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U.S. ARMY ATTACHES AND THE SPANISH CIVIL WAR,
1936-1939: THE GATHERING OF TECHNICAL
AND TACTICAL INTELLIGENCE

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by

Kim M. Juntunen

4 May 1990

A Thesis Submitted in Partial Fulfillment of the
Requirements for the Masters Degree in History,
College of Arts and Sciences

Thesis Adviser

Russell F. Weigley
Dr. Russell F. Weigley

Second Reader

Waldo H. Heinrichs
Dr. Waldo H. Heinrichs

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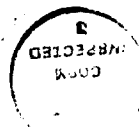
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The Spanish Civil War, 1936-1939, was an event of interest to the Military Intelligence Division (MID) of the War Department. Through the Army attachés stationed in the major embassies in Europe, MID received technical and tactical information concerning weapons used in Spain by the Germans, Soviets, and Italians. Although the information gathered by the attachés was often random and incomplete, they and their sources saw trends in the development and use of modern weapons, especially the airplane, the tank, and antiaircraft and antitank guns. The efforts of the attachés provided MID with information it could analyze, and from which it could draw conclusions about the nature of a future European war.

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 Dept. of History, U.S. Military
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INTRODUCTION

The United States Army shared with the armies of Europe a special interest in the civil war in Spain. It was the first time since the Great War that European weapons were used by European peoples against a European enemy. The war held the promise of answering questions left unanswered since 1918. Had technology brought an end to maneuver on the battlefield, or were the trenches of the last war an aberration? How would the new weapons, the tank and the airplane, tried but not fully developed during the last war, be used in future conflicts? What were the characteristics of the German, Soviet and Italian weapons, and how effective were they? Would bombing raids by aircraft against civilian and military targets cripple the enemy's morale and destroy the will to fight as Giulio Douhet, Billy Mitchell and others envisioned?

The United States Army, through its military attachés in Europe, gathered tactical and technical information about the war that was subsequently distributed throughout the army. This information clearly indicated the stage of development of many European weapon systems. The use of those weapons also provided an indication of how they might be used in the next war. That the United States Army could not or would not make use of the "lessons" of the war in

Spain was not the fault of a lack of information.

This study is based, in part, on two intertwined assumptions. The first assumption is that Spain was a testing ground for European soldiers and weapons. The second assumption is that the Spanish Civil War, being a testing ground, was worthy of intelligence interest.

The Spanish Civil War is an event that must be looked at within the context of its own time. Participants and observers of the war continually, and almost universally described it in terms of a testing ground or a dress rehearsal for the next war. A person of no less rank and influence than Reichmarshal Hermann Goering testified at Nuremberg after World War II that:

With the permission of the Fuhrer, I sent a large part of my transport fleet and a number of experimental fighter units, bombers, and antiaircraft guns; and in that way I had an opportunity to ascertain, under combat conditions, whether the material was equal to the task. In order that the personnel, too, might gather a certain amount of experience, I saw to it that there was a continuous flow, that is, that new people were constantly being sent and others recalled.

Goering was not the only German who viewed the war in terms of training soldiers, and testing equipment. General Wilhelm von Thoma, who commanded the German tank units in Spain early in the war, told B. H. Liddell Hart after World

War II that he was sent to Spain: "For it was seen that Spain would serve as the 'European Aldershot'."² It is also significant that the Condor Legion had a squadron, designated as VB/88, called the "Experimental Flight."³

The American Ambassador, and the American military attaché to Spain also recognized the war as a testing ground. The Ambassador, Claude G. Bowers, used that very phrase after the war: "Spain then was to be the testing ground. Here would be staged the dress rehearsal for the totalitarian war on liberty and democracy in Europe...."⁴ Colonel Stephen O. Fuqua, the attaché, wrote in the spring of 1937 that "It is generally accepted that the civil war in Spain had not only been a laboratory for testing equipment - particularly of German and Russian designs, but a 'dress rehearsal' for the next war."⁵

Although high ranking Italian and Soviet participants have not left as much information on their attitudes or participation as have the Germans, their civilian and military journalists, along with those of most of the major industrialized countries of the world, not only wrote in terms of a testing ground, but dwelt on the "lessons" to be learned from the war being fought. This desire to draw conclusions and theorize about the evolution of warfare is, in itself, a manifestation of the concept of Spain as a testing ground. The writers looked at weapons and tactics,

and tested former assumptions about warfare against what was perceived to be happening, and attempted to draw conclusions about the shape of future wars. They too spoke of Spain as a dress rehearsal and a testing ground.⁶

Spain afforded attachés and other observers a unique opportunity to learn about a variety of weapons from many countries. German, Italian and Soviet weapons were predominant, but French, Dutch, Czechoslovakian and Swiss arms and equipment were also used. The types of weapons included tanks and aircraft as well as antitank and antiaircraft guns. Most of the equipment and weapons used had been manufactured since the First World War, and had not been used before in combat. The Spanish Civil War was indeed worthy of intelligence interest.

From the outbreak of the war in July 1936 through to the defeat of the Spanish Government in 1939, the United States Army attachés in Europe gathered tactical and technical information about the combatants, weapons and equipment used in Spain. The task of gathering this information fell not only to the attaché in Spain, but to the military attachés in all the major capitals of Europe. The body of information that the attaches collected provided the United States Army with clear indications of the development of German, Soviet and Italian weapons, and pointed toward the possible tactical employment of those weapons in future wars.

NOTES

¹Trial of the Major War Criminals Before the International Military Tribunal: Nuremberg, 14 November 1945 - 1 October 1946 (Nuremberg: International Military Tribunal, 1947), 280-281.

²B. H. Liddell Hart, The German Generals Talk (New York: William Morrow and Co., 1948, repr., New York: Quill, 1978), 92.

³Raymond L. Proctor, Hitler's Luftwaffe in the Spanish Civil War, Contributions in Military History, Number 35 (London, England and Westport, Connecticut: Greenwood Press, 1963), 118.

⁴Claude Bowers, My Mission to Spain: Watching the Rehearsal for World War II (New York: Simon and Schuster, 1954), 272.

⁵Col. Stephen O. Fuqua to Military Intelligence Division, 26 Apr 37, 2724-S-16/8, Military Intelligence Division, Record Group 165, National Archives, Washington, D. C.

⁶United States and foreign military publications from the late 1930's contain numerous articles discussing the "lessons" of the war in Spain. The Historical Section, and the Translation Section of the Army War College translated many of the foreign articles into English, often within six months of their original publication. Among the articles that were translated are: Major Cailloux, "Lessons of the War in Spain," La Revue d'Infanterie (March 1938), trans. Fred Merten; V. Gusev, "Antitank Defense: Experience of the Spanish Civil War," Krasnaya Zvezda (May 21, 1938), trans. Charles Berman; S. Liubarsky, "Lessons of the Spanish Civil War," Voyennaya Mysl (October 1938), trans. Charles Berman; Major Wanty, "A Year of War in Spain: Facts and Lessons," La Revue d'Infanterie (April 1938), trans. Claudine Wannamaker. These and other translated articles are found at the Army War College Library at Carlisle Barracks, Carlisle, Pennsylvania under the call letters U15, A36. Other articles in English language magazines include: Emilio Canevari, "Forecasts from the War in Spain: Lessons Based on Technical and Tactical Experience," trans. Dr. Herbert Rosinski Army Ordnance XVIII (March-April 1938): 273-280;

Major-General Arthur C. Temperley, "Military Lessons of the Spanish War," Foreign Affairs 16 (October 1937): 34-43; Brigadier General Henry J. Reilly, "Proving Ground in Spain: Armament Trends as Revealed by the Civil War," Army Ordnance XIX (May-June 1939): 333-336.

CHAPTER I

THE ATTACHÉ AND THE INTELLIGENCE SYSTEM

During the 1930's the Military Intelligence Division (MID) was the nerve center of the Army intelligence system. A staff section of the War Department's General Staff, it was responsible for the collection, analysis and dissemination of all foreign information useful to the Army. Within the Military Intelligence Division were five branches, each with specific and separate functions. Besides the Geographic, Operations and Public Relations Branches there were the Administrative and the Intelligence Branches. It was with these last two branches that the attachés most closely worked.¹

The Intelligence Branch directed the attachés in the collection of information, and received the attaché reports coming into MID. The original copy of the reports went to the Chief of the Intelligence Branch, who read them and passed them to the Chief of MID. The original was then filed as a "permanent record." Additionally, the staff of the Intelligence Branch evaluated the information in the reports, and ensured that copies of the attaché reports were distributed, as necessary, to staff sections of the War

Department, to the chiefs of the various branches and schools within the Army, or to other interested departments or offices. The Intelligence Branch also used the information it had on file from previous attaché reports to prepare biweekly intelligence summaries, which were distributed throughout the Army, and to respond to specific requests for information from agencies or individuals within the Army or federal government.²

The Administrative Branch handled the financial and administrative details of the attaché's assignment, but more importantly, the Administrative Branch was the coordinating link between the War Department and the Department of State. Communications between the two departments passed through the Foreign Liaison Officer assigned to the Administrative Branch.³

Close cooperation apparently existed between the two departments. When cautioned about the cost of sending daily cables to the War Department, Colonel Stephen O. Fuqua, the attaché in Spain, used the State Department's request for daily military information from the Madrid embassy as a means of keeping the War Department informed through State Department channels of communication. And according to a memorandum sent to the Chief of Staff of the Army by Colonel Francis H. Lincoln, the Assistant Chief of Staff for Intelligence, the State Department regularly requested political reports sent by the attachés. He stated that

these reports were used to supplement reports sent by State Department employees.⁴

MID recognized the attaché as the Army's primary source of information; however, there were problems with the system. The information gathered was only as good as the attaché gathering it, and the Army had not developed a sound means of attracting and training qualified officers interested in intelligence work. The peacetime Army, especially in the middle of the Depression, was concerned with problems other than the collection of foreign intelligence. And the established and conservative elements of the Army had, at best, an indifferent attitude toward intelligence work.⁵

According to a study done by students in the G-2 (Intelligence) Course at the Army War College, in January 1938 there were only thirty-two officers assigned as attachés to cover the military affairs of forty-six countries around the world. Of the thirty-two, eight were assistant attachés, and four were assistant attachés for air, whose responsibilities were specifically for the collection of aviation information. This was an increase of one assistant attaché over the April 1936 figures. These numbers remained relatively stable throughout the late 1930's.⁶

The study also discussed the method of selecting attachés. Among the qualifications considered were an excellent or better efficiency rating, proficiency in a foreign language, good character of service and successful completion of the Command and General Staff College course, or preferably, the Army War College course. Other considerations included tact, personality, personal appearance, desire to be an attaché, and financial status. MID kept a file of applications, and the chiefs of the various arms branches made recommendations to MID of suitable officers. When an opening occurred for an attaché, a list of candidates was compiled from the applications and recommendations, and the best qualified officer available, who wanted the job, got it.⁷

An officer's financial status was an important issue because Army pay rarely covered the cost of living and entertaining in a manner expected of a member of the ambassador's staff. As the student study reported: "In spite of the monthly maintenance allowance authorized Army Military Attachés, an outside income is helpful in all instances, and is practically essential at such posts as London, Paris, Rome, Moscow and Buenos Aires." It was not until fiscal year 1938 that a bill was considered that would compensate Army attachés at the same rate as Navy attaches.⁸

The attachés, once selected, received a briefing on their duties from MID prior to being posted overseas, but did not receive any formal intelligence training. The lack of instruction undoubtedly effected the attachés' ability to seek out and recognize critical information. This weakness in the intelligence system was recognized by at least one diplomat. Ambassador William E. Dodd in the Berlin embassy complained about the quality of military attachés precisely because of their lack of training.⁹

That there were problems with the attaché system should not obscure the fact that the system worked. The attachés, although they were not trained intelligence agents, were exceptionally bright and successful Army officers. The careers of the ten attachés and assistant attachés who most often sent reports about Spain indicate that they were among the best officers of the Army (see Tables 1 and 2 on pages 26 and 27). At a time when a quarter to a third of the officers in the Army had no college education, all except Colonel Fuqua had graduated from West Point or a civilian college or university. Lieutenant Colonel Norman E. Fiske, the assistant attaché in Rome, had, in addition to a Bachelor's Degree from the University of California, a Master's Degree from the University of Pennsylvania.¹⁰

They had also all reached the highest levels of military schooling. Nine were graduates of the Command and General Staff School or its equivalent. Two, Lieutenant Colonel Henry B. Cheadle and Lieutenant Colonel Horace H.

Fuller, were Distinguished Graduates of their classes. Eight of the ten also graduated from the Army's most senior school; the Army War College. Two of the ten had, in addition, the rare opportunity to attend foreign military schools. Lieutenant Colonel Sumner Waite was a graduate of the French Ecole Superieure de Guerre, and Lieutenant Colonel Norman E. Fiske graduated from the Tor di Quinto in Italy.¹¹

Some had or would hold powerful and important positions. Colonel Fuqua was the Chief of the Infantry Branch from March 1929 through March 1933. Lieutenant Colonel Raymond E. Lee went on to become the Director of Army Intelligence during the Second World War, and Lieutenant Colonel Hayes A. Kroner was the Chief of the Intelligence Branch as World War II began. A final indicator of their successful careers was their rank upon retirement. One retired as a Lieutenant Colonel, one retired as a Colonel, six retired as Brigadier Generals and two retired as Major Generals.¹²

The reports of these attachés generally reflected their abilities and interests. Especially impressive were the attaché reports from Lieutenant Colonels Fuller and Waite in Paris. Their reports were extensive and varied, and they attempted to analyze the information they gathered and point out trends and possible lessons. Lieutenant Colonels Lee and Kroner, the attachés in London, also sent a variety of

information that they gathered from multiple sources. Less information about the war in Spain came from the attachés in Rome, Berlin and Moscow, but that in part can be accounted for by the reluctance of those countries to discuss their participation in the war. As Major Truman Smith reported from Berlin: "All information on Spanish combat experience is guarded as a state secret."¹³

The most technically detailed reports, however, were sent by Captain Townsend Griffiss, the assistant attaché for air assigned to the Paris embassy. For much of the Spanish Civil War, Captain Griffiss was attached to the embassy in Spain to work with Colonel Fuqua. An Air Corps officer, he was responsible for most of the aviation reports received by MID. Not only were his reports clear and detailed accounts of information he received from the Spanish Government, but they reflected his own wide range of contacts from Soviet pilots and Spanish mechanics to other foreign attachés. Also, Captain Griffiss, more than any other attaché, relied on personal observation for information, and he often analyzed the information he received, and tried to draw conclusions from what he was learning.

Colonel Fuqua in Spain sent information, often his own eyewitness accounts of the front lines, but he rarely attempted to analyze what he saw or draw conclusions from various bits of information. His reports were factual

accounts of troop movements, numbers of casualties and the designations of units involved in battle, but they rarely contained technical or tactical data. In the course of the war Colonel Fuqua made at least twenty-five trips to various locations in Spain to observe the war, yet his reports provide little information on the weapons being used, how they were deployed, or how effective they were. And he seemed to rely heavily on information from the Spanish Government rather than develop a variety of sources of his own. The mediocre quality of Colonel Fuqua's reports is a stark contrast to the energetic and lively reports of his assistant attaché for air, Captain Griffiss.¹⁴

There were admittedly problems associated with being the military attaché in a country torn by civil war. Travel and communication were difficult, and the government was in turmoil. Colonel Fuqua's problems were further complicated by the evacuation of the embassy from Madrid to Valencia, but when questioned by his superiors in MID about the lack of timely information he asserted: "I can assure the Department that no foreigners in Spain are given the opportunities afforded Capt Griffiss and myself" What those opportunities were he did not specify.¹⁵

In October 1936, before the embassy moved from Madrid, Colonel Fuqua requested assignment as a military observer attached to one of the armies in Spain. His request indicated the approval of both Ambassador Claude Bowers, the

ambassador to Spain, and the Spanish Government. At the time of his request, Colonel Fuqua had orders to remain with the embassy as long as it functioned on Spanish soil and to open an office in Portugal if the embassy in Spain closed. The War Department after consultation with the State Department denied Colonel Fuqua's request to be assigned as a military observer.¹⁶

The response from the War Department cited a need to avoid "embarrassing incidents" that might arise from the presence of an American military observer on either side. A memorandum for the Chief of Staff written by Colonel F. H. Lincoln, the Assistant Chief of Staff for Intelligence, additionally commented that "but little could be gained, judging by the lack of any reports of importance from Colonel Fuqua to date."¹⁷

There was apparently more to Colonel Fuqua's request than the desire to observe the war from a closer vantage point. Upon being notified that his request had been disapproved Colonel Fuqua responded by radiogram that "to move now with office under orders young secretary (of the embassy) would be to lose prestige and be humiliating." Ambassador Bowers' response to the State Department reflected a similar sentiment: "I think Fuqua feels professionally humiliated at being refused permission to witness battle for Madrid."¹⁸

Colonel Fuqua's battles with MID did not end there. Although he moved with the embassy to Valencia, under the direction of the secretary of the embassy, his relationship with MID continued to deteriorate. Requests were sent by MID to Colonel Fuqua for information about the battles for Madrid and Guadalajara. These requests specifically indicated the need for information about the different arms used, how they were employed, and how effective they were. Tanks, aircraft, antiaircraft weapons, machine guns and bombs were singled out by MID for specific emphasis, but still the information from Colonel Fuqua lacked substance.¹⁹

Colonel Fuqua's reports never substantially improved, but the struggles between him and MID eased after he sent a personal letter to Lieutenant Colonel John B. Coulter, the Chief of the Military Attaché Section of MID. The letter outlined the efforts he had been making to comply with the instructions from MID, and discussed the difficulties he had gathering information from the Spanish Government because the Government and the American embassy, both in Valencia, were so far from the front lines.²⁰

Spain was Colonel Fuqua's terminal assignment. Although his ego was apparently involved in some of the problems he had with MID, and he might have been upset because he was denied the opportunity to be a military

observer, it seems unlikely that he would have deliberately failed to send information requested by MID. Colonel Fuqua had been in the Army since the Spanish-American War, and had served his time as an infantryman. He was sixty-two years old in 1936. It is more likely that he was a man of the nineteenth century who understood infantry tactics, and the use of men in war, but who had never come to understand the growing technology of warfare. Perhaps his reports appear lifeless and limited because he did not understand what to look for.

There were limits to the means that attachés could employ to collect information. They were assigned as a part of the embassy staff, and were limited to overt means of collection. Before reporting to their embassies overseas, the attachés were briefed on their missions and the means they could employ to gain information. Specifically, they were restricted to official military channels, government reports, local civilian and military publications, observation, and civilian and military contacts.²¹

On 11 December 1936 Lieutenant Colonel Oliver S. Wood, the executive officer of MID, sent a letter to the attachés in the European capitals outlining MID's interest in the war in Spain. He described it as a conflict of "acute interest" to all the major military powers because of the practical "test" that weapons, tanks, and aircraft were undergoing.

Assuming that the European countries would have their own channels of information from Spain, he asked the attachés to cultivate sources in their host countries to gather information about the war. Specifically, Lieutenant Colonel Wood asked for data about the types of weapons being used, their characteristics, and how they were being employed.²²

The reports sent to MID during the war in Spain reveal the wide range of sources used by the attachés. Most sources were definitely within the guidelines set by MID. Excerpts or copies of articles were sent from newspapers, magazines, and military journals along with the attaché reports. And information was sent based on interviews with American and foreign civilians who had traveled through the war zones, or who had seen military equipment or weapons. The attachés in Paris were especially good at interviewing a variety of individuals. Mentioned in their reports are interviews with employees of the International Telephone Company, the Associated Press, The Chicago Daily News, soldiers who had fought with the Nationalists or with the Government, and stray civilians who had been vacationing in Spain when the war started.²³

Extremely important to the attachés was the information and the cooperation they received from their host governments, and their military counterparts. Although the Government in Spain could apparently offer little information of a technical or tactical nature because of the

political and military upheaval caused by civil war, it was helpful in allowing the attachés access to the war zones and to some military installations. The Soviets maintained control of their equipment and installations even though fighting for the Spanish Government; therefore access to Soviet equipment and installations required the permission of the Soviets. That permission was difficult to obtain.²⁴

The reports from the attachés in Spain mention little cooperation from other foreign attachés or observers, although it is interesting to note that Colonel Fuqua, on at least two occasions, traveled from Barcelona to Valencia and back aboard British naval warships. The British Chargé d'Affaires in Barcelona apparently arranged the transportation. The purpose of the trips was to allow Colonel Fuqua an opportunity to observe the military situation in the southern provinces.²⁵

In other capitals of Europe, American military attachés were more successful in establishing and maintaining foreign military contacts. Lieutenant Colonel Fuller in Paris regularly received and sent to MID the "Bulletin d'Information de Quinzaine", an official publication of the French Air Ministry. In addition, French and British intelligence officers and attachés provided technical data about weapons, tanks, and aircraft. Lieutenant Colonel Philip Faymonville in Moscow through discussions with fellow

attaches gathered information about the Soviet medium bomber and the I-15 pursuit planes being used in Spain.²⁶

And in Paris, Lieutenant Colonel Fuller over lunch with the German attaché, General Erich Kuhlenthal, learned that the Germans were disappointed with their planes and pilots, based on their performance in Spain, and that it would take at least four years to correct the training deficiencies of the pilots. That General Kuhlenthal made a point to pass this information to Lieutenant Colonel Fuller again a few days later might indicate that the German Government was attempting to use American intelligence gatherers to pass misleading or distorted information to the United States. Whatever the German motivation, Lieutenant Colonel Fuller noted and passed the information to MID without comment.²⁷

In spite of MID's briefings about the acceptable sources of information, there are reports that indicate that the military attachés went outside official military channels to gather information. Colonel Fuller, in a letter to MID, specifically mentions "information which has been furnished through friends without the knowledge of their superiors." Captain Griffiss and Colonel Fuqua received copies of reports directly from French naval and air attachés. In the case of the air attachés, the reports were given under the condition that the contents of the reports would be revealed only to the War Department. And

Lieutenant Colonel Raymond E. Lee received reports of British air attachés that were released from the Air Ministry with the "understanding that not even the British War Office was to have any knowledge of the trans-action."²⁸

While American military attachés were gathering information from all available sources, official and unofficial, their actions were being monitored by MID in Washington to ensure they were not providing unauthorized information to foreign governments. Colonel George Paine in August 1937 was warned against sharing military information concerning Spain with the Soviet military attaché in Italy. Lieutenant Colonel John B. Coulter of the Military Attaché Section of the Administrative Branch of MID quoted Colonel Paine the standing instructions: "In no case, except with the specific approval of G-2, will information regarding any foreign country with which the United States has diplomatic relations be furnished the government of another foreign country."²⁹

The attachés were not alone in deciding what kinds of information to collect. MID sent requests for specific information, and passed along requests from various agencies and branches of the Army. Some of the requests that originated with MID were aimed at gathering information about certain events or weapons, such as those sent to Colonel Fuqua requesting information about the battles of

Madrid and Guadalajara, while others were more general requests indicating the types of information MID required, like the general instructions sent to all attachés by Lieutenant Colonel Wood.³⁰

The requests for information that came through MID from the branches and agencies of the Army were most often very specific about the information they wanted gathered. A number of requests for information came in the form of questionnaires that were forwarded to the attachés. The questions in the questionnaires were specific in delineating the precise information they required. For example, the questionnaire sent by the Coast Artillery asked for such information as the muzzle velocity of the German 88 mm. gun, and a complete description of the sighting system used with that gun. The Ordnance Department also wanted detailed and specific technical information about the fire control system of antiaircraft and heavy artillery weapons.³¹

Although not all questionnaires were as lengthy or detailed, the questionnaire from the Coast Artillery contained thirty-seven specific questions, and the questionnaire from the Air Corps Tactical School contained sixty-seven questions. Other requests were brief, such as the one from the Chief of Infantry that requested general information about night operations in Spain, including resupply and troop movements, and the one from the Chemical

Warfare Service asking for any information on the use of chemicals in Spain.³²

These requests for information were important in providing the attachés with guidance on the kinds of information needed by MID and the Army. Yet, they are also important in indicating that the information gathered by the attachés was distributed and read by individuals and agencies outside MID.

The attaché was the prime means of collecting information, but he was only a part of the intelligence system. For the Army intelligence system to have worked there had to be communication between MID and the rest of the Army. The requests for information from the various branches and agencies indicate that at least part of the Army recognized and relied on MID as a means of collecting and disseminating information.

The requests for information that were forwarded to the attachés were not the only requests that MID received. There were numerous requests for basic information, copies of attaché reports and intelligence summaries from intelligence and operations officers in the divisions, corps, and departments within the Army.³³

There are also indications that MID sent information to agencies without being formally requested. Penciled on an attaché report concerning a photograph of the bombing of a building is a notation indicating that the photograph was

forwarded to the offices of the Chief of the Field Artillery and the Chief of Ordnance for their information. A similar indication is found in the response by MID to a request for information about the battle of Guadalajara from the Chief of Ordnance. The letter from MID stated that whenever any information became available about mechanized engagements it would be forwarded to the Ordnance Department.³⁴

In addition to handling requests and passing information outside the War Department, MID also answered questions from, and kept the War Department General Staff informed about the war in Spain. Especially prevalent are the memoranda for the Chief of Staff signed by Colonel Francis H. Lincoln, the Assistant Chief of Staff for Intelligence. The memoranda not only provided information about the displacement and strength of the Nationalist and the Government forces, and the amount of foreign intervention in Spain, but also summarized what MID had learned about the weapons and equipment used by each side. From the office of the Chief of Staff also came requests for such information as the facts surrounding the sinking of the Nationalist battleship España off Bilbao in April 1937, and an assessment of the reasons why the Nationalist attack at Guadalajara in March 1937 failed.³⁵

Although the intelligence system was imperfect, it worked. Through the almost three years of warfare in Spain, American military attachés collected and sent to MID a variety of information concerning the characteristics and

employment of weapons and equipment used by each side in the war. Their efforts were more than an exercise of the system. Because of the communication between MID and the branches, agencies, offices and individuals of the Army, the information collected by the attachés was disseminated, used, and considered at various levels throughout the Army.

Table 1

<u>CAPITAL</u>	<u>NAME</u>	<u>RANK</u>	<u>BRANCH</u>	<u>PERIOD OF ASSIGNMENT</u>
Madrid/Valencia	Fuqua, Stephen O.	Colonel	Infantry	Jul 33-Feb 38
Valencia	Cheadle, Henry B.	Lt. Colonel	Infantry	Feb 38-May 39
Paris	Fuller, Horace H.	Lt. Colonel	Field Artillery	Apr 35-Mar 39
Paris (Asst.)	Waite, Sumner	Lt. Colonel	Infantry	Mar 36-Mar 39
London	Lee, Raymond E.	Lt. Colonel	Field Artillery	Feb 35-Nov 38
London (Asst.)	Kroner, Hayes A.	Lt. Colonel	Infantry	Jul 34-May 38
Moscow	Faymonville, Philip	Lt. Colonel	Ordnance	Mar 34-Jan 39
Berlin	Smith, Truman	Major	Infantry	Feb 35-Mar 39
Rome	Paine, George H.	Colonel	Field Artillery	Mar 36-Nov 40
Rome (Asst.)	Fiske, Norman E.	Major	Cavalry	Oct 35-Apr 38
Paris/Valencia (Air)	Griffiss, Townsend	Captain	Air Corps	Sep 35-Apr 38

Sources: Department of State Foreign Service List (Washington, D.C.: United States Government Printing Office, 1936-1939). War Department, The Adjutant General's Office, Army List and Directory (Washington, D.C., United States Government Printing Office, 1936-1939).

Table 2

<u>NAME</u>	<u>COLLEGE EDUCATION*</u>	<u>MILITARY SCHOOLING**</u>	<u>RETIRED RANK/YEAR</u>
Fuqua, Stephen O.	non-graduate	Army Staff College, 1908	Maj. Gen., 1938
Cheadle, Henry B.	USMA, 1913	C&GSS, 1927; AWC, 1931	Brig. Gen., 1951
Fuller, Horace H.	USMA, 1909	C&GSS, 1923; AWC, 1928	Maj. Gen., 1946
Waite, Sumner	U. of Maine, 1911	C&GSS, 1926; AWC, 1932 Ecole Supérieure de Guerre, 1928	Brig. Gen., 1948
Lee, Raymond E.	U. of Missouri, 1909	C&GSS, 1923; AWC, 1927	Brig. Gen., 1946
Kroner, Hayes A.	Ga. School of Tech., 1911	C&GSS, 1928; AWC, 1933	Brig. Gen., 1947
Faymonville, Philip	USMA, 1912	Army Industrial College, 1933 AWC, 1934	Brig. Gen., 1948
Smith, Truman	Yale, 1915	C&GSS, 1928; AWC, 1933	Lt. Colonel, 1942
Paine, George H.	USMA, 1906	C&GSS, 1923; AWC, 1924	Brig. Gen., 1946
Fiske, Norman E.	U. of California, 1916 U. of Pennsylvania, 1935	C&GSS, 1934 Tor di Quinto, 1929	Colonel, 1953
Griffiss, Townsend	USMA, 1922	Flight Schools	died-line of duty Europe, 1942

* USMA - United States Military Academy

** C&GSS - Command and General Staff School
AWC - The Army War College

Sources: War Department, The Adjutant General's
Office, Official Army Register (Washington,
D.C.: United States Government Printing Office,
1931-1953.

NOTES

¹Col. F. H. Lincoln, "The Military Intelligence Division, War Department General Staff," Lecture given to G-2 Course, 5 Jan 37, The Army War College, United States Army Military History Institute, Carlisle Barracks, Carlisle, Pennsylvania (hereafter cited as MHI); Bruce W. Bidwell, History of the Military Intelligence Division, Department of the Army General Staff: 1775-1941 (Frederick, Maryland: University Publications of America, Inc., 1986), 263, 379.

²Ibid., 263; Col. F. H. Lincoln, Memorandum for the Chief of Staff, 12 Dec 36, 2610-178/2, Military Intelligence Division (cited as MID), Record Group 165 (cited as RG 165), National Archives, Washington, D.C., 5; Report of Committee #12, "Study of the Military Attache and Translation Systems", G-2 Course, The Army War College, 27 Jan 38, MHI, 10.

³Lincoln, "Military Intelligence Division".

⁴Col. Stephen Fuqua to Lt. Col. John B. Coulter, 5 Apr 37, 2657-S-144/155, MID, RG 165; Lincoln, Memorandum for the Chief of Staff, 2610-178/2, MID, RG 165.

⁵Bidwell, Military Intelligence Division, 263; The Evolution of American Military Intelligence (U.S. Army Intelligence Center and School, 1973), 45.

⁶Report of Committee #12, "Military Attaché and Translation Systems", 7; United States War Department, The Adjutant General's Office, Army List and Directory April 20, 1936 (Washington, D.C.: United States Government Printing Office, 1936), 58-59.

⁷Report of Committee #12, "Military Attaché and Translation Systems", 8-9.

⁸Ibid, 16: Bidwell, Military Intelligence Division, 385.

⁹Report of Committee #12, "Military Attaché and Translation Systems", 10; Alfred Vagts, The Military Attaché (Princeton, New Jersey: Princeton University Press, 1967), 70-71.

¹⁰For a general discussion of the qualifications of the "average" Army officer during the interwar period see: Edward M. Coffman and Peter F. Herrly, "The American Regular Army Officer Corps Between the World Wars," Armed Forces and Society 4 (November 1977): 55-73: Information about the attaches is compiled from the annual publication of: War Department, The Adjutant General's Office, Official Army Register (Washington, D.C.: United States Government Printing Office), especially the Official Army Register of January 1, 1931 and January 1, 1943.

¹¹Ibid.

¹²Official Army Register, 1 Jan 1931, 239; Vagts, Military Attaché, 209; Bidwell, Military Intelligence Division, 412; Official Army Register, 1 Jan 1943, 1 Jan 1948, and 1 Jan 1954.

¹³Maj. Truman Smith to MID, (no day given) August 37, 2657-S-144/229, MID, RG 165.

¹⁴Fuqua to MID, various dates, 2610-S-46/14 through 39, MID, RG 165.

¹⁵Lt. Col. O. S. Wood to Fuqua, 17 Nov 36, 2657-S-144/70, MID, RG 165; Lincoln to Adjutant General, 31 Mar 37, 2657-S-144/153, MID, RG 165; Fuqua to Coulter, 5 Apr 37, 2657-S-144/155, MID, RG 165.

¹⁶Fuqua to MID, 30 Sep 36, 2610-S-50/7, MID, RG 165; Lincoln, Memorandum for the AG, 26 Sep 36, 2610-S-50/6, MID, RG 165; Lincoln, Memorandum for the AG, 24 Sep 36, 2610-S-50/5, MID, RG 165; Lincoln, Memorandum for the Chief of Staff, 1 Oct 36, 2610-S-50/8, MID, RG 165; Lincoln, Memorandum for the Chief of Staff, 14 Oct 36, 2610-S-50/10.

¹⁷Dept. of State to Claude Bowers, 15 Oct 36, 2610-S-50/12, MID RG 165; Lincoln, Memorandum for the Chief of Staff, 1 Oct 36, 2610-S-50/8, MID, RG 165.

¹⁸The American embassy in Madrid/Valencia was represented by a secretary during the war. Ambassador Bowers, as well as most other countries' ambassadors to Spain, lived in and worked out of offices in Saint-Jean-de-Luz in southern France for the duration of the war. Claude Bowers, My Mission to Spain: Watching the Rehearsal for World War II (New York: Simon and Schuster, 1954), 288; Fuqua to MID, 20 Oct 36, 2610-S-50/19, MID, RG 165; Bowers to Secretary of State, 12 Oct 36, 2610-S-50/9, MID, RG 165.

¹⁹Wood to Fuqua, 17 Nov 36, 2657-S-144/70, MID, RG 165; Lincoln, Memorandum for the Adjutant General, 31 Mar 37, 2657-S-144/153, MID, RG 165.

²⁰Fuqua to Coulter, 5 Apr 37, 2657-S-144/155, MID, RG 165.

²¹Report of Committee #12, "Military Attaché and Translation Systems", 10.

²²Wood to attachés in London, Paris, Berlin, Rome, Moscow, 11 Dec 36, 2657-S-144/71 through 75, MID, RG 165.

²³Examples of newspaper and journal articles include: Lt. Col. Horace H. Fuller to MID, 18 Feb 37, 2765-S-144/114, MID, RG 165; Fuqua to MID, 15 Apr 37, 2657-S-144/158, MID, RG 165; Lt. Col. Raymond E. Lee to MID, 24 May 37, 2657-S-144/191, MID, RG 165; Lt. Col. Sumner Waite to MID, 7 Dec 37, 2657-S-144/302, MID, RG 165; Interviews are numerous, but include: Waite to MID, 13 Jan 37, 2657-S-144/87, MID, RG 165; Fuller to MID, 2 Mar 37, 2657-S-144/124, MID, RG 165; Lt. Col. Hayes A. Kroner to MID, 9 Mar 37, 2657-S-144/129, MID, RG 165; Waite to MID, 5 Nov 37, 2657-S-144/288, MID, RG 165; Waite to MID, 8 Nov 37, 2657-S-144/389, MID, RG 165.

²⁴Fuqua to MID, 16 Nov 36, 2610-S-48/11, MID, RG 165; Cpt. Townsend Griffiss to MID, 28 Jan 37, 2657-S-144/75c, MID, RG 165; Griffiss to MID, 27 Feb 37, 2657-S-144/127, MID, RG 165.

²⁵Fuqua to MID, 6 Jun 38, 2657-S-144/377, MID, RG 165; Fuqua to MID, 27 Aug 38, 2657-S-144/398, MID, RG 165.

²⁶For examples of the "Bulletin d'Information de Quinzaine" see: Fuller to MID, 25 Jun 37, 2657-S-144/211, MID, RG 165; Fuller to MID, 14 Aug 37, 2657-S-144/249, MID, RG 165; Information from foreign intelligence sources include: Waite to MID, 18 Jan 37, 2657-S-144/86, MID, RG 165; Waite to MID, 21 Jan 37, 2657-S-144/92, MID, RG 165; Kroner to MID, 25 Mar 37, 2657-S-321/5, MID, RG 165; Lt. Col. Philip Faymonville to MID, 10 Feb 37, 2657-S-144/116, MID RG 165.

²⁷Fuller to MID, 11 Feb 37, 2657-S-144/103, MID, RG 165; Fuller to MID, 23 Feb 37, 2657-S-144/118, MID, RG 165.

²⁸ Fuller to MID, 14 Mar 38, 2657-S-144/373, MID, RG 165; Fuqua to MID, 22 Jun 38, 2657-S-144/378, MID, RG 165; Griffiss to MID, 27 Feb 37, 2657-S-144/127, MID, RG 165; Lee to MID, 24 Mar 38, 2657-S-144/372, MID, RG 165.

²⁹ Coulter to Col. George H. Paine, 9 Aug 37, 2657-S-144/247, MID, RG 165.

³⁰ Wood to Fuqua, 17 Nov 36, 2657-S-144/70, MID, RG 165; Lincoln, Memorandum for AG, 31 Mar 37, 2657-S-144/153, MID, RG 165; Wood to attaches, 11 Dec 36, 2657-S-144/71 through 75, MID, RG 165.

³¹ Col. J. A. Green to MID, 9 Jul 37, 2657-S-144/212, MID, RG 165; Maj. H. C. Hinton to MID, 21 Jun 38, 2657-S-144/376, MID, RG 165.

³² Green to MID, 9 Jul 37, 2657-S-144/212, MID, RG 165; Brig. Gen. H. C. Pratt to MID, 2 Nov 37, 2657-S-144/291, MID, RG 165; Col. J. B. Woolnough to MID, 4 Sep 37, 2657-S-144/258, MID, RG 165; Maj. J. B. Fisher to MID, 4 Mar 37, 2657-S-144/173, MID, RG 165.

³³ Examples include: Lt. Col. Paul E. Tombaugh to G-3, War Department General Staff, 1 Dec 36, 2657-S-144/166, MID, RG 165; Maj. James M. Shelton to MID, 26 Mar 37, 2657-S-144/131, MID, RG 165; Lt. Col. Charles A. Walker to MID, 26 Apr 37, 2657-S-144/141, MID, RG 165; Wood to HQ Second Corps, 5 Mar 37, 2657-S-144/113, MID, RG 165; Coulter to HQ Hawaiian Dept., 6 Aug 36, 2657-S-144/48, MID, RG 165.

³⁴ Fuller to MID, 25 Feb 37, 2657-S-144/123, MID, RG 165; Wood to Chief of Ordnance, 8 May 37, 2657-S-144/141, MID, RG 165.

³⁵ Lincoln, Memorandum for Assistant Chief of Staff, War Plans Division, 10 Mar 37, 2657-S-144/169, MID, RG 165; Lt. Col. C. M. Busbee, Memorandum for G-3, G-4, AWC, WPD, Chief, Artillery, Chief, Infantry, Chief Air Corps, C&GSS, 30 Aug 37, 2657-S-144/314, MID, RG 165; Lincoln, Memorandum for the Chief of Staff, 19 Sep 36, 2657-S-144/48, MID, RG 165; Lincoln, Memorandum for the Chief of Staff, 2 Mar 37, 2657-S-144/111, MID, RG 165; Lincoln, Memorandum for the Chief of Staff, 29 Mar 37, 2657-S-144/189, MID, RG 165; Lt. Col. R. L. Echelberger to MID, 21 May 37, 2657-S-144/184, MID, RG 165; Lincoln to Fuqua, 31 Mar 37, 2657-S-144/153, MID, RG 165.

CHAPTER II

THE WAR IN THE AIR: THE AIRPLANES

Foreign intervention in the Spanish Civil War came early, and in the form of aviation support. By 1 August 1936, two weeks after the rebellion began, German Junkers Ju.52 and Italian Savoia-Marchetti SM.81 transport planes flown by German and Italian pilots were ferrying Rebel troops from Spanish Morocco to the Spanish mainland. More than 7,000 soldiers of the Army of Africa (the elite Moorish Regulars and Spanish Foreign Legions) were thus transported during the months of July and August. This air transportation allowed the rebels to avoid the Government naval blockade of the Straits of Gibraltar and to strengthen appreciably rebel control of the cities of Andalusia, which proved the staging ground for the Rebel push northward.¹

Although numerically, in both men and aircraft, the initial support provided by Germany and Italy was minimal, it was significant in altering the balance between Rebel and Government strength. The majority of the Spanish Air Force remained loyal to the Government, and most of the aircraft remained in Government hands. However, the Spanish Air Force in the summer of 1936 was small and equipped with obsolete airplanes. An American intelligence summary

from early August 1936 indicated that there were 273 airplanes in Spain and forty in Morocco; however, the summary failed to indicate if these were all military planes, or whether the number included civilian planes capable of military service. Captain Griffiss reported in August 1938 that there had been 208 airplanes in the Spanish Air Force in May 1936, of which 154 were listed as available for war service.³

The initial support agreed to by Germany on the night of 25-26 July was for twenty Ju.52 transport planes, six Heinkel He.51 fighters, twenty pieces of antiaircraft artillery, plus munitions and support personnel. In response to further requests for support another six He.51 fighters, fifteen bomb racks for the Ju.52s and assorted bombs were sent from Germany by the middle of August.³

The Italians committed themselves for an initial delivery of twelve SM.81 transport planes, of which nine actually arrived in Morocco. Of the three that did not arrive, one crashed and two were forced to land in French Morocco because of malfunctions. Further requests for support resulted in the dispatch of twenty-seven fighter aircraft to the Rebels, complete with munitions and aviation fuel, during the first week of August.⁴

From these beginnings German and Italian aviation support for the Rebels grew. As the war progressed the German and Italian commitment increased to include larger

numbers of aircraft, many of them the most modern available, as well as ground support personnel and munitions.

The Spanish Government during the early days of the rebellion sought military equipment, including aircraft, from other countries, but before the month of August was over the French, British and Americans had drafted policies of nonintervention that effectively prohibited the sale or transfer of military equipment to either side in the civil war. The French further sponsored an international nonintervention agreement that was signed by the United States as well as the major countries of Europe, including the Soviet Union, Germany and Italy. Nonintervention was a policy the United States, Great Britain, and to a lesser extent, France adhered to even in light of the support the Rebels continued to receive from the Germans and Italians.⁵

It was not until October that the first shipment of military equipment, including aircraft, arrived in Spain from the Soviet Union.⁶

Although it is difficult to determine the exact number of airplanes sent to Spain during the war by the major foreign participants, the numbers were not extremely large. Historians have estimated that the Germans sent about six hundred planes, the Italians sent six hundred and sixty, and the Soviets sent about a thousand. It must be remembered that these figures were totals for over a two and a half

year period, and that many fewer than these numbers were available at any one time for use in Spain.⁷

Because of the lack of large-scale air operations, Captain Griffiss cautioned against drawing any more than general conclusions about the use of aviation in combat based solely on the example of Spain. However, he and his fellow attachés recognized trends in the use of aircraft and alerted MID to the tactics and the equipment used by each side.⁸

In addition to submitting regular attaché reports, Captain Griffiss prepared a summary of the first year of the air war which he sent to MID in August 1937. In it he consolidated information sent throughout the year, and he drew tentative conclusions about the future of military aviation. Upon his return to the United States in 1938, Captain Griffiss again prepared and submitted a lengthy report of the air war in Spain, which included the tactics and operations of the second year of the war. More important than the factual information that these two special reports provided was the assessment by a trained and educated aviation observer of the meaning of what he was seeing and how it would be or could be applied in future aviation conflicts.⁹

Because of the lack of access to Nationalist airfields and pilots, Captain Griffiss was unable to gather as much information about German and Italian aircraft as he was about Soviet airplanes. Yet, between the information he sent and the information gathered by the attaches in Paris and London, a picture of German and Italian aviation in Spain emerges.

Both of the first German planes used in Spain, the Junkers Ju.52 and the Heinkel He.51, were standard aircraft of the developing Luftwaffe. The He.51 was a single-seated biplane normally armed with two machine guns, and capable of speeds of from 180 to 200 mph. Although it was not very fast in straight flight, it could dive swiftly and was fairly maneuverable. The Ju.52 had originally been developed as a civilian transport airplane and adapted for a military role. It had three engines and was capable of being used for either bombing or transport missions. Observers reported its maximum speed to be about 180 mph. and early indications were that it could carry about 2000 lbs. of bombs. Little new information came from the attachés about these planes except in comparison to their Italian and Soviet counterparts.¹⁰

Although neither of these planes was obsolete, their shortcomings were noted early in the war by pilots and observers on both sides, and by the Germans. Lieutenant Colonel Fuller reported conversations he had with the German

attaché in Paris, General Erich Kuhlenthal, in which the General related that the Germans were disappointed with their planes and pilots in Spain. He cited the slow speed and lack of maneuverability as the prime weaknesses of the aircraft, and lack of training as the problem with the pilots. Other interviews and reports from the attachés verified General Kuhlenthal's assessment, especially when German planes and pilots were compared to their Soviet counterparts.¹¹

However, speed and maneuverability were not the only weaknesses of the early German planes. Another problem was the lack of adequate armament on the Junkers. Captain Griffiss and Lieutenant Colonel Fuller reported that Government fighter pilots developed the tactic of the head-on attack of the Ju.52 because the forward section of the airplane was unprotected, and because the reserve fuel tank was mounted above the heads of the pilot and bomber in a vulnerable position. Two gunners, one on the top and one underneath the airplane, firing 7.62 mm. machine guns protected the mid-section and tail of the Junkers.¹²

It is unclear from the attaché reports when the Germans began sending other aircraft to Spain. In a report from Captain Griffiss, dated 16 March 1937, was a copy of an article from The Times of London dated 9 March which Captain Griffiss stated he believed was accurate. The article reported that there were approximately 100 German and

Italian bombers and an equal number of fighter planes in Spain. The only German planes cited were the Ju.52 and the He.51. A report by Lieutenant Colonel Fuller on 25 March, and based on information received from the French Air Ministry, agrees with Captain Griffiss' assessment. Yet, on 7 April 1937 Captain Griffiss reported to MID that the Government shot down a new German Junkers Ju.86 bomber powered by a Jumo-205 heavy oil engine. Captain Griffiss further noted that the latest additions to the Nationalist air force were the Junkers Ju.86 and the Heinkel He.111 bombers.¹³

These two airplanes were recent additions to the Luftwaffe, entering the force since 1935. Germany would use improved versions of both in the Second World War. The Ju.86 was a definite improvement over the Ju.52. It was faster, with the maximum speed estimated at 211 mph, and it was armed with three machine guns instead of two. Like the Ju.52 it had gunners in the rear of the plane, one on the top and one on the underside, but the third firing post was in the nose, offering protection from head-on attack.¹⁴

Because it was a faster and better defended plane, the Government fighter pilots had to change their tactics. Lieutenant Colonel Fuller and Captain Griffiss reported that instead of attacking head-on at the same altitude, the fighter pilots found that attacking from the rear was best.

Because of the large double rudder on the plane, there was a blind spot immediately behind and on the same altitude as the Ju.86 that would allow the fighter pilot a few seconds of protection in which to attack. This tactic, however, also often put the attacker in the position of being a target for the Junkers' rear gunners as he entered and left the blind spot.¹⁵

Colonel Fuller also reported that according to the British Air Attaché in France, the Jumo heavy duty oil engines were "extremely efficient, fast and stable in the air."¹⁶

About the He.111, much less was reported. Yet recent historical work has shown that almost one hundred He.111s were sent to Spain as opposed to about a dozen Ju.86s. This is a good example of one of the problems from which the attachés and MID suffered. They were tied to whatever information they could get, and what was reported or available was not necessarily the most important information. The attaches in Spain had no access to the equipment or pilots used by the Rebels unless one of their planes was shot down in Government territory. However, even then the chances of seeing the equipment were slight. Lieutenant Colonel Fuller received information through an unnamed observer that aircraft that were shot down "were always immediately packed up and sent off to Russia."¹⁷

The reports of Captain Griffiss and Lieutenant Colonel Fuller certainly indicate that they were aware of the existence and use of the He.111 in Spain, but their reports lacked specific technical data. Historians of German aviation show that the He.111 was one of the most modern planes Germany had at the time. Its first test flight was made in February 1935, Captain Griffiss noted its use in Spain in the spring and early summer of 1937, and by the summer of 1938 Lieutenant Colonel Fuller reported about forty in use by the Nationalists. He further reported that it was considered to be a superior piece of equipment.¹⁸

The Heinkel was a twin-engined medium bomber with a maximum speed at sea level of 186 mph, and capable of carrying approximately 3,300 lbs. of bombs. Like the Ju.86, it was armed with three machine guns, mounted in the nose and on the top and underside in the rear. However, unlike the Junkers, the Heinkel was specifically designed as a military aircraft, although it was adapted to civilian use as well. Captain Griffiss reported that the He.111 was used as a light bomber and a photographic reconnaissance plane in Spain.¹⁹

Another German bomber that was used in Spain, but of which little technical information appeared in the attaché reports, was the Dornier Do.17. It was identified in the reports as a light bomber with a maximum speed of approximately 250 mph. According to information received

by Lieutenant Colonel Fuller, a Soviet officer in charge of air intelligence in Spain estimated that there were twenty-five Do.17s in use by the Nationalists in July 1938.²⁰

Like the He.111, the Do.17 was a new airplane whose first production models came out in late 1936; but unlike the He.111, the Dornier was not originally developed as a military airplane. It was first produced commercially for Lufthansa mail service, but its small cargo space ill equipped it for commercial transport use. Because of its speed, it was modified for military use as a medium bomber. In its early military configuration it was equipped with twin 750 hp. BMW engines which gave it a maximum speed of approximately 255 mph. with a bomb load of 2,200 lbs. Like most of the other German bombers, the Dornier was equipped with three machine guns, one firing to the front, one to the rear and one down. However, Matthew Cooper in his history of the German Air Force states that because it was faster than most known fighter planes, military planners considered not supplying defensive armament at all for the Dornier.²¹

Along with the bombers sent to Germany during the spring and summer of 1937 was the Messerschmitt Bf.109 fighter. More technical information appears in the attaché reports about this airplane than any other of the German planes. The earliest information about its use came from Captain Griffiss in July 1937. He noted that the

Messerschmitt was a single-seated fighter with a maximum speed of about 310 mph. The information he had indicated that the plane was armed with a 22 mm. cannon rather than machine guns, and that it was faster and dived better than the Soviet fighters. Captain Griffiss also noted that thirty of the Messerschmitts had been received by the Rebels.²²

In early August, Lieutenant Colonel Fuller verified the use of Messerschmitts in Spain, and further described their characteristics. He reported that they were all metal monoplanes with low wings, retractable landing gears, a variable pitch propeller, and a 650 hp. engine. However, Lieutenant Colonel Fuller's information indicated that the Messerschmitts had machine guns in the wings. In spite of this conflicting piece of information, he verified that at least twenty of the Messerschmitts had been seen in Spain, and that they were considered "very satisfactory" fighters. In July of 1938, Lieutenant Colonel Fuller reported about fifty of the Bf.109s in use by the Rebels.²³

In the spring of 1938 Captain Griffiss sent further information about the Messerschmitts gathered from a "reliable French air contact" who had recently returned from visiting Republican Spain and talking to "high Spanish Air officials". Captain Griffiss' contact reported that there were two types of Messerschmitts in Spain. The majority had Jumo engines and were capable of speeds of about 275 mph.,

while the others had a Daimler-Benz engine and could fly at almost 300 mph. This unnamed contact, however, reported that the Messerschmitts were vastly overrated and were not liked by the Spanish pilots because, while they were fast, they were also hard to maneuver.²⁴

Hugh Thomas agrees that there were various models of Bf.109 used in Spain. He cites at least six variations which affected not only the engines but the armament of the planes as well. The variations help to explain why the information reported by Captain Griffiss and Lieutenant Colonel Fuller about the plane's armament does not agree. The earlier planes apparently did not have cannons, while the later models were equipped with two machine guns in the cowlings and with two 20 mm. cannons mounted in the wings.²⁵

Other German planes were also reported to have been used in Spain, such as the Heinkel He.45 fighter, the Heinkel He.70 bomber, and the Junkers Ju.87 "Stuka" divebomber; but little was written about these planes by the attachés, and research since the war has indicated that they played a minimal role in Spain. Yet, it is important to note that the dive bomber, which was to play such an important part in the Second World War, was found in Spain.²⁶

Three aspects of German aviation support for the Rebels should be noted. First, German aircraft and aviators were sent to Spain within days of the rebellion, and this early

intervention helped shift the balance of military power between the Rebels and the Government. The balance of air power was to shift from one side to the others during the war as new planes, more planes and new players entered the competition. Finally, it should be clear that the Germans sent some of their newest and best airplanes for use in Spain. These included the Messerschmitt Bf.109, the "Stuka" divebomber, the Heinkel He.111, and the Dornier Do.17, all of which would be used in improved versions during the Second World War.²⁷

The Italians sent even more planes to Spain than the Germans, but the attachés had the same problems gathering technical data about them as they did with the German planes. The general assessment of the Italian aircraft sent early in the war was that they were faster, more modern and of better quality than those sent by the Germans. The Italian pilots were also praised for their efficiency and flying ability, but the Italian pilots had the advantage of the experience of flying during the war in Ethiopia in 1935 and early 1936. The German pilots lacked similar recent combat experience.²⁸

Of the approximately 660 planes sent to Spain by Italy, over half were Fiat CR.32 fighters. Observers described the Fiat CR.32 as a single-seated biplane with a maximum speed somewhere between 220 and 270 mph. The information

gathered about the CR.32's armament was inconclusive. Lieutenant Colonel Fuller received information that there were four machine guns mounted on the plane, two firing through the propeller and two firing outside the propeller. However, in a summary written by Colonel Lincoln of MID for the Deputy Chief of Staff of the Army, the CR.32 was reported to be armed with only two machine guns. Colonel Lincoln's information was correct according to data now available; the CR.32 had only two machine guns. Aviation historians describe the CR.32 as a fighter with a maximum speed of 375 kmph. (233 mph) at an altitude of 3,000 m., a range of 760 km. and a maximum ceiling of 8,800 m.²⁹

The SM.81 and its newer and faster version, the Savoia-Marchetti SM.79, were the bombers most commonly used by the Italians in Spain. The SM.79 was introduced to Spain in early 1937, and became the mainstay of the Italian bomber fleet. The attachés reported the SM.81 to have a maximum speed of between 180 and 200 mph, and a bomb load of 2200 lbs., but no other technical information appeared in the reports. The attachés were correct in their information about the speed of the SM.81; its maximum speed at 4,000 m. was 340 kmph. (211 mph). However, the bomb load of the plane was 2,000 kg. (4415 lbs.) rather than 2200 lbs. The SM.81 is further described as a trimotor bomber with a crew of six, a range of 1,931 km. and a maximum ceiling of 7,000 m. The SM.79 was also a trimotor bomber with a crew of

six, a ceiling of 7,000 m. and a range of 1,900 m., but it was faster, and carried fewer machine guns and bombs. The SM.79 had a maximum speed of 430 kmph. (267 mph) at 4,000 m. four or five machine guns, and a bomb load of only 1,250 kg. (2,765 lbs.)³⁰

Lieutenant Colonel Fuller did send some information he received from a British pilot who visited Majorca in April 1937. That pilot described land based Italian planes he identified as the Fiat CR.32 fighter and the Savoia S-73 bomber. Historical evidence since the war has failed to identify a Savoia-Marchetti SM.73 bomber in the Italian Air Force. Based on the description provided by the British pilot, it appears that he had seen the SM.81. He described the plane as a low-winged monoplane with three radical engines that provided a maximum speed of approximately 205 mph., and a cruising speed of about 175 mph. He also reported that these planes had been used in the bombing of Valencia.³¹

The attachés gathered even less information about the SM.79. They acknowledged that it existed and was used, but besides a reported maximum speed of approximately 250 mph., no other information appears in their reports.³²

Among the reports sent to MID by Lieutenant Colonel Fuller from Paris were several during 1937 that concerned the use of the Balearic Islands as a base for land and sea

planes, mostly Italian. He gathered this information from British and French sources, including the British Vice-Consul at Palma on Majorca. The reports definitely identified Pollensa Bay and Palma as seaplane bases, and indicated that there was at least one base for land aircraft near Palma. The British Vice-Consul at Palma reported seeing SM.81s, SM.79s and Fiat CR.32s as well as seaplanes he identified as Savoia-Marchetti SM.55s, Cant Z.501s and Cant.25s.³³

A British pilot from HMS Shropshire, visiting Majorca, confirmed this information, and included rough descriptions of the seaplanes. He described the SM.55 as a twin-hulled, twin-engined reconnaissance and bombing plane. The Cant Z.501, he said, was a monoplane with a single engine capable of a maximum speed of 180 mph., and a cruising speed of 160 mph. It was used as a light bomber and reconnaissance plane. About the Cant.25 the British pilot was uncertain; he reported only that it had a single seat and a maximum speed of 150 mph. What its mission was he did not say. The British Vice-Consul further reported that the SM.55s "are a failure and have been abandoned." Although it was not verified at the time, historical research since the war indicates that they were indeed abandoned. Ramón Salas Larrazábal, historian of the Spanish Civil War, reports that only three were sent to Spain, all arriving in late 1936.³⁴

The British Vice-Consul estimated that there were approximately fifty land and sea planes on Majorca in April 1937. This was confirmed by information Lieutenant Colonel Fuller received from the French. The French War Ministry estimated that there were twenty-five Fiat CR.32s and twenty assorted bombers on Majorca in May 1937. According to an unconfirmed report sent by Lieutenant Colonel Fuller in July 1938, the land-based forces on Majorca had grown to an estimated eighty-five planes, about sixty being Fiat CR.32s and the rest SM.81 bombers.³⁵

It would be reasonable to assume that the Italians did strengthen their bomber and fighter fleet in the Balearic Islands as the war progressed. From there they could search for and attack shipping heading for Government territory, and they could attack Republican forces that were steadily being squeezed into northeastern Spain.³⁶

The Italian participation in the war in the air can be characterized differently than that of the Germans. The Italians did not appear to take advantage of the war in Spain to test new designs of aircraft. The SM.81s, the SM.79s and the Fiat CR.32 were the main contributions made by Italy. The Fiat CR.32 and the SM.81 were among the first planes to arrive in Spain, and they remained in use throughout the war. Even the SM.79 was in use by early spring 1937. Yet Italy was admittedly not in the position

of Germany. Germany was building an air force in the mid-1930s; Italy already had one.³⁷

Of special interest was the cooperation that appeared early in the war between the Germans and the Italians. Attaché reports from Colonel Fuqua, Lieutenant Colonel Lee and Lieutenant Colonel Waite, based on separate sources from early in 1937, reported that the Italians and Germans were beginning to specialize in their missions. The Germans were reported to be doing most of the bombing, while the Italians were flying fighter cover. Lieutenant Colonel Lee wrote:

It is interesting to note that the Italian pursuit planes and pilots form a complete complement to the German bombardment planes and pilots, and it is reported that this happy state of affairs has been a matter of mutual congratulations to the Italian and German authorities during the recent visit of Goering to Rome.³⁸

The cooperation between the two countries does not seem to have survived through the war. The specialization of mission was not discussed by the attachés again, and with the introduction of the Messerschmitt Bf.109, in the summer of 1937, the Germans had a fighter capable of providing protection for their bombers. And with the increased speed of their new bombers, they even questioned the need to provide fighter cover on bombing missions.³⁹

Most of the technical information received by MID about the German and Italian airplanes came through the attachés

in Paris from British and French sources. The information available to Captain Griffiss in Spain about the Nationalist planes was scarce, both from official and unofficial sources. The same was not true of information about Soviet aircraft. Even though Captain Griffiss reported the secrecy surrounding Soviet activities and equipment, he was able, through contacts and observation, to gather more detailed information about the Soviet planes than was available about the German or the Italian planes. He was also able to collect some information about the other foreign planes used by the Government.⁴⁰

The Soviets sent more than one thousand airplanes to Spain throughout the war. Most of them were of four models: the I-15 and I-16 fighters, the R-5 reconnaissance plane and the SB-2 bomber. These four planes accounted for over 900 of the thousand planes sent from the Soviet Union.⁴¹

As with the Germans and the Italians the preponderance of the planes sent were fighters, either the I-15 biplane or the I-16 monoplane. The I-15, or "Chato" (snub-nosed) as it was also called in Spain, Captain Griffiss described as a single-seater biplane that first came out in 1933 or 1934. According to his information it was derived from the United States Navy's Boeing fighter, and was constructed from metal, wood and cloth. It had a fixed landing gear of the cantilever type, and was powered by a 675 hp. Wright Cyclone engine that provided a maximum speed of 230 mph., a cruising

speed of 190 mph., and a diving speed of 310 mph. Captain Griffiss also reported that it landed at 53 mph. The armament consisted of four machine guns firing 7.62mm. rounds, two on each side of the cockpit, mounted one above the other and firing through the propeller. The I-15, he reported, also could be mounted with four 8-10 kilogram bombs, two under each lower wing.⁴²

The I-16 "Mosca" (fly) was described by Captain Griffiss as a single-seated, low-winged monoplane derived from the American Boeing P-26. Made of wood and metal, it had a manually operated retractable landing gear. Like the I-15 it was also powered by a Wright Cyclone engine, this one of 850 to 900 hp., that was capable of providing a maximum speed of 290 mph., a cruising speed of 255 mph., and a diving speed of 465 mph. According to Captain Griffiss, it was less maneuverable than the I-15, but it had more power and speed, and its climb was superior. He also reported that it landed with exceptional ease at a speed of 87 mph. The ease of landing became important as the Government was forced to create and rely on temporary landing fields, often little more than grassy pastures. Like the I-15, the I-16 could also be mounted with four 8-10 kilo bombs, two under each wing.⁴³

Captain Griffiss' initial reports indicated that the I-16 was equipped with only two machine guns, one on each wing, firing outside the propeller; however, reports from

Lieutenant Colonel Fuller based on British sources describe the I-16 as having four machine guns, two firing through the propeller and two mounted in the wings.⁴⁴

This discrepancy was never resolved in the attaché reports, but Andrés Baget Fornells, a Spanish historian, cites the existence of three different types of I-16 in Spain: a type 5, a type 6 and a type 10. The type 10 was the model most used, and it had the four machine guns as Lieutenant Colonel Fuller described. Little is known of the earlier models, but they could have carried the lighter armament described by Captain Griffiss.⁴⁵

The information provided by the attachés about the I-15 and the I-16 was generally accurate. The I-15 was a biplane fighter with a 9 cylinder, 700 hp., M-25 Wright Cyclone engine capable of a maximum speed of 368 kmph (229 mph.) Andrés Baget Fornells, however, reports that the I-15 could carry up to eight 8 kg. bombs rather than the four noted by Captain Griffiss. And the I-16's engine rather than being of 850 to 900 hp. was actually a 775 hp. M-25B Wright Cyclone, but the speed cited by Captian Griffiss was correct.⁴⁶

The armament on these Soviet planes sparked special interest. Captain Griffiss reported the machine guns to be a Soviet version of a standard Vickers machine gun, but where the Vickers fired at a rate of about 800 rounds per minute, the Soviet guns fired at an estimated 1800 rounds

per minute. This rate of fire was noted not only by Captain Griffiss, but also by British informants of Lieutenant Colonel Fuller.⁴⁷

In addition to the fighters, the Soviets sent one of their newest bombers to Spain. The SB-2, or "Katiouška," had just gone into production in 1935-1936. The reports from Lieutenant Colonel Waite and Lieutenant Colonel Fuller describe it as a twin-engined bomber powered by Hispano-Suiza 850 hp. engines and capable of a maximum speed of about 248 mph. The attachés reported that the SB-2, like the I-16, had a retractable landing gear. The armament consisted of two of the Soviet machine guns which fired at a rate of 1800 rounds per minute. One of the guns was mounted in the nose, the other in the tail. The "Katiouška," according to British and French sources, carried a bomb load of about 1500 lbs., and had a range of 1000 kilometers.⁴⁸

Although the information gathered by the attachés about the SB-2 was not quite accurate, it was close. The SB-2 was a twin-engined bomber with a retractable undercarriage, a range of 1,200 km., and a maximum speed of 255 mph., but it had an 830 hp. engine, and it only carried 1,000 to 1,300 lbs. of bombs. Also, the SB-2 could carry three or four machine guns: two in the nose, and either one or two in the body toward the back of the plane.⁴⁹

The R-5, although designed and designated as a reconnaissance plane, was described by Captain Griffiss as a

light bomber and an attack plane depending on the mission it was performing. However, he did note in a report that it had been previously used in the Soviet Union as an observation airplane. He described it as a two-seated biplane with a single Hispano-Suiza twelve cylinder engine capable of a maximum speed of only 130 mph. According to the information available to Captain Griffiss, the R-5 was armed with five machine guns, four mounted on the wings and one in the tail. He also reported that it was capable of carrying two 10 kilo bombs under the fuselage and two 70 kilo bombs under each wing. The information gathered by the attachés in Paris basically confirmed Captain Griffiss' description, but their sources, a British pilot and an American pilot who had flown for the Government, described the engine as an M-17 with 680 hp., and they placed the bomb load at 440 lbs.⁵⁰

Captain Griffiss' information about the R-5 was not quite accurate. Although the plane was a two-seated biplane, it had a maximum speed of 142 mph., and it only carried two machine guns. However, it had the engine and bomb load as reported to the attaches in Paris.⁵¹

The consensus of the American attachés in London, Paris and Valencia, based on their sources or personal observation, was that the Soviet planes were superior to the German and Italian aircraft, at least through the first year of the war. Indications were that the Soviet planes were

faster, more maneuverable and better constructed. Until the Messerschmitt Bf.109 arrived in Spain in large numbers late in 1937, the I-16 was the fastest and deadliest fighter in the air. And the SB-2 was the fastest bomber, clearly able to outrun the early German and Italian fighters.⁵²

The Government did not rely solely on the airplanes it could get from the Soviet Union. From the beginning of the war agents were traveling through Europe and North America to purchase planes and armaments. Although the efforts of the Spanish agents did not result in large shipments of planes from any one country, they managed to add an odd assortment of about 360 airplanes to the Republican Air Force. Occasional attaché reports from Spain and France mentioned the arrival or use of some of these planes. Included in the reports were such aircraft as Dutch Fokker trimotor passenger planes converted to bombers, Dutch Koolhoven F.K. 55 pursuit planes, American Vultes A-31 attack bombers, and British Vickers Vildebeest and Hawker Fury fighters. However, the major non-Soviet supplier appeared to be France.⁵³

The first mention of French planes joining the Republicans came from Colonel Fuqua on 13 August 1936, less than a month after the war began. He reported that twenty-five French planes had been added to the Government Air Force, but gave no details concerning type or characteristics. Throughout 1937 and into 1938 there were

confirmed reports of Potez 54 bombers, Bloch 210 bombers and Dewoitine 371 fighters being used by the Government. These were standard aircraft of the French Air Force in the mid-1930s. Their use in Spain seems strange in light of the French sponsorship of the International Nonintervention Agreement.⁵⁴

However, it appears that the French were doing more than just supplying a few planes to the Government of Spain. There were three separate reports that the French were testing out new airplanes in Spain. The first came in January 1937 from Lieutenant Colonel Fuller in Paris, based on information from the British Air Attaché. Lieutenant Colonel Fuller reported that a Loire 46 fighter was shot down in Spain, and that "this plane is reputed to be a very efficient type it has not yet been incorporated in the French air force." In March 1937 Lieutenant Colonel Fuller quoted another British source from Spain as saying:

It appears also that several aircraft have come here from France to be tried out under war conditions. It does not appear that they ever arrive in large numbers but from time to time one hears of a new machine having arrived from across the border.⁵⁵

Captain Griffiss in January 1938 noted the same thing. His information came from a Spanish "engineer-pilot" who reported that the Spanish Air Force had received a French Morane-Saulnier 405 fighter plane "for test of plane and motor-cannon" The informant stated that he had

flown the plane. Captain Griffiss added that "it is known to this office that no more than three or four Morane-405 pursuit are completed at this time." He was right. Based on a recent history of French aviation, the Morane-Saulnier 405 did not go into full production until the second quarter of 1938. It appears that the French were taking advantage of the war in Spain to test some of their new airplanes under combat conditions.⁵⁶

Although the information available to the attachés was often sketchy, some conclusions can be drawn from the reports that they sent to MID. It is clear that the airplanes sent to Spain by the major foreign participants were modern aircraft, not obsolete leftovers from the Great War. Some of the planes, such as the Messerschmitt Bf.109 and the Morane-Saulnier 405, had, in fact, just come off the drawing board. Although the models of planes sent by the Italians and the Soviets remained fairly constant throughout the war, the French, and especially the Germans, introduced new airplanes as the war progressed. Therefore, it is difficult to avoid the conclusion that they used the war in Spain as a test of their new equipment.

Another point that emerges from the technical data collected is the increasing speed of the fighters and bombers used in Spain. The air war was becoming faster, and with the increased speed of the Soviet machine guns and the

introduction of the Germans 22 mm. cannon on the Messerschmitt, potentially more deadly. The balance between speed and armament became one of the central questions each side considered as serial tactics evolved.

The Germans, the Soviets and the Italians were constantly faced with changes in their equipment or the equipment of their enemies. These changes affected the tactics each developed and used in Spain.

NOTES

¹Fuqua to MID, 15 Apr 37, 2657-S-144/158, MID, RG 165; Hugh Thomas, The Spanish Civil War, Revised and Enlarged Edition, (New York, Hagerstown, San Francisco and London: Harper and Row, Publishers, 1977, 370-371; Raymond L. Proctor, Hitler's Luftwaffe in the Spanish Civil War. Contributions in Military History, Number 35 (Westport, Connecticut and London, England: Greenwood Press, 1983), 22, 26, 30-31; John F. Coverdale, Italian Intervention in the Spanish Civil War (Princeton, New Jersey: Princeton University Press, 1975), 86; Lt. Col. Bernard R. Peyton to MID, 10 Jun 39, 2657-S-144/470, MID, RG 165. There is no consensus among historians concerning the exact number of soldiers transported by air from Morocco. Thomas claims the Germans alone carried 12,000 during August and September. Proctor agrees with Thomas, showing that 7,287 men were transported in August alone. Coverdale estimates that between the Germans and the Italians only 6,500 men were moved. The attache report from Lieutenant Colonel Peyton in Berlin reports 8,899 soldiers transported by the Germans by 1 September 1936. For an analysis of the effect of the transport of the Rebel troops to Spain see: Cpt. Griffiss to MID, 11 Aug 38, 2657-S-144/406, MID, RG 165; Paul Heywood, "Why the Republic Lost," History Today 39 (March 1989): 20-21; Thomas, Civil War, 400.

²Intelligence Summary from MID, 6 Aug 36, 2657-S-144/47, MID, RG 165; Griffiss to MID, 11 Aug 38, 2657-S-144/407, MID, RG 165.

³Thomas, Civil War, 363; Proctor, Hitler's Luftwaffe, 20, 33.

⁴Thomas, Civil War, 363; Coverdale, Italian Intervention, 3-4, 74, 87.

⁵Thomas, in The Civil War in Spain, provides a running commentary on nonintervention throughout the war. Douglas Little, Malevolent Neutrality: The United States, Great Britain, and the Origins of the Spanish Civil War (Ithica, New York and London, England: Cornell University Press, 1985) is also a good source of information about American and British involvement in the nonintervention issue.

⁶Thomas, Civil War, 440; Griffiss to MID, 13 Mar 37, 2657-S-144/136, MID, RG 165; Griffiss to MID, 25 Mar 37, 2093-213/8, MID, RG 165.

⁷Ramón Salas Larrazábel, Los Datos Exactos de la Guerra Civil (Madrid: Ediciones Rioduero, 1980), 294, 297-298; Final Report of the Ufficio Spangna, Archivio storico del ministero degli affari esteri (Rome), Ufficio Spagna, b.l., 20-22, cited by Coverdale, Italian Intervention, 393; Thomas, Civil War, 977-981, cites the figures of Salas Larrazábel.

⁸Griffiss to MID, 11 Aug 38, 2657-S-144/406, MID, RG 165.

⁹Griffiss to MID, 17 Aug. 37, 2657-S-144/255, MID, RG 165; Griffiss to MID, 11 Aug 38, 2657-S-144/406, MID, RG 165.

¹⁰Proctor, Hitler's Luftwaffe, 85, 89; Lincoln, Memorandum for the Chief of Staff, 12 Mar 37, 2657-S-144/170, MID, RG 165.

¹¹Fuller to MID, 26 Jan 37, 2657-S-144/90, MID, RG 165; Lee to MID, 12 Jan 37, 2657-S-144/80, MID, RG 165; Fuller to MID, 9 Feb 37, 2657-S-144/97, MID, RG 165; Waite to MID, 2 Mar 37, 2657-S-144/124, MID, RG 165; Fuqua to MID, 26 Apr 37, 2724-S-16/8, MID, RG 165.

¹²Griffiss to MID, 25 Apr 37, MID, RG 165; Fuller to MID, 2 Jun 37, 2657-S-144/197, MID, RG 165.

¹³Griffiss to MID, 16 Mar 37, 2093-213/6, MID, RG 165; Fuller to MID, 25 Mar 37, 2657-S-144/132, MID, RG 165; Griffiss to MID, 7 Apr 37, 2657-S-144/146, MID, RG 165.

¹⁴Matthew Cooper, The German Air Force, 1933-1945: An Anatomy of Failure (London, New York and Sydney: Jane's, 1981), 46; Col. E. R. W. McCabe, Memorandum for the Chief of Staff, 6 Jun 37, 2657-S-144/246, MID, RG 165; Fuller to MID, 10 Aug 37, 2657-S-144/246, MID, RG 165; Fuller to MID, 10 Aug 37, 2657-S-144/243, MID, RG 165.

¹⁵Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165; Fuller to MID, 2 Jun 37, 2657-S-144/197, MID, RG 165; Fuller to MID, 10 Aug 37, 2657-S-144/243, MID, RG 165.

¹⁶Fuller to MID, 28 Jan 37, 2657-S-144/91, MID, RG 165.

¹⁷Salas Larrazábel, Datos Exactos, 298; Fuller to MID, 28 Aug 37, 2657-S-144/261, MID, RG 165.

¹⁸Cooper, German Air Force, 46; Proctor, Hitler's Luftwaffe, 94; Griffiss to MID, 7 Apr 37, 2657-S-144/146, MID, RG 165; Griffiss to MID, 14 Jun 37, 2657-S-144/208, MID, RG 165; Fuller to MID, 26 Jul 38, 2093-213/25, MID, RG 165.

¹⁹Proctor, Hitler's Luftwaffe, 94-95; Cooper, German Air Force, 46; Griffiss to MID, 16 Mar 37, 2093-213/6, MID, RG 165.

²⁰McCabe, Memorandum for the Chief of Staff, 4 Jul 37, 2657-S-144/246, MID, RG 165; Fuller to MID, 26 Jul 38, 2093-213/25, MID, RG 165.

²¹Proctor, Hitler's Luftwaffe, 93-94; Brian Johnson and H. I. Cozens, Bombers: The Weapon of Total War (London: Thames Methuen, 1984), 69-70; Cooper, German Air Force, 46-47.

²²Griffiss to MID, 22 Jul 37, 2093-233/15, MID, RG 165.

²³Fuller to MID, 10 Aug 37, 2657-S-144/243, MID, RG 165; Fuller to MID, 26 Jul 38, 2093-213/25, MID, RG 165.

²⁴Griffiss to MID, 5 May 38, 2657-S-144/366, MID, RG 165.

²⁵Thomas, Civil War, 678-679.

²⁶Fuller to MID, 25 Mar 37, 2657-S-144/132, MID, RG 165; Griffiss to MID, 10 Aug 37, 2657-S-144/251, MID, RG 165; Fuller to MID, 26 Jul 38, 2093-213/25, MID, RG 165.

²⁷Proctor, Hitler's Luftwaffe, 95; Cooper, German Air Force, 46, 49.

²⁸Lincoln, Memorandum for the Deputy Chief of Staff, 12 Mar 37, 2657-S-144/170, MID, RG 165; Fuqua to MID, 15 Apr 37, 2657-S-144/158, MID, RG 165; Fuller to MID, 28 Jan 37, 2657-S-144/91, MID, RG 165.

²⁹Salas Larrazábel, Datos Exactos, 297; Fuller to MID, 26 Jul 38, 2093-213/25 MID, RG 165; Fuller to MID, 28 Aug 37, 2657-S-144/261, MID, RG 165; Lincoln, Memorandum for the Deputy Chief of Staff, 12 Mar 37, 2657-S-144/170, MID, RG 165; Enzo Angelucci, The Rand McNally Encyclopedia of Military Aircraft (New York: The Military Press, 1988), 124.

³⁰Salas Larrazábel, Datos Exactos, 297; Coverdale, Italian Intervention, 393-394; Lincoln, Memorandum for the Deputy Chief of Staff, 12 Mar 37, 2657-S-144/170, MID, RG 165; Angelucci, Military Aircraft, 260.

³¹Fuller to MID, 10 Apr 37, 2657-S-144/150, MID, RG 165.

³²Fuller to MID, 26 Jul 38, 2093-213/25, MID, RG 165.

³³Fuller to MID, 10 Apr 37, 2657-S-144/150, MID, RG 165; Fuller to MID, 10 Mar 37, 2657-S-144/178, MID, RG 165; Fuller to MID, 21 Dec 37, 2657-S-144/30, MID, RG 165.

³⁴Fuller to MID, 10 Apr 37, 2657-S-144/150, MID, RG 165; Salas Larrazábel, Datos Exactos, 297.

³⁵Fuller to MID, 10 Apr 37, 2657-S-144/150, MID, RG 165; Fuller to MID, 10 May 37, 2657-S-144/178, MID, RG 165; Fuller to MID, 26 Jul 38, 2093-213/25, MID, RG 165.

³⁶Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Griffiss to MID, 5 May 38, 2657-S-144/366, MID, RG 165.

³⁷Salas Larrazábal, Datos Exactos, 297.

³⁸Fuqua to MID, 15 Apr 37, 2657-S-144/158, MID, RG 165; Waite to MID, 13 Jan 37, 2657-S-144/87, MID, RG 165; Lee to MID, 25 Jan 37, 2657-S-144/88, MID, RG 165.

³⁹Proctor, Hitler's Luftwaffe, 95; Cooper, German Air Force, 47; Waite to MID, 8 Jun 37, 2657-S-144/198, MID, RG 165.

⁴⁰Griffiss to MID, 26 Jan 37, 2657-S-144/75c, MID, RG 165; Griffiss to MID, 27 Feb 37, 2657-S-144/127, MID, RG 165; Griffiss to MID, 14 Mar 37, 2657-S-144/137, MID, RG 165.

⁴¹Salas Larrazábal, Datos Exactos, 294; Kenneth R. Whiting, Soviet Air Power (Boulder, Colorado and London, England: Westview Press, 1985), 17.

⁴²Griffiss to MID, 14 Mar 37, 2657-S-144/137, MID, RG 165; Griffiss to MID, 13 Mar 37, 2657-S-144/136, MID, RG 165. Griffiss identified the I-15 as the "Mosca" and the I-16 as the "Chato". Historians have identified the I-15 as the "Chato" and the I-16 as the "Mosca". Because the attache reports normally referred to these planes as I-15 and I-16 rather than by nicknames, I have accepted the nicknames as given by historians such as Salas Larrazábal, and Proctor rather than those given by Griffiss. For further information see Salas Larrazábal, Datos Exactos, 294; Proctor, Hitler's Luftwaffe, 56, 276; Robin Higham and Jacob W. Kipp, eds., Soviet Aviation and Air Power: A Historical View (Boulder, Colorado: Westview Press, 1977 and London, England: Brassey's, 1978). 57.

⁴³Griffiss to MID, 14 Mar 37, 2657-S-144/137, MID, RG 165; Griffiss to MID, 28 Jan 37, 2657-S-144/75c, MID, RG 165.

⁴⁴Griffiss to MID, 13 Mar 37, 2657-S-144/136, MID, RG 165; Griffiss to MID, 14 Mar 37, 2657-S-144/137, MID, RG 165; Fuller to MID, 10 Mar 37, 2657-S-144/130, MID, RG 165.

⁴⁵Andrés Baget Fornells, "Alas Rusas Sobre España," Historia Y Vida 19 (224, 1986), 9-10.

⁴⁶Ibid., 8; Angelucci, Military Aircraft, 123, 183.

⁴⁷Griffiss to MID, 13 Mar 37, 2657-S-144/136, MID, RG 165; Fuller to MID, 10 Apr 37, 2657-S-144/150, MID, RG 165; Fuller to MID, 10 Mar 37, 2657-S-144/130.

⁴⁸Whiting, Soviet Air Power, 229; Griffiss to MID, 14 Mar 37, 2657-S-144/136, MID, RG 165; Waite to MID, 9 Feb 37, 2657-S-144/98, MID, RG 165; Fuller to MID, 10 Mar 37, 2657-S-144/130, MID, RG 165; Waite to MID, 8 Jun 37, 2657-S-144/198, MID, RG 165.

⁴⁹Baget Fornells, "Alas Rusas," 12; Angelucci, Military Aircraft, 263.

⁵⁰Griffiss to MID, 19 Apr 37, 2657-S-144/159, MID, RG 165; Waite to MID, 9 Feb 37, 2657-S-144/98, MID, RG 165.

⁵¹ Baget Fornells, "Alas Rusas," 13-14; Angelucci, Military Aircraft, 149.

⁵² Lee to MID, 12 Jan 37, 2657-S-144/80, MID, RG 165; Fuller to MID, 9 Feb 37; 2657-S-144/97, MID, RG 165; McCabe, Memorandum for the Chief of Staff, 6 Jul 37, 2657-S-144/246, MID, RG 165; Griffiss to MID, 10 Aug 37, 2657-S-144/251, MID, RG 144.

⁵³ Salas Larrazabal, Datos Exactos, 299; Fuller to MID, 10 Mar 37, 2657-S-144/130, MID, RG 165; Griffiss to MID, 15 Jun 37, 2093-212/11, MID, RG 165; Thomas, Civil War, 980; Charles Christienne and Pierre Lissarague, A History of French Military Aviation, trans. Francis Kianka (Washington, D. C.: Smithsonian Institution Press, 1986), 268. Christienne and Lissarague claim that no more than 144 planes were sent from France. That number may be a little low, but it still indicates that France was a major source of airplanes when compared to the number of planes that came from other non-Soviet countries. For a comparison see Jesus Salas Larrazabal, Intervención Extranjera en la Guerra de España (Madrid: Editora Nacional, 1974), 440-448.

⁵⁴ Fuqua to MID, 13 Aug 37, 2657-S-144/62, MID, RG 165; Waite to MID, 4 Feb 37, 2657-S-144/95, MID, RG 165; Waite to MID, 9 Feb 37, 2657-S-144/98, MID, RG 165; Griffiss to MID, 16 Mar 37, 2093-213/6, MID, RG 165; Griffiss to MID, 10 Aug 37, 2657-S-144/251, MID, RG 165; Lt. Col. John Magruder to MID, 11 Mar 37, 2657-S-144/344, MID, RG 165; Christienne and Lissarague, French Military Aviation, 271.

⁵⁵ Fuller to MID, 28 Jan 37, 2657-S-144/91, MID, RG 165; Fuller to MID, 18 Mar 37, 2657-S-144/130, MID, RG 165.

⁵⁶ Griffiss to MID, 27 Jan 38, 2093-213/21, MID, RG 165; Christienne and Lissarague, French Military Aviation, 307.

CHAPTER III

THE WAR IN THE AIR: TACTICAL CONSIDERATIONS

The future of military aviation was a topic of intense discussion in the interwar years. The theories and arguments advanced by military aviators such as Generals Giulio Douhet, William 'Billy' Mitchell and Hugh Trenchard raised questions about the use of airplanes in future wars. Was the airplane the wonder weapon air advocates believed it to be? Could it, through mass bombardment of civilian population centers and industries, cripple an enemy and shorten war, thus avoiding the bloody and costly static combat of the Great War? Were fighter forces necessary, or could bombers defend themselves against enemy air interception? Should the air arm be an independent force, or was aviation most valuable as a support weapon for ground maneuver forces, and for the navy? The war in Spain offered examples of the use of modern military aviation against which conclusions could be drawn about the future role of air power in warfare. However, it would be wrong to assume that the future of aerial warfare was decided in Spain.

Spain was of keen interest as an aerial battleground, but the attaches and their sources also emphasized the unique quality of the war. Neither side had a large air force. At any one time only a few hundred planes, both fighters and bombers, were available for service, and these planes often had to be spread to cover multiple fronts. In addition, it was a civil war; mass destruction of the people and the resources of the country was not an attractive option for either side. Both antagonists wanted a nation left to govern when the war ended, so the use of poison gas on civilian populations was not tried, nor was mass bombardment of major cities developed to the fullest extent possible. Another factor distinguishing the Spanish Civil War was the lack of artillery in the Nationalist and Republican armies. Airplanes were, of necessity, used to supplement or replace artillery fire in support of ground operations.¹

Yet, in spite of the unusual qualities of war in Spain, the equipment used and the tactics that were tried indicated directions in which military aviation could develop. The increasing speed of the planes and the faster firing armament were only two of the trends noted by American attaches. The air war in Spain also involved the increased use of collective tactics, increased coordination between fighter and bomber forces, and increased attempts to coordinate air and ground operations. The reports of

Captain Griffiss and Lieutenant Colonels Fuller and Waite underscored the growing importance of aviation in warfare, but they did not identify the air forces as the services around which all others revolved.

Cooperation rather than domination appears as the prevalent concept in the reports. As Captain Griffiss noted: "In my opinion the most important development that has taken place in the Government Air Force is the tactical cooperation that now exists between the pursuit, bombardment and ground-attack aviation." He also offered the opinion that "One of the most interesting developments of the aerial war is the increasing amount of ground-attack work that is being done not only by planes equipped for that special purpose, but also by pursuit and bombardment." Captain Griffiss and the other attachés repeatedly emphasized the importance of liaison and coordination with ground forces in the ground attack role.²

The cooperation and coordination mentioned by the attachés was not identifiable at the beginning of the war. It grew and developed as the war progressed and the air forces gained experience. Through 1936 air operations were scattered and uncoordinated. General Erich Kuhlenthal in a discussion with Lieutenant Colonel Fuller in February 1937 admitted that the German air units primarily engaged in individual combat, and that they had participated in no coordinated attacks. Reports from Republican Spain

indicated the same. Yet, by the spring and summer of 1937 air operations conducted by both sides began to reflect greater coordination.³

Lieutenant Colonel John Magruder, the attaché in Bern, Switzerland, sent an article to MID written by a Swiss officer who visited Nationalist Spain in the summer of 1937. In that article Captain Ed. Bauer observed: "For the first time in history we saw genuine air battles waged by numerous squadrons maneuvering against each other. The tactics have become collective" Captain Bauer may have overstated the magnitude of the air operations, but Captain Griffiss and the attachés in Paris certainly agreed that both sides were employing planes in massed and coordinated formations. The massed formations included not only bombardment, but fighter and ground attack airplanes as well.⁴

Unfortunately, the attachés had the same problem gathering tactical information about the Germans and the Italians as they did gathering technical data. Because they had no access to Nationalist pilots or air officers, most of the information they obtained came from Republican sources who had observed the aerial tactics of the German and Italian forces. Information about the tactics used by the Government, including the Soviet pilots, were more readily available, and constituted most of the tactical data sent to MID.

Important to consider in the development of tactics was the composition of the rival air forces. At the beginning of the war the Germans, Italians and Soviets operated their own equipment in their own units, but as the war progressed the Spanish began to assume a greater role in the air war. By February and March 1937 attaché reports indicated that Spanish pilots were beginning to be seen. Captain Griffiss and Lieutenant Colonels Fuller and Waite through the spring and early summer of 1937 also reported that the Government was sending Spanish soldiers to the Soviet Union for flight training. The reports indicated that 100 to 200 men were sent at a time. In addition the attachés reported that there were Spanish Republican pilots training at Los Alcázares near Cartagena, and Captain Griffiss noted that about 200 Republican pilots had been trained in France.⁵

Initially the Government had adopted a policy of replacing all foreign aviators, except Soviet, with Spanish pilots, but eventually even the Soviet pilots were replaced as the Soviet Union withdrew from involvement in Spain. By July 1938 Lieutenant Colonel Fuller received information that a total of 650 Spanish Government pilots had been trained and that another 650 would be available by the spring of 1939. This information came from Leland Stowe, a New York Herald Tribune correspondent, who had interviewed a Spanish pursuit squadron commander. The commander also told Mr. Stowe that there were only two Soviet squadrons still in

Spain, and that foreign combat personnel amounted to only about four percent of the total Government air force strength. This information confirmed the observations of two British air officers who had visited Republican Spain in February 1938. In their report, which they made available to Lieutenant Colonel Fuller, one of them stated that "The War Minister assured me that there were less than 300 Russians of all kinds in the country and not more than 20 Russian pilots."⁶

No information came from the attachés about the training of Spanish pilots for the Nationalist Air Force, but High Thomas in The Spanish Civil War claims that by the summer of 1937 there were about 150 Spanish pilots, 100 German pilots and 120 Italians flying for the Insurgents. And unlike the Soviets, the Germans and the Italians apparently did not significantly reduce their personnel commitment throughout the war. John Coverdale, who wrote Italian Intervention in the Spanish Civil War, admits that there were still 2,200 Italian pilots and aviation support personnel in Spain in December 1938. He also indicates that the Italians did not begin to withdraw their troops until after the middle of May 1939. Raymond Proctor in Hitler's Luftwaffe in the Spanish Civil War makes a similar argument. He claims that 281 officers, 4,383 men and 472 civilian technicians were with the Condor Legion when it left Spain on 28 May 1938.⁷

The foreign pilots had a significant effect on the development of tactics for both sides in Spain. The initial period of air cooperation and coordination came in the first half of 1937, when the foreign aviators dominated the air war. Both Lieutenant Colonel Fuller and Captain Griffiss submitted reports based on interviews with Republican pilots. Most of the pilots agreed that although the tactics used had to fit the equipment and methods of the enemy, the peacetime training they received served as a base from which tactical adjustment could be made. The foreign pilots brought their peacetime tactical training with them to Spain and modified it to fit the situation they found there. And the enemy they found was not primarily a Spanish patriot, but a fellow aviator from one of the major powers of Europe. In a sense the equipment, tactics and pilots reflected three European powers fighting each other, not two Spanish forces of similar background and training.⁸

Coordination and cooperation is evident in the formations used by each side. Although the attaches reported that the Soviets sometimes operated their high speed SB-2 bombers without a fighter escort, most reports indicate that both sides relied on fighter protection for their bombers in a ratio of two or three fighters for each bomber.⁹

Captain Griffiss reported in April of 1937 that the Government was protecting their bombing formations with I-15 and I-16 fighters working in cooperation. Flying in squadrons of about eleven planes, the I-15s would provide immediate protection for the bombers. A flight of three in a V formation would fly in front of the lead bomber, while the remaining I-15s would fly in an echelon formation either to the left or the right side of the SB-2s, whichever side offered better protection for the bombers. If more than a squadron of I-15s was used, the fighters would fly in echelon on both sides of the bombers. At the same time, the I-16s, also operating in squadrons of about eleven planes, would fly high above and to the rear of the I-15s and SB-2s. Their mission was to intercept enemy fighters coming in to attack the bombing formation.¹⁰

The I-15s and I-16s often worked in concert, not only protecting the Republican bombers, but also in attacking enemy bombing formations and engaging in ground attack missions. The I-15s were slow but more maneuverable than the I-16s, and they were equipped with four machine guns which provided a heavy volume of fire. Because of their maneuverability and armament they were best suited to carry out ground and air attacks. The I-16s, while less maneuverable and of lighter armament, were fast in straight flight and in a dive, and were capable of rapidly engaging

enemy pursuit planes before they had an opportunity to reach the I-15s.¹¹

When the I-15s were used to attack enemy bombing formations, at least Ju.52 formations, the squadron formed in three flights. A flight of three planes in V formation flew in the center and slightly ahead of the other flights, which were also in V or echelon formation to the left and right. The wing flights each had four planes. The extra plane in those flights had the mission of protecting the formation from any enemy fighter that escaped from the I-16s, flying protection above. The extra I-15s would turn and face the oncoming enemy, while the remainder of the squadron maintained the formation and continued the mission.¹²

Just before attacking the Ju.52 formation, the I-15 squadron would assume a single file echeloned to the right or left, and would engage the Nationalist bombers head-on, and usually at the same altitude. According to Captain Griffiss, the file of I-15s flew straight at the lead bomber, firing their machine guns before they were within effective range, so the enemy bombers flew into the machine gun fire. Each attacking I-15 after engaging the lead bomber would make a rapid 180 degree dive, fly opposite of the direction of attack, and reform for continued attack.¹³

The turning dive and the direction the formation echeloned were important for the safety of the pilots. The dive had to be tight and fast to avoid being caught under or behind the Ju.52s, because of the placement of the Junkers' machine guns. Only in front of the Ju.52 were the I-15 pilots safe from its armament. The direction in which the I-15 squadron formed its echelon was determined by the desire of the pilots to have the turning dive headed back into Republican territory. In case of problems this tactic allowed a quicker, less complicated escape back to a friendly zone.¹⁴

Captain Griffiss reported that the Government was able to engage the Ju.52 formations using the tactic described, because in addition to the lack of forward armament, the Nationalists did not provide a flight of fighters in front of their lead bomber. Their fighter protection flew in small formations at various heights above the Ju.52s. It was the mission of the I-16 fighters to attack these formations and draw them away while the I-15s attacked the bombers. When the I-16s attacked the bomber escort they remained in formation as long as possible, before breaking for individual combat. After breaking, they operated in pairs, using what Captain Griffiss called the "scissor method of attack," wherein the pair attacked an enemy fighter simultaneously from each side.¹⁵

About the cooperative use of the I-15 and I-16 formations Captain Griffiss said: "These tactics have been very successful not only in the tactical sense, but also relative to the number of enemy planes shot down and the losses suffered."¹⁶

Both Captain Griffiss and Lieutenant Colonel Fuller found another example of the Government's coordinated use of their airplanes. In the spring and early summer of 1937 they each reported a tactic used for night bombing. One bomber flew ahead at a high altitude, followed about five miles back by one or two R-5 attach planes flying low. Back further still was the formation of bombers. The lone bomber would trigger the searchlights and antiaircraft guns in time for the low attack of those targets by the R-5s. The attack planes would either destroy the searchlights and guns, or at least cause them to be shut down for their own defense by the time the formation of bombers arrived. This tactic could not be used indefinitely; the Nationalists would have developed a system to counter it in some way, and in fact, after it was first mentioned by the attaches in 1937 it was never discussed again. However, it worked a few times, and it serves as an example of the level of coordination of which the Government aviators were capable.¹⁷

The information sent by the attachés about German and Italian bomber and fighter tactics was sketchy at best, and

usually consisted of partial descriptions of specific operations. For example, Captain Griffiss described the German Ju.52 bomber formations used during operations in the Jarama sector. He explained that the Junkers formations consisted of eleven to twenty-two planes flying in V, echelon or line formation, and protected by two to three times as many fighters. Like the Republican forces, the Germans depended on the fighter escort for protection of their bombers. Lieutenant Colonel Fuller confirmed the ratio of two of three fighters for each bomber used by the Nationalists.¹⁸

Reports about the Italians generally concerned their bombing raids of the cities. Lieutenant Colonel Waite in February 1937 submitted a report of the bombing of Madrid, alledgedly by the Italians, but all he said was that the planes bombed from a high altitude, and that the bombing was inaccurate. Against Valencia in May 1937, Captain Griffiss reported that a formation of eight planes approached over the sea, possibly from Majorca, and bombed from an altitude of 1,500 to 2,000 feet.¹⁹

A year later, information received by Lieutenant Colonel Fuller from the British air attaché in Paris indicated that because of antiaircraft defenses both sides were bombing with their heavy bombers from altitudes of no less than 15,000 feet. The report further described a method of attack that had been used by the Nationalists

against Barcelona and other coastal towns in the first two months of 1938. Bombers would fly in over the sea at about 20,000 feet, cut their engines while "some distance from the coast," and glide over the target bombing at about 15,000 feet. Both the height and the silent approach offered a surprise attack thqt the antiaircraft defenses might be at a loss to counter.²⁰

In the summer of 1938 Lieutenant Colonel Waite reported that for surprise and security low altitude bombing missions were being carried out by both sides as well. He wrote that close formations bombing at an altitude of 200 to 600 meters (600 to 1800 feet) were achieving the best results. The low altitude raids offered surprise and a better chance of hitting the target. They also offered better protection for the pilots. Lieutenant Colonel Waite explained that enemy fighters could not attack the bomber formations from below because of the low altitude, and the antiaircraft guns were most accurate at ranges about 2000 meters (6000 feet). Besides, antiaircraft operators had trouble hitting low-flying, fast planes.²¹

The effect of air bombardment seemed to be of extreme interest to the attachés and to the sources that they used. Because of the theories of air advocates like Giulio Douhet, there was the expectation that the bombing of civilian populations would cause panic and crush the desire to resist. However, the actions in Spain did not prove the

theory true. Reports throughout the war stressed the endurance of civilian populations to withstand the bombing raids.

Lieutenant Colonel Lee submitted a report in January 1937 that included a copy of a Times of London article sent from Madrid by the paper's military correspondent, Presumably Basil H. Liddell Hart. In the article, Liddell Hart verified the destruction caused by the bombing that Madrid had endured since the beginning of the war. He stated that in the ten weeks prior to his article the city had been bombed thirty-three times with the equivalent of about fifty tons of high explosive. Yet in spite of the destruction and death there had been no civilian exodus from Madrid. Another source, this one unnamed, told Lieutenant Colonel Lee that:

One of the remarkable features of the war so far has been the amount of punishment the inhabitants of Madrid have taken from bombardment. Most military critics have hitherto assumed that continual bombardment of a civil population would completely disorganize the community life, but this has not proven true in Madrid.

In fact, a source quoted by Lieutenant Colonel Fuller wrote in 1938 that the bombing "has stimulated the hatred and endurance of the people and converted many of Franco's adherents into opponents."²²

Yet, even though what these sources reported was undoubtedly true, the argument can be made that fifty tons of high explosives over ten weeks did not represent massive and continual bombing strikes. The bombing attacks against the cities, according to the attaché reports, seemed to consist of from three planes to one or two squadrons (about eleven to twenty-two planes). And even sources in the French War Department reported that there had been "relatively few massed air attacks against vital centers in the interior of the country." Still, civilians had been bombed and subjected directly and repeatedly to the terrors of war, yet panic and collapse had not come.²³

In addition to how well the civilians were enduring the air raids, a number of attaché reports were concerned with the types of bombs being dropped and how effective they were. Incendiary bombs were generally acknowledged to be ineffective. In February 1937 Lieutenant Colonel Fuller reported that, while the early Italian high explosive bombs were of excellent quality, their incendiary bombs failed to ignite or only partially burned about fifty percent of the time. In a later report Lieutenant Colonel Fuller added that it appeared that incendiary bombs were being used at night to illuminate targets for bombers, but he also added that they were quickly extinguished with sand and dirt.²⁴

The first mention of the use of delayed action fuses came in June 1937 in a report from Captain Griffiss. Until

then, the report indicated, the Germans and Italians had been using "instantaneous types" of bombs. Captain Griffiss stated that the Germans had 50 to 150 kilo bombs with electric fuses that slightly delayed detonation. Lieutenant Colonel Fuller and Captain Griffiss confirmed that information in reports in March and May of 1938. By then the Italians also were using delayed action fuses, but Lieutenant Colonel Fuller received information that until early 1938 it appeared that the Italian fuses failed to work consistently. Another problem with time fuses was reported to Captain Griffiss by the French Air Ministry. The fuses were used in low altitude bombing missions, apparently by the Germans, but sometimes the bombs bounced before they had a chance to detonate, and as a result exploded away from the target. The attachés sent no information to MID about Soviet or Government bombs.²⁵

Although the bombing of civilian populations failed to spread panic as expected, the use of airplanes in bombing and strafing missions over the trenches and front lines caused considerable unrest. The reports of Captain Griffiss and Lieutenant Colonels Waite and Fuller emphasized the positive and negative effects the airplanes had on the morale of the ground forces. In a report written by British air officers who had visited Republican Spain, passed to MID by Lieutenant Colonel Fuller, the British officers concluded that the continuous effect of bombing was

more severe on troops in trenches than a continuous artillery barrage. With artillery, the troops remained protected from all but direct hits. However, the planes had the ability to bring the bombs and machine guns directly over the trenches, thus partially nullifying the advantage of 'digging in'. The British officers were careful to note that only sustained bombing could achieve a significant effect on morale. The information gathered by Lieutenant Colonel Waite from the French War Department agreed with the assessment of the British observers, but Lieutenant Colonel Waite also added that mass bombardment of troops, in addition to physical casualties, caused more serious psychological reactions than artillery attacks.²⁴

However, the use of airplanes in support of ground operations could have a tremendous positive effect on friendly troops. Lieutenant Colonel Fuller quoted a British source he considered reliable as saying that the Republican military commanders "claim that the value of the morale which the presence of their own aircraft instills in the troops is in excess of any material assistance which they can give." The attachés agreed that Government aviation was of vital importance to the ground forces, but they also stressed the need for the ground troops to take immediate advantage of the destruction and disorder air attacks provided.²⁷

However, throughout the war air-ground coordination was not consistently achieved. Lieutenant Colonel Waite reported that the Government air attack on a Nationalist motor convoy near Algora on 17 March 1937, which lasted between four and five hours, was successfully exploited by soldiers of the International Brigade. Yet Lieutenant Colonel Fuller reported that, considered in total, the battle of Guadalajara, of which Algora was a part, was characterized by the failure of the Republican infantry to seize immediately the opportunities provided by the Government air attacks on the Nationalist formations and positions. In spite of the imperfect coordination, ground attack by aviation continued to provide important support for the maneuver elements of both armies.²⁸

As usual, most of the information gathered by the attachés about the specific tactics used in ground attacks concerned the Republican Air Force. Captain Griffiss described both high and low ground attack methods used by the Government. The high attack method was usually used by fighter pilots when the target area was protected by antiaircraft guns. According to Captain Griffiss the pilot began a more than sixty-degree dive at about 14,000 feet, released the bombs at about 7,500 feet and fired his machine guns down to an altitude of about 4,500 feet. At 4,500 feet the pilot would usually turn and continue his dive back toward friendly lines, but if there was no antiaircraft fire

he might elect to continue the dive, firing his machine guns down to near ground level before turning to Government territory.²⁹

The fighter pilots would also use a low altitude method of attack. According to Captain Griffiss, low altitude attacks were made in a V or echelon formation, or individually. Because the bomb release handle on the I-15 was inconveniently mounted on the floor and would cause the pilot to have to lose sight of the target when he pulled the release, the pilots of those planes would try to drop their bombs at altitudes of between 600 and 1500 feet. The higher the altitude the better. After releasing the bombs, the pilot would continue the dive, firing his machine guns down to near ground level; then he would either strafe the trench or target, or climb back up for another attack.³⁰

The I-15s were generally used to carry out ground attacks because of their heavier armament and better maneuverability. However, as usual, while the I-15 pilots carried out the actual attack, the I-16s flew as a covering force. Lieutenant Colonel Fuller and Captain Griffiss noted that the I-16s, which originally were equipped with bomb racks to carry four 8 to 10 kilo bombs, had the racks removed. Information Lieutenant Colonel Fuller received indicated that the diving attacks by high-speed monoplanes like the I-16 were not particularly successful because the pilots would have to pull out of the dive before they

reached the effective range of their machine guns. The loss of the bomb racks undoubtedly increased the speed of the I-16s for their normal role in air to air combat. However Captain Griffiss did note that if the Nationalist planes were not present, the I-16s would conclude the ground attack by machine gunning the target after the ground attack force was finished.³¹

Both Captain Griffiss and Lieutenant Colonel Fuller also sent reports to MID describing the tactics used by the Soviet R-5 pilots. Although this plane was originally constructed for a reconnaissance role, in Spain the Government often used it for ground attack. The attachés reported that the R-5 pilots would approach the target at an altitude of about 100 feet. Captain Griffiss also noted that the planes approached in a V or echelon formation of three flights, much like the I-15 formations. Before reaching the target they would climb to an altitude of between 400 and 500 feet before releasing their bombs. If applicable, the R-5s would then dive back down near ground level and strafe with their machine guns. Lieutenant Colonel Fuller added that the R-5s had armor plating added to protect vital parts.³²

Apparently the tactics used by the Nationalist forces were much the same as those used by the Republicans. Lieutenant Colonel Waite reported that in various operations

both sides had surprised enemy troops and supply columns by flying in low to avoid detection, antiaircraft fire and attacks by enemy fighters. He also mentioned that the attacking planes were covered by fighters that terminated the attack by emptying their "magazines on hostile targets." It is interesting to note that Lieutenant Colonel Waite also included in his report information that showed that during some operations the attacks lasted several hours with the attacking planes departing for resupplies of ammunition and returning for successive attacks. This report confirmed previous information he received about the attack at Algora, which lasted over four hours and entailed planes returning to the attack after being resupplied.³³

Although the aerial attacks terrified the infantry, by 1938 the attaché reports indicated that ground troops had developed a method of destroying some of the attacking planes. A massed volley of fire across the line of flight, although not accurate, succeeded in bringing down low flying airplanes. The attachés reported that more than a few planes were lost to this tactic, and sources providing information to the attachés in Paris concluded that "Protection against ground weapons has become more and more a great necessity."³⁴

The targets of ground attacks were many and varied. The attaché reports indicated attacks against such targets as trenches, tanks, troop concentrations, villages used as military garrisons, motorized convoys, reinforcements and

retreating troops, but one of the most discussed targets was the airfields. The attack of airfields and attempts by the Government to limit the damage the Nationalists could inflict were chronicled in dispatches throughout 1937 and early 1938.³⁵

In the early stages of the war the Republicans lost many planes of their own on the ground due to Nationalist attacks, but by early 1937 the Government had enacted a policy of using temporary landing fields as a means of shifting their planes quickly to areas where they were most needed, and also to make them harder for the Nationalists to locate. According to the reports of the attachés, this tactic worked extremely well. Lieutenant Colonel Fuller reported in March 1938 that the Government Air Force was completely mobile. It was made up of squadrons of twelve planes, each squadron moving every day or two. He also reported that there was no more than one squadron per airfield. To protect their planes further the Government pilots parked them scattered around the edges of the fields and covered their support vehicles with shrubs and brush to make their presence less obvious. The dark green paint used by the Soviets also helped camouflage their locations.³⁶

However well the use of temporary airfields worked, the tactic was not without its problems. The rugged terrain where some of the fields were located made operations

difficult, and the high speed landing of the I-16 on primitive fields frequently resulted in the destruction of planes and the loss of pilots. In one of Lieutenant Colonel Waite's reports he quoted the former commander of the French Air School at Versailles, a General Armengaud, as saying that planes "required to change airdromes frequently to avoid bombing should be able to utilize mediocre landing fields through the use of modern wing flaps." Captain Griffiss also noted that landing on temporary fields caused more maintenance problems for planes like the I-16, which had a retractable undercarriage, than planes with a fixed landing gear.³⁷

In spite of the limitations and peculiarities of the Spanish Civil War, Captain Griffiss recognized that the air war had "shown us the power and limitation of an air arm from which we can better judge its future employment as well as the best means of defense against it." In his annual reports on the war Captain Griffiss not only summarized the information that he had collected through the rear, but he also assessed the importance of what he was observing. And more than any other attaché, he provided MID with his opinions concerning the future use and development of military aviation.³⁸

Unlike some aviators of his era, Captain Griffiss believed that "no major war of the future will be as short lived as some advocate due to the power of Air Forces."

This opinion apparently drove many of the other conclusions he reached. He strongly believed that in a future conflict involving industrial powers the quality of the aerial equipment would be so similar that the nation that could supply and resupply its air force with a greater quantity of planes would eventually succeed in gaining and maintaining air superiority.³⁹

Air superiority was essential in his opinion. Throughout his reports Captain Griffiss continually emphasized the power of the bomber and the devastation that it could wreak. Although he did not believe the bombing that took place in Spain fully demonstrated the capabilities of bombardment aviation, he insisted that the destruction evident from the bombing proved that air forces in the future would have to stop enemy bombers "at all costs." Captain Griffiss' arguments approach bombardment from a defensive rather than an offensive point of view.⁴⁰

Rather than calling for an air force predominantly composed of bombers, he advocated a well-rounded force of various components working in cooperation. He especially recognized the need for cooperation between bombers and fighters.

The peacetime theory of the complete invulnerability of the modern type bombardment plane no longer holds. The increased speeds and modern armament of both the bombardment and pursuit plane have worked in

favor of the pursuit. Pursuit must be employed to protect bombardment or, it is better to say, bombardment must rely upon pursuit for its protection.

And he also insisted that "Operations in Spain have shown the necessity of combined efforts of pursuit and anti-aircraft in protecting any one locality." Yet Captain Griffiss recognized that "the pursuit plane remains the decisive factor of air supremacy." Without air superiority offensive and defensive operations were difficult, if not impossible.⁴¹

In addition to cooperation within the air force, Captain Griffiss also advocated the development of a separate element specifically designed to support ground operations. Based on what he had seen in Spain, he believed it was necessary to have planes specially designed for the ground support mission, and he insisted that it was necessary to have "efficient liaison and cooperation between the Air and Ground Troops." To create the cooperation necessary in war, Captain Griffiss believed it was imperative that air and ground forces train together in peacetime. He understood that the air force could not win campaigns alone; it required ground forces to take and hold objectives.⁴²

Among the most interesting of Captain Griffiss' observations about the war concerned the Germans.

The Germans have attached a great deal of importance to the use of bombardment over battlefields and the German aviation in Spain has chiefly attempted to perfect its use in direct liaison with infantry . . . Today it seems that the Germans are studying the possibility of giving an overwhelming superiority to attack over defense by using at the same time artillery, tanks and airplanes.⁴³

Captain Griffiss was not alone in some of the conclusions he reached about the future of military aviation. General Armengaud, retired from the French Air Force, was quoted by Captain Griffiss when he said of Nationalist bombing in Spain: "Germany and Italy are thus getting the world used to the bombardment of capital towns which is a part of their war plans." The general, too, feared the power of the bombers. In an article sent to MID by Lieutenant Colonel Waite, General Armengaud argued, as did Captain Griffiss, that bombardment and fighter forces must work together, and that the fighters were the best means of defense against enemy bombing attacks. Other sources used by the attachés also supported the importance of pursuit aviation, and many reports reinforced the need for cooperation between air and ground forces.⁴⁴

Although arguments can be made about the proper lessons that should have been learned from the air war in Spain, it remains that Spain was important in generating thought and

discussion about the use and development of military aviation. At least through the first year, the Spanish Civil War was a contest largely involving pilots and equipment from German, Italy and the Soviet Union. And the tactics that developed reflected not only the circumstances and rival planes encountered in Spain, but also the training received by the pilots in peacetime. This was the first aerial combat between European air forces since the end of World War I, and it allowed the opportunity for military men of all nations to review, reassess and test the assumptions they held about the importance and role of military aviation in modern warfare. The reports sent to MID by the attachés in Europe also allowed the same opportunity to the United States Army. Thanks largely to Captain Griffiss, MID received more information about the air war than any other aspect of the war in Spain.

NOTES

¹Griffiss to MID, 11 Aug 38, 2657-S-144/406, MID, RG 165; Waite to MID, 6 Jul 37, 2015-1234/1, MID, RG 165; Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165.

²Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165; Griffiss to MID, 6 May 37, 2657-S-144/180, MID, RG 165; Fuller to MID, 10 May 37, 2657-S-144/178, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-165/395, MID, RG 165.

³Fuller to MID, 11 Feb 37, 2657-S-144/103, MID, RG 165; Fuller to MID, 9 Feb 37, 2657-S-144/97, MID, RG 165; Waite to MID, 28 Aug 38, 2657-S-144/395, MID, RG 165; Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165.

⁴Lt. Col. John Magruder to MID, 11 Mar 38, 2657-S-144/344, MID, RG 165; Griffiss to MID, 5 May 38, 2657-S-144/366, MID, RG 165; Waite to MID, 11 Jan 38, 2657-S-144/322, MID, RG 165; Fuller to MID, 10 Aug 37, 2657-S-144/243, MID, RG 165.

⁵Lincoln, Memorandum for the Chief of Staff, 2 Mar 37, 2657-S-144/111, MID, RG 165; Waite to MID, 29 Dec 36, 2657-S-144/79, MID, RG 165; Fuller to MID, 25 Mar 37, 2657-S-144/132, MID, RG 165; Fuller to MID, 9 Feb 37, 2657-S-144, MID, RG 165; Griffiss to MID, 15 Jun 37, 2093-213/11, MID, RG 165; Griffiss to MID, 7 Jun 37, 2657-S-144/202, MID, RG 165; Waite to MID, 9 Feb 37, 2657-S-144/98, MID, RG 165; Fuller to MID, 2 June 37, 2657-S-144/197, MID, RG 165; Griffiss to MID, 26 Mar 37, 2093-129/22, MID, RG 165.

⁶Griffiss to MID, 26 Mar 37, 2093-129/22, MID, RG 165; Fuller to MID, 10 Mar 37, 2657-S-144/130, MID, RG 165; Fuller to MID, 26 Jul 38, 2093-213/25, MID, RG 165; Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG 165.

⁷Thomas, Civil War, 678; Coverdale, Italian Intervention, 372, 384-385; Proctor, Hitler's Luftwaffe, 249, 253.

⁸Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165;
Fuller to MID, 2 Jun 37, 2657-S-144/197, MID, RG 165.

⁹Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165;
Fuller to MID, 25 Mar 37, 2657-S-144/132, MID, RG 165;
Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG 165.

¹⁰Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG
165.

¹¹Fuller to MID, 2 Jun 37, 2657-S-144/197, MID, RG
165; Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165.

¹²Ibid,; Fuller to MID, 2 Jun 37, 2657-S-144/197,
MID, RG 165.

¹³Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG
165.

¹⁴Ibid.

¹⁵Ibid.

¹⁶Ibid.

¹⁷Fuller to MID, 2 Jun 37, 2657-S-144/197, MID, RG
165; Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165;
Fuller to MID, 10 Aug 37, 2657-S-1-4/243, MID, RG 165.

¹⁸Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG
165; Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG 165.

¹⁹Waite to MID, 4 Feb 37, 2657-S-144/95, MID, RG 165;
Griffiss to MID, 17 May 37, 2657-S-144/195, MID, RG 165.

²⁰Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG
165.

²¹Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG
165.

²²Lee to MID, 25 Jan 37, 2657-S-144/88, MID, RG 165;
Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG 165.

²³Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Griffiss to MID, 17 May 37, 2657-S-144/195, MID, RG 165; Fuller to MID, 25 Mar 37, 2657-S-144/132, MID, RG 165; Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165.

²⁴Lee to MID, 25 Jan 37, 2657-S-144/88, MID, RG 165; Fuller to MID, 6 Feb 37, 2657-S-144/99, MID, RG 165; Fuller to MID, 10 Mar 37, 2657-S-144/130, MID, RG 165.

²⁵Griffiss to MID, 14 Jan 37, 2657-S-144/208, MID, RG 165; Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG 165; Griffiss to MID, 18 May 38, 2657-S-144/371, MID, RG 165.

²⁶Griffiss to MID, 25 Mar 37, 2093-213/8, MID, RG 165; Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165.

²⁷Fuller to MID, 10 Mar 37, 2657-S-144/130, MID, RG 165; Griffiss to MID, 7 Apr 37, 2657-S-144/146, MID, RG 165; Griffiss to MID, 17 Aug 37, 2657-S-144/255, MID, RG 165; Waite to MID, 8 Jun 37, 2657-S-144/198, MID, RG 165.

²⁸Waite to MID, 8 Jun 37, 2657-S-144/198, MID, RG 165; Fuller to MID, 10 May 37, 2657-S-144/178, MID, RG 165.

²⁹Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165.

³⁰Ibid.

³¹Fuller to MID, 2 Jun 37, 2657-S-144/197, MID, RG 165; Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165; Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG 165.

³²Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165; Fuller to MID, 2 Jun 37, 2657-S-144/197, MID, RG 165.

³³Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Waite to MID, 8 Jun 37, 2657-S-144/198, MID, RG 165.

³⁴Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Waite to MID, 5 Jan 38, 2657-S-144/316, MID, RG 165.

³⁵Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Lee to MID, 17 May 38, 2657-S-144/372, MID, RG 165; Fuller to MID, 23 Mar 38, 2657-S-144/348, MID, RG 165; Griffiss to MID, 10 Aug 37, 2657-S-144/251, MID, RG 165.

³⁶Fuller to MID, 10 Mar 37, 2657-S-144/130, MID, RG 165; Griffiss to MID, 25 Apr 37, 2093-221/1, MID, RG 165; Griffiss to MID, 25 Mar 37, 2093-213/8, MID, RG 165; Fuller to MID, 2 Jun 37, 2657-S-144/197, MID, RG 165; Fuller to MID, 22 Mar 38, 2657-S-144/348, MID, RG 165; Waite to MID, 9 Feb 37, 2657-S-144/98, MID, RG 165.

³⁷Griffiss to MID, 14 Jun 37, 2657-S-144/208, MID, RG 165; Fuller to MID, 10 Mar 37, 2657-S-144/130, MID, RG 165; Lee to MID, 24 May 37, 2657-S-144/191, MID, RG 165; Waite to MID, 5 Jan 38, 2657-S-144/316, MID, RG 165; Griffiss to MID, 17 Aug 37, 2657-S-144/255, MID, RG 165.

³⁸Griffiss to MID, 11 Aug 38, 2657-S-144/406, MID, RG 165.

³⁹Griffiss to MID, 17 Aug 37, 2657-S-144/255, MID, RG 165; Griffiss to MID, 11 Aug 38, 2657-S-144/406, MID, RG 165.

⁴⁰Griffiss to MID, 17 Aug 37, 2657-S-144/255, MID, RG 165; Griffiss to MID, 11 Aug 38, 2657-S-144/406, MID, RG 165.

⁴¹Griffiss to MID, 17 Aug 37, 2657-S-144/255, MID, RG 165; Griffiss to MID, 11 Aug 38, 2657-S-144/406, MID, RG 165.

⁴²Griffiss to MID, 17 Aug 37, 2657-S-144/255, MID, RG 165; Griffiss to MID, 11 Aug 38, 2657-S-144/406, MID, RG 165.

⁴³Ibid.

⁴⁴Griffiss to MID, 5 May 38, 2657-S-144/366, MID, RG 165; Waite to MID, 5 Jan 38, 2657-S-144/316, MID, RG 165; Fuller to MID, 26 Jul 38, 2093-213/25, MID, RG 165; Waite to MID, 30 Nov 38, 2015-1234/2, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165.

CHAPTER IV

THE WAR ON THE GROUND

At the same time that war raged in the skies, a different, but related war was being fought on the ground between the Nationalists and the Government. On the ground it was largely an infantry war waged between untrained or partially trained conscripts and volunteers, often led by inexperienced officers and noncommissioned officers. It was a war of trenches and street fighting with each side mainly depending upon light or individual weapons. Yet both sides also introduced technical elements to the fight that changed the nature of the war. Tanks, antitank weapons and antiaircraft guns, mostly from the Germans, Italians and Soviets, were used with varying degrees of success. And although neither side employed these weapons in great numbers, their use provided information that reflected the technical and tactical improvements and changes made since the end of the Great War. Their use also demonstrated the growing complexity of modern weapons and warfare. Although most of Colonel Fuqua's reports concerned the nontechnical infantry war of the individual soldiers, the focus of interest for most of the other American military

attachés became the tanks, antitank and antiaircraft weapons. Even though they were removed from the fighting, the attachés in Paris and London, and to a lesser extent in Rome and Berlin, provided information that supplemented the sketchy technical and tactical data sent from Spain by Colonel Fuqua.

If the hope of military thinkers was to return maneuver to the battlefield through the use of tanks, the experience of Spain was a disappointment. The general conclusion reached by the attachés and their sources was that the tanks used there were inefficient. They lacked the armor and armament necessary to meet successfully an enemy equipped with heavy machine guns and antitank weapons, and they were continually plagued with mechanical malfunctions. Lieutenant Colonel Lee submitted a report in the spring of 1937 that contained an excerpt from an article by Basil H. Liddell Hart. In it, Liddell Hart stated that the tanks used in Spain were "obsolescent and of poor quality." In a profound sense he was correct. With the rapid technical development occurring during the 1930s, equipment was soon displaced by more advanced technology. Yet it would be wrong to assume from his statement that the tanks used in Spain were old and discarded models, because they were not.¹

The Germans sent the Panzer Mark I to Spain. Designed in the early 1930s, it went into mass production in the summer of 1934, and served as the main weapon of the German tank regiments from 1935 to 1940. The Italian tanks had a similar history. The Fiat Ansaldo Carro Veloce 33 (CV 33) and the Fiat Ansaldo Carro Veloce 35 (CV 35), produced in 1933 and 1935 respectively, became the Italian battle tanks in Spain. The CV 35, a modified version of the CV 33, was the standard light tank of the Italian Army from 1935 through the early stages of the Second World War. The Government tanks were the T-26 and T-28 from the Soviet Union. The T-26, based on Vickers plans purchased in 1931, went into production in the early 1930s, and was still in service in 1942. The Soviets began producing the T-28 in 1935 and it remained the standard Soviet medium tank until 1941.²

So, although Liddell Hart may have been theoretically correct in arguing that these tanks were obsolete, in a practical sense the tanks used in Spain were the standard weapons of their respective armies.

The information gathered by the attachés about the Nationalist tanks appears to be relatively accurate and consistent. Although the attachés never mentioned the German Panzer Mark I by name, they provided an early description of its basic characteristics. Lieutenant Colonel Waite submitted a report at the end of January 1938

that described the German vehicle as a light tank weighing between four and five tons, capable of traveling at a maximum speed of forty to fifty kilometers per hour (kmph.), manned by a crew of two and mounted with two machine guns. A report by Lieutenant Colonel Waite in May of the same year basically confirmed the earlier report, but he added that the twin machine guns were mounted in a turret, and the maximum thickness of the tank's armor was fifteen millimeters (mm.).³

Colonel Fuqua gathered information about the German tank from the commanding officer of the Government Tank School at Archena. This information was much the same as had been previously reported by Lieutenant Colonel Waite, except that the Spanish Commander reported that the tank weighed 5000 kilograms (about 5.5 tons) instead of four or five tons, and that its maximum speed on the road was fifty-five kmph, instead of fifty. Colonel Fuqua's report also added information not previously reported about the machine guns and armor. He wrote that the machine guns were 7.92 mm. and that they fired independently but shared the same telescopic sight. The armor, he noted, had a maximum thickness of 14 mm. and a minimum thickness of 7 mm., the forward armor being the thickest, while the armor on the sides was only 8 mm.⁴

Technical data available today about the Panzer Mark I verifies the accuracy of the main points of information

collected by the attachés. According to the data gathered by Dr. F. M. von Senger und Etterlin in his history of German armored fighting vehicles, the Germans sent two models of the Mark I to Spain, which differed mainly in the size and power of their engines. Both models had crews of two, twin 7.92 mm. machine guns and a maximum thickness in armor of 15 mm., but speed and weight were different. The earlier 'A' model weighed 5.4 tons and had a maximum speed of 37 kmph., while the 'B' model weighed 5.8 tons and had a maximum speed of 40 kmph.⁵

In January and May of 1937 Lieutenant Colonel Waite was also gathering information about the Italian tanks. His first report described them as light, two and a half ton tanks with a maximum speed of 45 kmph., a two man crew and mounted with two machine guns. By May he had discovered that the Italians had two different tanks in Spain. The information he then sent to MID reflected the same speed and crew size, but provided more detail about weight, armament and armor. He reported that the tanks weighed between two and three tons, had either one or two machine guns, and carried armor between 9 mm. and 13 mm. thick. Other reports from Lieutenant Colonel Waite and from Colonel George H. Paine, the attaché in Rome, added little new information, but served to verify the data from January and May 1937. No information about the Italian tanks came from Colonel Fuqua in Spain.⁶

John Joseph Timothy Sweet in Iron Arm: The Mechanization of Mussolini's Army, 1920-1940 confirms the basic data received by MID. Both the CV 33 and the CV 35 were light tanks with two man crews, and both had armor that measured 5/16 of an inch (7.9 mm.) thick at the sides and a half an inch (12.7 mm.) thick in the front and the rear. However, the CV 33 weighed 3.1 tons and had a maximum speed of only 38 kmph., while the CV 35 weighed 3.2 tons and had a speed of 42 kmph. Although the attachés reported the Italian tanks to be a little lighter and faster than they actually were, they were right about the armament. The CV 33 had one 6.5 mm. machine gun, and the CV 35 had two 8 mm. machine guns.⁷

Unfortunately, the information sent to MID about the Soviet tanks was not as accurate or as consistent as that collected about the Nationalists'. As with the German and Italian tanks most of the technical information gathered came from Lieutenant Colonel Waite in Paris. Colonel Fuqua in Spain offered only the observation, in February 1938, that the Soviet tank had a 45 mm. gun mounted on it. Which Soviet tank that was he did not mention, nor did he indicate that he knew that the Soviets had at least two different tanks in Spain.⁸

In his report in January 1937, Lieutenant Colonel Waite described two Soviet tanks: a medium he identified as a 'BT', and a heavy T 28. The medium tank he described as

weighing 12 tons with a three man crew, a top speed of 55 kmph, and armed with a 45 mm. gun and one machine gun. He reported the T 28 tank to be 18 tons in weight with a five man crew, a maximum speed of 40 kmph, and mounted with a 76 mm. gun and three machine guns. In the report he also provided information about the armor on each of the tanks. The maximum thickness of the BT's armor, he said, was 12 mm. while the armor on the T 28 reached 25 mm.⁹

On 25 Mar 1937, based on an article from La France militaire, Lieutenant Colonel Waite again described two Soviet tanks, but this time he identified the T 28 as a medium tank and the other lighter tank as a T 26 light tank. Some of the information about the T 28 agreed with that sent in January, although the May report failed to provide a weight. He still characterized the T 28 as having an estimated 25 mm. maximum thickness of armor and a five or six man crew. However, he now reported the main gun to be a 45 mm. rather than a 76 mm. In the May report he also provided a more complete description of the placement of the guns. The 45 mm. gun and one machine gun were located in the main turret, and a 7.62 mm machine gun was in each of two lateral turrets. He also indicated that the tank traveled at no more than 40 kmph, a slower maximum speed than that previously reported.¹⁰

The information about the T 26 was similar, but not the same as the data already submitted about the BT. Lieutenant

Colonel Waite described it as an 8.5 ton tank with a crew of three, a maximum of 13 mm. of armor, and armed with either a 37 mm. or a 45 mm. gun mounted with a machine gun in the turret, or with just two turret-mounted machine guns. He also added that the T 26 was capable of speeds up to 30 kmph.¹¹

Further reports served to confuse the issue even more. In June 1937 Lieutenant Colonel Waite submitted a report by Lieutenant Commander John A. Gadé, U.S.N.R., who was the naval attaché in Brussels, and who had gathered some information about the war while visiting Portugal. Lieutenant Commander Gadé reported that there were two types of Soviet tanks in Spain, a 12 ton and an 18 ton. He did not provide a designation for these tanks, but he added that the 12 ton had a maximum speed of 55 kmph. and a crew of three and was armed with one gun and one machine gun. The 18 ton tank he described as having a maximum speed of 40 kmph., a five man crew, a gun and an undesignated number of machine guns. Information gathered by Lieutenant Colonel Waite from the French War Department agreed with Lieutenant Commander Gadé in terms of the weight and armament of the two tanks, but added that the 18 ton tank had three machine guns in addition to its cannon.¹²

Recent historians of the Spanish Civil War do not resolve the confusion. That the T 26 light tank was in Spain is agreed, but neither Hugh Thomas nor Jesús Salas

Larrazábal nor Ramón Salas Larrazábal indicates that the T 28 ever was used by the Government. Yet all three, who admittedly shared information, agree that the BT 5 was in Spain, Thomas citing its use from late 1937 through the end of the war.¹³

Nevertheless, military and civilian writers from the late 1930s clearly identify a 20 ton T 28 tank from the Soviet Union, or manufactured in Spain from Soviet design, as being used by the Government. Although there is confusion about the size of the gun in the main turret, whether it was 45 mm. or 47 mm., they all agree that in addition to the main gun there was a co-axially mounted machine gun in the main turret and a machine gun in each of two small turrets.¹⁴

Bryan Perrett, who has written a book about Soviet armored vehicles, agrees that the T 26 was used in Spain. Although he describes it as lighter and slower than reported by the attachés, his data verifies most of the information sent to MID. He characterizes the T 26 as a 9.4 ton light tank capable of speeds up to 17.5 mph. (28 kmph.), with a crew of three, a maximum of 15 mm. of armor, and armed with a 45 mm. gun and a co-axially mounted machine gun in a single turret.¹⁵

Although Perrett does not mention that the T 28 was in Spain, his description of it more closely matches the information sent by the attachés about the tank, which they

also identified as the T 28, than does his data about the BT 5. He writes that the T 28 was a medium tank with a crew of six, a maximum speed of 27 mph. (43 kmph.), and a maximum 36 mm. of armor. He also adds that it had in its main turret a 76 mm. gun and a co-axially mounted 7.62 mm. machine gun. In addition, located in separate turrets to the left and right forward of the main turret were two 7.62 mm. machine guns. However Perrett, unlike the attachés, claims that the T 28 was a 28 ton tank.¹⁶

Albert and Joan Seaton, who wrote The Soviet Army: 1918 to the Present, generally agree with Perrett in his description of the characteristics of both the T 26 and the T 28. However, they do not agree as closely on the characteristics of the BT 5. The Seatons classify it as a light tank of about 12 tons with a road speed of 40 mph. (64 kmph.), a crew of three, and a maximum thickness of 20 mm. of armor. They also claim that the BT 5 was armed with a 45 mm. gun and two 7.62 mm. machine guns. Perrett agrees that the BT 5 had a crew of three, and his estimates of speed and armor are similar to the figures of the Seatons. Perrett estimates the maximum speed to have been 37 mph. (60 kmph.), and the maximum armor 15 mm. However, Perrett classifies the BT 5 as a light medium tank, although he does not provide weight figures, and he does not indicate that the tank ever carried more armament than the single main gun.

The pictures he provides show no machine guns mounted on any of the BT series tanks.¹⁷

Although there is confusion about the types of Soviet tanks used in Spain, the data gathered by the attachés and the information provided by historians since the war tend to indicate that the T 26 and the T 28 were both used. The BT 5 might have been there as well, but because of its thin armor and small crew size it certainly would have been confused with the T 26, not the T 28. The T 28's distinctive combination of main and lateral turrets, its 76 mm. gun and multiple machine guns, and its large crew size make it difficult to mistake.

Whatever types of tanks the Soviets sent to Spain, they all seemed to share an unfortunate flaw. Attaché reports indicate they were susceptible to destruction by fire, apparently more than the Italian and German tanks. According to an article by Captain Ed. Bauer of the Swiss Army, forwarded to MID by Lieutenant Colonel Magruder from Bern, the part most susceptible to combustion was the "rubber sheathing covering the roller bearing which supports the caterpillar drive." A report from Lieutenant Colonel Lee early in 1937 had made a similar observation about how easily the synthetic rubber used on the treads burned. The Nationalists soon discovered and exploited the flaw.¹⁸

In reports based on interviews with newsmen returning from Spain, Lieutenant Colonels Kroner and Waite described

methods used by the Rebels to stop the Government tanks. According to Lieutenant Colonel Kroner, Moors were using gasoline tied to hand grenades, which thrown at close range started the tanks burning and forced the crews to abandon them. Lieutenant Colonel Waite received much the same information, which was further verified by the French War Department. He added that dynamite was also used to blow the tracks off the tanks, but regardless of the methods used the Nationalists had captured and were using Soviet tanks. According to Jesús Salas Larrazábal, by October 1938 the Nationalists had forty-one Soviet tanks incorporated into their army.¹⁹

The Government use of captured German and Italian tanks is not mentioned by Salas Larrazábal, indicating that if they were used it was not a widespread practice. Based on the attaché reports about the ineffectiveness of the light tanks, it is probably not surprising that the Government made little use of the Nationalist models. The attachés and their sources reported that the light tanks, especially those of the Nationalists, were too lightly armored and armed to be effective. The attachés in Paris submitted reports in 1937 and 1938 that mentioned how easily the light tanks could be penetrated not only by antitank weapons, but also by light machine guns. In the report of Lieutenant Commander Gadé, which Lieutenant Colonel Fuller forwarded to

MID, the commander mentioned that a bullet from an 8 mm. machine gun easily penetrated the German tanks.²⁰

The lack of heavy armament also hampered the tanks. Lieutenant Colonel Waite, based on an article in La France militaire, reported that the Nationalist tanks were incapable of penetrating "25 m/m or even 13 m/m thick" armor. This meant that the Nationalist tanks were no match for the Soviet tanks used by the Government - - except for the inflammability of the latter.²¹

Colonel Paine discovered that the Italian Army reached a similar conclusion. In a translated military publication forwarded to MID by Colonel Paine the Italians concluded that tanks armed with cannons were superior to those armed with machine guns. The document further suggested the necessity of organizing tank units so that tanks mounted with antitank guns protected the light tanks armed only with machine guns. The recommended ratio was one tank with antitank cannon for every three light tanks. Whether this was done in Spain is unclear, but Colonel Paine added the comment that the Italians were beginning to arm some of the light tanks in Italy with 37 mm. cannons instead of machine guns, and that he anticipated the integration of these tanks into the assault tank companies.²²

Colonel Fuqua reached a similar conclusion in regard to the German tanks. He noted that they were too light to be suited for attacking strongly fortified positions, and

suggested that if they were to be used for such a mission they needed to be protected by medium or heavy tanks. The ineffectiveness of the light tanks against fortified positions in Spain, Colonel Fuqua also argued, reinforced the growing tendency in modern military forces toward a greater use of medium and heavy tanks.²³

Parts, if not all, of the French War Department apparently agreed with Colonel Fuqua. Lieutenant Colonel Waite received information from French Army Intelligence that included the observation that light, fast, but insufficiently armed and armored tanks were not effective against organized positions. French military planners within the War Department also admitted that they agreed with the assessment made by General Duchêne in an article in L'Echo de Paris in July 1937. The General stated that "It has been demonstrated that the light tank, faster but insufficiently armed and protected, is distinctly inferior to the medium and heavy tank - a point well worth retaining."²⁴

Although most of the criticism was leveled at the light German and Italian tanks, the heavier Soviet tanks were better only by comparison. Both Colonel Fuqua and Lieutenant Colonel Fuller submitted reports in the spring of 1937 stating that the tanks used in Spain were universally ineffective. The Soviet tanks simply had heavier armor and more powerful armament, which gave them an advantage in

attacking fortified positions, and when facing the Nationalist tanks.²⁵

Most of the tank action in Spain, however, was not tank against tank in massed battles. Both sides typically doled out their tanks to support infantry attacks and counter-attacks. Colonel Paine learned from their official publications that the Italians used their tanks in Spain in three ways: as an advanced guard for motorized convoys, in cooperation with the infantry in the attack, and in cooperation with the horse cavalry to make contact with the enemy during attacks. Lieutenant Colonel Waite confirmed that most of the tanks in Spain, not just the Italian, were used for those types of missions, but he added that tanks also were being used in street fighting. Colonel Fuqua noted in one of his visits to the front lines that the Government used their tanks at Frentes de Ebro to carry small groups of Spanish soldiers forward into battle. He suggested that this might be a new role for the tank.²⁶

Fortunately, other observers were reaching different conclusions. Rather than using tanks as separate weapons, a number of the attachés' sources suggested the need to employ tanks in mass. Even Colonel Fuqua received notes captured from the Nationalists at Brunete that concluded: "Tanks operating alone are doomed to disaster." In addition, comments from French, British and Swiss sources also strongly emphasized the need for concerted action and

support between the various arms. They mentioned the need for close cooperation between the tanks and infantry, and among tank, artillery, aviation and antitank units. Without support and coordinated action they believed successful tank attacks were not possible. The same observation was made concerning tanks as was made concerning aviation: the infantry needed to exploit rapidly the advantage the tank offered for taking and holding ground.²⁷

The attachés also received and passed to MID comments from their sources that indicated a shift in thinking away from the advantages of light, fast armored vehicles toward more heavily armed and protected, but necessarily slower tanks. Both Colonel Fuqua and Lieutenant Colonel Waite agreed that the war in Spain showed the need for increasing numbers of heavy and medium tanks. As Lieutenant Colonel Waite commented in a report to MID: "speed is not armor." He, like many of his sources, also believed that tanks had to be employed in mass, and had to be used in concert with infantry, artillery and aviation support.²⁸

The attaché reports and the opinions of the attachés apparently were considered and accepted by the officers in MID. In a memorandum written by Lieutenant Colonel Charles M. Busbee, the executive officer of MID, for Colonel Adna R. Chaffee, the Deputy Chief of Staff, six reasons were given for the tank's lack of success in Spain. Included were the arguments that the tanks had not been massed, but used in

small numbers, that they had not been properly supported by infantry and artillery, and that antitank weapons were superior against the armor used on the tanks. Lieutenant Colonel Busbee also included comments about poor reconnaissance, maintenance, training and discipline, and unfortunate decisions to use tanks against villages and strongholds protected by natural and man-made obstacles.²⁹

There was almost no information from the attachés about the total number of tanks used in Spain. Lieutenant Colonel Waite in January 1937 received information that there were approximately 150 Soviet tanks, 150 German tanks and 300 Italian tanks in Spain by the end of 1936. Historians of the war disagree with the Italian and German figures. Hugh Thomas and Ramón and Jesús Salas Larrazábal generally agree that the Italians and Germans sent no more than 150 to 200 tanks to Spain through the entire war. Ramón Salas Larrazábal, in fact, believes it is unlikely that as many as 120 German tanks were used by the Republicans. However, all three agree that the Soviet Union eventually sent between 900 and 1000 tanks to the Government.³⁰

Although the figure of 1000 Soviet tanks seems large, it is relatively small when combat losses over almost three years are considered. Tank warfare was interesting to observers and important in isolated battles, but there were never enough tanks, and Spain remained an infantry war.

Less information was available to the attachés about antitank weapons. The occasional scraps and bits of data provide an incomplete but generally positive impression of their capabilities and their use. In May 1937 Lieutenant Colonel Lee quoted an article by Liddell Hart in which he said "the defense against tanks has been developed and perfected more quickly and more effectively than the tank itself." The antitank weapons used in Spain were clearly a threat to the tankers. As Colonel Fuqua concluded, an infantryman with an antitank gun had no need to fear tanks.³¹

Lieutenant Colonel Waite identified three different antitank weapons sent to Spain from Germany: a 37 mm. gun, a 20 mm. heavy machine gun and an antitank rifle. The use of these weapons was also confirmed by the French War Department. MID received little information about the 37 mm. Lieutenant Colonel Waite described it as a split-trail gun weighing 370 kilograms (814 lbs.) and capable of penetrating 33 mm. of armor at an angle of 90 degrees at 500 meters (m.). He also noted that the 20 mm. machine gun had a long barrel, fired a projectile capable of "great penetration," and was mounted on a small caterpillar vehicle.³²

Colonel Fuqua received further information from a captured German document dealing with the employment of the 20 mm. According to the document, the 20 mm. was meant to

be sighted for a range up to 1000 m. and employed as a direct fire weapon. It had an effective range of 600 m., although the paper claimed that any hit within 1000 m. "is disabling to the vehicle." The weapon could be employed as a unit, by section or individually, although the document failed to specify the size of the normal unit, or how many sections it contained. It did specify a minimum interval between pieces of 100 m. on a front of no more than 400 m., and it noted that in a defensive position the guns preferably should be placed 200 m. from the enemy front line.³³

The only data sent about the German antitank rifle came from Colonel Fuqua, based on more notes captured from the Nationalists. The antitank rifle was described as being of 7.92 mm. It also had a special projectile, marked with a red tip, which was capable of penetrating Soviet armor at distances of less than 100 m. The attachés provided no other technical information.³⁴

According to reports by Lieutenant Colonels Waite and Lee the German antitank weapons were effective. Lieutenant Colonel Waite noted that the 37 mm. was successful against Soviet tanks, and Lieutenant Colonel Lee's unidentified British source claimed that the German antitank weapons were among the best in the world.³⁵

Colonel Paine and Lieutenant Colonel Waite agree that the Italians sent 20 mm. and 47 mm. antitank guns to Spain.

From a captured Italian document Colonel Fuqua gathered some specific information about the 20 mm. It was either truck-mounted or operated on its own wheels. It was normally employed in batteries of six weapons, and although it could be operated in sections, it was rarely employed individually. The captured document further explained that although the 20 mm. could be used for both antitank and antiaircraft missions, it was primarily designed to be an antiaircraft weapon. According to Lieutenant Colonel Waite's sources in the French War Department, both the 20 mm. and the 47 mm. were effective against Soviet tanks.³⁶

The attachés gathered almost no information about Soviet antitank weapons. Lieutenant Colonel Waite mentioned a 25 mm. Soviet gun in one report, but no one else ever did. All that Lieutenant Colonel Waite said about it was that it was effective against the German and Italian tanks. Two other reports by Lieutenant Colonels Waite and Lee talk about a 47 mm. Soviet gun, but again, the only information offered concerned its effectiveness. The same is true of reports about a 45 mm. gun.³⁷

It is unlikely that the Soviets had both a 45 mm. gun and a 47 mm. gun. Although there is little information from historians about the use of antitank weapons in Spain, what little is available indicates that the Soviet weapon was a 45 mm. Albert and Joan Seaton provide no evidence that there ever was a Soviet 47 mm., but mention later models of

a 45 mm. John Weeks in Men Against Tanks does not mention a 47 mm. either, although he does talk about the Soviets using an obsolete 45 mm. against German tanks in 1941. And Hugh Thomas does identify a Soviet 45 mm. in Spain and says that it was "superior to any German models then available."³⁸

Lieutenant Colonel Waite and Colonel Fuqua also briefly identified some other foreign antitank weapons used in Spain, although they do not mention which side used which weapons. Based on an article in Revue militaire generale, Lieutenant Colonel Waite identified the 13 mm. Hotchkiss, the 25 mm. Hotchkiss and the 20 mm. Oerlikon as foreign weapons providing the best results. His source also argued that Spain had been used as a testing ground for antitank weapons, and that antitank weapons development had surpassed tank development.³⁹

The observation that antitank weapons had surpassed tank development was perhaps the most important conclusion reached about the use of tanks and antitank weapons in Spain. And if the trend was toward heavier tanks to try to overcome the threat of antitank weapons, there also appeared a trend toward larger and more powerful antitank guns. American reserve Brigadier General Henry J. Reilly spent seven months in Spain as a news correspondent. He reported in a letter to MID during the autumn of 1938 that "no one

has any use for the 37 mm. or similar small caliber weapon for antitank or antiaircraft fire." He stated that the Germans, Italians and Spanish soldiers he talked to wanted an antitank gun of at least 65 mm. Perhaps Liddell Hart would have disagreed. In an article sent by Lieutenant Colonel Lee to MID in the spring of 1937 Liddell Hart had argued that light antitank weapons had the advantage of being easily shifted from location to location and quickly brought up to the front lines.⁴⁰

Other sources observed that antitank defense needed to be coordinated, and that the antitank guns were only part of the defensive plan. Lieutenant Colonel Waite commented that the antitank weapons worked most effectively when they were used in conjunction with obstacles.⁴¹

Although the information gathered by the attachés about antitank weapons was scant, most of it appears reasonably accurate. Antitank weapons have not received the same attention by historians as airplanes and tanks, but some mention is made of their existence in Spain. Tim Sweet and John Coverdale confirm the use of the 20 mm. and 47 mm. Italian guns. Raymond Proctor and Dr. von Senger und Etterlin have done the same for the German weapons. And, as already mentioned, Hugh Thomas confirmed the existence of a 45 mm. Soviet antitank gun.⁴²

The attachés were able to gather a little more information about antiaircraft guns than about antitank

weapons, although much of the information began to overlap. Weapons like the Italian 20 mm. and the German 88 mm. were at various times used for both antitank and antiaircraft roles. Still, the technical data collected was random and incomplete, and in some cases not quite accurate. Most important were the reports of the effectiveness of some of the equipment used.

Early reports from Paris in 1937 about German anti-aircraft guns mentioned a 23 mm., a 25 mm., a 37 mm. and an 88 mm. By August 1938 the information accurately reflected three main German weapons: a 20 mm., a 37 mm., and an 88 mm. Lieutenant Colonel Bernard R. Peyton, the attache in Berlin in 1939, confirmed that the Germans had sent two types of antiaircraft batteries to Spain. He mentions the 88 mm. and the 20 mm. batteries, but does not note any 27 mm. weapons. Raymond Proctor clarifies the situation. The antiaircraft weapons for the Condor Legion were in a unit designated Flak Group F/88 which included, for most of its existence, five batteries of 88 mm. guns and two mixed batteries of 20 mm. and 37 mm. weapons. Proctor explains that the mixed batteries each contained twelve 20 mm. and three 37 mm. guns. The 88 mm. batteries contained four guns each.⁴³

Lieutenant Colonel Fuller in a report in August 1937 provided a partial description of the 20 mm. He wrote that

it was mounted on two wheels and pulled by a motorcycle or by hand, and to fire the crew had to take it off the wheels and place it on a tripod. He also noted that the gun was "said to be particularly effective." The attachés submitted no more data about the 20 mm., or any about the 37 mm.⁴⁴

However, MID received a bit more information about the 88 mm. Although no attaché provided a complete description, Lieutenant Colonels Lee, Fuller and Waite generally agreed when their information overlapped. All reported that it had a vertical range of between 9000 and 10,000 m., and that it fired at a rate of between 15 and 20 rounds per minute. Lieutenant Colonel Waite also pronounced the weapon extremely accurate, and Lieutenant Colonel Lee, quoting one of his sources, wrote that the Nationalists "would be much happier if they had more 88 mm. anti-aircraft defense."⁴⁵

Although the 88 mm. was apparently highly successful as an antiaircraft weapon, it was also used against tanks and ground forces. Brigadier General Reilly, in his letter to MID, wrote that the Germans had an 88 mm. weapon "which can be used at a rapid rate against both aircraft and ground targets . . . I have seen them change from one to the other." Lieutenant Colonel Peyton added that the 88 mm. was used against entrenched infantry in an attack at Bilbao and during mountain fighting in the Santander campaign.⁴⁶

The attaché reports were consistently positive in their assessment of the German equipment. Colonel Fuqua reported that the German weapons had been "thoroughly tested" and were found to be satisfactory. Lieutenant Colonel Fuller in a conversation with German General Kuhlenthal was told that the Germans were pleased with the performance of the antiaircraft weapons in Spain. Major Truman Smith, the American military attaché in Berlin for most of the war, learned from a private statement by a member of the German War Ministry that the antiaircraft material sent to Spain had "proven very satisfactory." He also learned that the German antiaircraft material used in Spain was the same as the equipment in Germany. This information served to strengthen a supposition submitted to MID by Lieutenant Colonel Lee, who had received indications but no substantial proof that the antiaircraft weapons used by the Germans in Spain were the same as the standard equipment of the German military.⁴⁷

According to two different sources who provided information to Lieutenant Colonel Waite, the Germans alone manned their antiaircraft weapons. No one was allowed within a few hundred yards of them, not even the Spanish. The French War Department verified that "great secrecy surrounded the operation of these weapons."⁴⁸

Lieutenant Colonel Waite also reported that the Italians operated their own antiaircraft guns. The only gun reported to be used by the Italians was the same 20 mm. that

doubled as an antitank gun. According to information sent by Colonel Paine the gun was a 20 mm. Breda with a maximum rate of fire of 220 rounds per minute. Colonel Fuqua reported that it was effective as an antiaircraft gun up to 2000 m.; Lieutenant Colonel Waite provided an effective range of 2500 m. The attachés sent no other information to MID about the Italian antiaircraft weapons.⁴⁹

As with the antitank weapons, the information gathered by the attaches about Soviet antiaircraft guns is confused and incomplete. The only thing that is clear is that the Soviet antiaircraft batteries were not effecient or effective.⁵⁰

The clearest report of a Soviet gun came from Captain Griffiss in April 1937. He described a 76 mm. gun that fired 21 rounds per minute, had an angle of fire of from 0 to 85 degrees, a maximum altitude of fire of 9,000 m., and a maximum vertical range of 14,000 m. This information is probably accurate. At least the Seatons admit that the Red Army used a 76 mm. antiaircraft weapon before the Second Worled War, as well as 40 mm. and 80 mm. Bofors and Vickers models.⁵¹

Lieutenant Colonel Fuller, using information from the French War Department, mentions 40 mm. guns used in conjunction with larger caliber Soviet antiaircraft weapons as well. He noted that there were four 40 mm. in each

battery in addition to the four larger guns that he tentatively identified as 88 mm. It is unclear what the guns really were, but probably they were 76 mm. or 80 mm. weapons. Unfortunately, the historians of the Spanish Civil War have not specified the types of antiaircraft and anti-tank weapons provided each side by its allies.⁵²

In addition to the material supplied by the Soviets, there were apparently other foreign antiaircraft weapons used by the Government. Captain Griffiss reported in July 1937 that there were three antiaircraft batteries near Valencia called Battery Móvil, Battery Skoda and Battery Oerlikon, possibly indicating the types of weapons used by each battery. In addition, Colonel Fuqua noted in early 1938 that six Swiss guns of unspecified caliber, and two English 88 mm. antiaircraft guns were being installed at Barcelona. He added that "If both are successful, 100 of each will be purchased."⁵³

As with the antitank guns, the most important information that came from the attachés was the assessment of the efficiency and effectiveness of the weapons used. The reports repeatedly and clearly indicate that the Nationalist weapons, especially the German equipment, were accurate and effective, while the Government's antiaircraft program was poor. Lieutenant Colonel Fuller received, from both British and French sources, the information that the

armament used by the Government, which was largely Soviet, was inferior to that of the Germans. The attaches also noted a lack of antiaircraft guns on the Government side. Because most historians consider antiaircraft and antitank weapons under the broad category of artillery, it is unknown how many of each type of weapon were in Spain.⁵⁴

How effective the antiaircraft guns were is open to some question too. Lieutenant Colonel Waite in three separate reports during the first six months of 1937 stated that 80 percent of all planes the Nationalists shot down were brought down by antiaircraft fire. At the same time, Lieutenant Colonel Kroner, citing an interview with a newsman returning from Spain, reported that most of the aircraft shot down in Spain were lost in dogfights with other planes.⁵⁵

Both reports may be based on fact, although 80 percent seems a bit high. The newsman spent his time in Government Spain, whose air force dominated the skies until the Messerschmitts arrived during the summer of 1937. It is likely that most of the planes the Government brought down fell in aerial combat. On the other hand, until the summer of 1937 the Nationalists might well have had to rely on their antiaircraft weapons to down enemy planes. However, Raymond Proctor reported that, in total, the Condor Legion shot down 386 Government planes, of which 59 were brought down by antiaircraft fire.

The war on the ground, like the war in the air, illuminated changes that were occurring in the conduct of war. The light tanks, praised in the early 1930s for their speed, were found to be a liability when they met the heavier armed and armored Soviet tanks. And all tanks in Spain abruptly faced antitank weapons that could immobilize or destroy them. The tank that was supposed to return maneuver and offense to the battlefield was countered with modern antitank weapons that gave advantage again to the defense. To overcome the threat of the antitank weapons, the attachés and their sources stressed the need for tanks to be employed in mass, not as separate weapons or in small groups. They also recommended that the use of tanks be coordinated with the infantry, who could hold the ground gained, and with the artillery and aviation, who could protect the tanks by destroying or suppressing enemy antitank fire.

Although the attachés gathered little technical data about the antitank and antiaircraft weapons, they were in agreement that the antitank weapons were effective in meeting their enemies in Spain. However, with the trend toward heavier tanks there was an implied corresponding trend toward more powerful antitank weapons.

The effectiveness of the antiaircraft weapons of the Germans made an impression on the attachés, as did the relative ineffectiveness of the Soviet guns. Yet both sides

had to change their tactics to avoid contact with anti-aircraft batteries, and both sides lost planes to these weapons. The effectiveness of any country's model of antiaircraft gun would imply future use, and possibly, future development of this kind of weapon.

The war on the ground was similar in its trenches and infantry battles to the Great War, yet it was also a signal of changes to come in a future European war.

NOTES

¹Lee to MID, 24 May 37, 2657-S-144/191, MID, RG 165.

²F. M. von Senger und Etterlin, German Tanks of World War II: The Complete Illustrated History of German Armoured Fighting Vehicles, 1926-1945, eds. Peter Chamberlain and Chris Ellis, trans. J. Lucas (Harrisburg, Pennsylvania: A&W Visual Library, by arrangement with Stackpole Books, 1969), 21, 88, John Joseph Timothy Sweet, Iron Arms: The Mechanization of Mussolini's Army, 1920-1940, Contributions in Military History, Number 23 (London, England and Westport, Connecticut: Greenwood Press, 1980), 192-194, 196; Bryan Perrett, Fighting Vehicles of the Red Army (New York: Arco Publishing Company Inc., 1969), 15-16, 24, 26.

³Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165;
Waite to MID, 25 May 37, 2657-S-144/192, MID, RG 165.

⁴Fuqua to MID, 19 Aug 37, 2657-S-144/253, MID, RG 165.

⁵Senger und Etterlin, German Tanks, 21-22, 88, 208.

⁶Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165;
Waite to MID, 25 May 37, 2657-S-144/192, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Waite to MID, 8 Jun 37, 2657-S-144/190, MID, RG 165; Col. George H. Paine to MID, 20 Jul 38, 2657-S-144/383, MID, RG 165.

⁷Sweet, Iron Arm, 93, 102.

⁸Fuqua to MID, 26 Feb 38, 2657-S-144/337, MID, RG 165.

⁹Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165.

¹⁰Waite to MID, 25 May 37, 2657-S-144/192, MID, RG 165.

¹¹Ibid.

¹²Waite to MID, 8 Jun 37, 2657-S-144/198, MID, RG 165;
Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165.

¹³Thomas, Civil War, 446.

¹⁴Colonel Conrad H. Lanza, "Lessons From Spain," The Field Artillery Journal 28 (May-June 1938): 187; Major Cailloux, "Lessons of the War in Spain," La Revue d'Infanterie (March 1938): 21, trans. Fred Merten, U.S. Army War College Library, Carlisle Barracks, Pennsylvania; Helmut Klotz, Military Lessons From the Civil War in Spain (Paris: By the author, 1937): 41, trans. Richard U. Nicholas, U.S. Army War College Library, Carlisle Barracks, Pennsylvania.

¹⁵Perrett, Fighting Vehicles, 15-16.

¹⁶Ibid., 24-26.

¹⁷Albert Seaton and Joan Seaton, The Soviet Army: 1918 to the Present (London: The Bodley Head, 1986), Appendix A: Perrett, Fighting Vehicles, 26-29.

¹⁸Magruder to MID, 11 Mar 38, 2657-S-144/344, MID, RG 165; Lee to MID, 25 Jan 37, 2657-S-144/88, MID, RG 165.

¹⁹Kroner to MID, 9 Mar 37, 2657-S-144/129, MID, RG 165; Waite to MID, 2 Mar 37, 2657-S-144/124, MID, RG 165; Waite to MID, 25 May 37, 2657-S-144/192, MID, RG 165; Lee to MID, 17 May 38, 2657-S-144/372, MID, RG 165; J. Salas Larrazabal, Intervención Extranjera, 553.

²⁰Fuller to MID, 2 Mar 37, 2657-S-144/122, MID, RG 165; Waite to MID, 30 Nov 38, 2015-1234/2, MID, RG 165; Waite to MID, 8 Jun 37, 2657-S-144/198, MID, RG 165.

²¹Waite to MID, 25 May 37, 2657-S-144/192, MID, RG 165.

²²Paine to MID, 20 Jul 38, 2657-S-144/383, MID, RG 165.

²³Fuqua to MID, 26 Apr 37, 2724-S-16/8, MID, RG 165.

²⁴Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Waite to MID, 6 Jul 37, 2015-1234/1, MID, RG 165.

²⁵Fuller to MID, 2 Mar 37, 2657-S-144/122, MID, RG 165; Fuqua to MID, 15 Apr 37, 2657-S-144/158, MID, RG 165.

²⁶Waite to MID, 25 May 37, 2657-S-144/192, MID, RG 165; Lee to MID, 24 May 37, 2657-S-144/191, MID, RG 165; Paine to MID, 20 Jul 38, 2657-S-144/383, MID, RG 165; Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165; Fuqua to MID, 1 Nov 37, 2657-S-144/294, MID, RG 165.

²⁷Waite to MID, 30 Nov 38, 2015-1234/2, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Kroner to MID, 9 Mar 37, 2657-S-144/129, MID, RG 165; Fuqua to MID, 26 Feb 38, 2657-S-144/337, MID, RG 165; Lee to MID, 25 Jan 37, 2657-S-144/88, MID, RG 165; Magruder to MID, 11 Mar 38, 2657-S-144/344, MID, RG 165.

²⁸Waite to MID, 25 May 37, 2657-S-144/192, MID, RG 165; Magruder to MID, 11 Mar 38, 2657-S-144/344, MID, RG 165; Fuqua to MID, 26 Apr 37, 2724-S-16/8, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165.

²⁹Lt. Col. C. M. Busbee, Memorandum for Col. Adna R. Chaffee, 27 Jun 38, 2657-S-144/340, MID, RG 165.

³⁰Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165; Thomas, Civil War, 977, 978, 982; R. Salas Larrazabal, Datos Exactos, 223, 227; J. Salas Larrazabal, Intervención Extranjera, 556, 558.

³¹Lee to MID, 24 May 37, 2657-S-144/191, MID, RG 165; Fuqua to MID, 1 Nov 37, 2657-S-144/294, MID, RG 165.

³²Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165.

³³Fuqua to MID, 26 Feb 38, 2657-S-144/335, MID, RG 165.

³⁴Fuqua to MID, 26 Feb 38, 2657-S-144/337, MID, RG 165.

³⁵Waite to MID, 7 Dec 37, 2657-S-144/302, MID, RG 165; Waite to MID, 25 May 37, 2657-S-144/192, MID, RG 165; Lee to MID, 25 Jan 37, 2657-S-144/88, MID, RG 165.

³⁶Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Paine to MID, 20 Jul 38, 2657-S-144/383, MID, RG 165; Fuqua to MID, 26 Feb 38, 2657-S-144/336, MID, RG 165.

³⁷Waite to MID, 7 Dec 37, 2657-S-144/302, MID, RG 165; Lee to MID, 17 May 38, 2657-S-144/372, MID, RG 165; Waite to MID, 22 Dec 37, 2657-S-144/311, MID, RG 165; Magruder to MID, 11 Mar 38, 2657-S-144/344, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165.

³⁸Seaton, Soviet Army, Appendix C; John Weeks, Men Against Tanks: A History of Anti-Tank Warfare (New York: Mason/Charter, 1975), 106; Thomas, Civil War, 446.

³⁹Fuqua to MID, 15 Apr 37, 2657-S-144/158, MID, RG 165; Waite to MID, 25 May 37, 2657-S-144/192, MID, RG 165; Waite to MID, 3 Oct 38, 2657-S-144/407, MID, RG 165.

⁴⁰Brig. Gen. Henry J. Reilly to MID, 13 Oct 38, 2657-S-144/414, MID, RG 165; Lee to MID, 24 Mar 37, 2657-S-144/191, MID, RG 165.

⁴¹Magruder to MID, 11 Mar 38, 2657-S-144/344, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165.

⁴²Sweet, Iron Arm, 159; Coverdale, Italian Intervention, 136; Proctor, Hitler's Luftwaffe, 42, 46; Senger und Etterlin, German Tanks, 208-209.

⁴³Fuller to MID, 11 Feb 37, 2657-S-144/103, MID, RG 165; Fuller to MID, 2 Mar 37, 2657-S-144/122, MID, RG 165; Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Peyton to MID, 10 Jun 39, 2657-S-144/470, MID, RG 165; Proctor, Hitler's Luftwaffe, 60.

⁴⁴Fuller to MID, 10 Aug 37, 2657-S-144/244, MID, RG 165.

⁴⁵Lee to MID, 17 May 38, 2657-S-144/372, MID, RG 165; Fuller to MID, 25 Mar 37, 2657-S-144/132, MID, RG 165; Waite to MID, 10 May 38, 2657-S-144/364, MID, RG 165; Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165; Lee to MID, 17 May 38, 2657-S-144/372, MID, RG 165.

⁴⁶Reilly to MID, 13 Oct 38, 2657-S-144/414, MID, RG 165; Peyton to MID, 10 Jun 39, 2657-S-144/470, MID, RG 165.

⁴⁷Fuqua to MID, 26 Apr 37, 2724-S-16/8, MID, RG 165; Fuller to MID, 26 Jan 37, 2657-S-144/90, MID, RG 165; Smith to MID, (no day given) Aug 37, 2657-S-144/229, MID, RG 165; Lee to MID, 13 Sep 37, 2657-S-144/228, MID, RG 165.

⁴⁸Waite to MID, 2 Nov 37, 2657-S-144/287, MID, RG 165; Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165.

⁴⁹Waite to MID, 20 Aug 38, 2657-S-144/395, MID, RG 165; Paine to MID, 9 Sep 37, 2657-S-144/264, MID, RG 165; Fuqua to MID, 30 Apr 37, 2657-S-144/175, MID, RG 165.

⁵⁰ Fuller to MID, 4 May 37, 2657-S-144/164, MID, RG 165; Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165; Fuller to MID, 10 Apr 37, 2657-S-144/150, MID, RG 165; Fuller to MID, 25 Mar 37, 2657-S-144/132, MID, RG 165.

⁵¹ Griffiss to MID, 11 Apr 37, 2093-213/9 MID, RG 165; Seaton, Soviet Army, Appendix E.

⁵² Fuller to MID, 10 Aug 37, 2657-S-144/244, MID, RG 165.

⁵³ Griffiss to MID, 6 Jul 37, 2657-S-144/219, MID, RG 165; Fuqua to MID, 17 Feb 38, 2657-S-144/332, MID, RG 165.

⁵⁴ Fuller to MID, 10 Apr 37, 2657-S-144/150, MID, RG 165; Fuller to MID, 25 Mar 37, 2657-S-144/132, MID, RG 165; Fuller to MID, 4 May 37, 2657-S-144/164, MID, RG 165; Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165.

⁵⁵ Waite to MID, 2 Mar 37, 2657-S-144/124, MID, RG 165; Waite to MID, 8 Jun 37, 2657-S-144/198, MID, RG 165; Waite to MID, 30 Jan 37, 2724-S-16/3, MID, RG 165; Kroner to MID, 9 Mar 37, 2657-S-144/129, MID, RG 165; Proctor, Hitler's Luftwaffe, 253.

CONCLUSION

The fighting in Spain ended on the last day of March 1939; and five months later Europe was at war. There was no time to ponder the data gathered and the conclusions reached by the attachés, war followed war too quickly. Yet Spain held clues to the war that would come in Europe. The weapons used by the Germans, Italians and Soviets in Spain were not outdated relics surplus to their armies; they were largely their armies' standard equipment, and they were employed based on tactical doctrine learned in peacetime training in Germany, Italy and the Soviet Union. Although the information gathered by the attachés was often random and incomplete, they and their sources saw trends in the development and use of modern weapons, especially the airplane, the tank, and antiaircraft and antitank guns.

The airplane, used primarily for light bombing and as a fighter in the Great War, expanded its missions in Spain to include ground support of maneuver units. It was a role at which the airplane excelled, even under the threat of enemy antiaircraft defense. The plane as a mobile gun platform did provide mobility and flexibility to forces on the battlefield. And in their traditional roles as bombers and

fighters the planes became faster and better armed. Twenty millimeter cannons began to replace machine guns on the fighters. And the fast bombers developed by the Germans and Soviets were soon countered by equally fast fighter planes, reinforcing the need for the bombers to carry their own armament and fly under the protection of fighter escort.

The bombing of civilian populations in Spain, although not as massive or as thorough as advocated by Giulio Douhet, failed to achieve the panic and despair expected. The limited results of bombing, combined with increasingly effective antiaircraft weapons, hinted at the future survival of cities and populations subjected to bombing. The bomber was not the wonder weapon some air advocates had been insisting it was. Spain demonstrated that fighter planes and antiaircraft weapons could provide a defense against enemy bombers.

On the ground the light, fast tanks sent to Spain by Germany and Italy proved vulnerable to antitank guns, and to the heavier armored and armed Soviet tanks. And all tanks were in peril when employed singly or in small groups, and without the protection of artillery or aviation. The attachés and their sources insisted that tanks had to be employed in mass and in combination with infantry, aviation and artillery support to be effective. The use of tanks in

Spain also demonstrated that the advantages of heavy armor and armament outweighed the corresponding loss of speed.

Effective antitank guns, especially combined with obstacles, served to slow or destroy enemy tanks. And as the tanks of the future would become heavier, there was a corresponding indication in Spain that the antitank weapons would likewise become larger and more powerful. The Germans' successful use of the 88 mm. as both a direct fire weapon and an antiaircraft gun was an indicator of the direction in which defensive weapons could develop.

The attachés, without formal intelligence training and most often removed from the site of battle, managed to gather a significant amount of information about the weapons and how they were used in Spain. Although in hindsight the information was not always entirely accurate, it represented the best efforts of the attachés to provide the staff of MID with information they could analyze, and from which they could draw conclusions.

The Spanish Civil War was quickly overshadowed by the Second World War, but for a brief time in 1939 it was Europe's most modern war, fought with weapons developed since 1918, and pitting industrialized European nations against each other. It was truly worthy of American intelligence interest.

SELECTED BIBLIOGRAPHY

PRIMARY SOURCES

Military Records

Records of the War Department General and Special Staffs,
Record Group 165, National Archives, Washington,
D. C.: Military Intelligence Division Files.

Records of the Army War College, United States Army Military
History Institute, Carlisle Barracks, Pennsylvania:
Records of the G-2 Course, 1936-1939.

Translated Books and Articles

United States Military History Institute, Carlisle Barracks,
Pennsylvania. Cailloux, Major. "Lessons of the War in
Spain." La Revue d'Infanterie Paris, March 1938.
Translated by Fred W. Merton, June 1938.

_____. Gusew, V. "Antitank Defense; Experience of the Spanish
Civil War." Krasnaya Zvezda Moscow, 21 May 1938.
Translated by Charles Berman, June 1938.

_____. Klotz, Helmut, Military Lessons from the Civil War in
Spain. Paris: By the author, 1937. Translated by
Richard U. Nicholas.

_____. Liubarsky, S. "Lessons of the Spanish Civil War."
Voyennaya Mysl Moscow, October 1938. Translated by
Charles Berman, January 1939.

_____. Wanty, Major, "A Year of War in Spain; Facts and
Lessons." La Revue d'Infanterie Paris, April 1938.
Translated by Claudine Wannamaker, September 1938.

Published Sources

Department of State Foreign Service List. Washington, D. C.:
United States Government Printing Office, 1936-1939.

Trial of the Major War Criminals Before the International
Military Tribunal: Nuremberg. 14 November 1945 - 1
October 1946. Nuremberg: International Military
Tribunal, 1947.

War Department, The Adjutant General's Office. Army List and Directory. Washington, D. C.: United States Government Printing Office, 1936-1939.

War Department, The Adjutant General's Office. Official Army Register. Washington, D. C.: United States Government Printing Office, 1931-1953.

SECONDARY SOURCES

Books

Angelucci, Enzo. The Rand McNally Encyclopedia of Military Aircraft. New York: The Military Press, 1988.

Bidwell, Bruce W. History of the Military Intelligence Division. Department of the Army General Staff: 1775-1941. Frederick, Maryland: University Publications of America, Inc., 1986.

Bowers, Claude. My Mission to Spain: Watching the Rehearsal for World War II. New York: Simon and Schuster, 1954.

Christienne, Charles, and Pierre Lissarague. A History of French Military Aviation. Translated by Francis Kianka. Washington, D. C.: Smithsonian Institution Press, 1986.

Cooper, Matthew. The German Air Force. 1933-1945: An Anatomy of Failure. London, New York and Sydney: Jane's, 1981.

Coverdale, John F. Italian Intervention in the Spanish Civil War. Princeton, New Jersey: Princeton University Press, 1975.

The Evolution of American Military Intelligence. U.S. Army Intelligence Center and School, 1973.

Higham, Robin, and Jacob W. Kipp, eds. Soviet Aviation and Air Power: A Historical View. Boulder, Colorado: Westview Press, 1977; and London, England: Brassey's, 1978.

Johnson, Brian, and H. I. Cozens. Bombers: The Weapon of Total War. London: Thames Methuen, 1984.

Liddell Hart, Basil H. The German Generals Talk. New York: William Morrow and Co., 1948; reprint, New York: Quill, 1978.

Little, Douglas. Malevolent Neutrality: The United States Great Britain, and the Origins of the Spanish Civil War. Ithica, New York and London, England: Cornell University Press, 1985.

Perrett, Bryan. Fighting Vehicles of the Red Army. New York: Arco Publishing Company Inc., 1969.

Proctor, Raymond L. Hitler's Luftwaffe in the Spanish Civil War. Contributions in Military History, Number 35. London, England and Westport, Connecticut: Greenwood Press, 1983.

Salas Larrazábal, Jesús. Intervención Extranjera en la Guerra de España. Madrid: Editoria Nacional, 1974.

Salas Larrazábal, Ramón. Los Datos Exactos de la Guerra Civil. Madrid: Ediciones Rioduero, 1980.

Seaton, Albert, and Joan Seaton. The Soviet Army: 1918 to the Present. London: The Bodley Head, 1986.

Senger und Etterlin, F. M. von. German Tanks of World War II: The Complete Illustrated History of German Armoured Fighting Vehicles, 1926-1945. Translated by J. Lucas. Edited by Peter Chamberlain and Chris Ellis. Harrisburg, Pennsylvania: A&W Visual Library, by arrangement with Stackpole Books, 1969.

Sweet, John Joseph Timothy. Iron Arm: The Mechanization of Mussolini's Army, 1920-1940. Contributions in Military History, Number 23. London, England and Westport, Connecticut: Greenwood Press, 1980.

Thomas, Hugh. The Spanish Civil War. Revised and Enlarged Edition. New York, Hagerstown, San Francisco and London: Harper and Row, Publishers, 1977.

Vagts, Alfred. The Military Attaché. Princeton, New Jersey: Princeton University Press, 1967.

Weeks, John. Men Against Tanks: A History of Anti-Tank Warfare. New York: Mason/Charter, 1975.

Whiting, Kenneth R. Soviet Air Power. Boulder, Colorado and London, England, 1985.

Articles

Baget Fornells, Andrés. "Alas Rusas Sobre España." Historia Y Vida 19 (224, 1986): 4-15.

Canevari, Emilio. "Forecasts from the War in Spain: Lessons Based on Technical and Tactical Experience." Translated by Dr. Herbert Rosinski. Army Ordnance XVIII (March-April 1938): 273-280.

Coffman, Edward M., and Peter F. Herrly. "The American Regular Army Officer Corps Between the World Wars." Armed Forces and Society 4 (November 1977): 55-73.

Heywood, Paul. "Why the Republic Lost." History Today 39 (March 1989): 20-27.

Lanza, Conrad H. "Lessons From Spain." The Field Artillery Journal 28 (May-June 1938): 183-196.

Reilly, Henry J. "Proving Ground in Spain; Armament Trends as Revealed by the Civil War." Army Ordnance XIX (May-June 1939): 333-336.

Temperley, Arthur C. "Military Lessons of the Spanish War." Foreign Affairs 16 (October 1937): 34-43.