



# ACES OF THE LUFTWAFFE

THE JAGDFLIEGER IN THE SECOND WORLD WAR

PETER JACOBS



# **ACES OF THE LUFTWAFFE**



# ACES OF THE LUFTWAFFE

*The Jagdflieger in the Second World War*

PETER JACOBS



Frontline Books  
London



### **Aces of the Luftwaffe**

This edition published in 2014 by Frontline Books,  
an imprint of Pen & Sword Books Ltd,  
47 Church Street, Barnsley, S. Yorkshire, S70 2AS  
[www.pen-and-sword.co.uk](http://www.pen-and-sword.co.uk)

Copyright © Peter Jacobs, 2014

The right of Peter Jacobs to be identified as the author of this work  
has been asserted by him in accordance with the  
Copyright, Designs and Patents Act 1988.

ISBN: 978-1-84832-689-7

All rights reserved. No part of this publication may be reproduced, stored in  
or introduced into a retrieval system, or transmitted, in any form, or by any  
means (electronic, mechanical, photocopying, recording or otherwise)  
without the prior written permission of the publisher. Any person who does  
any unauthorized act in relation to this publication may be liable  
to criminal prosecution and civil claims for damages.

CIP data records for this title are available from the British Library

For more information on our books, please visit  
[www.pen-and-sword.co.uk](http://www.pen-and-sword.co.uk), email [info@frontline-books.com](mailto:info@frontline-books.com)  
or write to us at the above address.

Printed and bound by CPI Group (UK) Ltd, Croydon CR0 4YY

Typeset in 10.5/15 pt ITC Slimbach

# Contents

	List of Plates	vii
	Acknowledgements	ix
	Introduction	xi
<i>Chapter 1</i>	Fledgling Days	1
<i>Chapter 2</i>	Blitzkrieg	15
<i>Chapter 3</i>	Battle for Britain	36
<i>Chapter 4</i>	Mediterranean and the Balkans, 1941	58
<i>Chapter 5</i>	Invasion in the East: Barbarossa	66
<i>Chapter 6</i>	North Africa and the Mediterranean, 1941–1943	78
<i>Chapter 7</i>	The Tide Turns in the East	97
<i>Chapter 8</i>	Air War at Night	111
<i>Chapter 9</i>	Struggle in the East: Zitadelle	128
<i>Chapter 10</i>	America Enters the Fray	139
<i>Chapter 11</i>	Final Defence of the Reich	160
<i>Appendix 1</i>	The Highest-Scoring Experten	182
<i>Appendix 2</i>	Highest-Scoring Experten by Operational Theatre	189
<i>Appendix 3</i>	Highest-Scoring Experten at Night	190
<i>Appendix 4</i>	Recipients of the Knight's Cross with Oak Leaves, Swords and Diamonds	191
<i>Appendix 5</i>	Recipients of the Knight's Cross with Oak Leaves and Swords	192
<i>Appendix 6</i>	Equivalent Ranks	194
<i>Appendix 7</i>	Luftwaffe Hierarchy	195
	Glossary	196
	Notes	197
	Bibliography	199
	Index of Luftwaffe Personnel	201



---

# Plates

- Plate 1:* Hauptmann Hannes Trautloft and other pilots of III./JG 51; Hauptmann Hans-Karl Mayer, Staffelkapitän of I./JG 53.
- Plate 2:* Hans-Karl Mayer, Kommandeur of I./JG 53; Major Adolf Galland with his officers, August 1940.
- Plate 3:* Werner Mölders and Adolf Galland; Göring in discussions with Mölders and Galland; pilots of III./JG 26 in October 1940 – Leutnant Gustav Sprick, Leutnant Klaus Mietusch, Leutnant Heinz Ebeling.
- Plate 4:* Rudder of Wilhelm Balthasar's Bf 109; Bf 109s of JG 2 'Richthofen'; Major Walter Oesau with pilots of JG 2.
- Plate 5:* Oberleutnant Joachim Müncheberg, Staffelkapitän of 7./JG 26; Feldmarschall Albert Kesselring (*2nd from left*), pictured with three officers of JG 53.
- Plate 6:* Pilots of 7./JG 26; Leutnant Theo Lindemann; Hauptmann Joachim Müncheberg; Oberleutnant Wilhelm-Ferdinand 'Wutz' Galland; Oberleutnant Kurt Ebersberger.
- Plate 7:* Leutnant Hans-Joachim Marseille of 3./JG 27; Oberleutnant Erich Rudorffer and Oberstleutnant Walter Oesau.
- Plate 8:* Hans-Joachim Marseille, the 'Star of Africa'; Oberleutnant Fritz Holzapfel of 13./SKG 10.
- Plate 9:* Hauptmann Hans Philipp, the Gruppenkommandeur of I./JG 54; Hauptmann Heinrich Krafft and Hauptmann Wilhelm Hachfeld.
- Plate 10:* Major Gordon Gollob; Lake Ivan in the winter of 1942–3, with a detachment of FW 190A-3s.
- Plate 11:* FW 190 of IV./JG 51 and is shown after an airfield accident; FW 190A-4 of II./JG 54.

## *Plates*

---

- Plate 12:* Messerschmitt Bf 110s; Major Heinz-Wolfgang Schnauffer, the highest-scoring night-fighter ace.
- Plate 13:* Adolf Glunz, Friedrich Lang, Erich Hartmann, Heinz-Wolfgang Schnauffer, Horst Kaubisch and Eduard Skripek decorated by Hitler; Bf 109 of JG 5 at Petsamo in Finland.
- Plate 14:* Hauptmann Walter Nowotny of JG 54; a heating trolley connected to the front of a FW 190F.
- Plate 15:* FW 190 of SG 10, January 1944; Hauptmann Gerhard Barkhorn, Gruppenkommandeur of II./JG 52.
- Plate 16:* Hitler with Josef Priller, Anton Hackl, Friedrich Lang, Erich Hartmann and Heinz-Wolfgang Schnauffer.
- 
- Plate 17:* Oberleutnant Kurt Ebersberger, Hauptmann Egon Meyer, Hauptmann Joachim Müncheberg and Gerhard Schöpfel; Oberleutnant 'Wutz' Galland.
- Plate 18:* Hauptmann Josef Priller; Leutnant Josef Wurmheller and Oberleutnant Erich Leie of JG 2.
- Plate 19:* Hauptmann Josef Priller; Oberfeldwebel Adolf Glunz; Leutnant Josef Wurmheller.
- Plate 20:* Günther Rall in front of his aircraft; Oberleutnant George-Peter Eder of JG 2.
- Plate 21:* Oberstleutnant Josef Priller and Major Klaus Mietusch; Hauptmann Robert Weiss, Kommandeur of III./JG 54.
- Plate 22:* Major Walter Nowotny; the Messerschmitt Me 262.
- Plate 23:* Hauptmann Erich Hartmann of 9./JG 52 after achieving his 327th victory.
- Plate 24:* One of the last recipients of the Knight's Cross was Hauptmann Heinz Knoke; Erich Hartmann; Oberleutnant Joachim Müncheberg.

---

# Acknowledgements

Having spent a full career in the Royal Air Force, and having served on a number of the RAF's finest fighter squadrons, I was personally delighted when Michael Leventhal gave me the opportunity to write this book. While I have written many books and articles about the RAF during the Second World War, this gave me an exciting opportunity to take another look at many of those same air campaigns but this time from the opposite end of the telescope and to look at them from the Luftwaffe's perspective. How fascinating it proved to be.

The subject is hardly new to military historians as it has been covered in various formats many times before but I was keen to set each air battle into context so that the reader understands why the Luftwaffe was involved in a specific campaign and why a particular individual was fighting in combat at that time.

Mike Spick covered the topic superbly well in his book *Luftwaffe Fighter Aces*, which he wrote for Greenhill Books nearly twenty years ago, and this proved to be an excellent place to start. I am particularly grateful to Mike for taking the time to go through my work and for providing me with extremely helpful advice on a subject that he has studied for many years.

As my research continued, I was keen to look deeper behind the scenes so that I could understand why the air battles were being fought and also to understand the views and beliefs of some of the Luftwaffe's leaders that were shaping the air war over the many fronts that it fought.

While an increasing amount of information has come into the public domain through being made available online, institutions such as the Bundesarchiv-Militärarchiv at Freiburg and the National Archives at Kew will always remain the repositories of information and illustrations. As a military historian and author, I am so grateful to both organizations for the use of material and illustrations over the years. I am also

## *Acknowledgements*

---

extremely fortunate to have been allowed privileged access to the Air Historical Branch at RAF Northolt and have spent the last nine years of my service career at the RAF College Cranwell, which boasts one of the finest libraries in the country, and so I am always pleased to be able to offer my thanks to the staff of both the AHB and the RAF College in this way.

Away from the more formal institutions, there are no end of excellent books and publications on the Luftwaffe. Whether the reader is a novice or is someone who has studied the subject in great depth over many years, there are plenty of publications to choose from. Unsurprisingly, many have come from Germany, for example from the highly acclaimed author Jochen Prien, but there are also many others published outside of Germany that have been written by extremely knowledgeable authors who have been fortunate to have access to veterans and archives over many years. These include books written by Theo Boiten, Martin Bowman, Robert Forsyth, Tony Holmes, Eric Mombeek, Simon Parry and Dr Alfred Price to name just a few, but I would like to thank three authors, in particular, who took the time to help me. First of all I would like to thank my colleague Chris Goss, another former RAF officer, who somehow seems to have found the time to write numerous titles on the Luftwaffe over the years. My thanks also go to Donald Caldwell in the United States, another Frontline author who is specifically knowledgeable on JG 26, one of the finest fighter wings, and to John Weal who has written a number of superbly illustrated titles for Osprey Publishing. I consider all three to be experts in their fields and I am extremely grateful to them all for their time, their willingness to help and for providing me with the superb illustrations included in this book. I could not have managed without them. I would also like to thank the reviewers at Frontline for their advice and comments; I have learned so much from them as well.

Finally, I would like to thank Michael, once again, and his team at Frontline Books for the finished product you see today.

---

# Introduction

Conflict has been around for thousands of years but war in the air is just a hundred years old. The Luftwaffe, at the forefront of Hitler's war machine during the Second World War, was in existence for just ten of those years yet it produced some of the greatest names in the history of air combat and produced the highest scoring fighter pilots of all time.

During the Second World War, an Allied fighter pilot was considered to be exceptional if he was credited with thirty or forty victories. Even the top scoring Allied fighter pilot, the Soviet ace Ivan Kozhedub, credited with sixty-two victories, was completely over-shadowed by well over a hundred Luftwaffe pilots, called *Jagdflieger*, who all exceeded his score. If using the generally accepted definition of an ace as being a pilot who achieved five aerial victories, then the Luftwaffe produced aces in the thousands but rather than use the term 'ace', the Luftwaffe used the term '*Experte*' as recognition of proficiency in the air as well as acknowledging the number of victories achieved.

How the Luftwaffe managed to produce so many high-scoring fighter pilots compared to the Allies is often the subject of great debate. Those sceptical about the figures will believe the claims to be highly exaggerated but a fighter pilot may genuinely have believed that he had achieved success, even though it may not have always been possible to confirm the success with evidence. For example, an enemy aircraft may have last been seen descending into cloud emitting smoke and flames or may have crashed into the sea but was unobserved by anyone else, and at night it would often prove impossible to observe the outcome of a quick aerial engagement when attacking large numbers of enemy bombers; the fighter pilot rarely had time to observe the result of his encounter.

The Luftwaffe High Command went to great lengths to verify the success of its pilots, probably more so than any other air force during

the Second World War. There was a strict requirement for written confirmation of the kill by the claimant and by at least one other aerial witness plus, if possible, a witness on the ground. As can be imagined, this system created a lot of paperwork, particularly from claimants on the Eastern Front, and in the latter half of the war it was not unusual for a claim to take more than a year to be officially confirmed. When taking all this into account, and even if the historian accepts these high figures to at least be in the right 'ball-park', then the achievements of many Jagdflieger are clearly quite extraordinary.

Unlike many of his Western counterparts, who often received lengthy breaks between stressful front-line operational tours, there was usually no end in sight; he simply carried on throughout the war and either survived, if he was lucky, or was killed or taken as a prisoner of war. There was also a chasm between success on the Eastern Front compared to in the West and other theatres such as the Mediterranean or North Africa. Against the Western Allies only a handful achieved a century of victories whereas in the east more than seventy achieved this feat, with eight going on to surpass 200 and two claiming more than 300 victories.

While these facts could suggest the Red Air Force was less capable than its western Allies, which may well have been true when Germany first invaded the Soviet Union in 1941, this was certainly not the case as the war progressed and the high totals are more a reflection of the vast scale of the air war in the east. The figures do, however, support the fact that the Jagdflieger was better trained than his Russian adversary, certainly up until the later stages of the war, and reflects just how good the *Jagdwaaffe* (the fighter arm's) tactics had become. Those who became combat leaders were masters of aerial combat and they also benefitted from having a more capable aircraft. Both the Messerschmitt Bf 109 and the Focke-Wulf FW 190 were far better fighters than anything the Russians initially produced, although it is fair to say that by the end of the war the Soviet fighters were every bit as good as the late-war versions of the Bf 109 and FW 190, but in the end there was little the Jagdwaaffe could do to counter the sheer numbers of Red aircraft that he came across over the Eastern Front.

The highest accolade was the award of the Knight's Cross, or Ritterkreuz des Eisernen Kreuzes (Knight's Cross of the Iron Cross) to give it

the full and correct name, and 500 Experten received such recognition. Its award was generally based on the number of victories achieved, although the qualifying number varied enormously as the war progressed and often differed between operational theatres. In the early months of the war, twenty victories would usually merit the award whereas towards the end of the war, for example on the Eastern Front, a hundred victories may have been required to receive the same recognition. For those achieving further success there was the award of the Oak Leaves (Eichenlaub) to the Knight's Cross and even greater success was rewarded by the Swords (Schwertern) with the ultimate award of the Diamonds (Brillanten) being reserved only for the very best. Only nine ever received the highest recognition and it can be no coincidence that of the twenty-seven members of the German forces to receive this ultimate recognition, the first five recipients of the Diamonds were all Jagdflieger.

For the convenience of the reader, I have used the English term of Knight's Cross with the associated Oak Leaves, Swords and Diamonds where applicable rather than using the German Ritterkreuz mit Eichenlaub, Schwertern und Brillanten. I have, however, kept to German terminology in a number of areas, such as for Luftwaffe organization – where I have used Geschwader, Gruppe and Staffel rather than their English-language equivalents – and used the appropriate ranks throughout. A glossary at the end of the book and the appropriate appendices, which cover the English equivalents of ranks and unit organizations, will assist the reader. I have also used the accepted abbreviated term of 'Bf' (short for Bayerische Flugzeugwerke) when referring to the earlier Messerschmitt fighters – like the Bf 109 and Bf 110 – and have only changed to 'Me' for later designs – for example the Me 163 and Me 262 – to be consistent with German terminology used at the time.

The story of the Jagdflieger is a quite staggering one. When considering the number of air battles fought across all the operational theatres during the Second World War, particularly on the Eastern Front where the sheer scale of the air fighting was immense, it makes it all but impossible to capture the story under one cover. A book of this size and covering such a vast subject can only ever be just the tip of the iceberg

and it has simply not been possible to dwell too long in any one particular area or on any one specific unit or individual. Anyone wishing to study a particular campaign, unit or individual in more depth may well find that other authors have already covered those specific areas of interest in far more detail. But a book on this subject would clearly be lacking if it failed to mention the exploits of some of the finest, such as Erich Hartmann, the highest scoring fighter pilot of all time, Hans-Joachim Marseille, the 'Star of Africa', Werner Mölders, the first recipient of the coveted Diamonds, and Adolf Galland, perhaps the most famous of them all. Otherwise, given the vast subject, deciding what to include or not include was down to personal preference but I was keen to ensure that all the major campaigns were covered to some extent to provide an understanding of the air war being fought.

Because there is so much that could have been written, I have resisted the temptation simply to repeat a number of exploits that may have appeared somewhat similar and, therefore, rather repetitive to the reader but have chosen instead to give examples of some of the aerial actions that took place and, where it helps to better inform the reader, have provided a simple background behind the air battles that were being fought. When appropriate, I have also described some of the tactics adopted by a number of the high-scoring Jagdflieger to achieve their great success.

There were many other challenges to overcome when writing this book and these included having to smooth out the inevitable variations between sources, as well as deciding which of two different spellings of names to use and having to translate German words into English. Ultimately, though, I had to choose the spelling of one word over another variation, which will be equally correct, in order to be consistent but if I have made any errors through my failure to grasp the German language then I can only apologize in advance. Other significant challenges included trying to piece together the movements of fighter units and individuals between the operational theatres as the war progressed. For this reason, I have chosen to tell the story by operational theatre but keeping within the chronology of the Second World War as much as possible to make it easier for the reader to follow and to put the air campaign of each operational theatre into the overall context of the war.

## *Introduction*

---

Unfortunately, there is not the space to cover the personal lives of these men other than brief mentions here and there. While some were die-hard Nazis, others were far from it. Some came from noble families with a long tradition of military service, whereas others were sons of humble farmers or coal miners who rose to prominence through their own natural abilities. Some clearly hunted for glory whereas others did not. Individually they were quite different but collectively they formed a most potent fighting force.

Finally, while the highest-scoring Experten have rightly earned their place in this book, I have also included many others who did not survive the last days of the Reich or score highly enough to become household names but were no less courageous. Only space prevents me from writing more. I hope you enjoy the book.

*Peter Jacobs*



# Fledgling Days

In time of war a nation needs its heroes and the fighter pilot has always held a fascination that has captured the imagination of his public at home. The first fighter aces appeared over the Western Front during the First World War and, ever since, history has tended to judge the fighter pilot by the number of victories achieved in the air rather than by flying skills or leadership in combat. But these qualities often go hand-in-hand. A pilot with few flying skills was unlikely to survive for very long, let alone become an ace, and those who led in combat were often best placed to influence an aerial encounter and to achieve success in the air.

Those destined to be successful in air combat soon learned that it was not all about dashing around the sky as fast as possible taking on anyone and everyone – those who elected to choose this method were destined not to survive – but they did require a unique combination of flying and personal qualities to succeed: excellent aircraft-handling skills; a good understanding of his own aircraft's performance and that of his opponent; quick reactions; good eyesight; anticipation; patience; courage and self-control to name but a few and, of course, they needed to be good shots.

The air campaigns fought by the Luftwaffe on all fronts during the Second World War, and specifically those fought by the fighter pilot, the Jagdflieger, were amongst the most intense in the history of air warfare but what stands out most is the number of aerial victories achieved by the high-scoring fighter pilots, the *Experten*, who totally eclipsed their Allied counterparts.

The successes of German air power did not come overnight and while it could be argued that its origins lie with its infancy during the First World War, the Luftwaffe was born following Adolf Hitler's rise to power. Although the Treaty of Versailles was still in effect, and had

restricted Germany's construction of new aircraft types, the treaty had never been meticulously observed and Germany's interest in aviation had gone from strength to strength with various clandestine methods of training aviators in Russia and a number of undercover air squadrons being set up in Germany. While the strength and capabilities of these squadrons did not amount to much, their existence, particularly as far as trained pilots was concerned, provided a nucleus for the creation of a new and powerful air force.

On achieving power Hitler appointed Hermann Göring, a highly respected fighter pilot of the First World War, as deputy leader of his Nationalsozialistische Deutsche Arbeiter Partei (the Nazi Party) and Reichskommissariat für die Luftfahrt (Reich Commissioner of Aviation). The official formation of the Luftwaffe was still two years away but Göring, as Hitler's deputy, had many responsibilities and so had little time for building a new air force. The task, therefore, was left to Erhard Milch, the former Commercial Director of Germany's national airline Lufthansa and now Göring's own deputy as the Nazis' first State Secretary for Aviation.

More so than Göring, Milch deserves the credit for the initial formation of the Luftwaffe, although he never held any great respect for Göring. Milch set about his task by dividing the Reich Aviation Ministry, the Reichsluftfahrtministerium (RLM), into a number of offices. The most important sub-division was the Air Command Office, as this would effectively become the General Staff, and he also set about expanding the German aviation industry and building new facilities for the training of aircrew, albeit secretly, to create a new air force.<sup>1</sup>

The Luftwaffe officially came into existence on 1 March 1935 with some 20,000 personnel and nearly 2,000 aircraft. It was never going to be possible to keep the build-up of an air force secret and so the following week Hitler announced its existence to the world and a week later he renounced the military clauses of the Treaty of Versailles. Selected to be its first Chief of the General Staff was Walter Wever, an infantry officer by background but a man of great vision and a great strategist. Aware of Hitler's intentions, Wever was led to conclude that Germany's main enemy in any future conflict would be the Soviet Union. His thinking, therefore, was to produce an air force to take on

the might of Russia while concurrently waging a war of revenge against France and possibly Britain. He was also astute enough to know that air superiority would probably be an elusive goal and so he believed it would be easier to defeat an air force on the ground at its sources, by attacking aircraft factories and industrial plants, rather than to try and defeat it in the air. His desire was for a bomber force capable of reaching the heart of Russia's industrial cities and beyond, and so his concept of a four-engine strategic aircraft, known as the Ural Bomber, led to the design and construction of two prototypes.

Amongst Wever's other strengths was his ability to work with and manage the expectations of difficult men such as Göring and Milch. He found them both, at times, equally difficult. Göring seemingly had little time for the new Luftwaffe while Milch had risen to the top very quickly, with Wever believing that his military rank of General der Flieger had been given rather than earned.

Wever's limited experience as a pilot cost him his life in June 1936 when he crashed his Heinkel He 70 during take-off. He was replaced by Albert Kesselring, a strong supporter of Hitler and the Nazi regime but another high-ranking officer without any aviation combat experience. Crucially, Kesselring decided to cancel development of the Ural Bomber because of its cost in raw materials to build<sup>2</sup> and because of its high fuel consumption, which he felt Germany could ill afford given its lack of oil resource. While Kesselring cannot solely be held to blame for this decision, the Luftwaffe would now never have an effective long-range strategic bomber during the Second World War.

The loss of Wever had created a further problem as Kesselring and Milch seemed unable to get on. Göring could have dealt with the matter but chose not to and the internal wrangling would never really go away. Kesselring would later resign to be replaced by the extremely bright Hans-Jürgen Stumpff as Göring continued to make further changes to the hierarchy, seemingly not for the better, as aircraft and armament production fell behind. Hitler now made the Luftwaffe's expansion programme a priority as it transitioned towards a new generation of aircraft with the emphasis being on large numbers to impress Hitler who, in turn, wanted to impress the world.

Despite the continuing wrangles at the higher levels, the Jagdflieger

prepared for hostilities that would inevitably come. The teaching was based on perfecting basic fighter manoeuvres, consisting of various turns and rolls, to position the fighter pilot behind his opponent. One of the earliest manoeuvres taught was the barrel roll in which an aircraft makes a complete rotation on its longitudinal axis while following a helical path and maintaining its general direction and height.

While pure flying skills would help a pilot learn how to master his aircraft in the sky, it was not the only important factor in learning how to become a good fighter pilot. Additional factors such as his aircraft's design, specifically its speed and ability to turn hard, were vital. The faster the aircraft then the greater the radius of turn and the less its rate of turn became in degrees per second. The ability to turn hard in combat also depended on the aircraft's wing loading and where all other factors were equal, the pilot flying the aircraft with the lower wing loading would be able to out-turn his opponent. However, hard manoeuvring would reduce the aircraft's speed. Speed could be maintained by losing height but height was also important because an aircraft with height advantage could be hard to see and height could always be turned into speed, either to reduce the range to the target or to help make an escape.

The easiest way to shoot down an opponent was to get line astern of the target, where there would be little or no deflection, and where a pilot could manage his closing speed to give him the maximum time possible to shoot an opponent down. The closer he could get then the easier it would be to hit his opponent whereas firing at excessive range meant the bullets were subject to the effects of ballistics, such as gravity drop, and a heavily manoeuvring target would be harder to hit because of the amount of lead required in the aim.

As far as a defending pilot was concerned, it was all a matter of whether he could see his attacker; if not, he could not react and often stood little chance. Once seen by his opponent, the attacking pilot could then have the problem of having too much speed, particularly if attacking from a higher position. If too fast, the attacker could not maintain a position inside a turn and would overshoot to the outside, and once the attacker was forced to overshoot then the defender had the opportunity to reverse his direction of turn back towards his opponent. This would often lead to a series of turn-reversals, known as

scissors, with each pilot trying to get on to the tail of his opponent. A pilot could elect to keep his speed higher than his opponent so that he could change direction during a reversal by rolling more quickly. However, it was not advisable for a pilot in an aircraft with lesser performance than his opponent to generate a scissors manoeuvre in combat because his opponent would eventually force him out ahead, thereby gaining the opportunity to bring his guns to bear. Any speed advantage over an opponent also gave a pilot the option to pull up and convert his excess speed into height, then use aileron to turn in the desired direction and then to pull out and roll the aircraft upright in a manoeuvre known as the Immelmann Turn (named after the First World War pilot, Max Immelmann, who had created the manoeuvre), so that he could reposition himself without too much horizontal displacement or dive away and disengage from the fight.

There was much to learn but the low engine power of aircraft during the 1930s and the design techniques at the time restricted the number of offensive manoeuvres that could be carried out. There was also the fact that the fighter tactics being taught were still based on those adopted during the First World War as many instructors were often quick to exert authority based on their own experiences many years before. These included men like Theo Osterkamp with thirty-two victories from the First World War who would become the first commander of Jagdfliegerschule 1, one of seven fighter pilot schools eventually established, although the Luftwaffe was not alone in this ideology as many European air forces were doing the same.

The Luftwaffe was given the opportunity to test its capabilities in a combat arena when the Spanish Civil War broke out in 1936. The war between the Nationalists and the Republicans had started when dissatisfied Spanish generals, led by the pro-Fascist General Francisco Franco, launched a coup against the Spanish government in Madrid. The attempt only achieved limited success and so Franco appealed to Hitler and the Italian leader, Benito Mussolini, for help.<sup>3</sup>

Luftwaffe fighter units were asked for volunteers to join an expeditionary force and the first batch included a cadre of six fighter pilots to fly the Heinkel He 51 biplanes sent to Spain.<sup>4</sup> The volunteers were not authorized to enter combat and so the pilots took on a training role but

as Soviet support to the Republican cause increased, Milch and, to a lesser extent, Göring were in favour of providing Franco with more support. Hitler agreed and so activated the Legion Condor, led by Hugo Sperrle. More He 51s bearing Spanish Nationalist insignia followed and by the end of the year thousands of men and tons of equipment had been shipped to Spain with a fighter group, Jagdgruppe 88 (J./88), being established under the command of Hauptmann Hubertus Merhardt von Bernegg.

Those who volunteered for Spain were very capable pilots but they soon found they were up against a stronger force, both technically and numerically, with the He 51 biplane proving inferior to the Soviet Polikarpov fighters; the I-16, in particular, as a monoplane design was arguably the most modern and most capable fighter in the world at that time. The Jagdfliieger quickly learned that he could not afford to become fixated on his own target but instead had to observe the overall situation and assess the risks, while maintaining a three-dimensional awareness of what was going on around him, and all while flying in a highly dynamic and changing environment.

Although the He 51 was technically inferior to the Soviet fighters, Sperrle did have the better quality pilots who quickly developed new tactics. One of those pilots was Oberleutnant Adolf Galland who arrived in Spain during the early summer of 1937. Galland was twenty-five years old and already an experienced pilot having gained previous flying experience prior to joining the Luftwaffe. Now leading the third Staffel of J./88 based at the Valencia-Ebro front, Galland displayed a unique style of leadership. He quickly proved to be an inspirational leader and a great analyst by paying particular attention to the tactics being employed and then analysing the results of each mission before adapting his tactics for future missions.

As far as countering the Soviet fighters was concerned, one of the most successful tactics employed by the Legion's pilots was to ensure they had superior numbers. This not only offered tactical advantage but also caused the Russian fighter pilots to increase their fuel consumption and eventually forced them to land. Then, once they were back on the ground, the Legion's bombers, which would be airborne in the vicinity, would attack the Russian fighters on the ground. While this tactic offered some success, the fact remained that the Luftwaffe's fighter

force, the Jagdwaffe, was equipped with biplanes that were little better than the fighters of the First World War.

The ongoing conflict in Spain provided the ideal opportunity to introduce the new fighter, the Messerschmitt Bf 109, into combat. The 109 had first flown in 1935 but design had begun in secrecy the year before to meet a future requirement for a single-seat daytime fighter armed with machine guns that was capable of reaching an operational ceiling of 33,000 feet, with an endurance of an hour, and was also capable of maintaining a speed of 250 mph for up to twenty minutes at 20,000 feet. The new aircraft-design techniques included a semi-monocoque fuselage with an enclosed cockpit and cantilever wings with a retractable undercarriage. The aircraft initially produced by Messerschmitt was designated the Bf 108, a quite different aircraft, but many of its design features were included in the prototype for the Bf 109. Its advanced wing, with slots and trailing edge flaps, gave it an unmatched manoeuvrability.

The Bf 109 was introduced into service in 1937 and soon started to equip J./88 in Spain. Powered by a Junkers Jumo 210 engine, the Bf 109B represented the cutting edge of aircraft technology. Armed with two MG 17 7.9 mm machine guns its introduction proved to be an immediate success and the Bf 109B quickly proved to be a better fighter than the I-16. However, the build-up of numbers of 109s in Spain was slow and so the pilots of J./88 had to improvise. Instead of adopting a formation of three aircraft, called a Kette, the 109 pilots chose to base their tactics on a two-aircraft formation, called a Rotte, to give more flexibility.

The balance of air power in Spain soon tipped in favour of the Legion. The campaign also taught valuable lessons about other aircraft, such as discovering that the Ju 52 was unsuitable as a bomber. To be fair, the Ju 52 was never intended to be used as bomber, and was only ever considered as a stopgap, but its lack of performance in the role simply emphasised the urgency of replacing it with the new Heinkel He 111 twin-engine medium bomber and the single-engine Junkers Ju 87 Stuka dive bomber. The Legion also learned the value of close air support for ground forces as the capabilities of the Ju 87 won over some of its hardest critics, although its vulnerability to modern fighters would

become evident later. The Heinkel He 46 and He 70 were also found to be unsuitable as reconnaissance aircraft and this led to the Dornier Do 17, which also had the capability to operate as a long range bomber.

With the successful introduction of the Bf 109, the He 51 was gradually withdrawn as a fighter but it did continue for the time being in the ground-attack role. By the end of 1937, J./88 had established air superiority over the battlefield. Since April the first Staffel had been commanded by Oberleutnant Harro Harder and by the time he returned to Germany in December, to be replaced by Wolfgang Schellmann, he had scored eleven victories during the year, for which he would later be awarded the Spanish Cross in Gold with Swords and Diamonds, the highest award for the campaign. Schellmann, too, would do well, out-scoring his predecessor by one victory during his nine months in Spain, for which he would receive the same recognition. During the same period the second Staffel had been led by Oberleutnant Günther Lützwow, who achieved five victories during the year, including the first recorded by a Bf 109, before he was replaced in September by Joachim Schlichting who would also go on to achieve five victories during his nine months in Spain. Both Lützwow and Schlichting would later receive the highest recognition.

Small numbers of Messerschmitts were now able to roam over the front line and pounce on any enemy bombers before they could even reach their targets. The early Bf 109B did suffer from limited capability when escorting bombers, and so lessons identified in Spain led to the improved Bf 109C and Bf 109D with improved performance and armament, although these variants would not arrive in Spain until the following year.

Techniques continued to evolve in Spain but one young pilot, more than any other, helped to shape the tactics that would later bring the Jagdwaffe so much success during the opening months of the Second World War. Although he did not arrive in Spain until the spring of 1938, Werner Mölders would go on to become the Legion's leading fighter ace of the Spanish Civil War with fourteen victories. When he arrived in Spain he was twenty-five years old and already an experienced pilot. Mölders was assigned to the third Staffel under the command of Adolf Galland at a time when the ageing He 51s were being replaced by the