Whiting did not believe that the Navy could have shared in such an arrangement with the Army. Lt. Commander Kenneth Whiting, "Report of Lt. Commander Whiting-Relating to the Method of Obtaining Aeroplanes for Service in Europe," p. 1. National Archives, RG 45, Box 910, Folder 9.

<sup>20</sup>"Report of Lt. Commander Whiting," p. 5.

<sup>21</sup>"Supply," p. 6. By September, 1918, however, that charge had changed to a consideration of "the importance of economy insofar as money and materials are concerned."

<sup>22</sup>*Ibid.*, p. 6.

<sup>23</sup>*Ibid.*, pp.8-9.

<sup>24</sup>*Ibid.*, p. 10.

## Chapter 7

### The Air Stations in France

By the time American Naval Aviation established its first base at Moutchic, commissioned on 17 July, 1917, the Allied situation in France was critical. Three years of fighting and three million casualties were taking a heavy toll. Neither small battles of attrition nor grand offensives seemed to be working. French morale had collapsed completely with the dramatic failure of the Nivelle Offensive on 16 April 1917. General Robert Nivelle had promised a quick and decisive victory over the Germans when he assumed command of the French army. Nivelle believed a strong artillery bombardment followed by a massive attack with ground forces would overwhelm the German positions in Champagne. The Germans, however, had fortified themselves behind the Hindenburg Line and their strong defensive position proved deadly to their attackers.

Nivelle's stunning defeat and the atrociously high number of casualties resulted in a series of rebellions and mutinies among the French soldiers that began on 29 April and continued through the month of May. These actions threatened to destroy the country from within. Worsening matters was the persistent threat of an impending German offensive hanging over Paris. To quell the chaos in

the field, the French government, on 15 May 1915, appointed General Henri Philippe Petain commander-in-chief of the French armies in the north and northeast. In him, the government placed their hopes for ultimate victory.

Petain brought the French army a new vision of warfare, a revolutionary change in the traditional military ideas of France. Petain rejected using soldiers as cannon fodder to win a victory at any cost. He preferred to carry out a strategic defense "while seeking a favorable shift in the balance of forces,"<sup>1</sup> i.e. the arrival of American forces. Petain was particularly concerned with how best to incorporate technology into his strategy. The arrival of American manpower fit his plans in two ways: 1) Additional troops to broaden the use of heavy artillery and light assault tanks; and 2) trained pilots to add another dimension to offensive maneuvers. Petain "realized the value of aircraft as a weapon of ground fighting and gave it a place in total combat."<sup>2</sup> Therefore, the newly arrived United States naval aviation forces were a welcome addition to France's new military strategy and would have a role to play.

According to an agreement forged between French and American leaders, United States naval aviation personnel had a three-part mission: 1) Escorting convoys; 2) Servicing alerts; and 3)

Patrolling. Within this larger framework, the French expected the Americans to maintain certain standards of activity, yet also be flexible when the unexpected might occur. In other words, official guidelines stipulated specific courses of action to be taken during patrol, escort and alert duties. However, should foul weather, mechanical failure, unfit personnel, or any unforeseeable event occur, station commanders were to use discretion and determine the best course of action. Therefore, all orders and requests which went out to the various station commanders implicitly ended with "If you consider it possible."<sup>3</sup>

To help maintain the general principles agreed upon, each American station was assigned a French station to coordinate activities with. The French were operating fifteen coastal stations. The airplane stations were: Guernsey, Treguier, La Penze, Camaret, Lorient, Quiberon, Le Croisic, Ile d' Yeu, Les Sables d' Olonne, La Pallice, Le Verdon, Hourtin, and Bayonne. (See Map 7.1, p. 222) The two additional stations were dirigible stations at Guipavas and Rochefort. Zones of action were specified for each station. The expected radius of activity for each station was sixty miles in all directions. These zones represented only a minimum area of responsibility for each station. Once the pilots had been properly

trained, they were free to extend areas of operation over a greater distance as circumstances required.

Protecting convoys during daylight hours within their own zones was the paramount mission for each of these stations. An escorting section of planes was to meet its convoy at the initial perimeter of its zone and continuously accompany the convoy until it reached the perimeter of another station's zone, or until fuel or mechanical needs, or other such circumstance arose, necessitating an early departure. Escort guidelines dictated that the planes were to fly continuous scouting loops beginning at the convoy, extending to the end of the designated route through their zone and then returning to the convoy.

The second facet of the aerial mission was known as "servicing alerts." There were two kinds of recognized alerts: 1) "Allo," which meant that an enemy submarine had been signaled; and 2) S.O.S., which indicated that a ship had been attacked by a torpedo or hit a mine.<sup>4</sup> Each air station was expected to maintain a section of planes on continuous alert. This section was responsible for responding to any alerts occurring within its zone. Depending upon the size of the station and the availability of planes and pilots, additional sections were expected to assist and/or relieve the alert

section as circumstances required. By continuously circling the location of a suspected submarine, the enemy vessel would be forced to either submerge deeply or rise to its traveling depth, thereby risking exposure to allied bombs from above. Seaplanes were expected to maintain such a course of action only until what was known as the "limiting hour." This was "the hour before which it is necessary that all seaplanes be back at the station."<sup>5</sup> This hour correlated to sundown, as seaplanes could accomplish little when it was dark.

The third part of the mission was patrol, or reconnaissance. Should an air station have sufficient planes and personnel to do so, after fulfilling both convoy escort and alert section priorities, it was expected that patrol flights be sent out to search for enemy submarines and mines. The basis for such flights would be established by the receipt of information from ships, semaphore stations or any intelligence centers. Acting on such information would be at the discretion of the station commanders.

The stated preference was for planes to go out in groups of two or three, known as a section, and for them to stay out as long as their resources permitted them to. The pilots and observers were trained to take special note of wakes and eddies produced by

submarines and calculate their bomb drops accordingly. The average submarine ran sixty to one hundred meters in front of its wake. This figure was based on the assumption that a submarine averaged no more than seven to eight knots per hour when running submerged.<sup>6</sup> A potential radius of patrol for a spotted submarine, therefore, was derived by multiplying eight times the fraction of the hour passed since the initial sighting. The recommended altitude for spotting submarines was between two hundred and three hundred meters.

The official guidelines for attacking a submarine were a little more specific. Bombs should be dropped from an altitude of 100 meters. The plane that spotted the submarine first was to direct the attack. Each plane was to carry two large bombs and all planes within a section were to drop their bombs successively. The bombs were expected to explode on contact with the submarine. Saving bombs for a later chance encounter with the now-submerged submarine was discouraged. All bombs were to be dropped heading into the wind and the observer was responsible for setting his bomb sights to correspond with the appropriate altitude and wind speed. Any submerged submarine or surface-running sub not participating in an allied convoy that did not respond to signals was to be considered enemy and treated as such. All submarine encounters

were to be immediately relayed to the air station by either radio or pigeon when possible, and a subsequent verbal report delivered upon return to the air station.

Searching for mines, though not as dramatic, was equally important. Mines were most frequently found in narrow channels and at convoy landfalls. Recommended spotting altitudes were between two hundred and five hundred meters. Minesweepers in the vicinity could be signaled visually or by correspondence buoy, special buoys which held written communications inside. Locations of mines could be physically identified by dropping phosphorus buoys as markers. In the event no mine sweeper was available, planes could also destroy the mines themselves, provided they could do so safely.

Whether searching for submarines or mines, or escorting ships, a key aspect of the air patrols' ability to be effective was the maintenance of effective communications. Direct telephone lines were established among the bases and these were particularly vital when they ran between the American and French paired stations. Knowing what their sister allied station needed or was assigned facilitated a great deal of cooperation and allowed for compensatory actions when one station or the other was incapable of responding to a given incident. Given the fact that the air patrols were dealing

primarily in a defensive manner with submarines that could be hard to identify, communication became of paramount importance when an allied submarine happened to be operating in nearby waters. Similarly, in order to be properly prepared to fly escorts, stations needed to maintain adequate communications to provide updated status reports on convoy locations, weather conditions, availability of manpower and aircraft accessibility.

There were three primary methods by which aircraft and vessels could maintain direct contact with each other when away from their home stations: 1) Radio signals employing an inter-Allied code; 2) Correspondence buoys; and 3) Visual signals. There were several types of visual signals available. These included flags and pennants, lamps flashing Morse code and Very pistols shooting colored lights and smoke clouds.<sup>7</sup> The variety of communication methods ensured that all friendly aircraft and sea-going vessels had an opportunity to identify themselves and avoid any unnecessary tragedy caused by misidentification and subsequent unwitting firing upon allied forces. Communication was particularly important given the number of French stations operating in the same areas as the American stations. In order to maintain the desired sister station ratio with the Americans, the French had planned for anywhere from

twelve to eighteen stations to be operating at any given point in time.

As indicated above, initial American plans called for establishing twelve air stations in France.<sup>8</sup> The stations were divided into three districts for organizational purposes. Under direction of the District of Lorient were: Seaplane Station, Ile Tudy; Kite Balloon Station, La Trinite; Seaplane Station, Le Croisic, Dirigible Station, Paimboeuf; and Seaplane Station, Fromentine. The District of Rochefort encompassed: Kite Balloon Station, La Pallice; Seaplane Station, St. Trojan; Seaplane Station, Arcachon; and Dirigible Station, Gujan. The third district, Headquarters Brest, included the seaplane station at Brest, the Assembly and Repair Station, Pauillac, and the Flying School, Moutchic.

Not all of the planned stations achieved actual operational status for a significant length of time. Only Moutchic and Le Croisic were operational before the end of 1917. By July 1918, Brest, Ile Tudy, Paimboeuf, Pauillac, L'Aber Vrach, Fromentine and St. Trojan were up and running. In the final four months of the war, Dunkirk, Arcachon, Treguier and La Trinite became operational. The final station put in operation was Guipavas on 11 November 1918. Two additional stations, Gujan and La Pallice, were never commissioned.

The detailed planning was not enough to overcome the obstacles inherent in such an enormous undertaking. By the war's end, only six of the offensive stations were able to report substantial activity and disclose accumulated statistics. These six were: Le Croisic, Ile Tudy, Paimbeouf, L'Aber Vrach, Fromentine and St. Trojan. Moutchic and Pauillac are excluded from this list because they were never intended to function as offensive stations. They were fully functional in the capacities for which they were chosen, however, namely as, respectively, training and supply stations. The failure to get all twelve fully operational was not for any lack of effort, however. With French help, all desired sights had been selected and land procured for development.

Ultimately, however, a lack of men and materials seriously hampered construction and supply efforts. As the preceding chapter detailed the efforts involved in procuring and initially equipping the U. S. Naval Air Stations in France, the following is a discussion of operations at those stations. The stations will be examined chronologically according to the dates on which they were put into operation.

As mentioned above, the first station in France was Moutchic, established in late July 1917. Plans called for Moutchic to become a

training station, not an offensive station, for naval aviation personnel arriving from the United States. Lt. John L. Callan, USNRF, served as the station's first commanding officer. His initial contingent of men who arrived on 31 July numbered just three: E. Reichell, BM1c, D. A. Garner, Lds. QM, and J. Stanley, Lds. QM, all U. S. Navy.<sup>9</sup> Over the course of the next three months, the ranks of the Moutchic station would be filled by nearly all of the quartermasters and mechanics who had sailed to France aboard the Neptune and the Jupiter.

The training curriculum the men completed before arriving at the Moutchic station included other locations around France in addition to Hourtin and Cazeau. Quartermasters from the Jupiter and Neptune went first to the French Army Flying School at Tours. From there they went to Hourtin to learn smooth water flying before moving on to the French Naval School for Pilots and Observers at San Raphael, on the Mediterranean, to master flying over rougher seas. Mechanics also went through a course of instruction at San Raphael before reporting to Moutchic.

Although strategically a good position, the land selected for the Moutchic naval air station was remote:

The sight was located on the Lake of Lacanau which was four miles from the ocean, a half-mile from the railroad

station at Moutchic and thirty-two miles from Bordeaux. At that time, only one rough road ran along the water's edge and the rest of the area consisted of sand dunes covered with pine trees, all the way to the water's edge.<sup>10</sup>

The location was not entirely unsatisfactory, however, as Moutchic was just twelve miles south of Hourtin where many U.S. men were training at the French School of Naval Aviation. Forty miles to the south, at Cazeau, other U. S. aviation men were training at the French School of Aerial Gunnery. Thus, Moutchic was actually advantageously located to serve as an advanced training station for pilots who were then sent on to other stations.

The Navy had initially entrusted construction of the station to a French civilian contractor, M. Georges Hauret, with the understanding that he would hire French civilian labor. The scarcity of French laborers and the paucity of rolling stock to move supplies soon necessitated the inclusion of Navy men among the ranks of laborers. Despite great effort, Moutchic was never completely finished. Much of what was built was only of a temporary nature. Roads and paths were made of pine needles and moss. The three hangars erected were of the canvas Bessonneau type. Despite the crudeness of the facilities, the men at Moutchic were able to

assemble five F.B.A. flying boats, thereby adding another piece to the skeletal framework of the station.

Barely existing initially as a station, Moutchic struggled to fulfill its role as a training facility. The first flight in one of the F.B.A.'s occurred on 27 September when Ensign R. A. Lovett, USNRF, took a solo eight minute flight in #295. Lovett "took another flight on the same day of six minutes, without an observer or mechanic, using sand bags for ballast."<sup>11</sup> Lovett took three more test flights in F.B.A.'s during the month of October, but there was little other flying done. In spite of the limitations they faced, the officers and men continued their efforts to improve the station and expand its capabilities. On 24 October 1917, Moutchic finally began to operate as a limited, yet increasingly important instruction station.

Elevation to status as an instructional station also brought with it a new commanding officer, Lt. G. C. Dichman, USN. Dichman had been making the rounds of the French training schools at Tours, Hourtin and San Raphael commanding various groups of men attending them, while undergoing training himself. The nascent Moutchic school still struggled under the constraints of limited supplies, but the curriculum included a Ground School, solo flights for pilots and flights for pilots and observers together, known as

passages.<sup>12</sup> The Ground School curriculum included: Navigation, Gunnery, Signaling, Aeroplanes, Motors and Navy Regulations. The inclusion of gunnery in the Ground School was rather misleading as neither the planes nor the station were equipped for teaching it. There was no gunnery range and, initially, no provisions for dropping any sort of bomb, dummy or otherwise, from the training F.B.A.'s. Months would pass before gunnery and bombing were integrated into the curriculum.

As it was, the F.B.A.'s were barely satisfactory as training machines. Dual controls were brought in and installed by station mechanics. They flew, but did little else. On 1 December, the first French DD arrived at the station and inaugurated the gradual phasing out of the F.B.A.'s. In February 1918, the first French Tellier arrived. From then on French planes were used exclusively to train the American pilots.

A rare first-hand chronicle of what it was like to undergo naval aviation training at Moutchic was revealed in the musings of Webster M. Wright, Naval Aviator #322. In a letter he wrote to his son in 1965, Wright describes his experiences, which would most likely have been very similar to those of his peers at the time. Wright had completed his initial ground school at the Massachusetts

Institute of Technology in October 1917. From there he went to Pensacola for flight training under the tutelage of the group of men from Yale who had purchased a plane, taught themselves to fly, and subsequently obtained commissions in the Navy.

This first "Flight School" was commanded by Commander E. F. Johnson. USN, Naval Aviator #25:

We flew N-9's-single pontoon planes with Hispano Suiza engines with top speeds of 55 knots. My earliest Log Book indicates that I had three hours and forty-five minutes of instruction and twenty five hours of solo before qualifying. The final qualification consisted of "Shooting the Boat." We climbed to 2000 feet (which in itself was no easy job)-glided with cut motor to 1000 feet-cut the spark and did three complete spirals-then landed 200 feet or less from a dinghy anchored in Pensacola Bay. Supposedly we were now accomplished pilots qualified to fly seaplanes anywhere.<sup>13</sup>

The next phase of training found Wright in Moutchic, France.

At Moutchic, Wright received additional ground school instruction and went through a bombing course. Bombing training was rudimentary, to say the least:

Bombing practice consisted of dropping concrete chunks at a barrel anchored in a lake. We flew tiny French DD flying boats. Bomb sights were two small sliding bars attached to a fixed L shaped contrivance. To come even remotely close to the target it was necessary to fly directly up or down wind. Since the wind at 1000 feet usually altered clockwise from visible wave streaks in

the lake, which was our only way of determining wind direction, we made very few hits.<sup>14</sup>

After completing training at Moutchic, Wright and his fellow aviators were deemed "expert bombers and capable pilots."<sup>15</sup> Wright estimated his total flying time at that point as 40 hours.

It is interesting to note here the differences between a personal recollection of living quarters and the official version. Wright offered no complaints as to the living quarters provided. He noted that the men lived in villas on the Bay of Biscay and were paid in "bundles of franc notes which we scattered around like confetti."<sup>16</sup> These "villas" were actually "huts rudely constructed from airplane boxes."<sup>17</sup> Such relatively luxurious accommodations had not even initially been available. Had Wright arrived much earlier than he did, he would have lived and eaten in tents for the most part.

Wright and the other pilots encountered many French influences, and some English ones as well, permeating the flight styles taught as they proceeded through the training curriculum. The men who were among the first instructors at Moutchic had themselves been trained at French Schools and English patrol

stations. While the commissioned Ensigns arriving from the United States remained at Moutchic for their training, most of the enlisted men were still sent to Cazeau for training as observers in the aerial gunnery school under Lt. H. T. Bartlett, USN. When these men returned to Moutchic, they continued to bring ever-evolving French methods and ideas with them.

When Bartlett was assigned to the station in mid-January 1918 the very nature of the station was transformed. The vital, yet up to that moment lacking, facet of gunnery training at Moutchic was finally introduced. Bartlett was designated the Bombing and Gunnery Officer and he immediately began a bombing course for eleven officers and eleven observers. Bartlett established a gunnery range and the first dummy bomb was dropped from a plane under his supervision in late January. On February 6, Lt. Bartlett assumed command of the station.

Moutchic was now finally a full-fledged aviation training station. A sense of continuity was provided by the presence of Ensign H. Jorgenson, USN, who remained as the Executive Officer. The Instruction Department headed by Ensign C. D. Murray, USNRF, benefited immensely from the broad exposure to allied methods attained by the men who taught the various courses therein. The

ongoing exchange of information and ideas among the Americans, French and English aviators enabled the station's officers to develop an efficient and comprehensive training program.

The three major areas of instruction were groundwork, bombing and gunnery. The nature of the war necessitated that instruction be comprehensive and all necessary knowledge imparted efficiently. Therefore, the duration of each segment of training was brief. The ground course lasted but one week and covered:

- 1) Navigation
- 2) Meteorology
- 3) Recognition of ship silhouettes
- 4) Theory bombing
- 5) Mechanism of bombs
- 6) Use of carrier pigeons
- 7) Signaling

The bombing course took two weeks to complete and included training in:

- 1) Passages
- 2) Batchelor Mirror work
- 3) Dummy bombing
- 4) Surprise bombing
- 5) Bombing a towed target made to represent a submarine

The remaining two weeks of instruction were spent on a gunnery course whose components included:

- 1) The theory of deflection
- 2) The mechanism of the Lewis gun
- 3) The cleaning of jams
- 4) Target practice on the range
- 5) Target practice from the air<sup>18</sup>

The development of the Northern Bombing Group project (which will be discussed in the next chapter), wherein naval aviators were to perform night bombing raids in land planes on Belgian submarine stations, fostered a new sense of urgency in getting men through training at Moutchic. Qualified commissioned pilots and observers were sent on to the U.S. Army Bombing School at Clermont-Ferrand and to the French Army Bombing School at Avord for more specialized bombing training as quickly as possible to expedite their integration into the Bombing Group. Enlisted men from Moutchic were also among the laborers who established the centers for the Bombing Group.

During Bartlett's six-month tenure as commanding officer, Moutchic developed into a first-rate training center for aerial anti-submarine warfare. Records indicated that Moutchic had produced 104 active duty commissioned pilots and 103 enlisted ones.<sup>19</sup> As had been intended, every station along the French coast had Moutchic-trained men among its ranks. Such was the success of

Moutchic that Bartlett was relieved of command in August in order that he might return to the United States to give expert testimony on the further needs of American naval air forces in France.

Bartlett's replacement at Moutchic, Lt. Cmdr. R. W. Cabaniss, USN, barely missed a step in taking over the reins. Cabaniss took flight training to another level by insisting that the men learn to fly in any weather, not just favorable. He was initially aided in this attempt by coinciding seasonal changes whose afternoon cooling trends were more conducive to mid-day flying. As winter approached, however, stepped-up hours of training remained in effect. This resulted in both a faster accumulation of in-air time and a greater number of trained pilots and observers in a shorter amount of time.

Mirrored in the efficiency of Moutchic's development as a training station was the enhancement of its military appearance and internal organization. A more strict adherence to the guidelines established at the Paimboeuf Conference of Commanding Officers of Patrol Stations evolved. Emphasis returned to such areas as correct uniforms, military bearing and proper formations. The structure and delegation of power within the station was also modified. Instead of vesting all power in the Executive Officer, heads of various

departments took on more responsibility. A decentralized approach offered more flexibility in running a station composed of a regiment with two battalions.

On November 11 1918, Moutchic was highly organized and, given the nature of the entire air station undertaking, exceptionally well equipped and more than adequately manned. There were thirty-three permanent officers and an additional thirty-five were undergoing training. Enlisted personnel numbered 493. Out of a total of twenty-four airplanes, Moutchic had eleven of the highly desirable HS-1s to use for bombing training.<sup>20</sup> All roads to, around and through the station had been completed, as was nearly all construction. Given its record in producing trained personnel for the stations along the French coast, Moutchic had undeniably fulfilled its mission and undoubtedly would have continued to do so had the war not ended. From that standpoint, it would be fair to assess Moutchic as having been a triumph.

The second U. S. Naval Air Station established in France, Le Croisic, was the first offensive station organized, completed and operated in France.<sup>21</sup> The Americans took over Le Croisic from the French in July 1918. The station was almost completely finished with the exception of a slipway and some hangar modifications.

Interestingly, much of the construction of this station had been completed by German prisoners, whom Whiting referred to as "the best workers in Europe."<sup>22</sup> Le Croisic was put into operation on 18 November and commissioned on 27 November 1917, under the command of Lt. W. Masek, USN. The first American patrol of the French Coastal Unit went out from here on 13 November 1917.

Le Croisic operated under the command of the District Commander at Lorient and cooperated closely with the French units of "Patronilles Aeriennes de la Lorraine." An unusual feature of this station was that it served as a clearing house for all French aircraft being used by the Americans in France and thus operated only French planes. The three types used were Le Pen, Tellier and Donnet-Denaut. To simplify operations, all three types of planes were powered with only Hispano-Suiza motors.

A summary of statistics compiled by American and French sources issued at the end of the war indicated that while Le Croisic had some impressive convoy statistics, it had been somewhat less successful in the area of anti-submarine work. According to French sources, in thirteen months of active anti-submarine duty, Le Croisic had received 28 SOS and "allo" calls and sent out response flights to 24 of those calls. During those flights, pilots sighted just

two submarines and/or mines and destroyed one mine. Far more positively, during nine months of active convoy duty, Le Croisic had reported 508 convoys, sighted 138 and escorted 95 through the station's area. There had been 166 days fit for flying during those nine months.<sup>23</sup>

The U. S. Naval Air Station, Brest had a rather colorful history. The station was put into commission on 7 October 1917, when Lt.(j.g.) G. R. Romulus, USN, arrived to assume command. Lt. Romulus was relieved of command 13 February 1918, by the station's first seaplane pilot, Lt. Commander F. C. Dichman. Dichman, in turn, was replaced on 6 June 1918 by Lt. W. M. Corry, USN. Although the station is noted in records as having been put in operation in January 1918, patrol and convoy systems were not initiated until 29 October 1918. In light of this information, Brest cannot be deemed as having been an active offensive station.

This station was unique, however, in that it was the only one in France which was intended to function as both a seaplane and a kite balloon station. Plans called for having a complement of 600 men. As was the case with several of the other stations, the French had begun the initial construction before American personnel arrived to relieve them. At Brest, however, French civil engineers from the

department of Travaux Hydrauliques were supervising French civilian contractors who were building barracks, launching slips and a wooden hangar according to a master plan drawn up by the engineers.<sup>24</sup> During their initial inspection, American representatives discovered that the French were not solely responsible for all of the construction. Much of the work on roads and foundations was being done by forced labor consisting of 50 German prisoners and 100 Moroccans.

Reports indicate that the American government was being charged a hefty sum to have the construction done by the French civilians and their forced laborers. An unusual disclosure regarding Brest found in files at the National Archives reveals that:

All expenses incurred were charged to our account, and were billed to us quarterly. The French government charged us 20 per cent on all these accounts to cover their engineering and overhead expenses."<sup>25</sup>

While it was probable that similar arrangements existed concerning the French construction on other American stations, the literature in files concerning other stations is not quite so forthcoming.

All outward signs indicated that construction of the Brest station would cost an exorbitant sum. However, a severe shortage of

supplies hampered French attempts to actually get much construction done. The Navy Department had planned to allow construction of this station to progress according the original French design, with only the deviation of adding additional barracks to house a larger complement of men. However, the French failure to progress beyond finishing just three of the six barracks started, coupled with the failure to even begin the planned hangar resulted in a cancellation of all of the French contracts at this station on 23 August 1918.<sup>26</sup> The remainder of the station's construction, ultimately including three seaplane hangars, a steel kite-balloon hangar, barracks and quarters for 1,000 men, 50 officers and 75 chief petty officers, and several auxiliary buildings, was finished according to more familiar American design.

Amidst all the chaos surrounding the construction of this station, an unusual source of lumber emerged that proved more than adequate to fulfill requirements. Brest had unexpectedly begun to receive shipments of seaplanes in large crates. The crates were arriving on troop ships as "deck loads." Their ungainly proportions made it impossible to send them on the rail line to Pauillac where most of the arriving planes were usually sent for assembly. In essence, Brest became a de facto assembly station. The complement

at the station swelled to 800 men to compensate for the additional work load. The wooden crates were disassembled and the lumber was used to build an entire machine shop and additional buildings that were smaller than the size of "standard portable sections."<sup>27</sup>

In addition to assembling planes, the men at Brest also ran a de facto trucking company:

Two three-ton English trucks were received from the Army in February and were used night and day, hauling barracks, provisions, and drafts of men both for this and for other stations in the district. The ground covered by these trucks was very hilly and the roads exceptionally rough. Owing to the demand for transportation, the much-needed road repairs oftentimes could not be accomplished. Eleven trucks were received from America in March, and were immediately put into service hauling sand, gravel, cement, lumber and provisions.<sup>28</sup>

The "truck drivers" were also responsible for unloading cargo from the supply ships that docked at Brest. Discharging the cargo from these ships was very labor intensive. One example is the U.S.S. Bella which took six to seven days of continuous labor to discharge. During the exceptionally busy month of April 1918, the Bella was unloaded twice, the Astoria once, and an English ship once.<sup>29</sup> Among these cargo were twenty-eight trucks and six Ford touring cars which men at the station also assembled and then delivered to neighboring

stations.

With all of these other responsibilities to attend to, it is little wonder that the Brest station's records note little flight activity until almost the time of the Armistice. Although Brest's convoy and patrol flights did not begin until the end of October, 1918, the station deserves to be recognized for the accomplishment of having assembled, tested and delivered fifty-three HS-1 and eleven HS-2 planes to surrounding stations.<sup>30</sup>

In the meantime, the Kite Balloon portion of the station was established on 4 July 1918, with the arrival of forty men, two officers and twelve balloons from the U. S. Naval Air Station, Castletownbere, Ireland. The French kite balloon station at Lannion, adjacent to the Brest station, had agreed to several accommodations for the American balloonists. A store room, a hangar for one inflated balloon, all needed gas for the balloons and the use of a transferring and field winch were all provided. The Americans lost little time in getting their first balloons aloft. On 11 July, the first American balloon to go up in France, a Goodrich type M, ascended from a French trawler, using a French winch.<sup>31</sup> Many subsequent day-long ascensions followed. Most of the early kite balloon trials were run from the U.S.S. Prometheus and the U.S.S. Bridgeport.

Ultimately, the plan called for kite balloons to be operated with destroyers. However, before this could happen, such modifications as adding marionette stands and fair leads to control the balloon's cables, and even possibly removing the mainmast of the vessel to prevent entanglements had to occur. The first destroyer used in conjunction with a kite balloon was the U.S.S. Cushing. On 20 July 1918, the Cushing went out for a day trip to test its compatibility with the kite balloon. All went as planned that day. A subsequent voyage of five days was planned and commenced on 1 August. Accompanying the balloon was a complement of four officers and seven men. Poor weather restricted the number of hours the balloon spent aloft, but the trip was still considered a success. Several more trips were made during the following months.<sup>32</sup>

Finished construction of an American hangar adjacent to the French one allowed for the transfer of the Goodrich balloon and its equipment on 19 October. As promised, the French continued to supply the necessary gas for the balloon's operation. An estimated 300,000 cubic feet of gas was provided to keep the balloon in use. As the American officers had become more confident in their ability to handle the intricacies of balloon work, a course of instruction was established at Brest for the enlisted officers. The extensive

curriculum included: "Theory of Ballooning, Meteorology, Navigation, Navy Rules and Regulations, Winches, Telephones, Hydrogen, Seamanship, First Aid, Signaling (wig-wag, buzzer, semaphore and blinker), Infantry Drills and Manual of Arms."<sup>33</sup> All of the training and instruction produced tangible results. By the war's end, the station had five destroyers ready for use. Cessation of hostilities prevented the full deployment of these resources.

The armistice provided Brest with its final anomaly. Although the French Navy had lead the Americans to believe that they wanted possession of several of the American air stations as they stood after the war, Brest was the only station so claimed at war's end. The Americans removed only their equipment at demobilization and left all of the structures standing. The French were given formal possession of the station on 22 February 1919.<sup>34</sup> The purchase price stood at 692,570 francs.

The Assembly and Repair Base established at Pauillac provided some essential functions for the Americans in the French Coastal Unit. In addition to being the place where all planes, boats and motors were sent for assembly, overhauls and repairs, Pauillac also served as the main supply depot. Receiving barracks for new arrivals were also located at this station. Pauillac's central location relative

to the rest of the stations in France was the key to its selection for all of these functions. In addition, Pauillac had in its favor its proximity to rail connections, a deep water dock, a favorable climate and more than enough suitable land for the development of such a station as Pauillac was intended to be.<sup>35</sup>

When Pauillac was commissioned on 1 December 1917, it comprised just Building #1, which was leased from the Bordeaux Chamber of Commerce. Although Lt. Cmdr. A. W. K. Billings, Public Works Officer for Aviation in France, and his assistants Lt. Richardson and Lt.(j.g.) H. Burnham arrived later that month to begin enlarging the station, little could be done to remedy the current situation until the following February. Two warehouses were rented from the French, a small pier was built and some improvements were made to roads and rail lines, but that was all supplies and weather permitted.

Once materials began to arrive from the United States towards the end of February, construction went apace. March proved to be an exceptionally busy month for the Public Works Department. A work force averaging 257 men soon had a telephone system in service and power coming from a temporary electric plant. The presence of this station greatly altered the landscape near Bordeaux. Where once had

been old and celebrated vineyards, a vibrant manufacturing apparatus arose. Indeed, Captain Thomas Craven, Aid for Aviation by war's end, assessed the new scenario as now resembling Detroit. As befitted a factory town, less than a year after construction began, Pauillac boasted "sawmills, sail lofts, machine shops, warehouses, hospitals, barracks, garages and a movie theater."<sup>36</sup>

Unfortunately, in spite of its vast potential and explosive growth, the usefulness of Pauillac remained hampered by its inability to get big enough fast enough to handle the enormous demands of the competing interests at this port. The establishment of the Northern Bombing Group added another dimension to activities at Pauillac. Now Pauillac would be assembling planes for the Group, in addition to the other stations in France. This meant that a flying field on which to test landplanes now had to be established and there currently was no land allotted for one. The arrival of additional men at the station was welcomed, but strained station resources and created a demand for more barracks to be erected. American demands were difficult to meet and the deficiencies were noted by Cmdr. Hutch Cone in a letter to Capt. Noble Irwin at Naval Operations in Washington, D.C. dated 15 May 1918:

There is only one wharf there with six berths and there are so many divergent interests, including our patrol

boats, vessels loaded with Aviation material, Army transportation, French merchant ships consigned to iron works, English colliers, vessels consigned to the French Government and the owners of the wharf, the Bordeaux Chamber of Commerce, all of which results in our getting very poor service on the wharf."<sup>37</sup>

The results were serious delays for both the ships coming in needing to be unloaded and for those awaiting cargo for transport. The perennial shortage of men to serve as stevedores was an ongoing problem. Although the number of men arriving at Pauillac had been increasing steadily, most were deployed to construction projects and Cone had dispatched a fair number of available men to the other station sites around France in anticipation of getting building materials to them to facilitate their construction.

As the months went by, the arrival of such mechanical aids as a locomotive crane and two cement mixers accelerated construction. Cumbersome steel frames for hangars went up with greater ease and the men no longer had to crush rock and gravel by hand to obtain their cement. The rock quarry was still a distance from the site and the trucks had to travel over roads in poor condition, but what was delivered could now be utilized faster. French cooperation in securing more land for the station to establish its needed air field for testing land planes solved the other big problem. Not only did the

French authorize additional land for American use to the west of the present location, a strip of land was approved for use as a road and rail line to run between the base and the flying field.<sup>38</sup> This land allocation more than doubled the geographical size of the station.

A tangible result of all the hard work put into this station was the completion of a double hangar with a concrete floor and slipway running clear to the water's edge on 9 June. Planes could now go out at high tide. Accordingly, "[t]he first plane was flown on the 13th of June. It had been assembled and tested on the station and was one of the first American seaplanes to fly in Europe."<sup>39</sup> The station made its first delivery, an HS-1 seaplane to Moutchic, on 18 June. From then on, the nature of the activity of the station began to change.

Whereas before the men at Pauillac had been primarily devoted to construction of their facilities, the emphasis was now on manufacturing and repair as had been originally intended. All of the necessary hangars, shops and buildings were quickly finished during the months of July and August. The Pauillac sawmill worked overtime providing lumber to the French to replace lumber used for hangars for the Northern Bombing Group, in addition to supplying the boards needed to make the light, portable buildings, known as "Trompeloup" barracks. The designation "Tromploup" came from the

nearby village which the Americans took over with a combination of renovation and demolition to fit their needs.

With the attention of the station now focussed on assembling planes and repairing motors, the men proved extraordinarily productive. By 1 November 1918, 322 motors had been overhauled and 82 seaplanes were assembled. A little known fact about this station was that it provided assembly and repair assistance to not only the U. S. naval air stations and their French aviation counterparts, but also to the U. S. Army Signal Corps' aviation section. In fact, an unusual aspect of the Assembly and Repair Base was the presence of Army and Marine Corps personnel actually stationed there. The Army presence consisted of the one-hundred-fifty men of the 312th Company, Horse Drawn Ammunition Train, commanded by Captain H. D. Cogdell, and another 65 enlisted men undergoing training in Liberty engines led by Second Lieutenant J. J. Percivall. The Eighty-Eighth Company, Searchlight, First Regiment of the Marine Corps, initially destined for the Northern Bombing Group, had been diverted instead to Pauillac. Major J. F. S. Norris, USMC, headed this encampment of 119 men.<sup>40</sup>

The other departments at Pauillac proved that they, too, could shoulder their share of the load at this busy station. The Supply

section was responsible for the distribution and handling of almost all of the materials and supplies sent to all of the U. S. naval aviation stations in France, including the Northern Bombing Group. Pauillac also served as the sole supplier for the U. S. station in Porto Corsini, Italy. Thousands of tons of canteen supplies, provisions, clothing and other assorted goods valued at almost three million dollars passed through Pauillac. The Transportation Department at the station handled its assignment adequately, despite the above noted limitations imposed by the size of the wharf. This department played a major role in assuring that supplies got to their intended locations by road, rail and/or ship. The Medical Department at this station took on one of the greatest challenges in the war, aside from the defeat of the Germans. The influenza epidemic that hit Europe in September 1917 spread to the Americans at the air stations in France during the first part of February 1918. According to one report, an average of three thousand men per month reported to sick call for examination. The epidemic hospitalized 550 men and took the lives of 11. Pauillac doctors also performed 112 major operations and 200 minor operations in their capacity as surgeons for their entire district.<sup>41</sup>

By the time of the Armistice, Pauillac was running so

efficiently that the Army was preparing to hand over most of its own aviation assembly and repair work to the men there. Had the transfer of duties actually taken place, Army officials expected Pauillac to assemble five planes per day for its aviation section, in addition to the Navy quota. The war ended before this arrangement could be enacted. Ironically, the Army took possession of Pauillac as an embarkation point for its troops returning to the United States when demobilization began.

The U. S. Naval Air Station at Ile Tudy was put into operation on 28 February 1918 and commissioned shortly thereafter on 14 March 1918. French workers had begun the construction of this station in early February and American servicemen took over after the commissioning in March. The site was deemed favorable as the nearby water was sufficiently deep for take-offs and landings. The commanding officer was Lt. E. C. Sugden, U.S.C.G.. Ile Tudy was in the Lorient District and carried out its duties in cooperation with the French Patrouilles Aeriennes de la Loire. Ile Tudy had a patrol and "allo" service radius of sixty miles and its coastal convoy escort area ran from "A parallel 5 miles north of Penmarch Light to a line running 215 (degrees) true from Ile Verte."<sup>42</sup>

A summary of statistics compiled by American and French

sources issued at the end of the war indicated that this station had been the busiest of all of the American air stations in France. Ile Tudy pilots had flown the greatest number of anti-submarine sorties and safely escorted the most convoys. During its nine months of activity, Ile Tudy received 66 SOS and "allo" calls. Responding alert flights numbered 42. Pilots sighted 18 submarines and managed to attack all 18. Of those attacked, 2 were destroyed, 2 were severely damaged and another 3 were somewhat damaged. In the 157 days fit for flying during its nine operational months, 490 convoys were reported, 297 sighted and 280 were escorted through the station's area.<sup>43</sup>

This station was rated a success in terms of organization, operation and discipline. Ile Tudy was even one of the few stations fortunate enough to have use of a functional and "attractive" YMCA building. By the end of October 1918, Ile Tudy had a complement of 11 flying teams, 14 ground officers and 371 men. This station also had the distinction of having one pilot and his observer awarded the Croix de Guerre by the French Ministry of Marine for their successful destruction of an enemy submarine in May 1918.<sup>44</sup>

The U. S. Naval Air Station at Paimboeuf was taken over from the French and commissioned on 1 March 1918, as a dirigible station.

Operations began on 21 March 1918. It had been the intention of the Navy Department to establish a few dirigible stations and Paimboeuf was the only one that made it past the planning phase. It had helped immensely that the French were already using Paimboeuf as dirigible station of their own. Although American experience with lighter-than-air craft was minimal, some aviation officers believed that the dirigible would add a dimension to scouting capabilities and operations with destroyers and aircraft carriers. As the French had more experience and expertise in designing, building and operating lighter-than-air craft, American aviation forces relied heavily on their allies for guidance in this area.

In the fall of 1917, a series of conferences was held which included French and American military authorities and representatives from the French Astro-Torres Company, the leading manufacturer of dirigibles. These conferences culminated in plans for turning Paimboeuf over to the Americans for use as a dirigible station and assisting them in equipping and operating it. Accordingly, an agreement was forged on 1 October 1917, between Cmdr. Frank McCrary and Lt. Cmdr. Lewis H. Maxfield of the U. S. Navy and Lt. de Vaisseau Thierry of the French Ministry of Marine. To begin with, in addition to the two American pilots, Lt. Z. Landsdowne, USN,

and Lt. R. Kiely, USN, currently training for dirigible work in England, the Americans were going to send two other experienced dirigible pilots, one of them Lt. Cmdr. Maxfield himself, to a French dirigible station for training with the French craft that were currently patrolling the French Coast.

As support for American dirigible pilots, forty mechanics were to be sent to a couple of French stations for training in maintenance and care of the French craft. Once sufficiently trained, these mechanics would move on to Paimboeuf in readiness for the American takeover.<sup>45</sup> The French personnel presently operating the station would remain to ensure that the Americans were completely comfortable handling the day-to-day operations of the station. The French hoped to turn the station over to the Americans shortly after the New Year. As noted above, the actual transfer occurred in March.

French officials also intended for the Americans to be so thoroughly trained as to be able to handle the future training of personnel necessary to man and operate any other dirigible stations that might make it past planning phase. In particular, the French had high hopes for an American station near Arcahon. At its inception, this trained force consisted of seven reserve officers who were classified as dirigible pilots and sent to various stations in France

for training. Six of these men ended up eventually at Paimboeuf. The seventh was ordered to Headquarters in Paris "in connection with dirigible operations, schools and training."<sup>46</sup>

To ensure that the dirigible pilots would have a competent leader when they reached their assignment, the Ministre de la Marine stipulated that as soon after 1 January 1918, as possible, "the officer of the United States Navy who is to command the [Paimboeuf Dirigible] Center will go to Lorient so as to receive the instructions of Monsieur le Vice Admiral, Prefet Maritime, and the Capitaine de Vaisseau Chef de Division of the Loire patrols. He will then go to Paimboeuf."<sup>47</sup>

Simultaneously with the training of an American commander, the Americans were also requested to provide 100 men to be trained by the French as a general work force to support dirigible activity. As these men became proficient in their tasks, the French personnel would be returned to their own Aeronautic Service. The American commander of Paimboeuf and the French Commander of the Aerial Patrols of the Loire would work closely to ensure that all felt ready for, and comfortable with, the cession of Paimboeuf to the Americans. Certain equipment and the hangars and workshops already constructed would be turned over with the station. An

exception was the motor cars, which would only be loaned to the U. S. Navy on a temporary basis. The French also gave the Americans two dirigibles, the AT 1 and the VZ 3.<sup>48</sup> The French forces in residence would finish any construction they had already started, but the Americans would have to build their own barracks and any other structures still needed.

When the Americans took over Paimboeuf in early March 1918, their progress was such during that first month that a request for dirigibles and munitions was forwarded to the General Purchasing Board. The Americans also requested materials through their French allies. To facilitate the American requisitions, the French authorities assigned a dirigible pilot, Lt. de Vaisseau Jean Tanzi, to serve as a liaison officer between the French and American lighter-than-air forces. On 6 and 8 April 1918, Paymaster Conger put in the first orders for French dirigibles to be operated by the Americans. In his request, Conger specified two of the smaller "vedette" type V2 dirigibles and two of the larger "Chalais Mendon" type. The larger dirigibles displaced 9,000 cubic meters and were 81 cubic meters long, 14.5 cubic meters wide and 20.5 cubic meters high.<sup>49</sup> These dirigibles were capable of employing 75 mm guns, though Conger's request allowed for the acceptability of 47 mm cannon should the 75

mm ones be unavailable. Conger hoped that delivery of both the dirigibles and guns would take place sometime during the month of July.

Two days later Conger sent his second request to Commandant Varaigne at the French Mission. According to Conger's estimation, the Americans would require a few more dirigibles than had originally been requested in the 6 April letter. Conger anticipated that the delivery of these additional dirigibles would be staggered throughout the remainder of the year, although he did express the hope that the French would cede the required craft as soon as possible. The additional airships requested included: Two 8,500 cubic meter Astro-Torres (A. T.) models equipped with 75 mm guns to be delivered in August; one A. T. of 9,600 cubic meters with a 75 mm gun to be delivered in either September or October; and three Zodiac dirigibles of 9,500 cubic meters to be delivered during October and November.<sup>50</sup>

Not long after Conger sent these written requests, a verbal agreement to get the legendary "Captain Caussin," a Chalais Mendon dirigible, for American use was made with the French. Although the French were willing to turn over that particular dirigible almost immediately, the Americans did not receive it until 23 November

1918 due to extensive damage sustained in two crashes during the craft's trial period.

The men at Paimboeuf conducted anti-submarine operations for eight months. During that time, French reports documented five submarine sightings. Three of those were attacked and two damaged. One of the submarines even returned gunfire while under attack. No notes were made on whether the attacking planes were hit by the enemy gunfire. No "allos" or SOS calls were recorded by either American or French sources for this station.<sup>51</sup>

In retrospect, the scale of American dirigible operations did not even approach what had been anticipated and hoped for. At the end of the war, the Americans had only managed operations out of Paimboeuf. The station at Guipavas was completed and capable of full function, but for the fact that it received no dirigibles until 23 November 1918, when the Americans finally took possession of the "Captain Caussin." By then, however, operations were a moot point. The station at Gujan needed a few more months' worth of construction before it would have been ready. The Americans were never able to implement their operations at the Rochefort site either as the French requested an emergency cession back of the site so they could have a place to relocate their dirigibles and hangars

evacuated from Paris when the Germans launched their offensive in March 1918.

The next three stations, L'Aber Vrach, Fromentine and St. Trojan all began operations in the middle of July 1918. Fromentine's commissioning date in early February 1918, had held the promise of another operating station closer to the beginning of the new year. By comparison, L'Abervrach and St. Trojan, not commissioned until June and July, respectively, began operations relatively quickly after being established. Although the statistics of these three stations were considerably lower than those of Ile Tudy and Le Croisic, these stations' data indicated that, had they had a longer operational period, their contributions to anti-submarine and, in particular, convoy activity would have been quite substantial.

Although L'Abervrach was not a particularly active station, it does have the distinction of being noted in some memoirs of an actual participant. Webster Wright, whose letter to his son was cited above in the introductory section on France, had the honor of accompanying the commander of L'Aber Vrach, Lt. Harry Cecil, Naval Aviator #42, on a flight from Brest to L'Abervrach to deliver the station's first plane.<sup>52</sup>

After completing his training at Moutchic, Wright had been

ordered to Brest to await the completion of the assembly of the new HS-1 seaplanes which the American Navy pilots were going to use to patrol the Channel in search of German submarines. Wright and Cecil made their flight in one of these HS-1s which had been equipped with one of the first Liberty engines in France. The flight was not an easy one. Wright's 150 mile trip took him over 10 foot waves and coastal rocks as big as houses. Noting the absence of parachutes for himself and his passenger, Wright dismissed their relative value under the circumstances.

When Wright and Cecil arrived at L'Abervrach with the station's first plane, they were met by the entire complement of 45 men. At that point, there was no runway and the hangars were not yet completed. Wright slept in a tent until suitable quarters were constructed. Eventually, L'Abervrach would become a model of construction and acquire 18 pilots and 15 planes.

Wright also included an account of operations at L'Abervrach. The pilots flew 3 and 1/2 hour patrols on a spider web type pattern. With no cowling over their heads, the pilots were subjected to the whims of Channel weather. Lacking radios, their only means of communication with the station were homing pigeons kept on board the planes. Wright noted that on the occasions of his two forced

landings at sea, his pigeon messengers never made it home. Wright reported that though there were a few accidents, none proved fatal. Well-trained enlisted men soon joined the pilots in the cockpits as observers. The men flew their patrols in flights of three. Bomb sights were gradually improved, but there were still problems with the bombs themselves. Wright was, himself, a victim of defective materiel. Shortly after he began flying patrols at L'Abervrach, and before the unit had dropped any bombs in actual combat, he was ordered to drop a couple of practice bombs on a nearby rock. Much to his chagrin, neither bomb exploded upon hitting its target. New bombs were soon received which did detonate on impact as intended.

Although Navy authorities had great hopes for this station, in the end, the U. S. Naval Air Station at L'Aber Vrach encountered the least activity of the six operational stations. During its four months of activity, in 48 days fit for flying, reports of 64 convoys were logged. Thirty-six of those were sighted and 32 were escorted through the station's area. No submarines were sighted by this station's personnel, but two mine sightings were reported. One "allo" flight went out in response to the only call received.<sup>53</sup>

The U. S. Naval Air Station at Fromentine had the longest lag time between its commissioning date and the date it actually went

into operation. With a commissioning date of 4 February 1918, the Navy Department had hoped to have the station operational much earlier in the year than the middle of July 1918, when the station began operations. Once running, however, Fromentine proved to be far busier than L'Aber Vrach. In its four months of operations, with 70 days fit for flying, this station reported 153 convoys. Of those, 67 were sighted and 43 were escorted through the station's area. Thirteen "allo" and SOS calls were received and 8 alert flights went out in response. Fromentine pilots encountered just one submarine, but did successfully attack it. Reports indicated it had been severely damaged and most probably destroyed, but no confirmation of such could be verified.<sup>54</sup> No mine sightings were reported.

The sixth of the operational U. S. Naval Air Stations in France was St. Trojan. This station was commissioned on 14 July 1918, and commenced operations on 19 July 1918. St. Trojan proved to be the most active of the three stations that began operations in July of 1918. Fifty-seven "allos" and SOS calls were received. Unfortunately, no notation as to the number of responding alert flights was noted in the reports consulted. Records do indicate that three submarines were sighted, two of which were attacked and damaged. It is possible, but unverified, that one of those damaged

subs was destroyed.

The stories of two of those submarine encounters were recounted in a history of naval aviation activities during World War I found in the National Archives files. The station was unprepared to deal with the first submarine that appeared:

[D]uring the summer of 1917 a submarine stranded on the sand flats at the mouth of the Gironde River was left high and dry. There being no soldiers in the immediate vicinity and no aircraft, the submarine rested undisturbed until the following high tide, when it floated off the sand-bar, got under way and disappeared.<sup>55</sup>

The station was at least capable of launching an attack when another submarine made an unexpected visit to its vicinity some time after the first had departed:

Later, during a heavy fog, a submarine came into the coast, presumably to rest its crew, and was discovered through rifts in the fog by two of the St. Trojan flying boats. Both flying boats dropped all of their bombs at the submarine which was again lost sight of in the fog before it could be determined whether or not it had been sunk.<sup>56</sup>

Although both encounters with the enemy submarines were disappointing, at least the manpower and aircraft were available on the second try and the pilots and their observers responded

according to their training. In total, during 72 fit days for flying, St. Trojan reported 163 convoys. Fifty-seven of those were spotted and 27 escorted through the stations area.<sup>57</sup>

An examination of the next U.S. Naval Air Station put in operation, Dunkirk, will be presented in the next chapter. It's history is different and in some ways more significant than the histories of the other stations in France. At this station, joint Navy and Marine Corps aviation operations were planned at a location the Allies had all but given up hope of being able to defend against German aircraft.

The U.S. Naval Air Stations at Treguier, Brest, and Arcachon began operations so late that they had no convoy escort patrols or submarine sightings to report. A Kite Balloon Station at La Trinite barely got going before the end of the war. Commissioned on 27 October 1918, under the command of Ensign C. M. Johnson, USN, La Trinite was expected to be completed sometime during November of that year. The French had begun work on this station in April and quickly turned the site over the Americans. This site had been selected with the intention of using it to relay kite balloons for convoys between Brest and La Pallice. However, a combination of factors prevented this station from ever realizing its function. The water approaches to this station did not permit destroyers near

enough to obtain the kite balloons without the help of additional water craft. An altered and upgraded convoy system found no clear use for the station before the end of the war arrived. Despite ultimately never being used, La Trinite could boast a basic readiness. At the Armistice the complement at the station included 3 kite balloons, 2 pilots, 4 ground officers and 140 men.<sup>58</sup>

Given the wide variety of accomplishments and differing levels of construction at each of the American stations in France, and the fact that no undertaking of this magnitude had ever before been attempted by the Navy Department, it is difficult to assess just how successful those stations' activities were. A truly limited, yet superficially interesting, basis for comparison as to how well the six fully operational American air stations did during their relatively brief tenures are statistics compiled by the fourteen French stations that averaged eighteen months' activity each. French forces reported 43 submarine sightings and 40 submarine attacks. Thirteen of those subs were damaged and, though unverified, 5 were believed to have been sunk.<sup>59</sup>

Even given such statistics, however, it would be unfair not to note the advantage enjoyed by the Americans in terms of equipment available. The majority of the French stations were equipped only

with land planes which were structurally more fragile than seaplanes. These planes were inherently limited in the scope of their duties. They could fly only in good weather and, not being seaworthy, the French planes were forced to operate near the shorelines in case of a forced landing. This being the case, escorting convoys was curtailed and servicing alerts nearly impossible if the call was too far out from shore.

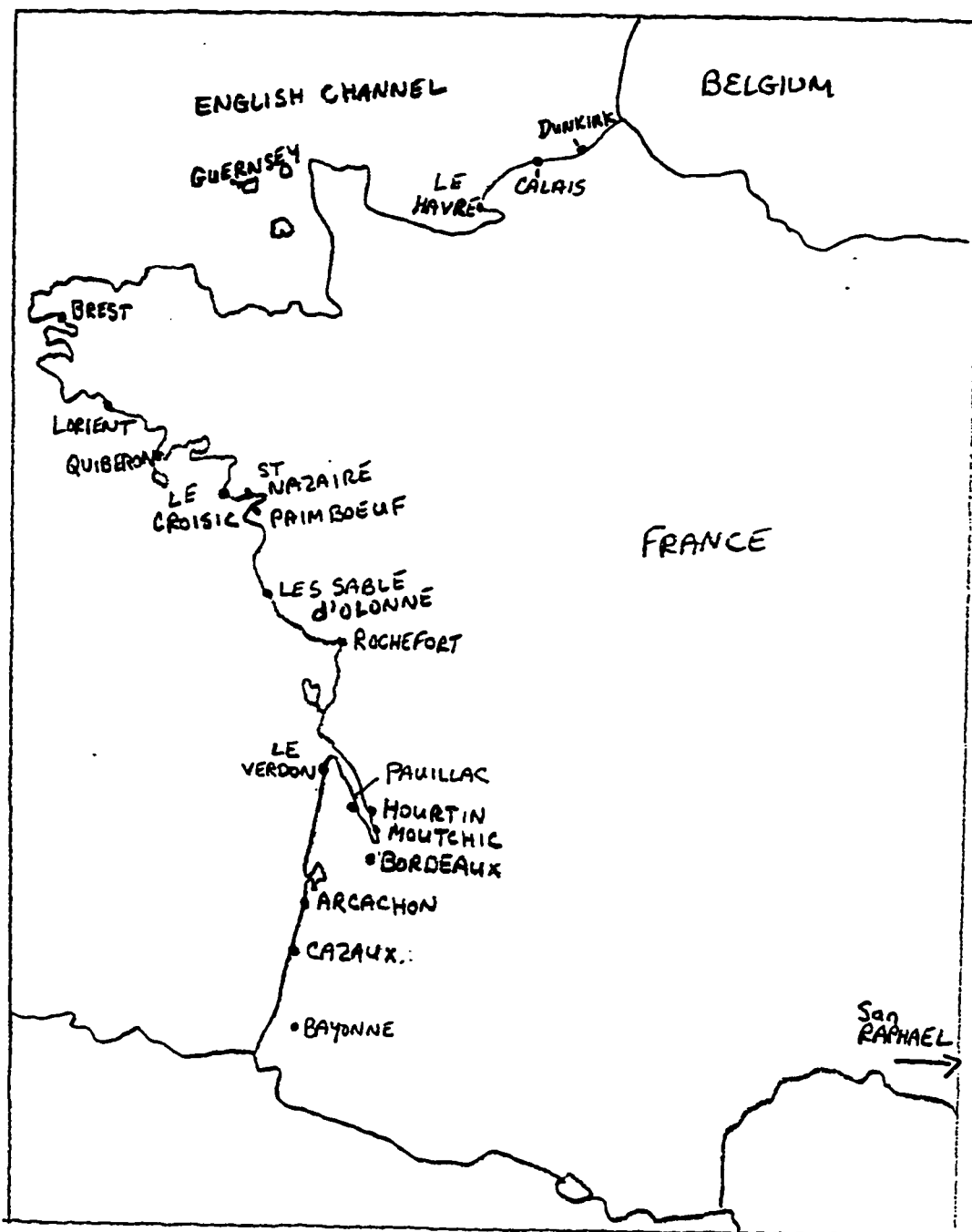
When Cmdr. Whiting issued his summary of the air stations' activities along the coast of France he concluded with some observations he felt to be pertinent to any analysis of the statistics presented. The nature and conditions of the airplane versus submarine conflict made it very difficult to accurately assess the outcome of each individual encounter. Whether a plane had successfully damaged or even destroyed an enemy submarine was open for conjecture in any instance not corroborated by a secondary intelligence source. Wakes, oil slicks, shadows and bubbles emanating from an area of water were notoriously unreliable indicators of the presence or destruction of a sub. This is not to say that there were no verified submarine destructions, for various intelligence sources certainly did confirm some as indicated above.

What Whiting cautioned against was attempting to assess the

performance and contributions of the aviation forces on the sole basis of submarine sinkings. Aviation deserved greater evaluative demarkations in Whiting's estimation. A more accurate appraisal of aviation's performance could be found in comparing the number of ships sunk by enemy submarines before the French and American aviation forces began patrolling the French Coast with the number of ships sunk in the same area after patrols began. Before aerial patrols began, between the Point of Penmarch and Ile d'Yeu Allied forces lost an average of a ship a day to enemy submarines. During aviation's active period in the final ten months of the war, a total of just three ships was lost in the same region.<sup>60</sup> The combined Franco-American forces successfully smashed the virtual blockade created by enemy submarines operating with impunity up and down the coast. The planes provided greater capability in relaying accurate information regarding the location of enemy submarines. Combining this information with a progressively better convoying system afforded the safe passage of shipping in this area, thus guaranteeing a continuous supply of men and materials where needed.

Whiting estimated that the combined aviation activities contributed to a 99% decrease in submarine activity in French

coastal waters. He was also confident that U. S. Naval Aviation forces were responsible for an overwhelming majority of the success in this area. In fact, Whiting asserted that nothing less than brilliant could be the conclusion of any evaluation of the overall contribution of American naval aviation forces in France.



Map 7.1: American and French Air Stations

Note: Map is not to scale and is for illustrative purposes only.

## Notes to Chapter 7

<sup>1</sup>Bernadotte E. Schmitt and Harold C. Vedeler, The World in the Crucible, New York: Harper and Row, 1984, p. 174. Petain also employed "repressive and remedial steps" to restore discipline to the army.

<sup>2</sup>Ibid., p. 175.

<sup>3</sup>Captain Thomas T. Craven, USN, "The History of Naval Aviation, French Unit," 15 February 1919, Washington Navy Yard Annex, Aviation News section, p. 282.

<sup>4</sup>Ibid., p. 278.

<sup>5</sup>Ibid., p. 279.

<sup>6</sup>Ibid., p. 280. The figures were based on studies of submarines conducted by the Permanent Commission on Submarine Navigation at Toulon.

<sup>7</sup>Ibid., p. 283.

<sup>8</sup>It should be noted that the number of U.S. Naval Air Stations planned and/or established in France differs according to which source is consulted. Whiting's reports all indicate that the French wanted, and therefore he sought permission for, twelve stations. According to Turnbull and Lord in A History of United States Naval Aviation, p. 121, the Navy Department approved fifteen stations, five of which were to be equipped to handle kite balloons and dirigibles. Personally, I found the range of twelve or thirteen most common in all the sources I consulted.

<sup>9</sup>"History of U. S. Naval Air Station Moutchic-Lacanau France," 2 December, 1918, Operational Archives Branch, Early Records

Collection, Navy Historical Center, Washington Navy Yard, "ZE" files, Box 11, p. 1.

<sup>10</sup>Ibid.

<sup>11</sup>Ibid., p. 2.

<sup>12</sup>Ibid., p. 3. "The commissioned students who took this initial course were: Ensign Archibald G. McIlwaine, USNRF, afterward Chief Pilot, Ensign Beach, USNRF, Afterward Engineering Officer, and Ensigns N. Cabot, D. S. Ingalls, G. S. Fearing and H. H. Landon, all USNRF, who were later sent out to patrol stations."

<sup>13</sup>Webster M. Wright, letter to son, dated 31 March 1965. Naval Aviation History Unit, Washington Navy Yard, Box: WWI, A-Mc, Folder: WWI, McKitterick Papers, Miscellaneous Correspondence.

<sup>14</sup>Ibid.

<sup>15</sup>Ibid.

<sup>16</sup>Ibid. Wright soon left Moutchic. He was assigned to Headquarters in Paris to await the assembly of the new HS-1 seaplanes.

<sup>17</sup>"History of U. S. Naval Air Station Moutchic-Lacanau," p. 2.

<sup>18</sup>Ibid., p. 5. Ensign E. L. Van Houten, USNRF, took over the instruction department on 23 July. He was a former student who had been through training at Moutchic himself. I make note here of what I consider to be either a typographical or contextual error in that the words "bombing" and "gunnery" appear to be transposed where the respective courses were listed. Logic necessitated that I swap the two to accurately represent what was probably originally intended.

<sup>19</sup>Ibid., p. 6.

<sup>20</sup>Ibid., p. 7.

<sup>21</sup>In light of the fact that Le Croisic was the first station to begin offensive actions against enemy craft, and Moutchic was established as a training station only, there exists an argument that Le Croisic was the first U. S. naval air station established in France. A document found in the Washington Navy Yard's Operational Archives' Early Records Collection, ZV file, Box 1, dated 19 July 1923, and titled "U. S. Naval Air Service Abroad: Brief summary based on reports by officers of the U. S. Navy and other official reports" bears this out.

<sup>22</sup>Turnbull, Archibald D., Captain, USNR, and Clifford L. Lord, Lt.Cmdr., USNR, History of United States Naval Aviation, New Haven: Yale University Press, 1949, p. 121.

<sup>23</sup>Dept. of the Navy, "U.S. Naval Aviation Operations on the Coast of France, Introductory." Received by Director of Naval Intelligence 20 April 1919, from Kenneth Whiting USN. National Archives, ZGU, Box 911, Folder 3, pp. 3, 11. The information on anti-submarine activities and servicing allos on the Channel-Atlantic Coast of France came from "Bulletins de la Guerre Sous-Marin" and extracts from Archives of the French Air Districts. The French provided most of these statistics because their access to intelligence was greater than that of the Americans and because the Americans had very strict reporting criteria on events they could not confirm.

<sup>24</sup>"Brief Summary of War Construction Abroad" from "Shore Facilities." National Archives, RG 45, Box 910, Folder 8, p. 26.

<sup>25</sup>Ibid., p. 26. The statements are attributed to "the Civil Engineer in direct charge of these operations" at not only Brest, but at Ile Tudy, L'Aber Vrach, Guipavas and Treguier as well.

Unfortunately, no name is given and none could be ascertained from sources found.

<sup>26</sup>*ibid.*, p. 27.

<sup>27</sup>*ibid.* The men in charge of Assembly and Repair were apparently highly skeptical of turning these crates into buildings. The panels of the crates were used whole for the sides and roof of the machine shop. The walls were made double thick for added insurance. The frames of the crates became "posts, plates and rafters."

<sup>28</sup>Craven, p. 448.

<sup>29</sup>*ibid.*

<sup>30</sup>*ibid.*, p. 451. There was only one fatal accident at Brest, but it took the lives of three men. On 21 August 1918, an HS-1 piloted by Ensign R. F. Clark, USNRF, plunged into the harbor from an altitude of four hundred feet during a training flight. No cause for the mishap was ever discovered. Also killed in the accident were second pilot Ensign A. K. Boorse and observer W. F. Redman, MM2c (A), USN. One other HS-1 seaplane was lost during a delivery flight to Ile Tudy from this station, but all three crew members were rescued.

<sup>31</sup>*ibid.*, p. 452.

<sup>32</sup>*ibid.* During the month of August 1918, two subsequent balloon trips were made aboard the USS Ericcson and the USS Sigourney. On 13 November, a new "R" type balloon made a trial voyage aboard the USS Benham.

<sup>33</sup>*ibid.*, p. 453.

<sup>34</sup>"Brief Summary of War Construction Abroad," p. 28.

<sup>35</sup>L. T. Ellington, "Naval Aviation Activities During the World War," National Archives, ZGU, Box 910, Folder 8, pp. 44-45.

<sup>36</sup>*Ibid.*, p. 45. Craven gives a very detailed account of dates various aspects of construction were completed at the station for those interested in such minutiae.

<sup>37</sup>Letter dated 15 May 1918 to Capt. Noble Irwin, USN, Office of Naval Operations, Washington, D.C., from Cmdr. Hutch Cone. National Archives, RG45, GA, Box 131, Folder 12, p. 3.

<sup>38</sup>Craven, p. 321.

<sup>39</sup>*Ibid.*, p. 322.

<sup>40</sup>*Ibid.*, p. 331. Craven does not elaborate further on what the functions of the men from the other services were at the station, aside from those training on the Liberty Motors.

<sup>41</sup>*Ibid.*, p. 339. Thirty-two foreigners also received medical and/or surgical services from the doctors at Pauillac.

<sup>42</sup>Adm. Henry T. Wilson, "Inspection of U.S. Naval Air Stations in France South of Brest," 3 November 1918. National Archives, RG45, GA, Box 131, Folder 6, p. 4.

<sup>43</sup>Cmdr. Kenneth Whiting, USN, "U.S. Naval Aviation Operations on the Coast of France, Introductory," received Dept. of Navy, 20 April 1919, pp. 3, 11.

<sup>44</sup>Wilson, p. 1. The names of the pilot and observer were not noted in the report and are therefore not identified here.

<sup>45</sup>Letter to Ministre de la Marine from Commander H. I. Cone,

dated 1 October 1917, in Thomas T. Craven's "History of Naval Aviation, French Unit," p. 21, presented 15 February 1919. Washington Navy Yard Annex, Aviation News records.

<sup>46</sup>Craven, p. 33.

<sup>47</sup>Letter to Navy Headquarters in Paris from Ministre de la Marine, no date, in Craven, p. 22.

<sup>48</sup>Ibid., p. 23.

<sup>49</sup>Letter to Commandant Varaign, French Mission through the General Purchasing Board, from Paymaster Omar Conger, dated 8 April 1918, in Craven, p. 25.

<sup>50</sup>Craven, pp. 33-34.

<sup>51</sup>Whiting, pp. 3, 12.

<sup>52</sup>Letter from Webster M. Wright to his son, dated 31 March 1965, describing his days as a naval aviator in Europe during World War I. From Naval Aviation History Unit, Box WWI, A-Mc, McKitterick Papers, Miscellaneous correspondence. Wright gave no dates for his various experiences. Given the operational dates for the L'Aber Vrach station, the conclusion can be made that Wright arrived there sometime in June of 1918. During the time Wright was at Brest, that station was under the command of Lt. William Corry, Naval Aviator #23.

<sup>53</sup>Whiting, pp. 3, 12.

<sup>54</sup>Ibid, pp. 3, 12.

<sup>55</sup>Ellington, p. 43.

<sup>56</sup>Ibid., pp. 43-44.

<sup>57</sup>Whiting., pp. 2, 11.

<sup>58</sup>Wilson, p. 5.

<sup>59</sup>Whiting, p. 1.

<sup>60</sup>Ibid., pp. 10, 11.

## Chapter 8

### Marine Corps Aviation and the Northern Bombing Group

The selection of Dunkirk as one of the U.S. Naval Air Stations in France was a key strategic decision. Consultation with French military advisors revealed that some of the Germans' heaviest bombing raids targeted the French station already at Dunkirk. The French could not afford to lose their position at Dunkirk as that location was the only French-owned port on the North Sea from which seaplanes could patrol against enemy submarines.<sup>1</sup> The German bases at Ostend, Bruges and Zeebrugge guaranteed that the Dover Straits would experience a heavy pattern of submarine traffic as the vessels ventured out into the North Sea in search of Allied shipping. The Northern Bombing Group came into existence for the purpose of operating day and night bombing squadrons from the Calais-Dunkirk area for the continuous bombing of those enemy submarine bases off the Belgian coast. In this endeavor, the Navy aviators would be joined by their Marine Corps counterparts.

The French were experiencing major difficulties in preventing repeated bombings on their station as their available planes were inadequate to face the superior German seaplanes. Overmatched, the

French invariably suffered heavy losses. So futile was the situation that the French had ceased sending any planes out north and northeast of Dunkirk to defend against the Germans. The current plan of action was to wait until a superior type of seaplane could be manufactured. One seaplane under development was not quite the equal of a landplane in terms of speed and climbing ability, but did have exceptional maneuverability. Definitely in its favor was the fact that this experimental plane had floats which would enable it to have a better chance of surviving a forced landing at sea.<sup>2</sup>

The British, suffering a similar fate against the German seaplanes as their allies, had absolutely no intention of trying to develop a seaplane capable of defeating the German aircraft. Their strategy was to switch their pilots into land planes to take on the German seaplanes on the few sorties undertaken from Dunkirk. A large "America," a twin-motored seaplane designed at the Curtiss Aeroplane Company, was to accompany these land machines and, in the event of a forced landing, pick up any stranded crew members as necessary.<sup>3</sup> Lt. Cmdr. Whiting found this solution untenable, if not impractical. Should the large America and its formation of landplanes be attacked by a group of enemy fighters, in all likelihood, the large America would be too busy fending off

attackers and seeking escape to be able to stay and rescue crews from any downed land machines.<sup>4</sup> In all likelihood, any plane downed during such a scenario would sink before any help could reach it. Any pilot caught in such a mishap would probably drown in the rough seas before a rescue could be attempted.

Whiting believed that an American station at Dunkirk could help eliminate the German ability to bomb with impunity the French and British forces there. His initial plan called for two types of seaplanes to be operated out of Dunkirk. The first was to be "a 3-placer bombing type carrying two machine guns and capable of protecting itself to some degree." The second would be "a fighting seaplane, single seater type with floats."<sup>5</sup> Whiting further explained how he envisioned these planes would be used:

The general idea is that approximately three or four fighting seaplanes would accompany each bombing seaplane. These seaplanes should operate to the east [and] northeast, to the north and to the northwest [,] and west of Dunkirk[.] [I]t is not expected or probable that they will meet enemy land fighting machines[,] but would be opposed by enemy seaplanes, single and 2-seat seaplanes.<sup>6</sup>

With a good idea of an effective strategy to combat the incessant German bombing raids on the Allied stations near Dunkirk, Whiting's

next step was to secure manpower and equipment and get construction under way.

Dunkirk was commissioned on 13 June 1917. Shortly thereafter, though, the Navy Department was presented with another strategic use for Dunkirk emanating from the Marine Corps aviation contingent. A significant change in the planned mission for Dunkirk resulted and Whiting soon found himself seeking sources of landplane training for his pilots. As a result, the Dunkirk station was not put into operation until 15 August 1918.

Altering the objective for the station at Dunkirk was directly attributable to Whiting's counterpart in the Marine Corps' aviation section, Major Alfred Cunningham, USMC. Actively searching for a role in the war for Marine Aviators, Cunningham's enterprise would set in motion what became known as the Northern Bombing Group. Dunkirk's strategic location and current difficulties caught Cunningham's attention during his search and lured him to the vicinity. Marine Corps aviators had been following the developments of aerial warfare in France and England almost since hostilities began. Lt. Bernard Smith, USMC, had been detached to Paris as assistant to the Naval Attache at the American Embassy in 1914. Over the course of the next three years he toured the front to assess

the usefulness of the aircraft employed. The information he gathered and reported back to Marine Headquarters in Washington galvanized Cunningham.

In November 1917, Cunningham convinced Marine Corps Commandant George Barnett to send him to Europe to personally assess the current developments in naval aviation and see whether there was any potential role the Marine aviation section could assume. Cunningham had been particularly incensed by an Army commander's statement asserting that if any Marine aviators made it to Europe, the only role they would play would be furnishing personnel to run a training field. No Marine aviator would see combat. Cunningham had no intention of ever seeing such a thing come to pass. From the time of his arrival in France on 12 November 1917, until 6 January 1918, Cunningham toured France and England seeking out personnel at allied training centers to interview and observing front line aerial activity to learn as much as he could about the current state of combat aviation. Not one to learn everything second hand, he even participated in three flights over German lines: one in a pursuit plane, one in a photographic plane and one in a bomber.<sup>7</sup>

The knowledge gained from his tour of allied aviation stations,

coupled with the Navy Department's development of air stations in England and France to conduct anti-submarine patrols, inspired Cunningham. The final impetus for his evolving plan for Marine aviation came from a visit to the U.S. Naval Air Station, Dunkirk. By mid-November 1918, organization of the Dunkirk station was proceeding fairly smoothly. Lt. G. de C. Chevalier, USN, following his qualification as a "French Military Aviator," had assumed command of the fledgling air station. Asst. Paymaster A. J. Stockhausen, USNRF, joined the staff as Supply Officer. Chevalier and Stockhausen hoped to eventually have two hundred enlisted men detailed to support the station when it was ready for operations. At present, however, they had to make due with fifty-two men, "engaged in constructional work preliminary to beginning of flying operations."<sup>8</sup>

Since his idea to have the Marine Aviation Squadron serve with the Marine Brigade in France had been rebuffed and the Dunkirk station was undermanned, Cunningham determined that he had found a promising opportunity. Although the shipping losses would begin to fall steadily in 1918, Cunningham's quest for a mission had begun in 1917 and he was initially drawn to the early inability of the Allies to curtail the enormous shipping losses to German submarines. He focussed on this issue and it became the final piece of the puzzle.

Cunningham envisioned a force of Marine Corps aviators continuously patrolling the shallow waters around the enemy submarine bases at Ostend, Zeebrugge and Bruges. The planes would be equipped with heavy bombs to destroy any submarines attempting to leave or return to their bases.

Upon Cunningham's return in January 1918, he laid his whole scheme before Commandant Barnett. Barnett helped Cunningham obtain a hearing before the General Board and the Secretary of the Navy. Impressed with Cunningham's proposal, the Navy Department issued orders for the organization of four Marine landplane squadrons to be completed as quickly as possible. The planes necessary for this undertaking were to be obtained from the Army.<sup>9</sup> The Marine Corps aviators were to be gathered from their current positions at Lake Charles, Louisiana, and the Everglades in Florida. Marine Corps aviation had received its combat assignment.

At the time America entered World War I, the Marine Corps had two branches in its aviation section, the Marine Aeronautic Company and the First Aviation Squadron.<sup>10</sup> Marine Corps aviation had originally existed as just one body designated as the Marine Aeronautic Company. As a result of Cunningham's maneuverings to get the aviation unit in on anti-submarine warfare activities before

he even left for his two month tour in Europe, the Company, numbering 34 officers and 133 enlisted men, was assembled at the Navy Yard in Philadelphia on 14 October 1917, and divided into two detachments. The split occurred because no one was sure whether land planes or seaplanes would be the most effective against enemy submarines. The First Marine Aviation Squadron, with 24 officers and 237 enlisted men, would train with land-based bombers, primarily the Army's JN-4B, under the command of Capt. William M. McIlvaine. The First Marine Aeronautic Company, commanded by Capt. Francis T. Evans and consisting of 10 officers and 93 enlisted men, was equipped and trained for operations using seaplanes.<sup>11</sup>

Evans moved the Aeronautic Company to the Naval Air Station at Cape May, New Jersey. There the men received seaplane training and practiced flying coastal patrols. From there, the Company deployed to Ponta Delgada, on the island of San Miguel in the Azores, for anti-submarine operations. This unit was the first American aviation group of any branch of service to be deployed during the war with a specific mission. That mission consisted of flying "regular patrols to deny enemy submarines ready access to the convoy routes and deprive them of a safe haven in the Azores."<sup>12</sup> The Company remained at its assigned location throughout most of 1918.

Meanwhile, McIlvaine moved his Squadron to the Army Aviation School at Hazelhurst (later Roosevelt) Field, Mineola, Long Island. There, under an agreement between Cunningham and Col. Henry H. Arnold of the Army Signal Corps, the Marine aviators were to receive their basic training in the unfamiliar land planes. Advanced training would then take place at the Army school in Houston, Texas. Once both phases of training were completed, Cunningham wrote to the Corps Commandant, the Squadron would be ready to deploy to France. The Army had agreed to equip the Marine aviators with the same technical equipment provided to the Army Air Corps.<sup>13</sup> The plan seemed simple enough, but the stunning turnaround by Army leaders and their designation of Marine aviation as worthy of playing only a secondary role had Cunningham once again desperately searching for a more significant role for Marine aviation.

While Cunningham's search for a role continued, the size of the Marine aviation organization continued to grow. On 15 December 1917, Capt. Roy Geiger was ordered to form the Aeronautic Detachment at Philadelphia. As yet, it was given no mission, just an order to exist. Speculation ran that this unit, whose four officers and thirty-six enlisted men came mainly from the First Aviation Squadron, was created to assist the Advance Base Force.<sup>14</sup> In early

February 1918, Geiger moved his Squadron to Miami, Florida. Shortly thereafter, he left the Navy's main field at Coconut Grove and set up his Marine contingent on a small sandy airstrip owned by the Curtiss Flying School.

As the Marine Corps' aviation program remained understaffed, particularly with qualified pilots, and Cunningham had secured permission to establish four squadrons, recruits were sought continuously. With permission from Cunningham, Geiger convinced the instruction staff of the Curtiss Flying School to join the Marine Corps Reserves. He also formally requisitioned the School's JN land planes. Cunningham, too, recruited widely. One of his first stops was the Officer Training School at Quantico, Virginia. Under Cunningham's sway, six volunteers headed to Miami. Still short of men, Cunningham searched everywhere he think of picking up his "strays."<sup>15</sup> In perhaps his most audacious move, Cunningham set his sights on the Navy stations at Pensacola and Key West. There he proselytized 78 qualified young aviators, convincing them to disenroll from the Navy and enroll in the Marine Corps as fliers.<sup>16</sup> Cunningham lured them with the beguiling promise of seeing action in France.

On 16 June 1918, as a result of his tireless recruitment

activities, Cunningham established a headquarters detachment and four squadrons, designated A, B, C and D. Capt. Geiger commanded Squadron A. Capt. McIlvain commanded Squadron B. Lt. Douglas Roben commanded Squadron C. Capt. R. A. Presley commanded Squadron D. Shortly thereafter, Geiger, McIlvain, Roben and Presley departed for France to choose two airfield sites, link up with their Navy counterparts and establish the infrastructure of the Northern Bombing Group. On 10 July, Cunningham received orders to take the men of the First Aviation Force, except Squadron D, to France to join their squadron commanders.

The Northern Bombing Group that was being established was not going to be what Cunningham had originally envisioned. The Navy Department had changed the mission for the aviators several times since the initial orders to establish it had been issued. Cunningham had never expected his Marine aviators to operate in conjunction with Navy fliers. It is equally doubtful that Whiting took into account Marine fliers when he was setting up activities in the Dunkirk area. Both men were at the mercy of the Navy Department, Rear Admiral William S. Sims in London, the War Department and the Allies, whose series of debates constantly altered the intended mission of both the Navy and Marine Corps aviators:

From bombing U-boats in the shallow coastal waters, the group's mission changed to bombing the German submarine pens in the Belgian ports. From flying fighters to escort the bombers, the Marine squadron's role changed to conducting daylight bombing raids, using the British-designed DH-4. The Navy wing of the force, flying large Italian-built Caproni bombers, would carry out night raids.<sup>17</sup>

Although Cunningham was disappointed in the final configuration of the Northern Bombing Group in that it was to be a shared endeavor with the Navy and chagrined that the mission had been altered, this was not the worst news to him. The most stunning personal blow came when the Navy Department revealed that Capt. David Hanrahan, USN, would have overall command of the Northern Bombing Group. Under Hanrahan, Cunningham would oversee the Marine contingent.

With Navy personnel in charge of the Group, the Marine aviation units were quickly merged into the organization. Gone were the alphabetical designations. Marine Corps Squadrons A, B, C and D became 7, 8, 9 and 10 and were cumulatively known as the Day Wing. At first, the Northern Bombing Group's field was to be at Calais. However, the Germans quickly found the new field and mercilessly bombed it both from the air and with their long-range guns. This development resulted in having the squadrons spread out around the countryside near Dunkirk. Cunningham set up his own headquarters at

Bois-en-Ardres. Squadrons 7 and 8 were located at Oye, a town between Calais and Dunkirk, and Squadron 9 operated out of La Fresne, which was 12 kilometers southwest of Calais.<sup>18</sup> Upon its arrival, Squadron 10 would join 9 at La Fresne. All of the squadrons would still work in conjunction with the big station at Dunkirk.

That the large station at Dunkirk was even capable of functioning seems somewhat miraculous. According to one source, this station was bombed 750 times from the air and another 500 times with the German's long-range guns. Indeed, the station endured almost continuous bombardment for the twelve months preceding the end of the war.<sup>19</sup> The distribution of the aviation forces throughout the surrounding countryside did serve to thwart the German attempts to destroy them and preparations for offensive missions began.

Although Cunningham had been advised that the planes for his men would be awaiting them at their new assignment, the first of the DeHavilland D.H. 4s and D.H. 9s did not arrive until 7 September 1918. Somehow, the planes had ended up in Eastleigh, England, as yet unassembled. The Day Wing was finally able to muster nine planes of its own by 5 October 1918. In the meantime, in order to gain some combat experience, the Marines flew with the British squadrons

whenever they could. Thus, the first kill recorded by a Marine aviator during World War I came on 9 September 1918, when Sgt. Thomas L. McCullough, out with a British squadron over Coremarch, Belgium, shot down a German Fokker.<sup>20</sup> There is no mention in records of any Marine casualties occurring while participating in sorties with the British. In fact, the first Marine member of the Northern Bombing Group to lose his life in combat was Lt. Chapin C. Barr, USMCR, who suffered an artery-severing leg wound while participating in a sortie on 29 September during which he himself had successfully shot down a German plane.<sup>21</sup>

Shortly after Barr's death, a more deadly foe than the Germans would take the lives of eight more members of the Day Wing. When Marine Squadron D (now known as Squadron 10 of the Northern Bombing Group) arrived during the first week of October, it brought with it a virulent strain of Spanish influenza. Lt. Donald B. Cowles, USMC, and six men died. The epidemic touched many, but fortunately killed few in total. Sadly, though, Squadron C (now known as 9) suffered a major blow when its commander, Maj. Douglas B. Roben, died of influenza on 31 October. The raging epidemic virtually shut down operations. So many of the pilots were hospitalized or confined to their beds by the sickness that Cunningham was able to muster

but ten pilots to conduct raids during this time.<sup>22</sup> Just as the epidemic was winding down, the Armistice was signed.

The Navy half of the Bombing Group was having its share of troubles too. The Night Wing aviators were no better trained to fly land planes than their Marine Corps counterparts. Whiting dealt with this dilemma by sending his incoming aviators to several foreign bases for training. Forty seaplane pilots were distributed among American allies: 1) Ten men went to the Royal Air Force School at Stonehenge, England; 2) Ten went to the Caproni school in Malpensa, Italy for training in night bombing work; 3) Another ten went to the U. S. Army School at Clermont-Ferrand; and 4) The final ten pilots were sent to yet another English school to work on daylight bombing techniques.<sup>23</sup> Although the allied countries graciously accepted the American students into their training programs whenever they could, at any given time a foreign training center already running at capacity could refuse admittance to any additional aviators. Fortunately, at the time of the establishment of the Northern Bombing Group, training proved available as soon as the Navy provided its men.

The Day Wing also fared no better in securing planes than had the Marine contingent. Since the Americans had as yet been unable to

set up their own supply line to Dunkirk, arrangements for necessities were made with the Royal Naval Air Service station nearby. The British commander there agreed to assist the American forces until alternative supply sources could be readied. The offer was not altogether altruistic as the Allied bases, as mentioned earlier, were taking a pounding from the nightly raids of the German flyers. Of particular concern was the devastating destruction of the British base at St. Pol. St. Pol had been equipped to handle the assembling and overhauling of sixteen seaplanes each week. German bombs and gunfire had gutted the station, rendering it useless. With eight seaplanes sitting in crates waiting to be assembled at that very moment, every thought was turned to getting enough hangars erected to enable the men to get those planes assembled and properly protected.<sup>24</sup>

Several arrangements for various types of planes were entered into, only to have deliveries stalled or fail to take place. The Capronis that were to be used for the night raids arrived on 11 August. Upon inspecting the planes, Commander Hanrahan deemed them unacceptable for Navy use and immediately contacted the British commanders in an attempt to secure some of their Handley-Page machines. Although the British agreed to supply the necessary

planes, delivery failed to occur before the end of the war.<sup>25</sup> As a result, the first and only raid undertaken solely by members of the Night Wing took place on 15 August 1918, when they made a bombing run over Ostend. Members of the raid dropped 1250 pounds of bombs and all returned safely to the base. This is not to say that that is all the Navy fliers at Dunkirk accomplished. Navy pilots serving with Allied units actually dropped 76,416 pounds of bombs on enemy locations.<sup>26</sup>

By comparison, the Marine aviation unit made at least an equal, if not slightly more impressive, showing. In fact, Cunningham firmly believed that they had made a significant contribution, all things considered. In an article he wrote after the war, entitled "Value of Aviation to the Marine Corps," published in The Marine Corps Gazette, September, 1920, Cunningham proudly listed their accomplishments:

Number of independent raids.....	14
Pounds of bombs dropped.....	52,000
Number of food dropping raids.....	5
Pounds of food dropped.....	2,600
Number of enemy planes shot down.....	12
Pilots and observers cited for decorations (two for the Medal of Honor).....	25 <sup>27</sup>

Cunningham was particularly proud of the fact that much of what the Marines had accomplished had taken place as they flew as many

as 75 miles into enemy territory at low altitudes and under heavy fire. Cunningham was also under the impression that the food dropping missions undertaken were the first ever in a combat situation. Just after the Armistice, when the Germans had cleared out of Belgium, evidence found indicated that on one of their raids, the Marine aviators had destroyed a troop train, in the process killing approximately 60 officers and 300 men.<sup>28</sup> This discovery buoyed Cunningham's confidence in the Marines' accomplishments, particularly in light of the contrasting fact that the aviators' casualties had been so slight. The evident sense of pride emanating from his article indicated that Cunningham believed that the Marine aviators had done the absolute best they could under the circumstances and should be recognized for having done so.

It is easy to understand Cunningham's personal satisfaction in the performance of the Day Wing of the Northern Bombing Group. Capt. Hanrahan had equal reason for satisfaction in the Navy aviators performance. For although the Night Wing did not amass great statistics under that designation, the individual fliers who participated with other allied groups represented their group well. Some were attached to the 5th Group, Royal Air Force, where they participated in bombing runs over canals, railroads, supply dumps

and airfields in German-occupied parts of Belgium.<sup>29</sup> Others flew with various French and British land squadrons. The Navy could even boast the one ace of World War I, Lt. David S. Ingalls, who would later become Assistant Secretary of the Navy for Air.

The Northern Bombing Group as a whole was a rather remarkable organization. The two fledgling aviation organizations within the Navy Department attempted to operate in synchronization from one of the most heavily bombarded areas in France. When the Germans threatened their existence and held up their construction and expansion efforts with aerial raids and long-distance guns, the Navy and Marine aviators adjusted and countered the measures as best they could. The lack of a supply line, the misdirected plane deliveries and heavy reliance on allied assistance severely hampered efforts at Dunkirk. The influenza epidemic and chronic shortage of manpower also hindered production. It is also important to remember that the Group was in operation for less than three months. The legacy of the Northern Bombing Group lies not in numbers, but in innovation and defiance in the face of seemingly insurmountable odds.

## Notes to Chapter 8

<sup>1</sup>Letter to Commander, U.S. Naval Aviation Force, Foreign Service. From Lt. Cmdr. Kenneth Whiting, dated 10 December 1917. National Archives, RG 45, Box 910, Folder 9, p. 2. Whiting went on to explain that Dunkirk had the only harbor suitable for seaplane operations on the French coast. Calais did have a basin that was large enough to fly seaplanes into and out of, but a dyke separated the basin from the North Sea. This barrier would prevent any plane forced down at sea from being able to return to the basin without in all probability being destroyed on the dyke. Boulogne, to the west, was far too small to handle any increase in operations.

<sup>2</sup>ibid. Whiting believed that the time spent developing a better seaplane was well worth the effort. Giving in to using only land planes on operations over the North Sea was tantamount to admitting an inferiority to the Germans. In Whiting's opinion, a good two-place combination bombing and fighting plane was the answer to this pressing problem.

<sup>3</sup>Henry Woodhouse, Textbook of Naval Aeronautics, (Annapolis: Naval Institute Press, 1991. Reprint. Originally published: New York: Century, 1917), p. 194. The original "America" was a flying boat ordered from the Curtiss Company in early 1914 by Rodman Wannamaker, who intended to use it for a transatlantic flight. This original model had a white cedar hull and was 32 feet long and 4 feet across. The upper wings spanned 72 feet and the lower wings were 46 feet across. The two 100 horse-power engines allowed for a total carrying weight of 5,000 pounds, including fuel, fuel tanks, two men and other supplies. The original America was acquired by the British Admiralty during World War I and was used for patrol duty and as a training plane.

<sup>4</sup>Letter to Commander, U. S. Naval Aviation Force, Foreign Service. From Lt. Cmdr. Kenneth Whiting, dated 10 December 1917. national Archives, RG 45 Box 910, Folder 9, p. 3. Whiting noted that

the British were trying to develop devices to help keep the land planes afloat, at least for a while, in the event of a forced landing at sea. The only one showing any immediate promise was an air bag to be fitted under each wing. An air bottle activated by the pilot would inflate the aerobics. The drawbacks here were that a bullet hole would render an air bag useless as it would no longer be water or air tight. At the time Whiting reported his findings, no British plane had been equipped with the air bags.

<sup>5</sup>Ibid., p. 2.

<sup>6</sup>Ibid., p. 2.

<sup>7</sup>Elizabeth C. Bentley, "Ma and the Old Man: Pioneers of Marine Corps Aviation," unpublished thesis, Emory University, Atlanta, Georgia, 1987, pp. 92-93.

<sup>8</sup>"Aviation-Weekly Report of Operations, 17 November 1917." Sent to Secretary of the Navy by Adm. William S. Sims, Force Commander. National Archives, RG 45, GA-1, Box 134, Folder 1, p. 1. In this report, Sims speculated that the additional approximately 150 men should be arriving at the station within a week.

<sup>9</sup>Alfred A. Cunningham, "Value of Aviation to the Marine Corps," Marine Corps Gazette, Sept. 1920, p. 225.

<sup>10</sup>A good source for information on the beginnings of Marine Corps aviation in the time before World War I is Lt. Col. Edward C. Johnson, USMC, Marine Corps Aviation: The Early Years, 1912-1940 (Washington, D. C.: History and Museums Division, Headquarters, U. S. Marine Corps, 1977.)

<sup>11</sup>Edwin N. McClellan, The U. S. Marine Corps in the World War (Washington: Government Printing Office, 1920), p. 71.

<sup>12</sup>Lt. Col. Edward C. Johnson, USMC, Marine Corps Aviation: The Early Years, 1912-1940 (Washington, D. C.: History and Museums Division, Headquarters, U. S. Marine Corps, 1977), p. 13.

<sup>13</sup>*Ibid.* p. 15.

<sup>14</sup>*Ibid.* The Advance Base Force was a twentieth century creation for the Marine Corps. It was created as a result of lessons learned during the conflicts of the nineteenth century, particularly the war with Spain in the late 1890's. The United States' maritime domain was now considerably larger and a force was required which would be able to move quickly, and in turn quickly establish, "a series of strategic outposts from which the Navy might defend the continental United States against an invader." Allen R. Millet, Semper Fidelis: The History of the United States Marine Corps (New York: Macmillan Publishing Co., 1980), p. 267. Millet's work is a solid history of the Marine Corps as a whole and is an excellent source in that capacity. It is less successful as a history of the Corps' aviation activities. Nevertheless, it remains useful in examining aviation in relation to the Corps as a whole as leaders with different notions of its abilities succeeded to positions of authority.

<sup>15</sup>*Ibid.*, p. 17.

<sup>16</sup>*Ibid.*

<sup>17</sup>*Ibid.*, p. 15.

<sup>18</sup>*Ibid.*, p. 20.

<sup>19</sup>John R. Cox, "U. S. Naval Aviation in the War: Operations and Achievements of the Naval Air Force," in Flying Officers of the U.S.N., 1917-1919, Washington, D. C.: Naval Aviation War Book Committee, 1919, p. 18. According to Cox, in one night alone, the Germans dropped 320 bombs. These bombs could be as large as 600

pounds, or as small as the so-called "pit-sqwaks," which were 20-pounders. The station was equipped with a series of dug-outs which were 15 feet underground and covered with corrugated sheet iron, sand, cement and cobblestones. The men were carefully distributed so that no more than fifty men could be killed at any one time should a direct hit occur.

<sup>20</sup>General Information Sheet, found in General Aviation Files, Marine Corps Museum, Washington Navy Yard, Washington, D. C.

<sup>21</sup>Major Edna Loftus Smith, USMCR, Marine Corps Reserve Aviation: 1916-1957, Washington, D. C., 1959, p. 10. Manuscript found at Marine Corps Historical Library. According to Smith, a few regular and Reserve Marine officers had been flying with the Army in France for a year before the Northern Bombing Group was established. Some, but apparently not many, of them were permitted to wear the Army wings in addition to their Navy wings, but this was according to the discretion of the Commandant and appeared to be granted on a case by case basis. Smith lists two casualties among these Marine aviators: Lt. Kenneth P. Culbert, USMCR, who died while serving in France and Lt. Marcus A. Jordan, USMCR, who was killed while serving in Italy.

<sup>22</sup>*ibid.*, p. 12.

<sup>23</sup>Capt. Dudley W. Knox, U.S.N., "American Participation in the Great War," 19 July, 1923, p. 2. Manuscript in Operational Archives, Washington Navy Yard, Washington, D. C.

<sup>24</sup>*ibid.* Sims had received an update on the conditions at Dunkirk from Lt. A. J. Stone, USN, who had been sent to Dunkirk to inspect and assess the situation at the American station. As of 17 November, only one hangar had been erected due to lack of men and supplies.

<sup>25</sup>*ibid.*, p. 4. Knox does not mention what exactly Hanrahan

found wrong with the Capronis. He only states that they "proved entirely unsatisfactory."

<sup>26</sup>Smith, p. 70.

<sup>27</sup>Major Alfred A. Cunningham, USMC, "Value of Aviation to the Marine Corps," The Marine Corps Gazette, September 1920, p. 226.

<sup>28</sup>*Ibid.*, p. 225.

<sup>29</sup>Capt. Archibald D. Turnbull, USN, and Lt. Commander Clifford L. Lords, USNR, History of United States Naval Aviation, (New Haven: Yale University Press, 1949), p. 140.

## Chapter 9

### The Air Stations in England

United States Naval aviation activities in England during World War I were conducted on a small scale, yet they proved illustrious. American servicemen manned only two naval air stations in England, one at Killingholme and one at Eastleigh. (See Map 9.1, p. 262) Of the two stations, only Killingholme, commissioned on 20 July 1918, was an operational air station. The station at Eastleigh, commissioned on 23 July 1918, functioned as an assembly and repair base for the Northern Bombing Group. Both stations were closed down before the first anniversaries of their respective commissionings. Despite the brevity of their existences, both stations contributed significantly to the prosecution of the war in their respective roles.

Killingholme proved to be one of the most interesting and varied assignments for U.S. naval pilots as it was an operational British air station before the arrival of the Americans. The American pilots who served at Killingholme found themselves sharing in an important task with their allies. The British government activated Killingholme in June, 1916, when two dozen members of the Royal Naval Air Service arrived. Their mission was

to protect large oil fuel tanks from German air raids.<sup>1</sup> Due to the frequency and intensity of the Zeppelin bombing missions, it soon became apparent to the commanding officers that defensive capabilities at Killingholme needed strengthening. Better organization and more thorough preparation provided the necessary solution. The restructuring of Killingholme proved so successful that the station's size was increased during 1917 and it became one of the Royal Naval Air Service's leading air stations in England.

This dramatic change in size brought with it some equally major alterations in Killingholme's operational agenda. Both flying and non-flying personnel experienced substantial modifications in their daily activities. Killingholme pilots found their patrols lasting longer and the total number of reconnaissance miles flown mounting up far more quickly than ever before. Support crews on the ground received additional duties when, in addition to continuing as an operational air station, Killingholme became both a training base for seaplane pilots and a construction base. This expansion of duties for the force at the station necessitated a call for additional men to ensure that all vital functions would be carried out. Into the breach stepped qualified allies of the Royal Naval Air Service, United States naval aviators.

American participation at Killingholme began 19 February 1918. The Navy Department decided that U.S. Naval Aviation Forces would assist Allied forces "in patrolling the North Sea, convoying ships and carrying out other assorted operations in the vicinity of Killingholme."<sup>2</sup> The British retained command of the station until the American forces were of a sufficient number, and adequately equipped, to effectively function on their own. From April to June 1918, 67 officers and 902 enlisted men of the U.S. Navy worked alongside the British forces preparing the station for its transfer to American hands.<sup>3</sup>

American involvement was by no means limited strictly to ground work. During this time, the pilots who arrived also joined their hosts on actual missions. A summary of activity at Killingholme found in the operational archives at the Washington Navy Yard reveals that between the time the first American pilot arrived at Killingholme on 9 February 1918, until 20 July when the Americans officially took command of the station, U.S. Navy pilots accounted for 171 of 301 flights taken. The Americans also surpassed their British counterparts in total flight time during this period, accumulating 596 hours as compared to the British total of

499 hours.<sup>4</sup> The U.S. naval aviators posted even more impressive statistics after their commanding officer arrived and assumed command of the station on behalf of the United States Government.

Lt. Kenneth Whiting, USN, designated to become station commander, arrived on 30 May 1918, aboard the USS Jason. Whiting, who had already had a hand in helping to set up operational U.S. naval air stations in France and Ireland, did not arrive empty-handed. He had been sent back to the United States with the mission of collecting an adequate contingent of men to take back to Killingholme. To the force already at Killingholme, Whiting added 7 officers and 150 enlisted men. Whiting's task in the United States had also included the gathering of materiel. Therefore, his cargo contained some items of particular interest and importance. Twenty-three American-made H-16 flying boats and 8 lighters were also aboard the Jason.<sup>5</sup> The only drawback was that the planes were not ready to fly. It took Whiting's men until 1 July to get the first six H-16s airworthy. Despite the delay, these H-16s were the first American-made airplanes flown in World War I. By the middle of July, the Americans had things well enough in hand to relieve the British of command of the station. Lt. Whiting officially took over the station on 20 July 1918.

Although the Americans had taken over the day-to-day command of Killingholme, the British government was not asked to relinquish total control of the station personnel's activity. To maintain a sense of cooperation and enhance the coordination of operations with their allies, the Navy Department, in agreement with the British Admiralty, stipulated that all U. S. naval aviation activities on the east coast of England were to be under the command of the Vice Admiral Commanding the East Coast Defenses of England.<sup>6</sup> This arrangement with the British command applied strictly to operations. Internal administration and station maintenance remained under U. S. control. Direct communications were to be maintained with the U. S. Force Commander at all times so that he knew the status of the station's personnel at any given time. Once the hierarchy of command had been established, the implementation of the "Killingholme Project" began.

The final form that the Killingholme Project took differed substantially from what it was originally intended to be. The initial plan of operation which Lt. Commander W. A. Edwards, Aid for Aviation on Adm. Sims' staff, worked up called for the Americans to assume an active role in the anti-submarine campaign.<sup>7</sup> Edwards' plan stipulated that the U.S. naval aviation contingent at

Killingholme would initiate attacks against enemy submarine bases operating in the Heligoland Bight. The pilots and ground crew soon found such an offensive to be unrealistic. The fuel capacity of the planes proved insufficient to enable them to fly the distances necessary to reach the enemy bases.

The negative reports coming in constantly could not be ignored. Edwards acknowledged the limitations of the H-16s and the lighters regarding their operation in the North Sea area and immediately began to draft a new operational agenda. In August 1918, he wrote to Cone verifying his changed perception of the situation at Killingholme and offering a new course of action. Edwards advised the continued use of the H-16s for defensive work and called for ceasing use of the lighters. Edwards advocated the continued use of the H-16s only until "a large seaworthy flying boat has been developed which will be able to defend itself in the air against concentrated attacks by superior numbers of small, fast planes."<sup>8</sup>

Very cryptically, and without further explanation, Edwards added that just such a craft was presently under construction and testing was to begin on it in two months' time. Edwards still believed that the mission of bombing German naval bases was a good one, but he also believed it could only be done effectively with

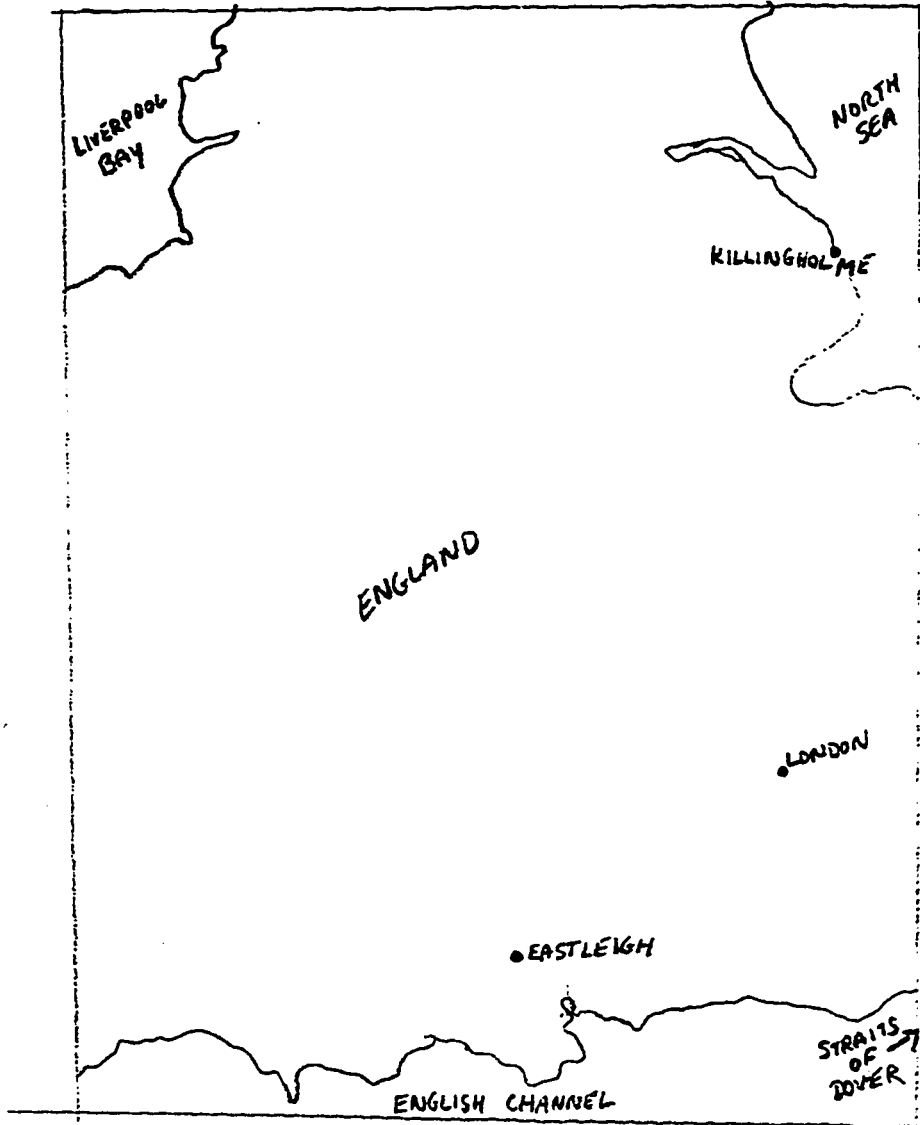
landplanes of the Super-Handley-Page type. Unfortunately, there were not many planes of this type immediately available to the U. S. forces at Killingholme.

With its offensive capability curtailed, the force at Killingholme assumed a defensive posture and concentrated on preventing the enemy submarines, Zeppelins and planes from carrying out successful attacks upon either the station itself, or upon allied vessels operating in the vicinity. This did not mean that the force at Killingholme was idle. In fact, Killingholme pilots found the nature of their work quite stimulating and varied. At any given time, a Killingholme pilot could expect to be flying one of four types of patrol: 1) Convoy escorts; 2) Submarine search; 3) Long distance reconnaissance; or 4) Special patrols carried out in response to warnings of approaching hostile air or surface craft.<sup>9</sup>

Each type of mission required different preparations. Therefore, specific training was required of the pilots. On convoy escort missions, pilots were responsible for ensuring the safety of slow-moving ships carrying troops and/or equipment. Reconnaissance patterns were flown by the contingent on patrol to ensure that no enemy vessel or plane could sneak up on the convoy. When flying submarine patrols, the pilots had to know how to

recognize an enemy submarine by being familiar with distinguishing markings and construction features. The reconnaissance flights required a special endurance capability on the part of both plane and pilot as the distances flown were frequently as much as 225 miles out to sea. Killingholme pilots honed their ability to respond quickly to a call for a special patrol and took pride in their ability to do so.

The men at the station proved singularly effective in their mission. Not only was their casualty rate zero, but they continued to compile additional impressive statistics. From the day the American forces assumed command of the station until the signing of the Armistice, the American pilots "under[took] 233 flights, each an average of 4 hours and 10 minutes long, for a total flying time of 968 hours."<sup>10</sup> The Killingholme force was able to patrol 57,647 sea miles. Perhaps most surprisingly, the Americans from Killingholme were able to safely convoy 6,243 ships to their destinations. All of this they were able to accomplish without losing either a man or a machine, in spite of 35 forced landings due to weather or mechanical malfunctions.<sup>11</sup>



Map 9.1: Air Stations in England

Note: Map is not to scale and is for illustrative purposes only

## Notes to Chapter 9

<sup>1</sup>"Killingholme England Naval Air Station," p.7. Operational Archives, Navy Historical Center, Washington Navy Yard.

<sup>2</sup>Ibid., p. 7.

<sup>3</sup>Dudley Knox, "American Participation in the Great War," p. 5. Operational Archives, Navy Historical Center, Washington Navy Yard.

<sup>4</sup>"Killingholme England Naval Air Station," p.7. Operational Archives, Navy Historical Center, Washington Navy Yard.

<sup>5</sup>Letter dated 3 June 1918 to Hutch Cone from W.A. Edwards. National Archives, RG 45, GA-1, Box 133, Folder 2. Whiting had apparently tried to tow an additional lighter, but the cable snapped and it was lost during the voyage.

<sup>6</sup>Letter dated 16 July 1918 to Capt. Hutch I. Cone from W. A. Edwards. National Archives, RG 45, GA-1, Box 133, Folder 2. This letter contained an extract from the Force Commander's "General Report to the Navy Department," dated 11 July 1918. In it, Cone is advised as to how the maximum coordination with the British will be achieved. In addition to placing "the U.S. Naval Aviation activities on the East Coast of England under the Vice Admiral Commanding the East Coast Defenses of the England, the aviation activities in Ireland were to be under the general operational command of the Admiral Commander-in-Chief, Coast of Ireland, and those in the Dover-Dunkirk area under the operational command of the British Vice Admiral Commanding the Dover Barrage."

<sup>7</sup>Dudley Knox, "American Participation in the Great War." Operational Archives, Navy Historical Center, Washington Navy Yard. Edwards assumed the chore of working up an operational plan for the Killingholme Project when he replaced Capt. Hutch I. Cone. Cone had been injured in a shipboard accident while aboard the U.S.S. Leinster.

Edwards functioned as Cone's personal representative as he worked in conjunction with the English Naval Air Service. Admiral Sims also allowed Edwards to act as his personal representative in aviation matters when dealing with British authorities.

<sup>8</sup>Letter to Hutch I. Cone from W. A. Edwards, dated 7 August 1918. National Archives, RG 45, GA-1, Box 133, Folder 2.

<sup>9</sup>"Killingholme England Naval Air Station," p. 7. Operational Archives, Navy Historical Center, Washington Navy Yard.

<sup>10</sup>ibid.

<sup>11</sup>ibid. All figures quoted are from this report.

## Chapter 10

### A Plan for Ireland

When the Navy Department decided that United States Naval Air Stations were going to be constructed in Ireland, a Board was convened to select appropriate sites. The men appointed to serve on the Board were Capt. Hutch I. Cone, USN, Lt. Comdr. Kenneth Whiting, USN, Lt. Comdr. Omar D. Conger, Pay Corps, USN, and two officers from the Royal Naval Air Service. Several criteria were considered in the selection of adequate sites for the construction of the air stations. Positioning the stations so as to permit strategic coverage of the Irish Coast and the approaches to the Irish Sea was key to the overall plan. Site selection had to take into consideration three basic operations contemplated for the U. S. Naval Air Forces in Ireland: 1) Patrol; 2) Offensive operations against enemy submarines whose positions had been reported; and 3) Escorting convoys.<sup>1</sup>

The strategic goals of the stations dictated that they must be located near the areas of enemy submarine activities. The greatest concentration of submarine activity was naturally near the usual shipping routes which required protection from the underwater menace. The Board determined also that the successful operation of

an air station depended upon certain geophysical requirements also being met. The handling of seaplanes dictated that a sufficient area of enclosed water, at least partially protected from the wind, exist at the potential site. Adjacent to such a water area, a suitable shore area had to be available. Finally, a potential site must not be too isolated. Transportation facilities had to be available nearby. Should the needed facilities not be available, there must be sufficient labor and materials to permit their construction.

Given the criteria, the Board selected four sites for naval air stations in Ireland. These were: Queenstown Harbor at Aghada, commissioned on 22 February 1918; Wexford Harbor, commissioned on 2 May 1918; Lough Foyle at Aught Point, commissioned on 1 July 1918; and Whiddy Island, commissioned on 4 July 1918. A repair base was also planned at Queenstown, to be separate from the air station there. Strategically, the naval air stations were well placed: "The northern and southern approaches to the Irish Sea were commanded by the seaplane stations at Lough Foyle and Wexford. The southern coastal areas from the first land fall at the south western end of Ireland to St. George's Channel were commanded by the stations at Whiddy Island and Queenstown."<sup>2</sup> Such positioning meant that a convoy could be under aerial escort from prior to its first

land fall to the time it passed into the Irish Sea, providing that weather conditions remained favorable. From there, the convoy could then be safely turned over to the British Air Stations of that area.

In spite of careful consideration of all choices, the selections made were still compromises in the areas of operations, supply and construction. The problems encountered were such that the commissioning of any given station was no guarantee that it would soon be an operating station. In preparation for the stations' openings, drafts of men were distributed to the stations. By 14 September 1917, the stations had the following numbers: Queenstown, 1214; Whiddy Island, 240; Wexford, 299; Lough Foyle, 392; and Berehaven, 72.<sup>3</sup> The Board members hoped to be able to operate 24 H-16 seaplanes at each Whiddy Island and Queenstown, and 18 H-16s at each Lough Foyle and Wexford. Lough Foyle was the first to begin operations, but not until 3 September 1918. Wexford began its operations on 18 September and Whiddy Island on 25 September 1918. Queenstown, the first air station commissioned in Ireland, did not begin operations until 30 September 1918.

The locations of the individual stations could be criticized for various, but valid, reasons at any given time throughout the year. The weather conditions were to prove a considerable handicap to all

operations in Ireland, especially during the winter months when visibility was exceptionally poor. A change in convoy route or in the field of the enemy's submarine activities, neither easily foreseen, could render a base virtually useless. Each site had its deficiencies, but none that were acknowledged as insurmountable. Operations at Aghada, Wexford and Lough Foyle were to suffer interference from a great rise and fall of the tide which made it difficult to get planes safely airborne and then back to shore. At Lough Foyle the situation was particularly acute as planes could be launched or returned to the slip only during a period of about an hour at each high tide. Operations at Wexford could not be continuous until a bar was dredged. The station at Whiddy Island was located fifteen miles from the entrance to Bantry Bay, necessitating a flight of such a distance before the operating area could be reached.

The selection of potential air station locations was not limited only to those for seaplanes. Also considered were two sites for the operation of kite balloon stations. A kite, or captive, balloon (as opposed to the more familiar free floating type) had considerable potential for observation and artillery spotting purposes. The Royal Naval Air Service was building kite balloon stations at Berehaven (Bantry Bay) and at Rathmullen (Lough Swilly), and it was decided

that the U. S. Naval Aviation Forces would equip and operate these two stations. The plan to take over the Rathmullen station was canceled when it became apparent that there were no U. S. Navy ships operating in the vicinity.

The Berehaven Kite Balloon Station was taken over from the British, completed by the U. S. Naval Aviation Forces, and commissioned on 2 May 1918. Operations there lasted approximately one month, however, as the site proved too inconvenient to the base of destroyers. Berehaven was shut down early in June, but received a second lease on life on 12 September 1918. With the arrival of Battle Ship Division Six, the station was recommissioned to assist in the operation of kite balloons for the division.

Once the Board finished selecting sites, plans for the organization of the administration, construction and operation of the U. S. Naval Air Stations, Ireland began. The Commander of the U. S. Naval Aviation Forces, Europe determined that there would be a commanding officer of all U.S. Naval Aviation Stations established, or to be established, in Ireland. Commander Frank R. McCrary was detailed to this duty and given the title Commanding Officer, U. S. Naval Air Stations, Ireland. At the same time, McCrary received an appointment as Aide on the Staff of the Commander in Chief, Coast

of Ireland, Admiral Bayly, Royal Navy. McCrary arrived at his new post on 14 February 1918, and with a force of about 200 enlisted men immediately began work to establish his administrative headquarters and personnel at the U. S. Naval Aviation Base, Queenstown (Aghada).<sup>4</sup> He was directly responsible to the Commander, U. S. Naval Aviation Forces, Foreign Service, in Paris (later London) for the administration of supplying material, personnel, construction and discipline for the Ireland air stations. The commanding officers of each of the air stations in Ireland were to be responsible to the Commanding Officer, U. S. Naval Air Stations, Ireland, for the efficiency of their respective stations.

To assist the Commanding Officer in keeping the Ireland air stations running smoothly, designations were made for five aides.<sup>5</sup> The Aide for Operation and Personnel was responsible for coordinating the operations and aerial activities of the various stations. The Aide for Intelligence and Communications was to supervise all matters relating to the means of communications, including radios, telephones, telegraphs, signals and codes. This Aide would also act as the liaison officer to the British Air Service. The Aide for Supplies and Transportation would coordinate the material and transportation needs of the supply officers of the individual

stations. This meant making appropriate requisitions whenever possible from either stores of naval aviation supplies already in Ireland or elsewhere in Europe, or from the United States. Failing that, the aide would obtain permission to make appropriations from local Irish merchants and individuals when needed in order to ensure expeditious delivery of supplies and transportation.

The job of planning and supervising all building operations at the individual stations fell to the Aide for Public Works. All civil engineers assigned to work on the construction of the air stations in Ireland were directly under the Public Works Aide. The Aide himself was responsible to the Division of Public Works, Headquarters, Paris, through the Commanding Officer, U. S. Naval Air Stations, Ireland. The Medical Aide position was filled by the senior medical officer of the Queenstown station, in addition to his regular duties. There existed a rather vague possibility that a naval base hospital would be built at Queenstown. Were that to happen, the Medical Aide would see to it that arrangements were made to accommodate the needs of the aviation forces in Ireland.

The responsibility for ensuring that the aerial activities of each of the stations were in accordance with the desires of the British Commanding Officer of each district fell to the Commanding

Officer, U. S. Naval Air Stations, Ireland. The daily aerial operation of each Ireland station was to be controlled directly by, and routine reports forwarded directly to, the designated British authority. Under ordinary circumstances, all correspondence with the Headquarters Office in Paris and with the British Air Authority was to go through McCrary's headquarters. Two exceptions to this rule existed: 1) In the event that a station was too isolated and the process of sending mail through proper channels proved too circuitous; and 2) If the message were so urgent that first sending it to McCrary would unnecessarily slow its delivery to Headquarters. In such cases, the commanding officers of the individual stations were permitted direct contact with Headquarters in Paris, providing a copy of said correspondence was forwarded to the Commanding Officer, U. S. Naval Air Stations, Ireland.<sup>6</sup>

Due to the complexity of the relations of the various American and British military authorities involved in U. S. naval aviation operations in Ireland, the U. S. naval aviation forces in Ireland required a unity of command. Simplicity proved elusive, however, as the authority of the organization for Administration and the organization for Operations at the Headquarters Office of the Naval Air Stations, Ireland had to be divided to accommodate the division

of authority that soon evolved at the individual stations. Each station would have a separate Commander-in-Chief for its Military Operations and its Administration.<sup>7</sup>

The central Administrative Headquarters for the aviation forces in Ireland remained at Aghada, at the Office of the Commanding Officer, U. S. Naval Air Stations, Ireland. A Headquarters Office for the Military Operations was established in the vicinity of the Admiralty Office at Queenstown. This office was directly connected to all U. S. Naval Air Stations in Ireland by telephone, telegraph and radio. The Operational organization of the naval air forces, or any other military forces attached to the Ireland stations, were conducted under the direction of the Commander-in-Chief, Coast of Ireland, Adm. Bayly, R.N.

To facilitate operations, the Commander, U. S. Naval Air Stations, Ireland was appointed to Admiral Bayly's staff. The separation of the Administrative and Operational Headquarters initially required considerable travel on the part of the Commanding Officer as he assisted the Aides in organizing and learning their duties. By the time of the Armistice, the Aides for Operations and Administration were functioning at a high level on their own, thus allowing the Commanding Officer freedom to make inspection tours

without fear that operations would fall apart in his absence.

The Royal Naval Air Service began the actual construction of the U. S. Naval Aviation Stations in Ireland about the first of January 1918, before the American commanding officer and advance forces even arrived. The British forces cleared the selected sites, did the necessary excavating and leveling of the ground, and built the concrete foundations and slipways. As noted above, an American force of enlisted men arrived in February 1918 to assist in the construction at Queenstown. Advance parties arrived at the other Irish stations between 1 March and 15 March 1918. The initial ship-load of building material from the United States arrived in Dublin on 10 March 1918. Back in January 1918, Lt. Arthur L. Stiff, Civil Engineer Corps, USNRF, Lt. Edwin H. Lorentzen, Medical Corps, USN, and Lt.(jg) Edwin D. Foster, Pay Corps, USN, had arranged for a warehouse to be rented in Dublin to provide space for the unloading and sorting of supplies that would then be transhipped to the air stations. For the remainder of the war, this Dublin warehouse would serve as the unloading point for all arriving building materials. From here, materials would be distributed to the air stations in Ireland as needed.

The primary duties of the American enlisted working crews

included building huts to accommodate the larger work parties to follow and making preliminary arrangements for necessary supplies. Irish civilian work crews contracted at most of the stations for the construction of one hangar and additional concrete work not done by the British. With each additional infusion of American servicemen, the number of British servicemen and Irish civilians working at each station dwindled until practically all of the work was being done by American Navy enlisted men.

The Navy men proved to be more efficient builders than their Irish civilian counterparts. The ongoing unrest caused by the Sinn Fein, a home-rule movement, prompted many of the Irish workers to participate in numerous strikes. The American construction crews also had to contend with shipments of building materials which were slow to arrive, incomplete when they did appear, or which never materialized at all.

A decided lack of information regarding when a shipment would arrive and what exactly it would contain lent a certain amount of mystery to the entire supply process. Each station received a Type Allowance equipment list that stipulated what materials should be supplied. However, it quickly became apparent that merely having a list did not guarantee that the materials

indicated would arrive as scheduled, or at all, from the United States. When crucial materials failed to arrive, it became necessary to attempt their purchase in small quantities on the open market. It took until 17 September 1918 for all of the needed building material to arrive.<sup>8</sup> Two categories of supplies proved particularly scarce, ordnance and water transportation. No American bombs ever made it to the Ireland air stations. Fortunately, a sufficient supply was procured from the British. The borrowing of rifles to equip a small station guard was not an unusual occurrence. It proved possible to rent a few private boats which were not in very good condition. The best boats had already been commandeered by British forces.

The problems caused by the lack of proper materials to effect the basic construction and supply of the naval air stations were only exacerbated by the concomitant inability to supply even a minimal number of airplanes and pilots. The grandiose preliminary plans to divide 48 H-16 aircraft between Whiddy Island and Queenstown, and provide another 36 H-16s to split between Lough Foyle and Wexford proved to be wishful thinking. Queenstown received the first shipment of airplanes from the United States on 24 July 1918. The first flight was made on 3 August 1918. An inspection trip by

Admiral Henry T. Mayo in mid-September revealed that as of 17 September 1918, only two stations, Queenstown and Lough Foyle, had planes that were operational.<sup>9</sup>

Queenstown was to become a hub of activity for the naval aviation forces in Ireland. In addition to the naval air station, Queenstown also became home to two receiving stations, one for airplanes and another for personnel. The plan was for the planes to be unloaded, assembled, equipped and tested at Queenstown before they were flown to the other air stations in Ireland. This was to prove a slow process. In mid-September, out of a total of 35 seaplanes at Queenstown, 8 were flying. Of 5 at Lough Foyle, 3 were airworthy. Four of the planes capable of flying at Queenstown were scheduled for delivery to Wexford shortly after Adm. Mayo's visit. A British Army camp capable of housing 600 men served as the receiving station for the men. This allowed for a continual flow of men to arrive in Ireland while the construction of the other bases progressed. The system worked very well and prevented overcrowding at the air stations as they were completed.

As the air stations were slowly manned and equipped, another delaying factor became apparent. Although the officers and men who arrived to man the stations were competent to carry out their

duties, they lacked experience. The extent of the problem can perhaps be best illustrated by the fact that three of the bases had Acting Radio Gunners as their initial commanding officers. It was estimated that seventy-five percent or more of the new arrivals were members of the Navy Reserve.<sup>10</sup> Navy Reservists, as a group, averaged fewer years in service than did their regular Navy counterparts. Consequently, their training was not as complete and their superiors believed that they lacked familiarity with military procedure. To rectify the situation, training programs were improvised to teach the ground support men how to adapt the skills which they already possessed to work in the aviation field. The pilots assigned to Ireland were also in need of additional training as they lacked knowledge of seamanship and some basic navigational skills. Some of the regulars grumbled about the lax military appearance of some of the men at the stations, but this was trivial to the actual conduct of the war as the men ultimately proved capable of carrying out their duties in an effective and professional manner.

A system of operations for both patrolling and convoy work was designed for the air stations in Ireland. As the three southern stations, Queenstown, Wexford and Whiddy Island, were assigned

primarily patrol work and very little convoy work, each of the three stations was given a very specific area to patrol and assigned specific tasks within its area. The areas to be patrolled were established by the Commander-in-Chief, Coast of Ireland.

The Queenstown station was to cover from longitude 8 degrees 30' west to latitude 51 degrees north, along 51 degrees north to 7 degrees west, and up the Waterford Coast. Wexford was to patrol from longitude 7 degrees west to latitude 51 degrees north, along 51 degrees north to 6 degrees west, up to the Blackwater Light and over to the Wexford Coast. Whiddy Island was assigned from longitude 8 degrees 30' west to latitude 51 degrees north, along 51 degrees north to 11 degrees west, up 11 degrees west to 52 degrees north, and over to the Irish Coast. The patrol areas of Queenstown and Wexford were adjacent to the westward areas patrolled by the British Stations on the west coast of England.<sup>11</sup>

After the boundaries were set, training for operations began. To give the pilots the greatest range of patrol training, two types of patrols were instituted. Short patrols were used to allow the pilots the chance to familiarize themselves with the terrain over which they would be flying. It was essential that the pilots be able to orient themselves by, and recognize the configurations of, the

various bays and bodies of water over which they were flying as they patrolled the Irish Coast. To help the pilots learn their land marks, training flights were designed to allow pilots to make at least two land falls during their patrols. In addition to allowing the pilots the chance to familiarize themselves with the coastline, the short patrols also offered the new pilots the opportunity to get acquainted with the H-16 seaplanes, the Liberty engines and the weather conditions in Ireland.

Once the pilots had gained proficiency on their shorter patrols, longer patrols were instituted which took the pilots away from the coastline. Land falls were fewer and visibility more limited as the patrols went farther out to sea, but the longer patrols taught the pilots that efficient patrolling depended upon the variables of visibility, weather and fuel consumption. As a back-up for the pilots, all of the patrols that were mapped out allowed for a visibility of five miles to each the port and starboard to assist the pilots in identifying known landmarks and remaining on course.

Both Queenstown and Lough Foyle conducted limited patrols, but neither was able to attain a fully operational level until near the end of the war. One limitation to regular patrol work was the fact that the planes that were flying were not properly equipped to carry

out full patrol duties due to delays in the shipment of materials from the United States. Propellers, starting cranks and radios were among the missing equipment. Even if there had been sufficient numbers of aircraft available, the lack of personnel would have kept the number of flights to a minimum. An official report issued in October of 1918 estimated that the seaplane stations would be working at full capacity by 1 January 1919, provided sufficient numbers of enlisted aviation personnel and commissioned aviators arrived from the United States to fill the positions. As of September 1918, the stations had less than half of their ground personnel and less than one-third of their pilot complement.<sup>12</sup>

An integral part of being able to carry out patrols was being able to relay messages back to the bases. This was easier said than done, however, as radios were in short supply. Then, too, a lack of trained radio operators was also a constant impediment to operations. In spite of complications, the air stations in Ireland were able to develop an efficient chain of command and organize an excellent communications system. The Force Commander aboard the USS Melville, assigned to support American naval aviation forces in Ireland, had charge of all aircraft radio, all ship and shore station radio, and all land lines and telephones.<sup>13</sup> The chain of

communications was elaborate. Working for him, the Force Commander had an assistant on the staff of the Commander, U. S. Naval Air Forces, Ireland. In turn, this assistant had his own assistants, including one for aircraft radio at the Assembly and Repair Base at Aghada, and a communications officer at each air station. The radio gunner at each station was either the communications officer, or his assistant.<sup>14</sup> It was the radio gunner who took charge of all of the radio work at his station, including the installation of an Arc radio set at each base.

The importance of the Arc transmitters at each station soon became apparent. By 1 September 1918, 98% of the equipment needed to run the 5 kilowatt Arc transmitter sets at each of the four air stations in Ireland had been installed.<sup>15</sup> This included the radio huts, the antennas, masts, and receiving sets, in addition to the transmitters. Despite this progress, the radio stations were unable to begin operations until the first of October as there was an insufficient power supply. This power shortage was caused by the receipt of A.C. generators to supply power to the general power plant system at each station which were incompatible with the D.C. motors of the radio sets. The only alternative available was to try and obtain an a 10 kilowatt Direct Connected D.C. Gas Engine. Even

then, the power problem remained exacerbated by the fact that many of the machine tools in the work shops also operated on D.C. currents. Power drops were therefore unavoidable and the stations were forced to operate at half power. Fortunately, this did not interfere with communications with seaplanes out on patrol.

As the arrival of the first planes for the Ireland air stations was expected around the first of June, plans were made to have the British Air Ministry deliver radio sets for the planes at about the same time.<sup>16</sup> This way, installation could begin immediately and the patrols would not be stalled on the ground for lack of equipment. As fate would have it, the arrival of the first planes preceded the arrival of the radios and when the first ten radio sets did arrive on 20 June, they were incomplete. Subsequent shipments from London over the next few months sometimes yielded complete radio sets, and sometimes not. Occasionally, spare parts arrived. Not until 1 October 1918, were the original ten sets received fully assembled and installed into seaplanes at the Lough Foyle and Queenstown stations.

As if problems with the supply of radio equipment and power sources were not enough, with the exception of the one radio gunner at each station, the radio personnel were primarily third class men

with very little previous experience in radio operations. A total of 160 men were assigned to radio work in Ireland. Of them, ninety-five percent were fresh out of the Harvard Radio School. The command decision to have the British Air Ministry supply all seaplane radio equipment for the Irish stations invalidated the radio operators' experience on American equipment.<sup>17</sup> Therefore, the operators were totally unfamiliar with the delicate equipment and the intricate workings of the British radio sets. In addition, it turned out that very few of the men had operated a working radio station and almost none of the radio operators had ever even been up in an airplane. Therefore much of the training of the seaplane radio operators occurred in mid-air as patrol flights were started as soon as possible without any training flights.

Some radio personnel were able to complete the Allied Procedure School at Passage Barracks in Aghada where they learned how to stand listening watches. More opportunities for additional training came as a result of the completion of the radio installation at each of the four air stations under the tutelage of the senior radio gunners at each base. This then allowed for the establishment of training schools where the arriving men could be trained on the British-supplied radio sets and learn British procedures.

The organizational plans called for having all radio repairs done at the repair station at Aghada because that was where most of the assembly work was carried out. Repair facilities did not exist at the other stations. A particular problem that occurred on a regular basis due to the climate in Ireland was that the high humidity repeatedly dampened the radios' internal mechanisms. As a result, the radio operators spent considerable time taking the sets apart and drying them out. The plan did not work as well as had been hoped as poor transportation facilities hindered the delivery and return of the radios to and from Aghada.

In addition to the radio operations, land wire telephones were an extremely important communications source connecting the air stations and the headquarters offices. In April 1918, a network of long distance telephone wires was installed which connected the four sea plane stations, the kite balloon station and the Headquarters, Commander, U. S. Naval Air Stations Ireland (Air Operations) to each other. These long distance lines were very important in the daily operations of the stations. Twelve additional important contacts were also connected by the telephone lines allowing for the instantaneous communications 24 hours a day among all of the principal points in Ireland. These twelve locations

were:

- 1) The Admiralty House at Queenstown
- 2) Queenstown Civil Exchange
- 3) U.S.S. Melville
- 4) Dublin Store House
- 5) S.N.O. Kingstown
- 6) British Direction Finder Station, Skerries
- 7) British Direction Finder Station, Larne
- 8) Londonderry Civil Exchange
- 9) Rear Admiral, Buncrana
- 10) Civil Exchange, Castletownbere
- 11) S.N.O., Castletown
- 12) U.S.S. Bushnell<sup>18</sup>

Not only the Americans, but the British forces as well, took advantage of the telephone system.

In addition to this telephone system of long-distance wires, in May 1918, the Force Commander ordered the installation of more lines for station inter-communicating sets to operate among the four air stations. Plans for this venture called for ordering the material for the outside construction work from the London house of the Western Electric Company. The additional inside equipment had to be ordered from the Western Electric Company in the United States as the London branch could not deliver the switchboards and telephones in a reasonably short time. As it turned out, the outside construction equipment did not arrive until October and the

telephones and switchboards never arrived. Needless to say, this enlarged system was not operational by the Armistice.

The American patrols' dependence on the British Direction Finder Stations in assisting in the search for enemy submarines illustrated the importance of adequate communication systems. As the American telephone system was important to the British forces, the British reciprocated in the use of equipment by allowing the American naval aviation forces to use their Direction Finder Stations. The Americans were not able to complete any of their own before the Armistice. The Direction Finder Stations were a key resource in the detection of enemy submarines.<sup>19</sup> Since much of the submarine activity occurred between ten o'clock at night and dawn, and patrols were very rarely flown after dark, the Direction Finders' ability to track submarine movement was invaluable. Following detection of a submarine, a Direction Finder Station would communicate its position to the Admiralty in Queenstown where the position of the sub could be pinpointed most accurately. Usually, more than one bearing was wired to the Admiralty in order to get the most accurate bearing. Sometimes, delays of an hour or more occurred in the transmissions of data. This was generally a very minor detail as no seaplanes were sent to take any action before

dawn.

As the Admiralty received its information it quickly passed it on to the Air Operations, also in Queenstown. At Air Operations, reported sightings were tracked with color coded thumb tacks on a board which held a drawing of the coast of Ireland. There were 26 groups of tacks, 15 in each group, designed to correspond to the movements of an enemy submarine. As the tacks were placed on the board, the date and time of the sightings were chalked in next to them. In this manner, Air Operations was able to track the enemy subs from the time they entered waters off the Irish coast until the time they left. Tacks of similar color were used along with those tracking the subs to indicate the locations of any oil patches sighted, allied vessels attacked or sunk, any friendly submarines on patrol in the area, and any lighthouses from which observations could be made.

Operational plans called for having as much information as possible relayed well before dawn to the air stations which would be involved in a submarine tracking. The basic data needed included the location and time of the initial sighting, the speed, course and direction of the sub at the initial sighting, and an estimation of its probable location at dawn. It was the duty of the participating air

station to carry out a standard patrol and seek to intercept the hostile sub. Air Operations kept track of all such patrols on large, six foot by six foot charts mounted on the office wall. There were four such charts, one for each of the four stations, showing the area which the Commander-in-Chief had designated for the individual stations to patrol.

The seaplanes that took off in pursuit of the enemy subs were then also tracked on the charts at Air Operations. The air station involved radioed the take-off time to Air Operations. Subsequent to that, the seaplane radioed in its location every half-hour. This system allowed Air Operations to know exactly where all patrols were at any given time, thus making it possible to reroute a patrol to another location at a moment's notice if necessary. It also facilitated rescue operations should a patrol plane be forced down in the open waters, as the location of the last reported position and intended course would be right at hand, and the Admiralty could be notified to dispatch a surface craft immediately to the probable location of difficulty.

Additional charts at Air Operations that helped in keeping track of all operations included enlarged maps of the areas assigned to each air station. These charts made it easier to keep track of the

patrols which an individual station had out at any given time. Another chart was an enlarged squared chart of the west coast of Ireland, including the Irish Channel and going out to 15 degrees west. A smaller duplicate of this chart was carried aboard each plane to enable the pilots to accurately transmit their locations. Two additional charts were used to track weather conditions in Ireland and western Europe. The weather charts were continuously updated every eight hours and each chart showed the weather patterns for the three previous eight-hour periods.

This elaborate system for keeping track of patrols and enemy submarine activity was placed in operation on 1 October 1918. It proved to be quite proficient. Good relations with the Admiralty proved invaluable in getting information to the air stations. Commanding officers at each of the four stations had been instructed to have one seaplane ready at all times to respond to any daylight reports of enemy submarines. The sighting of a submarine by a British surface craft was generally transmitted to the Admiralty within ten minutes. It was estimated that another ten minutes elapsed before the Admiralty received the transmission and passed it on to Air Operations. Ten more minutes generally elapsed before Air Operations relayed the location, course and speed of the

enemy submarine to the appropriate air station. The plane on stand-by at each station could be ready to take-off in minutes. All told, it was usually possible to get a seaplane within range of a submarine sighting within an hour-and-a-half after its initial sighting. Standing orders called for the patrol plane to conduct a standard search patrol of the area when it arrived. Enemy submarines were to be attacked if encountered and sunk when possible.

To further aid the planes out on patrol, a meteorological hut had been constructed at each of the four air stations. In May 1918, Lt. Cmdr. A. G. McAdie, USNRF, had toured the air stations under orders from the Force Commander.<sup>20</sup> An expert on weather, and recently the head of Harvard's Blue Hill Observatory, McAdie's mission was to select appropriate sites adjacent to the air stations for the establishment of meteorological services which would provide the pilots with accurate weather readings of the conditions at sea, and at several altitudes. The brick structures were built and equipped with the necessary instruments during the month of June. All equipment was supplied by the meteorological office in London.

Two officers were detailed to each station to act as aerographers. A central training facility was developed in Queenstown to train men detailed to the meteorological service.

During July and August additional men arrived for instruction in aerography at Queenstown who were then sent to the individual stations for advanced training in meteorology. Those who successfully completed their training were then sent to France and placed in charge of their own meteorological huts. Most of the men who did the general meteorological work were Quartermasters, 1st and 2nd class, who had received their initial training at the base at Pelham Bay, New York, before being sent to the school at Queenstown.

Operational plans for the meteorological huts called for them to supply their respective commanding officers with weather forecasts three times daily. The regular daytime weather observations were scheduled for 0700 hours, 1300 hours, and 1800 hours. A nightly weather observation was recorded at 0100 hours. The results of all observations were to be forwarded to both the Hydrographic Office at the Admiralty in Queenstown and to the Air Ministry, Meteorological Service, London. Additional special reports were expected should there be a sudden, serious change in the weather. In order to secure accurate information on the weather at different altitudes, balloon ascents were made at regular intervals throughout the day and the wind direction and velocity were

recorded at several different altitudes. In addition to making these ascents just prior to regularly scheduled patrols, balloons were also sent up to collect data just before any special flights were made in order to have the most up-to-date weather information available.

As the central clearing house for weather reports, the Meteorological Office in London received reports four times daily from over fifty meteorological stations throughout northwestern Europe. The central office in London forwarded these reports to the U. S. Naval Air Operations Office in Queenstown. Here weather maps were made and sent on to the Commander-in-Chief, Coast of Ireland, and to the Commander, Sub-Chaser Detachment, who, in addition to the Commanding Officer, U.S.S. Melville, were also to receive any special bulletins pertaining to gale warnings, should one arise. The Queenstown office also passed on the data to the four Ireland stations. The additional data allowed the men to supplement the weather maps made of the local conditions. In turn, the ability to make more reliable long-term forecasts improved. In spite of the continual volatile change in weather along the Irish Coast, the Meteorological Service's network was able to supply excellent general forecasts and gave advanced warning of every gale that occurred between July and December 1918.

Although all had not gone as smoothly as hoped, a reasonably efficient groundwork for operating four stations in Ireland was achieved. Excellent relations were established and maintained with the Commander-in-Chief of the Coast of Ireland and his staff. Effective and relatively reliable forms of communication among the stations were constructed. Exchange of information on enemy submarines and their whereabouts was greatly facilitated. Given the unpredictability and severity of Irish weather, the accomplishments and reliability of the Meteorological Service were extraordinary. In sum, the best foundation possible for successful U. S. naval seaplane operations in Ireland was laid.

## Notes to Chapter 10

<sup>1</sup>"Report on U. S. Naval Air Forces in Ireland, 10 October, 1918." From Commander in Chief, U. S. Atlantic Fleet to Sec Nav (Operations). National Archives, ZGU, Box 918, Folder 10, p. 2.

<sup>2</sup>"History of U. S. Naval Air Stations, Ireland: Notes by Commander and Headquarters Staff, U. S. Naval Air Stations, Ireland." National Archives, ZGU, Box 919, Folder 4, p. 2.

<sup>3</sup>"Report on U. S. Naval Air Forces in Ireland, 10 October, 1918," p. 5. There seems to be conflicting evidence as to the actual numbers of men at each station. According to "History of Stations: Stations in Ireland," found at the National Archives, RG45, ZGU, Box 919, Folder 4, the Navy Department established guidelines for the complements of each station. However, it also includes the statement that no official complements were ever determined. This data will be presented in the individual segments on each station.

<sup>4</sup>*Ibid.*, p. 3.

<sup>5</sup>"U. S. Naval Forces Operating in European Waters: U. S. Naval Air Station, Queenstown, Ireland, 16 February, 1918." National Archives, ZGU, Box 919, Folder 5, p. 2. Statements pertaining to roles of Aides are found in this document.

<sup>6</sup>*Ibid.*, p. 1.

<sup>7</sup>"History of U. S. Naval Air Stations, Ireland." p. 1.

<sup>8</sup>"Report on U. S. Naval Air Forces in Ireland, 10 October, 1918," p. 4.

<sup>9</sup>*Ibid.*, p. 4.

<sup>10</sup>*Ibid.*, p. 5.

<sup>11</sup>"Report: Communications and Operations, U. S. Naval Air Stations, Ireland, U. S. Naval Aviation Base, Queenstown, Ireland, 5 December, 1918." National Archives, ZGU, Box 918, Folder 10, p. 11.

<sup>12</sup>"Report on U. S. Naval Air Forces in Ireland, 10 October, 1918," p. 5.

<sup>13</sup>*Ibid.*

<sup>14</sup>*Ibid.*, p. 6.

<sup>15</sup>"Report: Communications and Operations, U. S. Naval Air Stations, Ireland, Queenstown, 5 December, 1918," p. 1.

<sup>16</sup>*Ibid.*, p. 3. "At a conference in London sometime during the month of April it was decided for some reason, which is not apparent at this time, that all Seaplane Radio Equipment for the Irish stations would be obtained and supplied through the British Air Ministry." The British were supposed to supply 84 sets total.

<sup>17</sup>*Ibid.*, p. 7.

<sup>18</sup>*Ibid.*, p. 8.

<sup>19</sup>"Report: Communications and Operations, U.S. Naval Air Stations, Ireland, Queenstown, 5 December, 1918." The information on Direction Finders is found on pages 10-15.

<sup>20</sup>Ensign A. S. Macdonald, USNRF, "History of the Meteorological Service at U. S. Naval Air Stations in Ireland, 6 December, 1918." National Archives, ZGU, Box 918, Folder 10, p. 1. All meteorological information was found in this article.

## Chapter 11

### The Air Stations in Ireland

The U. S. Naval Aviation Forces established a definite presence with the four air stations in Ireland. (See Map 11.1, p. 343) As described in the preceding chapter, their mission was three-fold: 1) Patrol; 2) Offensive operations; and 3) Escort duties. In this chapter, each of the station's operational histories, based on contemporary reports, will be presented to see if and how well the men were able to accomplish their goals. In addition, the little-known kite balloon station established at Castletownbere (or Berehaven) will be appraised for its contributions to the war effort.

The first of four U.S. Naval Air Stations established in Ireland was commissioned on 22 February 1918 at the eastern end of Queenstown Harbor in Aghada. The Queenstown station was unique in that it was home to not only the Queenstown Naval Air Station, but also to the Assembly and Repair Base, Ireland, which had the responsibility for receiving, assembling and testing the planes destined for the other stations in Ireland prior to their delivery.<sup>1</sup>

The station was accessible from the city of Queenstown by either land or water, being a four mile boat trip or a twenty mile

drive. When the men of Queenstown station were finally able to begin operations, the location right by the central headquarters of Air Operations in Ireland and the British Admiralty Office gave them a strategic advantage. Receiving continually updated information, including sightings of enemy submarines, enabled the men to develop a system to coordinate its aerial activities with the movements of surface craft, convoys and the air patrols of the two other southern Ireland stations, Wexford and Whiddy Island. An efficient chain of command was established to ensure that the air station functioned within the guidelines required by the British Admiralty and the British Air Service as worked out with the U. S. Navy Department.

Three men served in the position of commanding officer at Queenstown. The first was Lt. C. T. Hull, USN, who arrived at Queenstown on 17 January 1918. Hull took command of a draft of 169 men detailed for construction work who had arrived on 6 January 1918. Hull was relieved by Lt. Cmdr. Paul J. Peyton, USN, who served from 7 February 1918 until 2 October 1918. Peyton was replaced on 2 October by Cmdr. J. C. Townsend who served in this capacity until the Armistice.<sup>2</sup> The aviation force at Queenstown was to operate under orders from the Commander in Chief, Coast of Ireland, Admiral Bayly, R.N., and coordinate its operations with the

U.S. Naval and British Naval Forces based at Queenstown and Berehaven. Operations were also to be coordinated with the U.S. Naval Air Stations at Wexford and Whiddy Island.<sup>3</sup> The officer personnel at Queenstown were an extremely small, competent group, but lacking in experience. As late as October 1918 the station was still operating with less than twenty-five percent of its allowed officer personnel and was in particularly desperate need of seven line officers to fill important gaps in the leadership corps. Among these were a Senior Flight Officer and an Executive Officer to come from among regular officers, and five Watch Officers, Class 2, to be selected from among Reserve officers.<sup>4</sup>

The men assigned to the U.S. Naval Aviation Forces, Ireland, arrived early in February 1918. They were initially quartered in a section of the British Army Camp known as Timbertown, located at Aghada. Their quarters were little wooden huts which required a great deal of repair work to make them habitable. The men fixed up their temporary housing in addition to taking over most of the construction work of their actual air station. The British Army had done the early construction work with help from local contractors secured by the Admiralty. The British Army personnel had the responsibility of seeing that enough buildings were completed to

house the first draft of American Navy men assigned to the Aghada location. The contractors did all of the original ground and concrete work at the air station site, including the excavation and concrete pouring for three hangars, a concrete apron, a sea wall, a slipway and a new pier. In addition to this work on the air station itself, the contractors did the initial excavation for the assembly plant around which the Assembly and Repair Station at Queenstown would be built.

The first shipment of materials from the United States designated for the U. S. Naval Air Stations, Ireland, reached Dublin on 10 March 1918. The second shipment followed the very next day. Included in the shipments were portable buildings, materials for hangars, carpenters' tools, some electrical supplies and some plumbing materials. Queenstown received its share of these materials, but remained deficient in the necessities. Additional materials were secured on the open market. After the arrivals of a third and a fourth supply ship, general materials such as nails, bolts and screws became available in abundance.

The continually arriving American Navy personnel were assigned to work parties exclusively responsible for the construction of some of the more technical and sensitive facilities

required. These construction responsibilities included: all storehouses; the excavation and grading for magazines and a magazine road; all barracks in the camp; sewer lines; electrical lines and utility poles; the installation of 17,000 feet of wrought iron piping for fire and water lines; the erection of two radio towers and a radio hut; and the erection of a fence around the entire station.<sup>5</sup> As more men arrived, the help of fewer non-Navy personnel was required.

It would have been immensely helpful if about 100 seamen second class could have been sent to Queenstown to assume the duties that required no aviation experience. This would have freed from construction work men better qualified for aviation work. However, such extra men were not to be had. The men and officers detailed to Queenstown did the best they could, and made considerable progress on both the construction and operation of their station. Contractors and civilian workers contributed their labor until 1 September 1918. At that time, all non-Navy personnel were relieved by Navy personnel who completed what construction work was left.

The men proved resourceful in gathering and assembling the equipment they needed to fulfill their assigned tasks. Locating and

procuring the necessary tools and machinery was difficult. Trying to explain to local merchants what was needed was often frustrating and futile. Such construction supplies and tools as picks, shovels and wheelbarrows, that could be obtained locally were of inferior quality. The nearest major city was Cork, but supplies there had already been depleted by the time the Americans arrived. Much of the needed machinery and tools were shipped from England.

The Americans did get lucky once in obtaining the services of a particularly useful piece of machinery under some unusual circumstances.<sup>6</sup> Facing the prospect of a great deal of excavation and concrete work, the blue jackets sent out inquiries as to the availability of steam shovels, concrete mixers and light rail dump carts. Such equipment was not readily found in Ireland. Fortunately, the inquiries in Dublin revealed the existence of a large steam "Navy" in the possession of the Great Southern and Western Railway. The "Navy" turned out to be an immense, antiquated steam shovel abandoned in a gravel pit years before by a bankrupt contractor. A search for the owner led to a junk dealer who claimed that the original owner had defaulted on a large, unpaid bill. The junk dealer therefore had a lien against the steam shovel.

Still further investigation turned up the contractor himself,

with whom negotiations were entered into for use of the steam shovel. After additional negotiations which ended up including the Dublin Water Commissioner among others, a deal was made. The steam shovel was rented to the U. S. Navy on the condition that it be returned in the same condition as when borrowed. This was to prove a simple enough task as the machine had been sitting outside, uncovered and unused, for three years.

Once the matter was resolved, the men from the Queenstown station came and dismantled the steam shovel and loaded it onto a four ton Packard truck for transport back to Aghada. This was not an easy task as the old gravel pit in which the steam shovel had been found was two miles from the road and twenty-six miles from the railroad tracks. After extensive repair work to combat the effects of years of neglect and exposure to the elements, the steam shovel was restored to working order.

In order to operate the steam shovel to its maximum capability, some additional equipment was required. A number of small dump carts and tracks to run them on were needed and they were procured wherever they could be found. A concrete mixer was ordered from London which took three months to arrive. It took another three months for its wheels to arrive and make it usable.

Eventually, between the steam shovel and the concrete mixer, all of the excavation and concrete work for the Assembly and Repair Station was completed, as well as the excavation, grading and concrete work for a third hangar at the air station. The steam shovel was able to move a total of 50,000 tons of dirt, thus saving a considerable amount of time and manpower. Upon completion of the necessary work, the steam shovel was once again dismantled and transported back to its original location in the gravel pit.

With the heavy excavation work and most of the construction work done, the time came to implement plans for operating both the air station and the repair station. Although it was the first commissioned, the Queenstown station was the last of the four to begin actual operations, the first patrol going out on 30 September 1918. From the standpoint of military operations, the location was excellent in spite of three constant impediments: 1) A formidable twelve foot rise and fall of the daily tide; 2) Lack of transportation to the city of Queenstown; and 3) Near constant rainfall.

An extra long slipway was constructed to allow for operations with a minimum of interference from the tide. Even then, operations would have to be suspended for both an hour before and an hour after low tide as the seaplanes could not get off the slipway. Although the

Queenstown station was only four miles from the city by water, and twenty miles by road, the severe shortage of water and land transportation constantly hindered the station's shipment of supplies to the other stations. The only water transportation available was a single motor sailer and a few lighters supplied by the British. The scarcity of trucks caused considerable delays in transporting supplies. The railroad at Middleton, used to ship materials from the supply station at Queenstown, was seven miles distant. When trucks did become available, their heavy weight tore up the already bad roads. The wear and tear caused by the trucks, coupled with the almost constant rainfall, made the roads all but impassable much of the time.

Before the scheduled operations could begin in Ireland, all of the arriving pilots needed to be trained to handle the H-16 flying boats. Queenstown was selected as the training site. The Assembly and Repair Base, Queenstown supplied the pilots that were needed to conduct the test flights of the planes assembled and then ferry them to the other air stations. On August 31 1918, the first test flight taken by U. S. Naval Aviation Forces in Ireland was successfully completed at Queenstown. An earlier flight, attempted on 12 August, had ended a minute-and-a half after take off with a crash landing

into the harbor. No lives were lost and the plane was salvaged. An investigation revealed that the aileron wires, used to control the movable parts on the wing responsible for lateral balance and turning control, had been crossed.

In September 1918, the Queenstown station received eight planes for testing prior to delivery to other stations in Ireland. Out of the eight, four were ferried to Wexford and two to Whiddy Island. The remaining two were kept at the Queenstown station. In October, the Assembly and Repair Station was able to send two more planes to Whiddy Island, an additional one to Wexford and one to Lough Foyle. Three other planes were retained at the Queenstown station.

During the month of October there was considerable activity at the Queenstown air station. The first forced landing at sea by a plane stationed at Queenstown occurred on 4 October 1918. While on patrol, seaplane No. A-1075 suffered broken crankshafts on the port motor and was forced down. No casualties resulted from the incident and the plane was recovered. In spite of the downed craft, that particular week was productive for the station. With two planes operational, six patrols went out and recorded 18 hours and 42 minutes air time, and covered a distance of 1,158 miles. One convoy was escorted and one oil patch sighted. The station was not so lucky

the following week, however, as two planes were sunk when they were forced down in rough seas.<sup>7</sup> Despite these drawbacks, three operational planes were able to conduct six patrols during which the pilots spent 21 hours and 31 minutes in the air.

By the end of the third week in October the station was still operating with only two planes. Nevertheless, flight activity was starting to increase. Fourteen patrols were conducted during which the pilots covered a distance of 2,432 miles in 38 hours and 57 minutes of flight time. That week two convoys were escorted, one oil patch was bombed and the wake of an enemy submarine was spotted. The pursuing plane dropped a bomb directly on a swirl. Although no sinking could be confirmed, the submarine was not seen again. During the last week of October the Queenstown station recorded its most productive statistics yet. Still operating with only two planes functional, 14 patrols went out and stayed in the air for a total of 46 hours and 45 minutes, with a distance of 2,744 miles covered. Two convoys were escorted that week and three oil patches sighted.<sup>8</sup>

Even as the signing of the Armistice on November 11 1918, effectively ended operations, activity at the Queenstown air station during the first ten days of the month made November productive as

a whole. During that time, 24 patrols went out, spending 73 hours and 49 minutes in the air and covering a distance of 3,884 miles. The last week of its operations the Queenstown station broke all existing records among the stations in Ireland by flying 15 patrols that had a combined mileage total of 3,297 miles and a total flight time of 61 hours and 41 minutes.

One final convoy was escorted. A flight of note was taken on 9 November 1918, when H-16 flying boat No. A-1048 broke the existing endurance record for H-16 patrol flights. Carrying five passengers, two bombs and 150 pounds of emergency fuel, the use of which proved unnecessary, the H-16 stayed in the air for nine hours and 37 minutes.

All told, the personnel at the Queenstown station accomplished a great deal in spite of their other obligations and the short amount of time in which the station was actually in operation. By the Armistice, the Queenstown station had a complement of 23 pilots, 49 ground officers and 1,426 men. The equipment available by the war's end amounted to 28 H-16 seaplanes and 45 Liberty engines. A total of 155 flights were made logging a total of 254 hours in the air. Of the total number of flights made, 64 were actual patrol flights which accounted for 198 hours and 45 minutes of the total

air time and covered 11,508 miles. Test flight mileage totaled 3,200 miles in 91 flights. Six escort missions were flown, one submarine wake was spotted and bombed, and two oil patches were sighted and bombed. Four additional oil patches were sighted on patrols, but were not bombed.

Although it must be noted that the German submarine forces had steadily decreased in both number and activity as the war neared its end, the contributions of the men at the Queenstown station cannot be discounted. A seaplane conducting a routine four-hour patrol covered most of the area where submarines had frequently been sighted. The personnel at Queenstown deserve credit for reducing the number of enemy submarines venturing into the area.

The second American air station to begin operations in Ireland was Wexford, commissioned on 2 May 1918. Wexford was located at the southern entrance of the Irish Sea, on the Slaney River well inside Wexford Harbor. It was just twelve miles from Tuscar Light. This position made Wexford perhaps the most strategically placed station of the four in Ireland. With the station as the center point, "drawing a circle with a radius of 100 miles[,] the sector to the southward would include all traffic bound for the Irish Sea and British Channel," thus passing within patrol range of the station.<sup>9</sup>

This meant that all enemy submarines had no choice but to operate in the vicinity of the Wexford station if they were to carry out their mission of destroying allied shipping. The fact that the Irish Sea and the English Channel were also short cuts to the enemy submarines' home ports gave Wexford an additional strategic ability to screen all inbound and outbound traffic.

The audacity of German submarine captains operating their craft in that area of water was unsurpassed. During the months prior to the establishment of the U. S. air station, enemy submarines made as many as four attacks a week on allied shipping, often only three or four miles offshore. So bold did the enemy become in the vicinity of Wexford that seeing a German submarine rounding Tuscar Light running on the surface became almost routine. The arrival of the American naval aviation forces at Wexford put an effective stop to such activity.

With its sheltered location within Wexford Harbor, the air station was virtually landlocked, and thus protected from the volatile Irish winds, but less so from the rains. The channel leading to the station was narrow and tortuous, but this was but a minor inconvenience when balanced by the fact that the station was only two-and-one-half miles from the open sea. The protected harbor

allowed the seaplanes to take-off easily and return with very little trouble, even in questionable weather. The presence of numerous lighthouses and other conspicuous landmarks in the immediate vicinity of the air station made it easy for incoming planes to home in on the station, even if the air was heavy with mist and visibility was poor.

In contrast to the other three air stations in Ireland, Wexford had no great difficulty in the transportation of supplies. The air station was located just across the road from the Wexford Railway Station. The town of Wexford was only a half mile down the road. This was to prove extremely advantageous as the delivery of supplies by water was restricted to those vessels which drew less than twelve feet of water due to the presence of sandbars at the entrance to the harbor.

The station's commanding officer, Lt. Cmdr. Victor D. Herbster, USN, arrived on station on 27 March 1918. Preliminary construction had been done by British forces prior to Herbster's arrival. The Admiralty had completed roads, the slipway and the concrete aprons for the hangars. With an initial complement of less than 100 men, Herbster directed the construction of the most important structures for the station. Working from 5 o'clock in the morning until nine at

night, the men at Wexford had completed the majority of their necessary buildings by 1 July 1918. Among the completed construction were the men's barracks, the administration building, the canteen, the mess hall and galley, a provisions storehouse, and a testing house. The machine shop and carpenter's shop were near completion by this time. Work was well underway on the gas and oil houses, the garages, the pigeon loft, the C.P.O.'s quarters, the YMCA, the magazine, the meteorological hut, and the radio hut and tower. All of this was done with a force of men who only numbered 115 by 1 July.

The construction phase was not without its excitement, however. Irish civilians who had been hired to assist in the construction of the station were caught up in the Sinn Fein movement there, as elsewhere.<sup>10</sup> At Wexford, however, the strikers were under the impression that the American government would tolerate some of their extreme activities, even interference with the completion of the station. The Irishmen interrupted their work on Hangar No.1 in late May and early June 1918 to participate in a strike. Rather than allow construction to come to a halt, the men at the station doubled their efforts and completed that hangar and another one in spite of the strikers' agitation. At one point, tension

reached such a level that the station commander was forced to take over a road in front of the station under the Defense of the Realm Act, put up fences and post a heavy guard to protect the station's equipment and personnel.

After 1 July 1918, a spirit of friendly competition pervaded the four American air stations in Ireland as they all vied to be the first to complete construction and commence with operations. Wexford lost out to Lough Foyle in being the first to begin operations, though not by much. Lough Foyle commenced operations on 3 September and Wexford followed suit on the eighteenth when four H-16 seaplanes arrived from Aghada after carrying out an extensive patrol of the area. Unfortunately, one of the four planes sustained irreparable damage when it landed in the outer harbor. A second plane was rendered temporarily inoperable when a hole was discovered in the bottom when the plane landed. The two remaining planes were able to carry out significant patrol activity, however. During the remaining 12 days of the month, the two operational planes accumulated 49 hours and 18 minutes on the flight log.<sup>11</sup>

It was on the third day of patrol that the Wexford pilots sighted their first enemy submarine. Though new and inexperienced, the crew of the seaplane eagerly went for their prey. They

successfully dropped bombs within the known destruction range of the submarine. Subsequent observation of the sub revealed that it was damaged to such an extent as to be unable to fully submerge.

As the pilots had run out of bombs, further action against the submarine was not possible. After notifying the station and destroyers in the area, the seaplane returned to the Wexford. Nothing more was reported of that particular vessel. During the rest of the first month of operations, the Wexford pilots encountered four more enemy submarines, all of which they attacked. The reports state that all four were bombed, but it is unclear whether they were sunk or even damaged.

During the flight operations of September and early October, the pilots got some unintentional training in maneuvering their aircraft on the surface of the water. A dredger with its moorings and chains was sitting in front of the slipway, forcing the pilots to skillfully maneuver their planes around the obstruction as they taxied during landing and take-off. This was especially difficult during periods of high winds. With little experience, it was to the pilots' advantage to enhance their abilities in any way that they could. As the Wexford station was considered a fully operational station, any flight practice was given to second pilots while out on

actual patrols. The same was true of any landing practice. Such practice could come only at the end of a war-related patrol.

More flight practice came in the form of ferrying planes to and from the Assembly and Repair Station at Queenstown. All of these flights were treated as regular patrols, with an anti-submarine course being followed, and the planes went fully armed. Indeed, it was during one such transfer flight that an enemy submarine was encountered and bombed. On 16 October 1918, seaplane No. 3478, enroute from Queenstown to Wexford, sighted two long oil patches 15 miles southeast of Balencourty. A thirty-minute surveillance vigil resulted in repeated sightings of the sub's periscope. Two bombs were dropped, only one of which detonated. The functional bomb was dropped in a line with the last appearance of the periscope. The fate of the submarine remained undetermined.<sup>12</sup>

Due to a severe shortage of pilots on the Wexford station, every available pilot had to fly patrols every day. A lack of supplies and tools forced the quartermasters and machinists' mates to work 18-hour days in order to keep the planes in the air. It was essential that the planes be kept in working order as the Wexford station had the responsibility of guarding against enemy deep sea traffic one hundred miles south of the Tuscar Light. Although plans had called

for the Wexford station to be equipped with 18 planes, it subsequently never had more than five operating planes at any given time. Nonetheless, these planes were kept in almost constant use as the ground crew did exceptional work to keep the pilots in the air.

Documentation of the fate of several enemy submarines bombed by Wexford personnel was incomplete. The Admiralty confirmed that severe damage was done to one sub, sending a letter of commendation to that effect to the station. Another submarine was believed to have sustained such heavy damage that it must have sunk during a subsequent storm. Wexford personnel observed the vessel in distress, unable to maneuver, just minutes before a heavy storm, lasting four days, broke. No other sightings of this particular sub were subsequently reported. A third enemy submarine, later identified as the one which had sunk the Leinster in the Irish Sea, was effectively bombed, but its fate remained undetermined. A large oil slick was sighted which lasted for four days, but the extent of the damage to the vessel could not be ascertained.

By the Armistice, the U. S. Naval Air Station, Wexford, had a complement of 10 pilots, 12 ground officers and 405 men. Five H-16 seaplanes were operational and there were 10 Liberty engines available for replacement purposes. Wexford pilots flew a total of

98 anti-submarine patrols, during which time they spent 312 hours and 21 minutes in the air while covering a distance of 19,135 miles.<sup>13</sup>

The third U. S. Naval Air Station established in Ireland was at Lough Foyle. From a geographic standpoint, Lough Foyle should have been an ideal location. Its position at Aught Point, 18 miles inland from the open sea on the northwest side of the lough, not far from the mouth of the Foyle River, could hardly have been better. In reality, however, the adverse meteorological conditions, such as constant rain, high wind velocity and heavy cloud strata proved that geography was not everything. The climate effectively cut down the number of patrols and escort flights the men of the station were able to accomplish.

In addition to the weather, the station at Lough Foyle also had to endure chronic shortages of men and materials, and the insufficient training of the men who were available. In spite of these difficulties, Lough Foyle managed to send out the first patrol flight of all the air stations in Ireland on 3 September 1918.

As the first American Navy men did not arrive until March 1918, the British Admiralty placed the first contract to begin work on the station in January 1918. Irish civilians broke first ground on

5 January. Seven carpenters' mates of the U. S. Navy joined the civilian work force on 26 February. As had happened at the Whiddy Island Air Station, the civilian labor was frequently caught up in strikes instigated by the Sinn Fein movement. With the arrival of the first large contingent of the American Navy men on 12 March 1918, the phasing out of hired civilian labor began. The civilian workers who still remained at Lough Foyle in June were terminated abruptly when they chose to participate in yet another Sinn Fein related strike. Work at the station was unaffected, however, as enough Navy personnel had arrived to finish the final construction of their air station.

Londonderry, nine miles distant, was the primary supply point for the Lough Foyle station. Until the Lough Foyle station received several trucks, transporting the necessary supplies and building materials to the station was next to impossible. Once the trucks did arrive, and the weather abated, construction on the station proceeded rapidly. By the first of May 1918, most of the station was ready for occupancy. Eleven buildings were completed, including the barracks for the officers and men, the galley, and a gasoline storage hut. The concrete aprons for the hangars had also been poured as a prelude to their construction. Although the slipway for the launching

of the seaplanes was also finished at this time, poor planning and design resulted in a severe impediment to flight operations. The slipway was above water at both low and medium tides.<sup>14</sup> Consequently, the seaplanes could only be launched within one hour of the high tides.

With construction entering its final phase, the administrative and operational personnel began to arrive to turn Lough Foyle into a functioning air station. On 17 May, the station's first commanding officer, Cmdr. H. D. Cooke, USN, put in to port. The American flag was officially hoisted on 20 May. By 1 June 1918, 37 buildings had been completed at the Lough Foyle station. Exactly one month later, on the first of July, the U. S. Naval Air Station, Lough Foyle was formally commissioned. The personnel were reviewed by Admiral F. S. Miller, Royal Navy, who at that time was the Admiral Commanding British Naval Base at Buncrane. On 7 July, Cmdr. Cooke was relieved of his position as commanding officer and replaced by Lt. C. T. Hull, USN. The Navy forces at Lough Foyle were to cooperate with, and coordinate their activities with, the British Naval Forces based at Buncrane.

The arrival of the station's first planes on 20 July 1918 was a greatly anticipated event. Almost all of the building construction

had been completed by that time and attention could be focused almost solely on getting the seaplanes ready to fly. The delivery of a second shipment of planes on 31 July equipped the station with an adequate number of spare planes to begin preparation for actual operations.

The station received a new commanding officer on 8 August, 1918. Lt. E. A. McKitterick, USN, relieved Lt. Hull and took over supervision of the flight preparations. The first test flight was taken on 20 August 1918. The delay in sending up a plane was caused by the receipt of orders from the Bureau of Construction and Repair to the effect that the step on all of the H-16s had to be altered. This alteration meant that the chariots of the planes had to be altered, too. The initial test flight of Seaplane No. L059 was a failure. "Ignition trouble" prevented the craft from leaving the water.<sup>15</sup> The following day the pilot did get the plane up into the air and encountered no difficulties. An inspection upon its return revealed no structural problems. U. S. Naval Air Station, Lough Foyle was ready to begin operations.

The men at Lough Foyle encountered the same difficulty in getting spare parts as the other stations in Ireland. This was a constant threat to efficient operations. Nevertheless, the Lough

Foyle station did undertake instruction for its new pilots on a daily basis throughout the rest of the month of August and into September. On 3 September 1918, Lough Foyle sent out its first patrol flight, which also turned out to be the first patrol flight of all of the stations in Ireland. The duration of the flight was four hours. Immediately upon its landing, the same plane was taken up again by another flight crew for another patrol of three hours and thirty-five minutes duration. Owing to bad weather conditions, the station was only able to log 33 hours and 5 minutes flight time during the entire month of September.<sup>16</sup>

There was some excitement in October when, on the 19th, seaplane L-F-4, escorting a 32-ship convoy, sighted and successfully bombed an enemy submarine as it was about to attack. In a rare instance of fully functioning ordnance, both bombs released and exploded properly. One struck just 30 feet to the right of the submarine's periscope, and the other hit about ten feet forward of the periscope.<sup>17</sup> Station records fail to indicate whether the submarine sank or managed to slip away after the attack. Although no other major activity was reported up to the Armistice, the Lough Foyle station did set successive records for endurance aloft. On 19 October, a flight of 5 hours and 13 minutes was made. One week

later, a flight of 6 hours and 5 minutes wiped the previous record off the books.

The men at Lough Foyle did not spend all of their time engaged in flight preparations and operations. Liberty was given daily to men who were not on watch duty. Transportation to Londonderry was provided for these men. The Lough Foyle station was equipped with the best YMCA facilities of all the stations in Ireland and frequent entertainments were sponsored there for the men. Dances and concerts were held which the men were encouraged to invite the local people to attend. The men were also encouraged to engage in sports among themselves. Although relations among the men at the station, local civilians and allied forces stationed nearby were generally good, occasional friction resulted from jealousy engendered by the relatively higher pay of the Americans and the superiority of their entertainments and accommodations.<sup>18</sup>

By 11 November 1918, the personnel at the Lough Foyle air station numbered 10 pilots, 10 ground officers and 432 men, making it the second largest station (behind Queenstown) in Ireland in terms of manpower. In their possession were 7 H-16 seaplanes and 14 Liberty motors. The pilots flew a total of 62 flights, 41 of which were actual patrols. During the actual patrols, the pilots covered

6,000 miles in 99 hours and 6 minutes. An additional 1,900 miles were covered during test flights which totaled 31 hours and 27 minutes.

The fourth air station in Ireland was commissioned on 4 July 1918. The U. S. Naval Air Station, Whiddy Island was located on the north end of the island, in Bantry Bay, itself in the southwestern part of Ireland. The Whiddy Island station was sixteen miles from the coast and two miles from the town of Bantry in County Cork. The patrol area of this station would come to include Fastnet Light, a few miles from the entrance of Bantry Bay. The Lusitania had been sunk there on 7 May 1915, by a German submarine. Plans called for making Whiddy Island an operational station by 25 September 1918.

The station's position on the northeastern portion of the island afforded it several advantages. High cliffs and rock formations provided natural barriers from high wind gales that frequently rocked the Irish Coast. Even the prevailing southwesterly and westerly winds were effectively buffered by nature's windscreens. The relative isolation of the station made security a relatively easy matter. There was very little boat traffic to worry about, what there was being mostly government-owned or contracted water transports. Therefore, only a small guard had to be maintained at the

island station. The surrounding hills added extra security at night by almost totally obscuring what night illumination was necessary for the functioning of the station.

In terms of fulfilling the major requirement that an air station be located near enemy submarine activity, Whiddy Island was an ideal location. There was considerable enemy submarine activity in this area in spite of the presence of allied sub-chasers.<sup>19</sup> To assist them in combating the underwater menace, the station's forces received some additional help from other allied craft patrolling the channel of Bantry Bay. The boats in the channel provided effective protection against possible enemy submarine raids on the air station. The close proximity of the British ships allowed for the development of a good interactive working relationship between the allied air and sea forces once operations began.

As the span of time between the commissioning of the station and the date it actually went into operation indicates, things progressed slowly. The commanding officer of U. S. Naval Air Station, Whiddy Island, Commander J. C. Townsend, had quite a task in front of him. Before the arrival of those first two planes on 25 September 1918, a severely undermanned station had to construct and equip itself literally from the ground up. A draft of only forty-

five men arrived in Bantry on 12 March 1918.<sup>20</sup> Another three months passed before additional men arrived to help.

While the isolated location was good strategically, it initially made things quite difficult in terms of transporting supplies and men. There were few roads and the station initially lacked ground transportation. The location adjacent to the Bay, however, offered an alternative supply route. The men could unload supplies sent by boat relatively easily. Local people provided the initial ground transportation as materials were hauled the short distance inland in the farmers' rented carts. Relief arrived aboard a large, flat-bottomed barge on 12 May 1918, in the form of a six ton Packard truck. A short while later, two smaller trucks arrived from Queenstown. While poor roads were a continual nuisance, the trucks managed to haul heavy loads to where they were needed.

There were no accommodations on the island for the initial draft of men. Housing the men at rented quarters in the town of Bantry resulted in much time being lost due to the necessity of ferrying the men back and forth between Bantry and Whiddy Island. The fact that only two boats, a rented motor sailer and a small speed boat, were initially available for transportation purposes did not help the situation. Nonetheless, determined to make progress,

the men at Whiddy Island sought alternative solutions to their problems.

To get things started, the station commander contracted out to a Cork contractor who hired local labor for some of the heavier construction work, such as pouring concrete for the hangars, building roads, and laying down drains and sewage pipes.<sup>21</sup> On the surface, this arrangement appeared ideal. Unfortunately, political undercurrents erupted to the surface and effectively ended the cooperative effort with the Irish civilian work force. The Whiddy station was not immune from the civil unrest fueled by the Irish conscription question being debated in Parliament. All of the stations in Ireland were affected when the civilian workers participated in general strikes. Diplomacy and tact, while easing the relations between the Irish and the Americans, were just not enough to curtail the strikes.

The U. S. Naval Aviation Forces at the air station did their share of construction, too, although the actual number of enlisted men working specifically on construction was even less than the number of the initial draft would imply. After filling such necessary positions as guards, boats crews, office workers, hospital apprentices and ships' cooks, an additional forty-five men were still

needed for the construction work. Help eventually arrived in June. In the meantime, the available men steadily built their barracks, storehouses and other buildings. Hangars were another matter, however. More men than were initially available were needed to put up these large structures. Therefore, to facilitate the erection of at least the first hangar, the Public Works Department contracted out to local labor, finding about 110 men willing to do the job. Under supervision from a representative of the commanding officer of the station, work on Hangar No.1 commenced on 20 May 1918.<sup>22</sup>

On 10 July 1918, Hangar No.1 was finished. Soon after, a force of about 60 enlisted men at the station finished Hangar No. 2. Additional men had arrived at the station while the Irishmen were building the first hangar. This augmentation of the base force allowed for enough extra men to build Hangar No.2 in about 45 days, even when there was no woodworking machinery available to them.

In addition to the hangars, facilities for the radio operations were also very important. The station needed a complete radio facility in order to maintain contact with: 1) The three other air stations in Ireland; 2) Their planes when operations began; and 3) Various other operational points, including stations in the Mediterranean, Russia and America. Construction on the radio hut and

towers commenced on 18 June 1918. By 1 August, the radio facilities were completed and the installation of interior equipment proceeded quickly. Radio operations began a full two weeks before the arrival of the first two planes.

As construction neared completion, the senior staff began organizing actual operations. The forces at the Whiddy Island Air Station would be under the orders of the Commander-in-Chief, Coast of Ireland, Admiral Bayly, Royal Navy. Operations would be coordinated with American and British naval ground and sea forces based at Queenstown and Berehaven, and with U. S. naval air forces at Queenstown. Although the administrative personnel lacked experience, a problem common among the four U. S. naval air stations in Ireland, once all of the necessary construction was completed and the first planes arrived, the men at the station turned their attention to getting their planes operational and out on patrols.

The first two planes arrived from Queenstown on 25 September 1918. They were immediately put into service. For the first month, no mishaps occurred during patrols and other flights. On 22 October, however, the first fatality occurred when seaplane A-1072 crashed on return from a patrol, killing the pilot. Two passengers in the plane were unhurt. The plane was salvaged as it

had crashed not far from shore. No cause for the crash was given.<sup>23</sup>

Two days later, the station received two more planes. By 9 November, the total number of planes available was up to five.

Although the total number of flights was not recorded for some reason, the pilots at the Whiddy station were able to log eighty-nine-and-a-half hours in the air and patrol 3,870 sea miles.<sup>24</sup> The Whiddy Island station sent out several special patrols in response to suspicious movements and actual sightings of enemy submarines. Whiddy Island planes escorted a record number of five convoys. An usual factor here was that it had been officially notified of only three of those convoys and had picked up the other two while out on routine patrols. The Whiddy Island station was also credited with assisting a downed seaplane near Queenstown after it had intercepted a wireless S.O.S. transmission. Aside from the first fatal crash on 22 October, pilots from Whiddy Island experienced only two additional forced landings. One plane was forced down near Queenstown due to aileron trouble. A severe storm which came on during a return flight from Aghada caused the second downing. Neither of the planes nor any of their occupants was hurt on these two occasions.

As the station was relatively isolated, and the complement of

men small, leave was only granted to five men per week. These men were allowed to go only to the town of Bantry between the hours of 6:30 p.m. and 11 p.m.<sup>25</sup> A YMCA hut was available on station for sports and other activities. As it was a cramped facility, and the weather generally poor, a request was made for the construction of a gymnasium. Time constraints did not permit such a venture before the end of the war.

To alleviate the bleakness of life at Whiddy, the pilots were permitted to attempt record-setting flights and maneuvers. Seaplane A-1078 logged the best individual record in flight time, being in the air 31 hours and ten minutes out of a total flying time of 64 and one half hours possible. On Armistice Day, one final record was set as plane number 3466, carrying six men, reached an altitude of 10,750 feet in one hour and three minutes.<sup>26</sup> Experiencing no engine trouble, the pilot retarded the spark at 7,000 feet. The spark remained retarded for the duration of the descent and the temperature of the motor only dropped to 110 degrees. This performance resulted in a letter of commendation from the Commanding Officer of the Irish Stations, Admiral Bayly, R.N.

By the Armistice, the Whiddy Island Air Station was operating with a complement of only 8 pilots, 10 ground officers and 400 men.

The supply of operational planes had dwindled to three H-16s. For those planes there were six Liberty engines available. While lack of time and equipment resulted in few actual operations, the men at the station showed that a few determined men could build an air station and commence operations in a relatively short amount of time.

The U.S. Naval Kite Balloon Station, Castletownbere, located at Berehaven in the extreme southwestern corner of Ireland, was the only American kite balloon station in Ireland that carried out any activity during the war. Its location made it an ideal point from which to operate against enemy submarines in the area. It was within 30 miles of Fastnet Light and 60 or 70 miles nearer to the transatlantic route than the seaplane station at Queenstown. This location made it appear to be the most logical post in Europe from which to protect the shipping traffic from America to Liverpool or Southampton.

Planning the kite balloon station on paper turned out to be the easiest thing about it. Several obstacles made the transition to reality difficult. Perhaps the greatest hindrance was the absence of a real historical record of military use and experience to draw from. Free balloons had been used in military operations in the mid-1800's

and by 1884 all of the "Great Powers" had established their own balloon organizations.<sup>27</sup> But even then, balloons had limited roles and the technology of warfare had not been as evolved. The kite, or captive, balloon was a relatively new innovation. The first stabilized kite balloon had been invented by two German officers in 1896. Subsequently, the kite balloon came into military use with the airplane and airship.

To facilitate military use, several aerodynamic features were redesigned. The spherical envelope of the free balloon was replaced with "an elongated envelope of better aerodynamic shape."<sup>28</sup> This eliminated the wind resistance, or drag, problem common to the free balloons and allowed the kite balloon to maintain a more vertical, and thus higher, float in relation to its anchoring spot. The shape also increased the kinetic lift, which was the extra lift caused by the relative motion between the craft and the air. Three tail fins were added to "ensure fore-and-aft, lateral, and weathercock stability."<sup>29</sup>

During the course of WWI, the French, British and Italians each added refinements to the design of captive balloons. The results brought ever greater stability and aerodynamics to the original

designs. The gas inside the envelopes was controlled by an internal series of ballonets. These were small bags that could be filled with or emptied of gas to maintain the shape of the balloon and regulate the internal pressure to either keep the balloon aloft, or assist in its descent.<sup>30</sup> Valves were attached to the ballonets to facilitate both inflation and deflation.

During the war, the American Navy initially intended to use the kite balloons both on land and in conjunction with aircraft carriers. The ships could tow the balloons, using them for detecting enemy submarines and for directing fire on enemy ships or land fortifications. An additional use for captive balloons suggested during this time was the so-called "apron defense." Here, "a line of kite balloons lifted a horizontal cable from which were suspended at frequent intervals a number of vertical wires intended to foul the wings of raiding aeroplanes."<sup>31</sup>

In spite of these proposals, the U. S. Navy's actual use of captive balloons during WWI failed to meet even the minimal expectations. Given the real lack of application of balloons in wartime maneuvers, the Castletownbere kite balloon station's mission was only to fly balloons for testing purposes. Because there were no aircraft carriers operating in the vicinity, no regular

wartime operations were planned. An exception to this rule was allowed if emergency pilots were needed aboard battleships operating in the vicinity. As a result, the Castletownbere station logged very few flights or hours in the air, and reported no enemy submarine sightings. This was an unfortunate situation as the location of the Castletownbere station was one ideally situated for operations against German U-boats active in the area. In fact, two encounters between American submarines and German U-boats had been reported in that area prior to the establishment of the kite balloon station.

The Castletownbere station was situated on a harbor in Bantry Bay which the personnel boasted was "sufficiently large to accommodate the whole American Navy."<sup>32</sup> The flying field, located on the mainland, was surrounded by the Cahah mountains in such a way that it resembled the center stage of a natural, if somewhat crude, outdoor amphitheater. With a row of six hangars facing northwest and having the backing of a small hill, in addition to being surrounded on the other three sides by ground rising anywhere between 30 and 1300 feet above the level of the field, the site was well protected from any prevailing winds. This was a key aspect of the location as the kite balloons were prone to breaking free from

their moorings in the event of high winds.

Another important feature of the location was that the temperature variation during any 24-hour period was not drastic. The slight changes in temperature caused only a small drop in the air pressure of the inflated balloons and they experienced no loss of gas during daytime operations. Unfortunately, however, even if the temperature ranges caused no problems for balloon operations, the amount of rainfall in the area did. Castletownbere was located in the region of Ireland that experienced the greatest accumulation of rainfall. The average yearly rainfall there was 60 inches. The majority of the rainfall occurred during the autumn and spring months as it was during these periods that it rained almost incessantly. The atmosphere in the hangars, partially open to the elements, was constantly damp. The persistent dampness proved destructive to the fabric of the balloons and made any maintenance or repair work impossible. A solution to the problem was found by transforming part of a storehouse into a balloon fabric repair shop.

Plans called for the station was to be manned by commissioned "Kite Balloon Pilots." The men selected for this duty required dual training. First, the balloon pilots had to be proficient in just operating the balloons. Second, these men needed training in the

strategies of operating kite balloons in conjunction with destroyers. Here, the British allies proved of some assistance. Prior to being sent to U. S. Naval Kite Balloon Station, Berehaven, the U. S. naval balloonists were assigned to the Royal Naval Air Station, Roehampton, England for instruction in kite ballooning. Upon completion of the Roehampton course, the men were to be attached to one of the British Destroyer Bases. Operating in the capacity of observers, the balloon pilots would be able to witness and study actual kite balloon operations from destroyers at sea. Once this training phase was completed, the men would then be assigned to active duty at the U. S. Naval Kite Balloon Station.<sup>33</sup>

The Castletownbere station was taken over from the Royal Air Force at the end of April 1918. An advance force of 2 officers and 18 men had been sent to the site from Queenstown to begin the preliminary work necessary to secure possession of the station from the British. A slight, but dramatic, delay occurred when a ship carrying supplies destined for the station was torpedoed. Miraculously, the damaged ship beached not far from the station and much of the cargo was recovered.<sup>34</sup> In the meantime, the men at the station had set up hydrogen compressors and equipped the station with supplies received from the Wexford air station.

Before the end of the month, the station's complement was augmented by the arrival of 8 flight officers, a Chief Petty Officer and a draft of 61 men. Simultaneously, 46 British ratings departed the station for Roehampton. Ensign C. E. Shumway, USNRF, arrived and assumed command in the name of the U. S. Navy on 29 April. The colors were raised on 2 May 1918 and work on unfinished structures began in earnest. Lt. J. H. S. Dessez, USN, arrived on 17 May and took over command of the station from Ensign Shumway.

Although it was not scheduled for actual wartime operations, the Castletownbere station had a kite balloon in the air for test work and practice almost continuously. Five destroyers had been equipped with kite balloon winches.<sup>35</sup> Station personnel were ready at any time to provide balloons, pilots or crews wherever and whenever needed. The first test flight in a balloon at the station occurred on 21 May. This initial flight was made in a balloon towed over land by a truck. By the end of May, three balloons were inflated and in operation.

June was a busy month for the station. The operational balloons made frequent flights, affording the flight crews much opportunity to carry out drills and instruction. While the men in skies were perfecting their skills, the men on the ground were

equally busy as the sick bay, officers' quarters, enlisted men's barracks, and two sheds, one for silicon and one for soda, were all built. By the end of June, however, operations came to a virtual standstill when a majority of the personnel and equipment were transferred to Brest. Headquarters staff believed that the equipment would be of more use at Brest. A skeleton force of 2 flight officers and 40 enlisted men was all that remained at Castletownbere. At this time, Lt. Dessez returned command of the kite balloon station to Ensign Shumway.

The station was out of commission for all intents and purposes. A bright spot occurred on 14 July with the arrival of the H.M.S. Sloop Flying Fox.<sup>36</sup> The Flying Fox had been sent to Castletownbere with a flight officer aboard to undertake some balloon work. After several shorter practice cruises were made, a longer one was taken to Queenstown on 27 July. Beginning its voyage at 0645 hours, the Flying Fox brought down its last balloon crew at 1330 hours, after its arrival at Queenstown. That same evening, the Flying Fox went out on a 24-hour patrol cruise, utilizing balloons. The following evening, on 28 July, the Flying Fox was forced to end its patrol and put in at the Castletownbere station due to a damaged balloon.

The Flying Fox continued work at the Castletownbere kite balloon station through mid-August. It was during the August operations that one balloon related fatality occurred. Early in August, the station received a new balloon, K.B.A.M. 183. This new balloon was broken out, inflated and tested. On the morning of 12 August, the Flying Fox put out with K.B.A.M. 183 in tow. As the balloon was being hauled down, its nose dived and Ensign C. E. Reed was thrown out of the basket. Ensign Reed's death cast a pall on the station. There was little activity for the rest of the month. Ensign C. G. Eldridge succeeded Ensign Shumway as station commander on 19 August.

The station received a second lease on life when it was recommissioned on 9 September. Nine officers and 72 men arrived in preparation for the arrival of Battle Ship Division Six on 12 September for kite balloon operations training. Ensign J. C. Roseborough took over command of the station from Ensign Eldridge at this time. With the arrival of the new men, work began immediately on setting up new balloons and repairing the older ones. A gas plant was also constructed. Within ten days of Battle Ship Division Six's arrival, trial flights were ready to be taken. On 20 September, a kite balloon was delivered to the U.S.S. Utah, ready for

operations. By the end of the first week of October kite balloons had been placed aboard the U.S.S. Nevada and the U.S.S. Oklahoma. One disastrous incident occurred during a severe hail storm when the balloon aboard the Utah was struck by lightning and fell in flames into the harbor. Fortunately, the balloon had been unmanned at the time of the accident.

The Utah was shortly reequipped with a new balloon. On 14 October, three officers were sent to sea as emergency pilots with the Utah and the Nevada. These officers were in addition to the regular pilots aboard the two battleships. The Oklahoma, having all needed pilots, accompanied the Utah and the Nevada. The patrol, lasting three days, was for the purpose of convoying three transports. The balloons did not fare well on this outing. Disaster again struck the Utah's balloon. That lightning that never strikes twice...did. Once again, the battleship's balloon fell in flames into the water. The Oklahoma lost its balloon when it broke loose during a sudden squall. Amazingly, the pilots of the Nevada were able to recover the Oklahoma's balloon by carefully following its movements and skillfully reeling it in.

The October cruise was the only one the battleships took while they were based at Castletownbere. Nevertheless, the men at the

kite balloon station kept the balloons in top condition. The balloons were ready for service at a moment's notice and could be delivered to the battleships in less than one hour if the need for them arose. Several drills were conducted with the men of the battleship division being given training in handling the balloons aboard ship according to the best French and British methods available. The men were also given hands-on experience in fabric repair. The station did everything it could to keep up with any new technologies in balloon design. Many of the American balloons were equipped with the latest French "topping up" sleeves and other improvements. The station commander believed that the kite balloon station operated its balloons in a manner comparable to that of its allies.

Even though the men of U. S. Naval Kite Balloon Station, Castletownbere, saw very little action, they did play an important role in preparedness. Their services were readily available should the need for them arise. Had the war dragged on longer, things might have been different. Nonetheless, the Castletownbere kite balloon station proved that it could accomplish what it was asked to do, when it was asked to do it.

The ability to do what was asked was probably the hallmark of the stations in Ireland. The mitigating factor was that there proved

to be not that much to do. There is little doubt that the air stations were prepared to do much more than they ultimately did. The pilots logged a considerable amount of air time and performed wide-ranging patrols. Their very presence proved a strong deterrent to continued German submarine activity. Where once U-boats had prowled and destroyed their prey with impunity, there was now a striking lull in activity. Part of the decrease can be attributed to the Allies newly evolved policy of using convoys to protect their shipping. However, common sense dictates that the German commanders would hardly be inclined to recklessly continue to send their prized purveyors of destruction into an area as well patrolled and protected as the coast of Ireland became after the establishment of the U. S. naval air stations.

343



Map 11.1: Air Stations in Ireland

Note: Map is not to scale and is for illustrative purposes only

## Notes to Chapter 11

<sup>1</sup>McCrary, Frank. "Organization of the U. S. Naval Air Stations in Ireland, 16 February, 1918." National Archives, ZGU, Box 919, Folder 5, p. 1. The operations of the Queenstown Air Station and the Queenstown Repair Base were to be completely separate. Overlapping would occur, however, in that the personnel for the repair base would be quartered and disciplined by the Commanding Officer of the air station.

<sup>2</sup>"Histories of Stations. Stations in Ireland: Queenstown." National Archives, RG45, ZGU, Box 919, Folder 4, p. 1.

<sup>3</sup>"Report on U. S. Naval Air Forces in Ireland, 10 October, 1918." To Sec Nav (Operations) from Commander-in-Chief. National Archives, RG45, ZGU, Box 918, Folder 10, p. 8.

<sup>4</sup>Ibid.

<sup>5</sup>"Histories of Stations. Stations in Ireland: Queenstown," p. 4.

<sup>6</sup>Ibid., pp.2-3. The story of the Navy was found here.

<sup>7</sup>Ibid., p.5. The station report did not note whether the crews of the downed planes were killed. The accidents were referred to as "disasters," however.

<sup>8</sup>Ibid., pp. 5-6. All statistics were taken from this report.

<sup>9</sup>"Histories of Stations. Stations in Ireland: Wexford." National Archives, RG45, ZGU, Box 919, Folder 4, p. 1.

<sup>10</sup>There are several books available concerning the Sinn Fein Movement. Among them: The Evolution of Sinn Fein by Robert Mitchell Henry; Tom Clark and the Irish Freedom Movement by Louis LeRoux;

and Sinn Fein. An Illumination by Patrick S. O'Hegarty.

<sup>11</sup>"Histories of Stations: Wexford," p. 4.

<sup>12</sup>*Ibid.*, p. 7.

<sup>13</sup>*Ibid.*, p. 1.

<sup>14</sup>"Histories Of Stations. Stations in Ireland: Lough Foyle." National Archives, RG45, ZGU, Box 919, Folder 4, p. 2. The report does not assign blame to anyone. It also fails to indicate whether anyone was punished as a result of this engineering error.

<sup>15</sup>*Ibid.*, p. 2. The history uses "ignition trouble" ambiguously. It is impossible to tell whether that means the plane didn't start or, if there was actually a problem with the engine once the plane did start.

<sup>16</sup>*Ibid.*, p. 2. All flight hours and distances are from this history.

<sup>17</sup>*Ibid.*, p. 3.

<sup>18</sup>"Report on U. S. Naval Forces in Ireland, 10 October, 1918," p. 12.

<sup>19</sup>"Histories of Stations. Stations in Ireland: Whiddy Ireland." National Archives, RG45, ZGU, Box 919, Folder 4, p. 2. The report does not specify what "extensive" submarine activity actually meant. A guess would be between one and five subs per day.

<sup>20</sup>*Ibid.*, p. 4.

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

<sup>22</sup>Ibid., p. 5.

<sup>23</sup>Ibid., p. 2.

<sup>24</sup>Ibid., p. 1.

<sup>25</sup>"Report on U.S. Naval Air Forces in Ireland," p. 10.

<sup>26</sup>"Stations in Ireland: Whiddy Island," p. 3.

<sup>27</sup>Nayler, J. L. and E. Ower, Aviation: its technical development. London: Peter Owen/Vision Press, 1965, p. 8.

<sup>28</sup>Ibid. The almost spherical envelope of the free balloons caused instability when tethered in winds. The high drag factor of the shape caused severe drift away from the anchorage point.

<sup>29</sup>Ibid. The definition for kinetic, or dynamic, lift was provided on p. 286.

<sup>30</sup>Ibid. Definition was found on p. 283.

<sup>31</sup>Ibid., p. 9. This book does not provide the specific information on who exactly proposed the "apron defense" idea. It also claims that the idea was implemented on a couple of occasions during WWI, but gives no specifics as to who did it or where.

<sup>32</sup>"Histories of Stations: Stations in Ireland, Castletownbere (Kite Balloon Station.)" National Archives, RG 45, ZGU, Box 919, Folder 4.

<sup>33</sup>"Aviation-Weekly Report of Activities, 13 April, 1918." To Sec Nav from Adm. William S. Sims. National Archives, RG45, GA-1, Box 134, Folder 1, p. 1.

<sup>34</sup>ibid. No indication was made in the report as to whether any lives were lost in the incident.

<sup>35</sup>ibid. Four more destroyers were scheduled to have winches installed. Installation was delayed when a ship carrying winches was sunk in the Mediterranean. Scarcity of winches was further exacerbated by British priority in receiving them.

<sup>36</sup>"Histories of Stations: Castletownbere," p. 3. All information about the Flying Fox was found here.

## Chapter 12

### The Air Stations in Italy

In the latter part of November 1917, an intriguing telegram arrived at Headquarters, U. S. Naval Aviation Forces, Foreign Service in Paris. The Italian Naval Attache in Washington informed the Bureau of Navigation that the Italian government desired, and was ready to instruct, fifty American naval aviators in Italy.<sup>1</sup> The Italian government was running short of military personnel with which to staff its air stations. As a result, the Italians had discussed with the Naval Attache in Rome, Captain Charles R. Train, the possibility of U. S. Navy aeronautic personnel taking over operations at two Italian air stations. The Italians offered the incentive of two completely equipped seaplane stations at Pescara and Porto Corsini.<sup>2</sup> (See Map 12.1, p. 378) The Americans need only supply the necessary personnel to operate the stations. The two stations were ideally located for offensive operations and the offer deserved serious consideration.

In response to the Italian offer, Captain Hutch I. Cone, Commander, U. S. Naval Aviation Forces, Foreign Service, ordered Lt. John L. Callan, USNRF, to Rome to meet with Italian representatives.

Callan left his command of the U. S. Naval Air Station at Ile Tudy, France, and arrived in Rome on 19 December 1917.<sup>3</sup> Choosing Callan as the American naval representative proved a very astute move. The Italians already knew of Callan since, while still a civilian, he had acted as a flying instructor for the Italian Navy. He also spoke fluent Italian.<sup>4</sup>

Callan's mission, therefore, was to meet with the head of the Italian Aviation Forces, Captain di Vascello L. de Filippi, and discuss in detail the problems of training American naval aviators in Italy and the possibility of U. S. Navy personnel manning two Italian air stations. The first thing Captain de Filippi told Lt. Callan upon their meeting was that an error had been made in advising that Italy was ready to train American pilots. The telegram sent to the Italian Naval Attache in Washington had only inquired as to the possibility of the American Navy assuming operational control of the two Italian air stations. The request had been for fifty trained American naval aviators.

In the time since the telegram was sent, however, the Italian government had managed to ready a site for aviation instruction at Lake Bolsena. Construction had commenced and it was expected that the school would be ready to accept student aviators about 15

February 1918. The Italian government offered to supply all of the machines, gasoline, oil, barracks, quarters for officers and all necessary material to maintain the flight school and keep it in operation. The Americans would only have to pay for food, which would be provided by an Italian caterer, and perhaps supply such things as coffee, tea, cocoa and sugar.<sup>5</sup>

Time constraints permitted Callan the chance to visit only Pescara. This was not a critical problem, however, since the conditions at Porto Corsini were very similar to those at Pescara. Porto Corsini was further to the north, located on a triangular piece of ground at the intersection of two narrow canals. One of those canals led to the Adriatic Sea. The city of Ravenna was just 12 kilometers distant. The Porto Corsini air station was thus situated in a very strategic location, being across from Pola, the source of most of the German and Austrian submarine and aviation activity against Italy.

At the time of Callan's trip to Italy, the Porto Corsini station had been in operation for six months and was in the process of being enlarged. Callan wrote favorably of Pescara: "It was a city of five or six thousand inhabitants, located on the eastern coast of Italy, about midway between Brindisi and Venice".<sup>6</sup> Good railway facilities were

available and food supplies were satisfactory. An abundant water supply came down from the mountains several kilometers inland from the coast. The station itself was located at the mouth of the Pescara River, on the north bank. Both Pescara and Porto Corsini either had a radio station on base, or the use of one nearby.

The Italians appeared determined to offer the Americans all of the facilities possible for an air station and their construction work at Pescara reflected that sentiment. In an unusual move, the hangars, which faced south, were built of brick and steel, with slate roofs. Each hangar was a spacious 18 x 28 meters and of sufficient height to accommodate bombing machines. The hangars were also camouflaged to protect them from enemy air attacks. To facilitate getting the planes into the water, a concrete platform 13 meters wide was constructed which ran in front of the hangars allowing the planes access to separate wooden runways which led down to the river.

The Pescara River itself was very narrow, being only 80 meters at its widest point. In the summer, the river receded to a depth of only about 1 meter. While there was sufficient water at all times for operation of the seaplanes, and the length of the river provided ample room for taking off and landing, the narrowness of

the river did not permit the planes enough space to turn around. This problem was solvable by beaching the planes in the soft sandy banks of the river and having mechanics and small boats manually turn them around upon landing so they could be returned to the hangars. All things considered, the Italian offer of the seaplane stations looked very good.<sup>7</sup>

On 7 February 1918, Adm. William S. Sims, Force Commander, U. S. Naval Forces, Foreign Service, received a cablegram from Capt. Train outlining the personnel requirements for such an endeavor. Capt. Train's estimation of the personnel needed at each station included: 10 Administrative Officers; 34 Chief Petty Officers; 331 enlisted men; and 72 flying personnel. Flight personnel were to be divided as follows: 27 bombing officer pilots; 18 chasse officer pilots; and 27 bombing observers.<sup>8</sup> It was Train's opinion that U. S. naval operation of these two stations, located as they were in an area of constant fighting, would prove extremely beneficial to the morale of all aviation personnel. In addition, Train believed that such operation would greatly enhance American prestige among the Allies. Therefore, Train recommended accepting the offer.

On 19 February, Adm. William S. Benson at Naval Operations cabled a response back to Admiral Sims. Top officials at the Navy

Department expressed a strong desire to cooperate with the Italians and assist them in any manner which would "tend to increase the efficiency of our joint general campaign against [the] common enemy."<sup>9</sup> In spite of this desire to assist the Italians, however, Benson indicated that there were still a few aspects of the proposal for which greater clarification was desired before a decision could be reached. The most fundamental question asked concerned whether it had been the Italians' idea to turn over the two air stations for American naval aviation operation. If that were the case, had the Italians issued the request for the manning of their two stations by U. S. naval personnel because they lacked sufficient personnel and materiel of their own to do so? A different interpretation of the offer could be that the Italians were merely offering facilities at which the Navy pilots and ground personnel could train for future operations.

Strategically, the question of how well carrying out operations at Pescara and Porto Corsini would fit in the overall war plan was central. Intrinsic to the strategic question was how well American-made planes would be able to carry out operations in Italian territory. An analysis of whether seaplanes or land planes would be more suitable and effective was needed. In summing up the American

naval situation, Admiral Benson concluded that if the Italians were indeed willing and able to hand the two air stations over fully equipped, trained American pilots and ground personnel might be able to begin operations by 1 July 1918.

However, should the Italian stations not be adequately equipped and, indeed, in need of American materials and labor, then such operations could not commence until after the arrival of the needed supplies. It was Admiral Benson's opinion that the necessary supplies could not be ready for shipment before 1 August. This was a far cry from Lt. Callan's projection back in his January report that the Pescara station would be ready to both receive its first delivery of planes and be capable of housing its initial contingent of men at the end of March.

On 28 February 1918, Admiral Sims answered Admiral Benson's questions. The source of information for the content of Admiral Sims' cablegram was his field expert on the aviation situation, Capt. Hutch I. Cone. Cone had provided the additional information needed in Washington before a decision could be made concerning the Italian offer.<sup>10</sup> The Italian Naval Commander had made the original request for American Navy personnel to man the two air stations. He made the suggestion based on the fact that, while the Italians had

sufficient materiel with which to equip their stations, they lacked a concomitant sufficiency of personnel with which to man those stations. Should the American Navy decide to accept this offer, Cone believed that such operations as would emanate from Pescara and Porto Corsini would be able to accomplish more than some of the U. S. Naval Air Stations already in existence in France.

In answer to the question of whether American planes then under construction back in the United States would prove suitable for operations against the enemy, Cone's reply indicated that the large F-type flying boats would be suitable for activities in England. However, at such locations as Porto Corsini and Pescara, where contact with enemy air forces was frequent, land planes would be a better choice as they would be capable of both providing defense against any enemy attacks and protecting bombing planes out on a mission. Preliminary plans for the stations called for each to have three squadrons of nine patrol machines of the Italian F.B.A. type, six S.V.A. hydro-chasse machines for defending the stations against enemy air attacks, and 12 Macchi single-seater flying boats for escorting patrols and doing swift reconnaissance work.<sup>11</sup>

Cone believed that the Italians would make every effort to equip the two stations adequately for American operation, but he

still had reservations about it. The Italians had not received, or asked for, any personnel or materials lists, and did not know exactly what the Americans were going to require. Therefore, at this time it was unknown whether the Italians could complete all construction and equipping of the Porto Corsini and Pescara stations. Also unknown was whether sending in Navy personnel and materiel might facilitate the process.

The possibility of the U. S. Navy Department sending in any materiel for the completion of the two Italian air stations became a moot point in March as Admiral Benson informed Admiral Sims that absolutely no supplies could be shipped from the United States until autumn.<sup>12</sup> In light of this development, Benson asked Sims to reevaluate the situation concerning the advisability of taking over the two stations, also bearing in mind how difficult it would be to transport large aircraft to Italy at some future date. Should Sims determine that the Italian venture was still feasible, Benson asked for an approximate date to begin implementation of such. Sims once again sought advice from Cone.

Exactly one month later, on 17 April 1918, Cmdr. Cone cabled his recommendation for acceptance of the Italian offer.<sup>13</sup> Cone stated that the Italian government offered a guarantee that the two

stations would be fully equipped as required, Porto Corsini to be ready for arriving American personnel on about 1 May, and Pescara to be ready about 1 June. Simultaneously, Cone was in Pauillac, France attempting to organize sufficient complements of men which he could transfer to Italy by the stated dates. A critical shortage of available personnel was seriously hampering his attempts. Eleven days later, after having weighed Cone's conclusions concerning Porto Corsini and Pescara, Sims cabled his own recommendation for approval of the project to Admiral Benson in Washington.<sup>14</sup>

On 10 May 1918, Cone received official approval from Sims to take over of the two Italian air stations. The Italian attache in Rome, Capt. Train, had been instructed to notify the proper Italian authorities as to the proposed course of action intended by the Navy Department in Washington.<sup>15</sup> On the same day that Cone received official consent to proceed with operations in Italy, he wrote a personal letter to Capt. Train. Cone informed Train that, in order to facilitate the projected activities at the two air stations in Italy, Lt. John L. Callan, USNRF, had been appointed Commanding Officer, U. S. Naval Aviation Forces in Italy. Cone expressed his hope that Train would now offer his valuable assistance and advice to Lt. Callan and help him carry out his duties in Italy.

To that end, Cone made Train his personal representative in Italy in recognition of Train's stated willingness to continue such future assistance as would prove necessary. Cone believed that by giving Train such official status it would help him in dealings in general policy matters with the Italian authorities where aviation was concerned. Cone did not expect Train to become deeply involved in aviation matters, or do Callan's job for him. Cone's expectation was that Train's knowledge of the situation in Italy would give Callan an extra edge in his new position.<sup>16</sup>

Headquarters for the U. S. Naval Aviation Forces in Italy were established in Rome, with offices in the American Embassy there. Orders concerning operations in Italy, with the exception of the Lake Bolsena flying school and the Porto Corsini air station, emanated from the Rome Headquarters, or were forwarded from there when received from either the Force Commander, or the Commander, U .S. Naval Aviation Forces, Foreign Service. The flying school at Lake Bolsena and the Porto Corsini air station were operated through orders from the Italian District Commander at Venice. The American Headquarters office in Rome still had to oversee operations at the Lake Bolsena and Porto Corsini stations, however, to ensure that operations ran according to the Italian government's desires. It was

important that close cooperation be maintained at all times with Italian Ministry of Marine. Great care was taken and relations were good for the duration of the war.

In fact, relations were so good between the Italian government and the American aviation forces that plans were considered for enlarging American naval air activity there. Under consideration were the taking over of two islands in the Gulf of Venice where construction of hangars and other buildings had already commenced. Docks were also being prepared on the shore-side of Venice which were to be used as an assembly plant. These plans, and others, were cut short, however, by the signing of the Armistice between the Italian and Austrian governments on 4 November 1918.<sup>17</sup>

The month of May was taken up with preparations for taking over the stations at Porto Corsini and Pescara. On 1 June, the first draft of American men arrived in Italy. They were mechanics, sent ahead to receive training in Italian factories. Together with another draft of men under the command of Ensign Franklin K. Lane, Jr., USNRF, son of the Secretary of the Interior, the mechanics were dispersed to Milan, Varese and Taliedo for their training.<sup>18</sup> During the middle of June, a draft of naval aviators arrived from France to train on Caproni biplanes in Malpensa. In the coming months, some of

the pilots trained at Malpensa would be loaned, at the request of the Italian government, to the Italian Navy for the purpose of ferrying Caproni planes from Taliedo to the Italian air station at Gioia del Colle. Of the first twelve pilots borrowed, only eight managed to reach their destination safely. The other four planes were destroyed by crashes enroute, but fortunately no lives were lost. Subsequent groups of naval aviators also trained at Malpensa were used to ferry planes between Milan and Paris.

The American contingent sent to take over the air station at Porto Corsini did not arrive at its destination until 24 July. Under the command of Lt. Willis B. Haviland, USN, 377 enlisted men and their stores arrived on a special train from Pauillac, France. Excitement hit the station almost immediately as the following evening 6 Austrian seaplanes attacked the newly American-manned air station. Fortunately, no damage occurred and no casualties were suffered.<sup>19</sup> The majority of the bombs landed in the marshes and canals a bit farther up the coast. The Austrians had miscalculated the location of the air station, though not by much. Two large bombs had landed within 500 yards of the camp, leaving holes in the ground eight meters in diameter and four to five meters deep.<sup>20</sup>

Although the initial estimates had called for Porto Corsini to

be officially and completely taken over by the American Naval Aviation Forces on 27 July, this did not, in fact, occur until 1 August 1918, when Lt. Haviland officially assumed command of the U. S. Naval Air Station, Porto Corsini.

Just prior to beginning aviation offensives against Austria, the Italians put in a request to the Commander, U. S. Naval Aviation Forces in Italy, for a few chasse (special land plane patrol) pilots to assist in the work to be done by the land chasse force, a special reconnaissance group of the Italian Squadron in Venice. An inquiry revealed that there were six such available pilots at Porto Corsini. These men were immediately ordered to Venice where they participated in the offensive on the lower Piave.

The assistance the Americans rendered to the Italians proved instrumental in containing the Austro-Hungarian aviation forces. Commensurate with its size, Austria-Hungary maintained a small, but active, aviation force scattered about the country. Although the Austro-Hungarian air force never developed into a coherent, consistent organization, the geographical locations of the primary Austro-Hungarian stations did pose a tremendous risk to Italy. Enemy incursions flown from Pola and Trieste could inflict severe damage upon major Italian cities, making Italian authorities ever

anxious to shore up defensive positions along the coast.

The Italian Military Intelligence organization went to great lengths to keep American officials abreast of developments within the Austro-Hungarian aviation program. The constant trading of information, and the assistance of U. S. naval personnel allowed for an effectual containment of the Austro-Hungarian aviation forces, a contributing factor toward the final defeat of the forces of the Kaiser.

By the middle of 1918, Austria-Hungary had established a handful of operational air bases, some more successful than others. The largest and most important station was at Pola. There, military authorities had combined the air station with a flying school annexed from nearby Cosada. Other stations were to be found at Trieste, Fiume and Sebenico. These stations operated only hydroplanes. A very small air base was also located at Parnego.<sup>21</sup>

The further expansion of the Austro-Hungarian system of air stations had been stymied, however, by both natural and man-made forces. A very poor, and possibly contaminated, climate precluded any air stations from being established along the coast between Trieste and the Piave even though the Italian retreat from that area certainly suggested such a development. Plans for construction of an

Austrian air station on the site of the former Italian air station at Grado were suspended due to the loss of experienced personnel at the Trieste station who were to have manned the Grado station. This was an especially keen disappointment to the Austro-Hungarian forces as a station at Grado could have played a major role as an advanced defensive guard for the Gulf of Trieste.

With Italy being potentially vulnerable to air attacks by Austro-Hungarian forces, planning for and maintaining defense of the Italian coastline dominated much of the discussion between Italian and U. S. military officials. The Intelligence Service of the Italian Ministry of Marine monitored Austro-Hungarian aviation developments during the early part of the war. Italian intelligence then scored a major coup in May 1918, with the capture of two enemy aviators flying planes out of Trieste.

On 4 May 1918, Italian aviation forces attempted to penetrate the Austro-Hungarian defenses along the Tagliamento-Punta di Salvore line.<sup>22</sup> Three planes took off from Trieste in pursuit of the invaders. In the dogfights that ensued, the Italian aviators brought down all three of their opponents' planes. Plane No. 91 was brought down by bullets that tore into its motor and gas tanks. Enemy hydroplane No. 78 was outmaneuvered by two more experienced

Italian aviators, and it, too, crashed into the water below. The third enemy plane, designated "N. VI-83" suffered a fate similar to the others, but landed irretrievably on the Istrian Coast.

The Italian aviators were able to recover enemy planes 91 and 78. Even more coveted prizes were the two uninjured pilots taken into custody. The seized aircraft were towed to Fano, a nearby Italian air station, and the enemy pilots were handed over to members of the Italian Intelligence Service. In addition to personal revelations of their own flying histories, the two captive pilots shared information on the status of German and Austro-Hungarian naval aviation developments, personnel and tactics. They even knew a little about activity within the aviation units of the German Army. This was a little unusual for the aviation unit at Trieste had absolutely nothing to do with army aviation. Of particular interest were tales of fatal and near-fatal accidents befalling a couple of their senior officers. With both of the captured pilots coming from the Trieste air station, more detailed information concerning the personnel and aircraft of that site was supplied.<sup>23</sup>

Their revelations about Trieste included an odd statement describing the Trieste station as a "Pochstation," a station of misfortune. In every engagement in which men of the Trieste station

had participated, one or more men and machines had either been lost or captured. Interestingly enough, the losses were rarely green newcomers. The most devastating part of the "curse" was that it was the most experienced pilots who comprised the majority of the casualties. According to Italian authorities, there was a strand of continuity to this assertion of some sort of curse being visited upon the Austro-Hungarian stations as other enemy pilots who had fallen into Italian hands had also designated their stations as Pochstations.

As if in keeping with the idea of a hex plaguing the Austrian stations, the commanders of a couple of the stations had just recently suffered either severe or fatal injuries. The commander of the Trieste station, a highly decorated aviator named Banfield, was presently recovering from serious injuries resulting from a fire apparently caused by the carelessness of a sailor. He was prevented from flying for several weeks following the mishap. The temporary loss of Banfield was detrimental to morale for he was considered the best aviator of the Austro-Hungarian forces. In addition to being a particular favorite of Marie Therese and Leopold, Banfield had been honored by the Emperor with a gift of his very own airplane. Less fortunate was the commander of the Cosada flying school, part of

the Pola air station. Commander Fontaine had been killed when his plane crashed to the ground for unknown reasons.

At Trieste, Banfield was known as a very stern administrator, exceptionally talented, but not especially beloved by his men. Personality aside, he had managed to briefly turn the Trieste station into the most active and important of the Austrian stations. Banfield's ability to maintain his striking achievement was soon to become questionable as the station's reputation as a Pochstation, and its history of disasters grew. By early June, having lost many of the experienced flight personnel through crashes and captures, Banfield's command had dwindled to a crew of inexperienced, undertrained young pilots numbering all of twelve. These were all the wounded hero had to lead into battle. It did nothing to instill confidence among the personnel at Trieste to take note of the fact that their own anti-aircraft defenses had presently shrunk to a mere handful of guns.

A marked shortage of reliable, usable planes also plagued the Trieste station. The prisoners spoke of an inventory taken in May wherein the count had been thirty-five airplanes. Thirty of these planes were of the "K" type, also known as Brandenburgs. These were well-known chase planes equipped with Austro-Daimler 350 HP

engines. The other five planes were of the "A" type, the "A" standing for Abwehr. These so-called "hydro-chasers" could attain airspeeds of between 160 and 165 kilometers per hour. Despite the appearance of a suitable number of aircraft, at the time of the prisoners' capture, the air station's usable craft numbered just five "K's" and two "A's."

The two remaining "A" planes were virtually excluded from any combat use due to unusual circumstances; one a more easily understood reason than the other. One of the "A's" was Commander Banfield's personal aircraft, awarded to him by Kaiser Wilhelm. Commander Banfield's recent injuries precluded his flying and his plane was effectively grounded. The other "A" had inexplicably been assigned solely to a beginning pilot who was in no position to undertake sorties.

A shortage of the necessary Austro-Daimler engines also contributed to the problem. This shortage the prisoners attributed to abnormal wear and tear on the few engines available, and an overall lack of raw materials from which to build new ones. There also seemed to be a question concerning uniform quality of construction on the "K" planes in particular. These planes were manufactured in a number of plants, but it was generally conceded that the best built

ones came from Budapest, Hungary, while consistently inferior ones arrived from German factories.

The curse theory of the "Pochstation" was ostensibly supported during the first half of 1918 as the attrition rates for men and machines were high. The prisoners easily ticked off the losses: a "K" on 20 March at Cortellazzo, another "K" on 17 April at Porto di Piavo Vocchia, and the three "A" chasers (of which their own counted for two) on 4 May near Trieste. Add to these numbers the two additional "K's" lost at Cortellazzo in December 1917, and it became apparent that operations at Trieste were in serious jeopardy.

There was one other interesting facet to Trieste's operations. A tiny air station with four "Phoenix" chase airplanes and two "R" machines operated from the fields of Zaule, southwest of Trieste. Italian Intelligence either neglected to, or was unable to specify the nature of this station in its report. All that was known was that this station was to cooperate with the Trieste station in the protection of the city. In practice, however, the naval aviation forces at Trieste were insufficient in number and lacking in the proper experience to offer any guidance or assistance to the little station in the fields of Zaule.

Even if there had been personnel to spare to the Zaule station,

it is unlikely that much would have been accomplished. The "Phoenix" planes were not the best available, and the "R" planes were heavy machines capable of only extremely slow air speeds. In fact, the "R's" were actually "L's" (Lehners) which had undergone minor transformations. These planes were not suitable for offensive sorties and thus were used only for such defensive purposes as spotting mines and tracking submarines.

Thus it was only the "A" and "Z" hydroplanes which were suitable for offensive activity. Of these two types of planes, the two captured enemy pilots had more tactical knowledge and they willingly shared it with their captors. Three of the enemy hydroplanes were equipped with torpedoes fastened to their undercarriages. Additions had been made to these undercarriages in such a manner that they resembled gondolas, and as such served to keep the entire underside of the boat out of the water. This enabled the enemy planes to more effectively deploy their torpedoes at their intended targets. For an unknown reason, the torpedo planes had been painted in such a manner as to make them look strikingly different from other craft. The hulls and wings of these planes were painted in many colors and had a checkered flag on them.

The two pilots also outlined for their captives an offensive

maneuver popular with the Austro-Hungarian and German air forces. This favored ploy involved the apparently downed enemy plane feigning distress so as to lure unsuspecting Allied ships into range. The hunter suddenly became the hunted as the distance between the two craft closed and the deathly still plane roared to life. The ship moving in for a capture would be hard-pressed to reverse engines quickly enough to avoid an oncoming torpedo fired at point blank range. The captives allowed as to how their compatriots were undertaking much practice at this maneuver so as to perfect it.

This was an interesting piece of information as the German aviation forces had given up on the use of torpedo planes. Apparently, the Austro-Hungarians hoped that the unexpectedness of their maneuver would prove to their advantage. Ultimately, however, it would seem that the Allies caught on fairly quickly to this game as losses due to attempting to capture downed enemy aircraft were minimal.

Another interesting piece of tactical information from the two captive pilots brought at least a measure of relief to Italian authorities. Recently an order had come down from the German High Command that the city of Venice was no longer to be attacked from the air.<sup>24</sup> The precious art and buildings of that ancient city were

deemed too valuable to be subjected to further bombardment. Instead, the aviation forces were to concentrate their attacks on the Italian encampments along the Basso Piave line. To ensure the element of surprise in these bomb raids, the planes were to approach from the sea with their engines silenced.

Assisting in preventing these attacks on the Italian troops along the Piave gave the Americans a specific task to perform. Shortly, however, the Americans found the need for their services greatly amplified.

As American naval aviation activity in Italy intensified, the number of personnel at the Headquarters office in Rome was increased. On 30 September 1918, the initial staff of four officers and four men was increased to nine officers and seventeen men. The increase in personnel was especially needed as the Rome Headquarters found its number of duties quickly multiplying. In addition to ensuring that American naval personnel at Lake Bolsena and Porto Corsini were complying with Italian guidelines, the Rome Headquarters found itself making arrangements for the purchase of Caproni land planes for the Northern Bombing Group in France, and purchasing captive balloons and shipping them back to the United States. A great deal of time was devoted to investigating and

reporting on all types of Italian dirigibles, seaplanes and land planes, and various instruments and equipment, including machine guns, which were then purchased and shipped back to the Bureau of Navigation in Washington, D.C., for the information of the aviation forces in America.<sup>25</sup>

With only one air station operating in Italy, the total number of patrols and offensive bombing operations flown by American naval aviators was not very high. However, there were some notable ventures undertaken. On 21 August, one M-8 and four M-5's left Porto Corsini for a raid on Pola. As they approached Pola from the south, the raiders noticed five enemy land chasse planes and two enemy seaplanes taking off and gaining altitude rapidly. In a defensive maneuver, three of the enemy land chasse planes formed a group to the west. The other two Austrian land chasse planes moved to the northwest. For some unknown reason the enemy seaplanes disappeared. The American pilots prepared for combat.<sup>26</sup>

Ensign George Ludlow, USNRF, leading his own force of chasse planes signaled for the attack to begin, the time being about 1125 hours. Ludlow, Ensign Austin Parker, USNRF, and Ensign Charles Hammann, USNRF, from an altitude of about 2500 meters, dived after the group of three enemy planes to the west of them. Ensign

Ludlow took on the center plane, then shifted to the plane on the left. Immediately behind him was Ensign Parker who continued the attack on the center plane. Ensign Parker's right gun then jammed and he found himself unable to follow his opponent into a nose dive forcing him to pull out of the action to try and unjam it. As he pulled up, Parker fired all of the bullets remaining in his left gun into the plane immediately above him. Ensign Hamman found himself taking on the other two enemy chasse planes which had initially split off from the others to the northwest.

During the battle, Ensign Ludlow's plane was hit several times. He remained in the area long enough to observe one of the enemy planes trailing smoke or steam as if badly damaged. Ludlow's own damaged plane forced him to head back to base, but not before having to fight off two enemy planes in pursuit of him. As if he were not having a difficult time already, Ensign Ludlow's motor suddenly quit, having sustained too much damage. Fire then broke out aboard his plane. Ludlow managed both to put out the fire and shake one of the enemy planes pursuing him. The second plane followed him down to 500 meters before breaking off. After pulling out of a spin, Ensign Ludlow managed to safely land five kilometers from Pola. The enemy plane abandoned the downed Ludlow and returned to base.

Meanwhile, Ensign Hammann had seen Ludlow go down so he worked his way over to where Ludlow was after fighting off two more enemy planes. Pilot Hamman then landed next to Ludlow who climbed aboard and positioned himself just below the engine. Moments before Hammann landed to rescue him, Ludlow had opened the photographic port of his plane to allow water to come flooding in. For good measure, Ludlow also kicked holes into both wings. From their position aloft, Ludlow and Hammann watched as the plane gradually sank. As extra insurance for the plane's total destruction, Hammann fired 100 rounds into the sinking craft.

The return flight to Porto Corsini was without incident. However, when Hammann tried to land in the canal with new passenger Ludlow on board, the craft flipped over and was completely wrecked. Both Ludlow and Hammann were rescued, though both men were considerably banged up and bruised. Speculation as to the cause of the crash led to the conclusion that the bottom of the airplane had probably been broken when Hammann took off with Ludlow as a passenger below the engine, adding to the stress on the plane's structure caused by numerous bullet holes sustained during the dogfight over Pola. On this particular mission, all pilots returned safely despite the loss of two aircraft. The following night the

Austrians staged a retaliatory raid, but failed to cause much damage. A building at the Italian Naval Station near the air station was hit, as were a couple of fuel tanks. No casualties were suffered, however.

Commendations for outstanding work arrived at the station from both the Italian District Commander and the Commander, U. S. Naval Aviation Forces in Italy. For Ensign Hammann's heroic effort in saving Ensign Ludlow, the Commander, U. S. Naval Aviation Forces in Italy, Lt. John Callan, notified the Italian Ministry of Marine that he would accept for Ensign Hammann the Silver Valor Medal for which Hammann had been proposed by the Italian government. For having shot down an enemy plane, Ensign Ludlow was to be awarded the Bronze Valor Medal, as also proposed by the Italian government.

Subsequent raids were made on Pola during the months of August, September and October. Of particular note was a search patrol sent out the night of 1 September in response to a report of a missing Italian submarine. The submarine was located and found to be disabled. A destroyer was summoned which successfully towed the submarine back to Venice. During the month of October, the pilots saw considerable action. A morning reconnaissance flight on 7 October almost turned into something more deadly. As the six

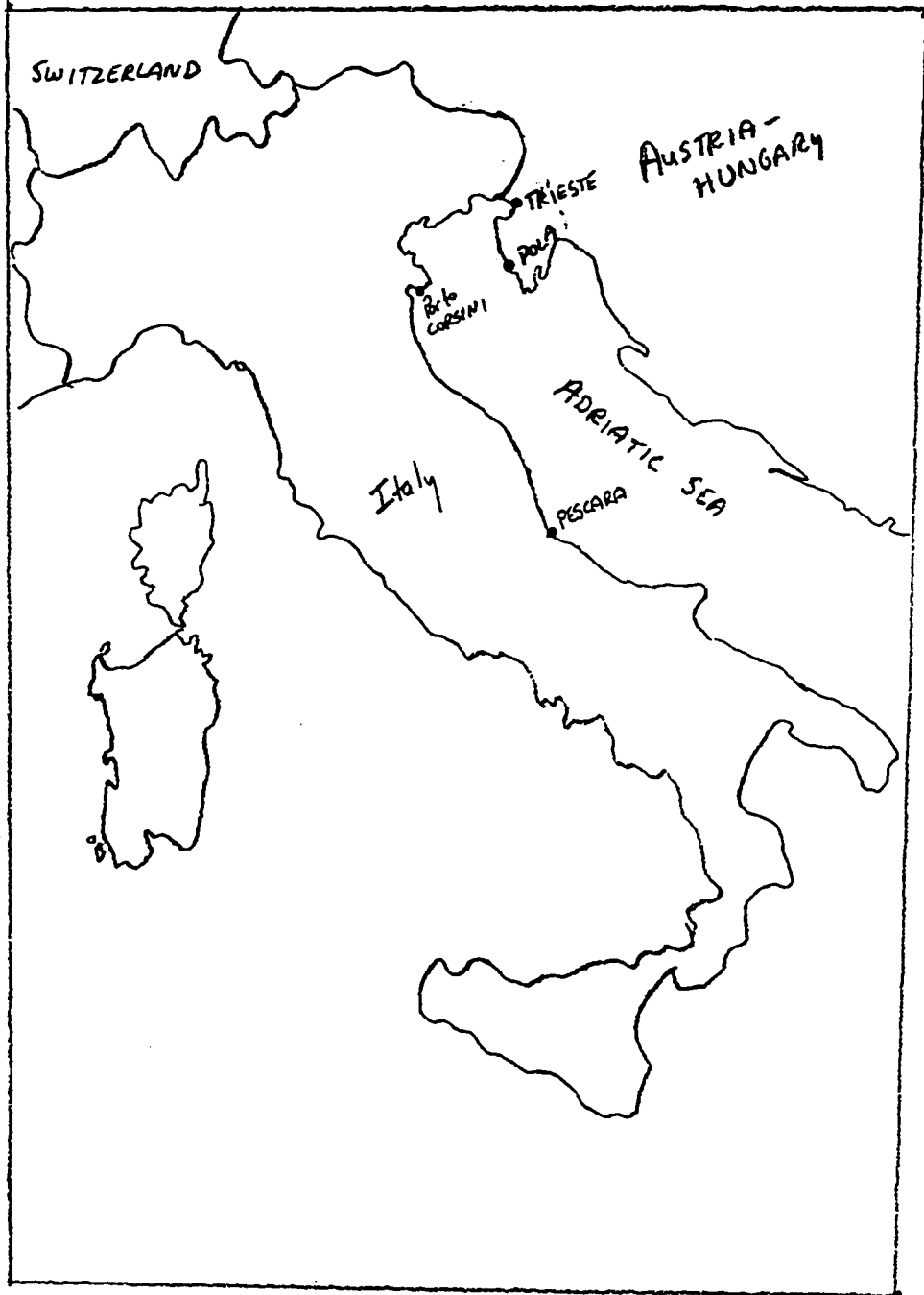
Macchis circled over the harbor at Pola, a barrage was put up over the city and anti-aircraft fire came from below. Three Austrian seaplanes and two land planes took to the air, but failed to interfere with the operations of the American pilots. All of the machines returned safely to their base. On the afternoon of 22 October, 13 American-manned planes from Porto Corsini joined 30 planes from the Italian Venice Squadron on an offensive bombing operation against Pola. The American pilots dropped 14 bombs on Pola and all returned safely to Porto Corsini.

A letter of commendation from Vice Admiral Marzolo, the Italian Naval Commander-in-Chief at Venice, was received at Porto Corsini on 14 October 1918 following an inspection tour by the Admiral during the middle of October. Marzolo was considerably impressed by what he termed the "perfect conditions of the station and of the planes, and the discipline and smartness of the men."<sup>27</sup> Marzolo was extremely complimentary of Porto Corsini commander Capt. Willis B. Havilland and of all the officers and enlisted men for their "spirit of organization and military discipline [which had] brought the station to the highest point of efficiency."<sup>28</sup> Marzolo was particularly impressed with the Chief Pilot, Lt. R. B. Read and all of the aviators who had participated in the reconnaissance

missions and the raids on Pola.

A decision by the Navy Department to increase operations in Italy to such a degree that between three and four thousand men would be employed resulted in the removal of Lt. Callan as the Commander, U. S. Naval Aviation Forces in Italy. Callan was to remain in Italy in the position of Aide for Aviation, a position similar to that of the Aide for Aviation to the Force Commander, London. The new commander of the Forces in Italy was Capt. Train. Train assumed his new position on 16 October 1918 and served in that capacity until demobilization occurred.

At any given time during its operation, the greatest number of planes used at the Porto Corsini air station was 21. The actual number of reconnaissance, patrol and offensive flights that originated from Porto Corsini was 745. During their operations, the Porto Corsini pilots amassed a total air time of 807 hours and 8 minutes.<sup>29</sup> On 8 November 1918 the U. S. Naval Air Station at Porto Corsini received word that it was to remain in full commission pending demobilization orders to be issued by Admiral Sims. All preparations for the commissioning of the Pescara were canceled. No further students were to be sent to Bolsena for flight training.<sup>30</sup>



**Map 12.1: Air Stations in Italy**  
**Note: Map is not to scale and is for illustrative purposes only**

## Notes to Chapter 12

<sup>1</sup>Report dated 17 June 1925, titled "Operation of the U.S. Naval Aviation Forces in Italy." Author unknown. National Archives, RG45, ZGU, Box 919, folder 3, p. 1.

<sup>2</sup>Lt. John L. Callan, "Seaplane Stations in Italy," a report sent to Commander Hutch I. Cone, dated 26 January 1918. National Archives, RG45, ZGU, Box 911, folder 3.

<sup>3</sup>Ibid. According to Callan, the Italians also offered the possibility of a third air station at San Severo. However, the Italians envisioned San Severo as a hub of activity far greater than any station the Americans had experience running. The Italians figured on 1,364 men and officers to operate 80 Caproni planes. Such operations were beyond American capabilities.

<sup>4</sup>Archibald D. Turnbull and Clifford L. Lord, History of United States Naval Aviation (New Haven: Yale University Press, 1949), p. 129.

<sup>5</sup>Report dated 17 June 1925, titled "Operation of U.S. Naval Aviation Forces in Italy," Author unknown. National Archives, RG45, ZGU, Box 919, folder 3.

<sup>6</sup>Callan, "Seaplane Stations in Italy," p. 1.

<sup>7</sup>Ibid., p. 2.

<sup>8</sup>Train, Capt. Charles R., cablegram to Adm. William S. Sims, 7 February 1918. National Archives, RG45, ZGU, Box 919, folder 3.

<sup>9</sup>Benson, Admiral William S. at OpNav, cablegram to Adm. William S. Sims, 19 February 1918. National Archives, RG45, ZGU, Box 919, folder 3.

<sup>10</sup>Cone, Commander Hutch I., cablegram to Adm. William S. Sims, 18 February 1918. National Archives, RG45, ZGU, Box 919, folder 3.

<sup>11</sup>Lt. John L. Callan, "Seaplane Stations in Italy," a report sent to Commander Hutch I. Cone, dated 26 January 1918. National Archives, RG45, ZGU, Box 911, folder 3.

<sup>12</sup>Benson, Admiral William S., cablegram to Adm. William S. Sims, from Adm. William S. Benson, 17 March 1918. National Archives, RG45, ZGU, Box 919, folder 3.

<sup>13</sup>Cone, Commander Hutch I., cablegram to Adm. William S. Sims, 17 April 1918. National Archives, RG45, ZGU, Box 919, folder 3.

<sup>14</sup>Sims, Admiral William S., cablegram to Adm. William S. Benson, 28 April 1918. National Archives, RG45, ZGU, Box 919, folder 3.

<sup>15</sup>Confidential order dated 10 May 1918 confirming cablegram of same date from Adm. William S. Sims to Commander Hutch I. Cone. National Archives, RG45, ZGU, Box 919, folder 3.

<sup>16</sup>Cone, Commander Hutch I., letter to Capt. Charles R. Train, 10 May 1918. National Archives, RG45, ZGU, Box 919, folder 3.

<sup>17</sup>Report dated 17 June 1925, titled "Operation of U.S. Naval Aviation Forces in Italy," p. 3. Author unknown. National Archives, RG45, ZGU, Box 911, folder 3.

<sup>18</sup>Ibid.

<sup>19</sup>Train, Captain Charles R., cablegram to Adm. William S. Sims, 27 July 1918. National Archives, RG45, ZGU, Box 919, folder 3.

<sup>20</sup>Report dated 17 June 1925, titled "Operation of U.S. Naval Aviation Forces in Italy," p. 4. Author unknown. National Archives, RG45, ZGU, Box 911, folder 3.

<sup>21</sup>Ibid., p. 3.

<sup>22</sup>Ibid., pp. 5-7. All combat descriptions from the Porto Corsini station are taken from this report.

<sup>23</sup>"Confidential Bulletin, No. 5," dated 8 June 1918. National Archives, RG 45, GA-1, Box 132, Folder 8, p. 14.

<sup>24</sup>The following account of the dogfights and the personal information concerning the pilots is excerpted from a report received from the Intelligence Service of the Italian Ministry of Marine. Neither captured pilot was identified by name in this report. This information was printed in "Confidential Bulletin, No. 5," dated 8 June 1918. National Archives, RG 45, GA-1, Box 132, Folder 8, p. 13.

<sup>25</sup>The following account of enemy operations at Triest was also found in the report received from the Italian Ministry of Marine and printed in "Confidential Bulletin, No. 5" identified above. Reference is made to pages 13 and 14.

<sup>26</sup>This directive was also quoted in "Confidential Bulletin No. 5" of 8 June 1918. Reference is made to page 15.

<sup>27</sup>Vice Admiral Marzolo, Italian Naval Commander-in-Chief at Venice, letter to Commanding Officer, Porto Corsini air station, 14 October 1918. Text as quoted in "Operations of U.S. Naval Aviation Forces in Italy," p. 6. National Archives, RG45, ZGU, Box 911, folder 3.

<sup>28</sup>Ibid.

<sup>29</sup>ibid.

<sup>30</sup>Sims, Admiral William S., cablegram to Rome Headquarters for Aviation in Italy, 8 November 1918. National Archives, RG45, ZGU, Box 919, folder 3.

## Chapter 13

### Conclusion

On 12 November 1918, the following dispatch was sent out from Headquarters to all United States Naval Air Stations in Europe:

Suspend patrol flights. Only flights now authorized are those necessary to look for dangerous mines and harbor flights reduced to strict minimum to test planes and train personnel. Deflate all kite balloons except those judged necessary for mine sweeping. Limit ascensions and trips to mine searching, test of material and training of personnel.<sup>1</sup>

The War was over and the time for assessment and reflection was about to begin.

When the United States Government declared war with Germany on 6 April 1917, Naval aviation, including Marine air power, had a total strength of 48 officers and 239 enlisted men, 54 airplanes, 1 airship, 3 balloons and 1 air station. By 11 November 1918, those numbers had increased dramatically. Naval air men numbered 6,716 officers and 30,693 men, to which the Marine air arm added an additional 282 officers and 2,180 men. Between the two branches could be found 2,107 assorted aircraft, 15 dirigibles and 215 kite and free balloons.<sup>2</sup> Of these totals, 18,000 men and 570 aircraft went abroad. More than twenty air stations had been

established throughout France, England, Ireland and Italy.

Sheer numbers alone, however, cannot determine whether U. S. naval aviation played an instrumental role in bringing World War I to a close. It is the specific contributions to the Allies, and the resulting effects Germany and its allies, that truly illuminate the influence of the American presence. Those contributions were not strictly of the material nature, either, for American naval aviation brought with it a powerful psychological aspect that cannot be overlooked.

To be sure, the physical aid provided by U. S. naval aviation forces was greatly needed by the Allies. For Great Britain, the failure to adequately protect their shipping around both England and Ireland from the German U-boats was turned around by American assistance with the new strategies of convoying and escort flights to defeat German tactics. The French, too, were having trouble keeping the Germans from their coastline and the air above their country. Although Germany was already suffering from both a steady decline in manpower and its ability to replace damaged U-boats before the Americans arrived, the boost to Allied defensive capabilities from the influx of American personnel and equipment was substantial. The American presence established in Italy aided in

keeping Austro-Hungarian forces from decimating that country's vulnerable coastline. American naval aviation, in fact, made itself into a strong physical presence in France, England, Ireland and Italy fairly quickly .

Yet, there is another facet to the contributions made by the American naval aviators. A most compelling argument supporting the claim that U. S. naval aviation played an instrumental role in ending World War I sooner is the psychological one. The perception that one's enemy possesses superior strength is highly demoralizing and can serve as a powerful deterrent to greater offensive activity. By the same token, the belief that a new ally will be overwhelmingly dominant can rejuvenate sagging spirits and return confidence to those on the edge of defeat. Petain believed the French military situation would be greatly relieved by the arrival of American forces, particularly those who were qualified pilots. In his perception, the air power brought by naval aviators would swiftly vanquish the German U-boat capability and diminish German field positions. Perhaps the Germans believed this, too. While in reality many of the first American pilots arriving on Allied soil were undertrained and ill-equipped to fulfill any kind of mission, that initial perception of tremendous American air strength must have

simultaneously boosted Allied morale and crushed German hopes.

Although using airplanes in conjunction with ships and ground forces on a large scale was untried, the sheer magnitude of this experiment undoubtedly provoked a great deal of the excitement surrounding the American presence overseas during World War I. The groundwork for getting naval aviation accepted as a viable component of strategic warfare can be directly linked to the transition away from focusing on the construction of capital ships that had begun at the turn of the century. For all modern navies, but especially for the United States, this was the first step towards establishing a more balanced Navy. The capital ships had served their purpose when they stood at the forefront of technology. However, the introduction of the technological innovations known as the submarine and the airplane added, almost literally, two new dimensions to strategic operations and their potential, and real, value could not be ignored.

The Germans, with their intimidating U-boats, had precipitated this large scale infusion of aviation forces. In fact, the breakdown of American isolationism was facilitated by technology. The failed mediation between Germany and the Allies and the resultant resumption of unrestricted submarine warfare left the Wilson

government no choice but military intervention. The American government had already entered the political and economic arenas of Europe. On 6 April 1917, technology forced its military role abroad to begin.

The core concept that aerial warfare quickly evolved into a science is central to the role played by naval aviation in World War I. Submarine warfare had already become a science as the Germans cunningly deployed their subs against Allied shipping, sinking 6 million tons in 1917 alone. In response, the Allies devised the convoy system as a defensive measure, and airplanes figured prominently in that strategy. Submarines and airplanes, therefore, transformed the very nature of warfare. Technological advances expanded the capabilities of submarines and airplanes beyond merely reconnaissance and patrol, and allowed them to become offensive weapons. These developments contributed to a change in the very definition of "preparedness."

The nature and type of logistic support and manpower necessary to sustain aviation dictated a change in the organization and allocation of resources. The organization, design and capabilities of present and future ships in the fleet needed to be reconsidered in conjunction with how best to use them with

airplanes. Having aviation as an adjunct to the surface fleet meant that tactics had to be adjusted accordingly. As the Allies could not afford to sustain such losses as they had in 1917, the remedy for the situation lay in the establishment of aerial patrols and convoy escorts. Convoys were proving a positive defense against surprise U-boat attacks. This extra dimension of aerial assistance provided an additional measure of security as ships navigated through waters filled with enemy predators.

Once the United States became involved overseas and military forces were given their assignments, the senior officers of U. S. naval aviation became determined to prove that aviation could live up to its promise in World War I. Although the United States established naval air stations in four different countries to varying degrees of success and organization, an overall idea of its relative success, or failure, can be obtained by evaluating where naval aviation stood, as a whole, on 12 November 1918.

Accomplishments did vary in each of the four countries where American naval air stations were established. The level of development and the attendant capabilities of, and assistance rendered by, each nation's military organizations were quite different. Relations with the various governments were also

different, although the bottom line must be said to have been accommodation and cooperation from all involved. Geography and the concomitant ability to get supplies through to a particular location were critical factors. Shortages of men and material were constant impediments to progress and the best intentions did not always produce tangible results, but the esprit de corps was palpable.

Morale among arriving American aviators equaled that of its new hosts and was easily sustained. Aid for Aviation Captain Thomas T. Craven, USN, noted in his personal writings immediately after the war's end: "During the three years in which the United States remained dormant, aviation skirmishing over Europe had secured a strong hold on popular imagination and when we arrived it was being exploited to the limit."<sup>3</sup> Indeed, the Americans were welcomed by their overseas allies and afforded the utmost cooperation in getting their air stations up and operational.

One of the first attempts to analyze the performance of American naval aviators overseas appeared three months after World War I ended when Capt. Craven authored what he referred to as "a lasting record of the work of the construction, operation, and demobilization" of American Naval Aviation forces in France.<sup>4</sup> This document, titled "The History of Naval Aviation, French Unit," was

intended to answer any future questions which might arise as to "whether or not the vast expenditure of funds and the tremendous amount of labor involved in the creation of the bases in France were worthwhile."<sup>5</sup> Although in Craven's opinion the larger questions of aviation's worthiness might never be satisfactorily answered, he did intend to evaluate and address the individual aspects of the entire endeavor. The ideas he expressed concerning aviation in France can easily be extended to apply to U. S. naval aviation in England, Ireland and Italy as well. In his capacity as the current Aid for Aviation, Craven was responsible for all aviation, not just that in France.

Cost and effectiveness seemed to be the end points on the spectrum of evaluating aviation activity, at least according to Craven. Initial costs and outlays of material were conceived on a fairly large scale. The original intent was that the scale of aviation activity be such that it would be large enough and well enough equipped to effectively participate in a war of a few years' duration. The conflict was anticipated to be intense and long. No one expected the Germans and their allies to collapse as quickly as they did.

The French government proved extremely generous to its new ally and its enthusiasm for aviation was reflected therein. "While the business of war boomed, France provided us with one hundred and

forty-two planes of various types, nine 'blimps' as well as quantities of aviation clothing, instruments and accessories. When bombs reached us from home that could not be exploded when dropped on rocks, we returned them quietly to the United States and fell back on our allies for bombs, bomb racks and sights."<sup>6</sup> That the Allies supplied the Americans with planes was no small matter given the fact that Navy and Marine Corps aviation in Europe during World War I were able to use but few airplanes actually manufactured in the United States. According to one source, a total of 388 seaplanes were sent abroad. The types included were the H-16, HS-1, HS-2 and F-5. Also among the shipments that went out between May and November 1918, were 52 Army DH-4 land planes.<sup>7</sup> The mere fact that planes were shipped did not mean that they were usable once (or if) they reached their destinations. Misdirected and incomplete shipments were a constant plague to the overseas forces.

Ultimately, however, most of the costs of equipping and establishing the air stations in France were recovered after the war when the French purchased most of the supplies that had been shipped from the States. While this did not include specific aeronautic equipment, the balance of materials retained their initial value. From the effectiveness point of view, there is no disputing

the fact that the arrival of aviation forces severely curtailed the submarines' domination of the oceans and waterways. Aviation does not lay sole claim to this area for the adoption of daytime convoy techniques was also a contributing factor.

In retrospect, however, the accomplishments of American naval aviation in France were extremely impressive in that virtually all activity that was planned and initiated was seen through to the end. Even though less than two years elapsed between the time the Navy Department ordered the beginning of aviation activities in France and cessation of hostilities, the Americans had been able to design, establish and equip twelve air stations, all but a few of which were operable by war's end. Those not quite ready would only have needed a short while longer before they, too, could have been operational. The area in which American naval aviation accomplished the least was in the area of lighter-than-air craft. American construction capabilities for such craft were minimal and reliance was placed heavily on the French to supply all the needed equipment.

French reports reveal the dynamic nature of the American stations in the comparison of a mere six months' worth of American activity at six active stations with the activities of fourteen French stations operating for eighteen months. In the six months from April

to November 1918, American air stations were on record for 27 submarine sightings. Of those, 25 were attacked, 12 damaged and 4 were probably sunk. In contrast, the French stations sighted 43 subs, attacked 40, damaged only 13 and probably sank just 5.<sup>8</sup>

Operations in England, Ireland and Italy were nowhere near the scale of those in France. Their numbers and relative success necessarily pale in direct comparison. Yet, it would be a disservice to categorically dismiss the efforts of the men at the stations in these countries as inferior. A better context in which to judge the relative success or failure of naval aviation in these three countries is to determine to what extent American contributions affected enemy activities.

Naval aviation in England consisted of just two stations. Yet, each served an important purpose. The station at Eastleigh supplied the Northern Bombing Group. Killingholme was an operational air station and the assistance its men rendered to England was substantial. The English needed assistance in combating the physical and psychological threats of intermittent Zeppelin bombing runs by the Germans. American naval aviators joined their allies on offensive missions even before American equipment arrived, instead flying English planes. When the station became operational, the

American pilots assisted in patrolling the North Sea and escorting convoys safely to their destinations. The fact that the pilots of this station safely escorted 6,243 ships to their destinations speaks volumes about American contributions here, particularly in light of the tonnage sunk before the Americans arrived.

The establishment of U. S. naval aviation in Ireland was more ambitious than that in England, but not quite on par with plans for France. Ireland had a unique set of circumstances, not the least of which were volatile weather patterns and civil unrest, for the Americans to work around. Even so, Ireland was perhaps the most successful undertaking for naval aviators overseas during World War I. Four stations were organized and proved a sufficient deterrent to reduce the number of submarine sightings to virtually zero. The naval aviators were prepared for almost anything, but the Germans did not even try to attack the Irish coast once the Americans were in place.

U. S. naval aviation in Italy was initially to take much the same form as it had in England. Two stations, one at Porto Corsini and one at Pescara, would be occupied by American forces. Here, however, the Americans were promised stations that were already fully equipped. The Italians needed American help to fend off German

and Austrian air and submarine attacks emanating from Pola, across the Adriatic Sea. Although the stations in Italy were not equipped exactly as promised, the Porto Corsini station was the most strategic location from which to mount a defense. The Pescara station was never commissioned. Even so, the American contribution to holding Austro-Hungarian air forces in check was substantial. American pilots flew 745 flights from Porto Corsini and in so doing, helped protect the vulnerable Italian coastline and prevented the Austro-Hungarians from obtaining an upper hand and expanding their sphere of operations.

The end of the war and the subsequent withdrawal of American aviation forces from their scattered positions throughout Europe brought closure to this first grand experiment of using aviation in warfare. A new chapter opened for aviation as demobilization contributed to the rearrangement of elements within the Navy Department. The Department's evolving policies for the strategic use of aircraft in combat were part of a greater goal of establishing the best balance among all the elements at its disposal to attain the greatest effectiveness for the Fleet in the event of future conflicts.

Some of the biggest changes within the Navy Department affected the Marine Corps and its aviation units. Post-war

demobilization in February and March 1919 brought the abandonment of both the First Marine Aviation Force, which had formed the Day Wing of the Northern Bombing Group, and the First Marine Aeronautic Company, returning from duty in the Azores.

The occupation of parts of the Dominican Republic and Haiti by two Marine brigades gave impetus to the regrouping of two smaller aviation forces to support the ground troops. Squadron D was formed and sent to the Dominican Republic to support the 2nd Provisional Brigade at Consuelo in February. In March, Squadron E was set up for work with the 1st Provisional Brigade at Port au Prince, Haiti. The remainder of aviation personnel were transferred to Quantico and Parris Island, North Carolina during the summer.

Throughout 1919 and 1920, Marine aviation experienced change and reorganization. Post-war reduction of the military forces resulted in Congressional authorization of Marine manpower levels of 26,380, 1/5 of the Navy's strength, but with an additional 1,020 Marines specifically detailed to aviation.<sup>9</sup> Further refinement of the organization of the Aviation Section within the Corps took place in December 1920. A Division of Operations and training was formed and on 1 December the Aviation Section was placed under its supervision. The reassignment of aviation to the newly formed

Division was designed to promote closer ties between Marine aviation and the rest of the Corps. The result of this reorganization was the promulgation of a mission for Marine aviation: the close support of amphibious landing forces.

During the 1920's the Marines saw action in not only Haiti and the Dominican Republic, but also in China and Nicaragua as well. The introduction of many techniques that would later be used so effectively in World War II evolved from this time. In Haiti, Marine fliers worked out the technique of dive-bombing, which would later be perfected in Nicaragua. Air-ground communication using a system of drops and pick-ups, and experimentation with plane-to-earth radio transmission were developed. The technique of dropping supplies to stranded or isolated units, begun in France during World War I, was perfected. Marine aviators recorded the first air attack directed by ground troops using panels showing the direction of the enemy. The system of evacuating wounded men by air was pioneered. Pilots carried mail, took photographs and made maps of the terrain over which they flew. In sum, they worked out most of the procedures which became standard for future combined air-ground operations.

The controversy which had accompanied the development of

Marine aviation was closely tied to the on-going evaluation of the role of the entire Marine Corps within the Navy Department. Preoccupation with the definition of a mission for the Marine Corps resulted in the development of two schools of thought. The first viewed the Corps as a small Army-type operation, able to perform any mission the Army could, but on a reduced scale. Advocates of the second school of thought wanted the Corps to concentrate on a specialized task, amphibious warfare, cooperating with naval forces to seize advance bases for the Fleet. The establishment of the Fleet Marine Force on 8 December 1933 was a victory for the advocates of amphibious warfare.<sup>10</sup>

The Fleet Marine Force was constituted as an integral part of the United States Fleet and was to be included in the Operating Force Plan for each fiscal year. Drawn from the forces maintained by the Major General Commandant in a state of readiness for operations with the Fleet, the Fleet Marine Force replaced the East and West Coast Expeditionary Forces which had been created after World War I. The Marine aviation organizations operating with the Expeditionary forces were redesignated Aircraft One and Aircraft Two. Command of the Fleet Marine Force was divided. During Fleet operations ashore or afloat, the Force was commanded by the Commander-in-Chief of

the United States Fleet. At all other times, command was exercised by the Commandant of the Marine Corps.

The mission of Marine aviation was the direct support of the ground forces in operations with the Fleet. In this capacity, Marine aviation had finally officially become an integral part of the Marine Corps and the Navy as a whole. It provided a vital component in the Corps' primary mission of the seizure and defense of advance bases. Marine aviators would give direct support to the Marine ground forces.

Establishing aviation as one more component in the concept of a balanced fleet for the waging of naval warfare became a dominant theme within the the Navy Department in the years following the war. Granted, there were still those who harbored a strong bias against any further development of aviation. Even so, the overwhelming sentiment within the Department was how best to integrate all aviation with the Fleet. Marine aviators had found their small niche. Navy aviators would follow suit.

In January 1919, a squadron of H-16 flying boats joined the Fleet exercises in Guantanamo in order to learn how best to work with battleships. The idea of creating a torpedo plane emerged. Experiments using remodeled ships as "seaplane tenders," or what

have commonly become known as aircraft carriers, began, laying the groundwork for the extraordinary combined air/sea battles of World War II. Change, and acceptance of change, came slowly, but naval aviation never looked back as its men kept their sights set on new horizons.

It would have to be said that naval aviation was both experimental and instrumental. Yet, the weight of the argument must fall in favor of it being instrumental. In essence then, the argument becomes American naval aviation began as an experiment and became an instrumental factor in bringing about the end of World War I. Doubtless, the war would have dragged on much longer without American intervention. The U. S. servicemen of all branches were catalysts in the ending of the war. The naval aviators were perhaps a more glamorous group than their comrades on the ground. Their contributions, however, were potentially more far-reaching than those of the men on the ground. For starters, the aviator in the plane had the distinct advantage of being able to travel farther and, man for man, had the ability to inflict far greater damage upon the enemy than the soldier on the ground. A well-placed bomb dropped on a submarine base could cause enough damage to slow many U-boats. This would make it easier for Allied and American shipping to make

it to safety with supplies and reinforcements.

World War I naval aviation also left a lasting legacy. The lessons that were learned during deployment in WWI were studied by those who would command the air in World War II. The weak links were strengthened and the failed strategies were reevaluated. At the close of the war, American Navy and Marine Corps aviators "were operating 225 American seaplanes over the North Sea, the Irish Sea, the Bay of Biscay, and the Adriatic Sea and bombing was daily going on over the enemy bases in Belgium."<sup>11</sup> Naval aviation had begun as a grand, but questionable experiment. By the end of World War I, the organization as a whole had earned the right to be identified as an instrumental factor in ending the war and, in so doing, started a new chapter in the art of modern warfare.

## Notes to Conclusion

<sup>1</sup>Captain Thomas T. Craven, USN, "The History of Naval Aviation, French Unit," 15 February, 1919. Naval Air Station Annex, Washington, D.C., Aviation News Section, p. 291.

<sup>2</sup>United States Naval Aviation, 1910-1980, Washington, D. C.: Government Printing Office, 1981.

<sup>3</sup>Vice Admiral Thomas T. Craven, "1918-1919: Naval Aviation, Foreign Service, France." National Archives, ZGU, Box 911, Folder #3, p. 4.

<sup>4</sup>Captain Thomas T. Craven, USN, "Introductory Remarks" from "The History of Naval Aviation, French Unit," 15 February, 1919. Naval Air Station Annex, Washington, D.C., Aviation News Section, p. 1.

<sup>5</sup>Ibid., p. 2.

<sup>6</sup>Craven, "1918-1919: Naval Aviation Foreign Service, France," p. 248.

<sup>7</sup>Capt. Dudley W. Knox, "American Naval Participation in the Great War," 19 July 1923, p. 5. Manuscript found at Operational Archives, Naval Historical Center, Washington Navy Yard, Washington, D. C.

<sup>8</sup>Craven, "History of Naval Aviation, French Unit," p. 248.

<sup>9</sup>Guy Anselmo, "Diamonds on the Wing: Marine Aviation History," Leatherneck, May, 1986, p. 26.

<sup>10</sup>Ibid.

<sup>11</sup>Knox, p. 9.

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### Biographical and Subject Files

Reference Section, Marine Corps Historical Center  
Washington, D. C.

The Biographical Files contain chronological, unofficial military histories of several Marines, newspaper clippings and other assorted articles and photographs pertaining to each individual on whom a file has been made. The files are arranged alphabetically and have additional materials added periodically. The files used in this work were those of: Alfred A. Cunningham, Francis T. Evans, Roy S. Geiger, William M. McIlvain, Bernard L. Smith and Thomas Turner.

The Subject Files are arranged alphabetically and cover a wide range of topics of concern to the Marine Corps. The files used in this work include: General Aviation, Folders 1-5; Aviation: Pre-World War II Histories; Aviation: 75th Anniversary; Aviation: Early Naval Aviators; Aviation: Close Air Support, Folders 1-2; Balloons; Dive Bombing, Folders 1-2; Aviation: Awards, Folders 1-2; Origins of USMC Aviation; Organization of Aviation; and Naval Aviation, Folders 1-2.

Collections of Personal Papers  
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Alfred A. Cunningham Papers. PC459. This collection of papers and memorabilia of the Marines' first aviator includes the flight log of Cunningham's first airplane, a diary of his trip to France in late 1917, a scrapbook of photographs of his pre-aviation Marine career and an assortment of letters and documents, most of them related to formation of the First Marine Aviation Force.

Edwin N. McClellan Papers. PC108. This collection contains several rough drafts for articles published in the Marine Corps Gazette, several unpublished works, correspondence with Alfred A. Cunningham, Francis T. Evans and Roy Geige other correspondence and the original drafts of a large manuscript on George Washington.

Other Special Collections

Aviation News section, Washington Navy Yard Annex, Washington, D. C. In this small publication office at the Navy Yard Annex is a small collection of personal papers, naval aviation histories and assorted other documents. There is also a wealth of cartographic material that relates to Naval and Marine Corps aviation. Works used from this collection are so designated in the end notes.

Navy Historical Center, Washington Navy Yard, Washington, D. C. Within this historical center is a library and the Operational Archives Branch housing the Early Records Collection. An assortment of personal papers, documents and histories relating to naval aviation is found here. Works used from this location are so designated in the end notes.

Naval Aviation History Unit, Washington Navy Yard, Washington, D.C. This small unit is housed in the same building as the Navy

Historical Center at the Navy Yard. An assortment of documents, histories and personal papers relating to naval aviation is found here. Works used from this location are so designated in the end notes.

National Archives, Washington, D. C. Record Group 45, Subject File, 1911-1927 is a rich source of all types of documents relating to Naval Aviation. There are reports, telegrams, letters, short histories and other types of records all focussed on various aspects of naval aviation before and after World War I. The sections utilized for this work were primarily "G-Naval Aviation," "PA-Bases (Naval Air)," "Q-Councils, Conferences, Commissions, Boards and Committees" and "Z-Naval Aviation." Within each of these general alphabetical categories are sub-categories with additional letters used to denote divisions. For example, within the "Z" group is subcategory "ZGU." Works cited from this Record Group are classified by their alphabetical division, box number, folder number and page number. A guide to the Subject File is available from the National Archives.

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