October 2, 1916, 2nd Lt. W. J. Tempest RFC, lights up L31 commanded by Kapitän-Lieutenant Heinrich Mathy. Within minutes L31 would crash onto Potters Bar. Mathy was undoubtedly the most famous and best recognized of all the airship pilots in the war. His death marked the downward turning point for the airship service in the Great War. Painting by William Reynolds with permission of Dr. Marvin Chadab.
Despite the tremendous devastation and millions of dead that the Great War (1914-1918) left in its wake, there are a number of “romantic” episodes that continue to capture the public imagination.

Chief among these are the exploits of the Imperial German Navy's Luftschiff Abteilung or Airship Division. To the terrorized citizens of Great Britain, they were simply known as ZEPPELINS!

THE CRAZY COUNT

The world's largest flying craft was the design and inspiration of Count Ferdinand von Zeppelin (1838-1917) of Baden, Germany. Zeppelin sought a military career and became a Lieutenant in the cavalry. At the age of 23 Lt. Zeppelin traveled to the United States of America to witness the War Between the States as an observer and military student. He was hoping to see and report on any innovations that might be found to be useful to his own branch of the military.

At the time of the American Civil War, a primary function of the cavalry was to serve as reconnaissance for the main army. The speed that the cavalry could deliver important information on enemy troop movements was considered vital to the success of any military maneuver or campaign. In August of 1863, Lt. Zeppelin was invited to St. Paul, Minnesota to witness and participate in a new development in the science of military information.

There, on 19 August, Lt. Zeppelin ascended in a balloon to an altitude of nearly 100 feet. Professor Thaddeus Lowe had developed a hydrogen balloon that was capable of elevating
an observer far above the terrain, giving him an unparalleled view of the surrounding countryside. Zeppelin was immediately impressed with the opportunities that a hydrogen balloon possessed and began to think of ways that it could be adapted to better serve his country's military.

Upon his return from America, Zeppelin remained in the Army and served with distinction during the Franco-Prussian War of 1870-71. With the unification of Germany, Zeppelin found himself becoming more and more disenchanted with the old and staid manner in which the Prussian military machine conducted its affairs. Soon after, he was passed over for promotion he was encouraged to retire and separated from the service, returning to his home in Friedrichsafen.

There for the next 15 years he experimented with making something useful out of the ideas that had been planted in his mind from those visits to America years before. His experiments were bizarre enough to earn him the moniker "The Crazy Count" by his neighbors. He continued to wrestle with designs and plans to create something for the military that would allow him an opportunity to redeem himself in the eyes of his former superiors.

On July 2, 1900 the "Crazy Count" fired up two Daimler internal combustion engines that were attached to a 416-foot-long airship, named LZ 1 (Luftschiff Zeppelin) and with the twin 16 hp engines grinding away, managed to keep his monster of the skies aloft for over 20 minutes. Few people then, or even now, fully realized the historical significance and the full potential of what happened over southern Germany that July day. To place it in

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One of the many airships owned by the Army, LZ37, became the first airship victim of British airplanes on June 7, 1915. Flying a monoplane, Fl. Lt. Reginald Warneford, RFC won the Victoria Cross by being the first pilot to bring down a Zeppelin in combat. Warneford accomplished the task by dropping 6 bombs into the airship. Unfortunately the resulting conflagration crashed into a convent killing civilians including two nuns.

Kaptainlieutenant Heinrich Mathy, perhaps the greatest and most successful airship commander of the entire war. Good looking, daring and skilled, he was the romantic embodiment of a crusading knight. He personally accounted for close to half of the damage inflicted by airships during the war. He died with his ship (L31) on October 2, 1916 over Potters Bar, England.

Professor Thaddeus Lowe's balloon "Intrepid" offered Zeppelin his first airship ride during the American Civil War and planted the seed for his future experiments and designs.
some sort of perspective, Zeppelin flew a powered aircraft 3½ years before the Wright Brothers flew for the first time at Kitty Hawk. Zeppelin's flight lasted 20 minutes, the Wright Brothers' lasted less than 20 seconds. From his first flight, Zeppelin was demonstrating his aircraft for his peers in the military, almost a full ten years before the American military showed an interest in the Wright Brothers' plane and its capabilities.

Though Zeppelin was a former Army officer, it was the German Navy that showed the most interest in the potential of the airship as a weapon of war. Zeppelin's first airships used the flexibility of a floating hanger located on the Boden Zee (Lake Constance). This enabled the Zeppelin crew to maneuver the nose of the craft into the wind to avoid the inevitable disaster a sudden crosswind would produce if the craft was in the process of exiting or entering the hanger. Given its berth on the sea, it was a natural assumption that the craft would become known as an Air Ship and thus named as such. Luftschiff is German for "airship." (As First Lord of the Admiralty, Winston Churchill used the same logic to try to gain control of the fledgling British Armour service by calling tanks, land ships. His logic, as history has proved, didn't hold water, as such, and the Army has maintained control over them ever since.)

Between the years 1900 and 1914, a handful of airships served as passenger liners of the skies, logging in over 100,000 safely flown miles having carried a total of 34,000 paying passengers. These behemoths became the most successful and safest way of traveling for what would soon become the airline industry that we know today.

**ZEPPELINS AT WAR**

In 1913, as tensions between Germany and Great Britain increased, Germany's Kaiser Wilhelm II continued to tweak the efficiency of his prized possession, the High Seas fleet. Feeling that the success of any conflict between Germany and her English cousins depended solely on his ability to defeat England on the open seas, the Kaiser ordered the purchase of three Zeppelins for use by the Kaiserliche Marine, the Imperial German Navy.

The initial idea for the Zeppelins' employment would be to serve as an aerial screen for the fleet as it maneuvered on the high seas, in a way quite similar to the fashion that General Robert E. Lee used General J.E.B. Stuart's cavalry during his two Maryland campaigns. The eyes and ears of the Navy would be floating 12,000 feet above sea level, capable of reporting enemy positions.

Naval Captain Peter Strasser became the first head of the Naval Airship Division and began an enigmatic career as the dynamic leader of a close-knit group of pilots who quickly became folk heroes for their daring exploits. His chief advisor was the most experienced airship pilot in all of Germany, Hugo Eckener. Dr. Eckener, a former economics professor, had become impressed with the possibil-

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**An interior view of a Maybach engine. When one of them failed at 12,000 feet, it was the duty of a mechanic's mate to open these exposed plates to perform the needed servicing in the open air, often while under attack.**

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**Zeppelins, on average, were 650 feet in length, 2 million cubic feet in volume, 80 feet in diameter and had 16 gas cells. The five 1,200 horsepower Maybach engines could propel the behemoths along at 65 mph.**

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**AIRCRAFT AND BOMBARDMENT INSURANCE.**

**Never at a loss to exploit an opportunity, insurance companies were quick to offer special policies against damage from airship raids.**
ties that airships offered when he first saw LZ1 fly over Lake Constance in 1900. He quickly learned the craft of piloting directly from Count Zeppelin himself and was soon training Strasser's new cadre of young pilots.

Count Zeppelin's manufacturing company (DELAG), located in his home town of Friedrichafen, began to supply the Navy with airships, numbering them L1, LS2 and L3. From this point on, all airships manufactured for the navy were consecutively numbered. Zeppelin, however, to number the frame of each airship with the more familiar LZ numbers which represented the place in the order of manufacture since the first Zeppelin in 1900. A helpful hint in examining period photographs is to note that the navy Zeppelins have a conspicuous number painted near the nose that is just the letter "L" and a number. Civilian Zeppelins have the "LZ" moniker painted on their nose.

During the course of the war, the Zeppelin factory was able to produce a new Zeppelin once every two weeks and completed nearly 109 airships before the war's end. (Note that a small number of airships were also ordered by the Army who used them in the fashion that the old Count had originally intended, as the eyes and ears of the Army. Army airship pilots proved to completely lack in the training or esprit de corps that the Navy pilots displayed and soon, after numerous pilot error disasters, all Army airships were transferred and absorbed by the Navy.)

As previously stated the mission of the airship was to screen for the High Seas fleet. However the Kaiser was reluctant to send his favorite toy, the fleet, out into the open and tempt direct combat with the enemy. This provided the airship division with a lot of downtime. Capt. Strasser soon began to spoil for a fight and recommended that the airships be used in a more offensive manner against the enemy. He suggested the bombing of selected military targets in England. With stalemate developing in the west and no quick end to the war in sight, the Kaiser reluctantly agreed to allow the use of airships as offensive bomb-

German Naval ratings display a variety of bombs carried from the airships, weighing from 22 pounds up to 660 pounds.

Aft photo of L2, the second in the line of Navy Zeppelins.

Officers and crew pose for a picture as an early naval airship embarks on a test flight before the war.
ing weapons. With a stipulation that the bombing of targets be confined to those located east of the Tower of London, Strasser soon began to map out an offensive battle plan.

On January 19, 1915, three naval Zeppelins, L3, L4 and L6, rendezvoused off Heligoland and began a run on the east coast of England. It was, as Britons would later come to call it, perfect Zeppelin weather. A cool, crisp, moonless night where the prowling airships could easily see the lights of their targets and yet remain undetected, save for the constant drone of the powerful Maybach engines. Leaving in the early morning and making the rendezvous point by mid-afternoon, the Zeppelins, who's top speed reached an astounding 80 mph, arrived off the coast of England as darkness began to fall, concealing their approaches but giving them enough light before total darkness to mark landfall on their maps and make directional adjustments.

The payload of an airship is considered to be the amount of non-structural weight that the ship can safely lift. This includes officers and crew, munitions and cargo.

PUBLIC WARNING

The public are advised to safeguard themselves with the appearance of British and German airships and aeroplanes, so that they may not be mistaken for British aircraft and may take shelter if German aircraft appear. Should hostile aircraft be seen, take shelter immediately in the nearest available house. In the basement, and remain there until the aircraft have left the vicinity. Do not stand close to windows and do not touch any illuminated lamps.

The following table shows the approximate times at which the various British airships and German airships are expected to appear over the various areas of the United Kingdom. The times are approximate and are subject to change. Should any airship be observed that is not listed in the table, please advise the authorities immediately. It is important that the public remain vigilant and take appropriate action to protect themselves.

<table>
<thead>
<tr>
<th>Time</th>
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<th>German Airships</th>
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<td>03:00</td>
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Broadside and posters kept the British civilians apprised as to which planes and airships were friendly and those which were not.

The three men most responsible for the development of airships, from left: Dr. Hugo Eckener, Count Ferdinand von Zeppelin and Fregattenkapitan Peter Strasser, Chief of the Naval Airship Division.

Early airship attacks were confined to areas east of the Tower of London by order of the Kaiser. Unwilling to risk damaging familiar haunts, the Kaiser still had a fondness for the Royal playgrounds that he enjoyed in his youth as a grandson of Queen Victoria.
tions, water ballast, petrol, supplies, cold weather gear and, of course, bombs. The typical Zeppelin in 1915 could lift a payload of 30,000 pounds, by 1918, with improvements in Zeppelin size and strength, it was raised to close to 100,000 pounds.

The typical armament in bombs usually included 22, 110, 220 and 660 pound bombs.

The attack of January 19 proved to be a wakeup call to the British. Cries of panic and terror quickly spread throughout the United Kingdom. For a while it seemed that the island was completely defenseless and the Zeppelins could attack anywhere, any time at will without fear of opposition. Public outcry was instantaneous and soon air defenses were developing all throughout England. Damage was measured in the loss of innocent civilian life as well as in pounds sterling. The first year of raids produced £800,000 ($3,840,000) worth of damage in the 27 raids that were completed during that period. The year 1916, the happy hunting time for the airship service, saw 111 raids completed and over £600,000 ($2,880,000) in damage caused. By war's end, £1,500,000 ($7,200,000) of damage had been inflicted as well as the deaths of 557 people and 1,300 injured in a total of 177 airship raids. Of course the loss of any life is considered tragic and devastating to those close to the victims, and this kind of warfare brought the fight to the personal homes and factories of the civilians for the first time in modern warfare. The effect was monumental on the public psyche. Soon demands of protection were near riotous pitch. By the war's end, nearly 500,000 men, hundreds of planes and thousands of artillery were in place surrounding the cities and docks thought to be prime targets for the Zeppelins.

One cartoonist expressed a commonly-held desire that the British Isles' only protection from attacks would be to move further west, out of their range.
Recruiting posters soon took advantage of the civilian attitudes and prevailing panic caused by airship raids to encourage young men to enlist and do their part in bringing about an end to their attacks.

The Kaiser’s edict of “hands off” on targets west of the Tower of London was declared for the simple reason that the Kaiser was still the first cousin of King George V and as such had spent many blissful vacations with his mother, the daughter of Queen Victoria, at the royal palaces and estates within and near London. This rule was lifted after a while and open bombing was permitted throughout the whole of

Early airships had suspended gondolas. Later modifications and construction placed the command and control cars closer to the body of the airship.

LZ4 in 1908 shows the airship entering its hanger shed on a lake. Early hangers were floating so that they could take advantage of quick directional changes as winds shifted.

Shoulder boards for officers were of the same color patterns as the belts and fastened by brass buttons with the imperial crown and anchor design.

A Zeppelin gets caught in the searchlights of a barrage battery. The numbers of men and resources spent on combating the Zeppelins was more damaging to the British war effort than the actual destruction inflicted on targets in England.

The interior of an airship showing the massive skeleton of duraluminum that held her together. Empty Zeppelins would weigh on average 45,000 pounds. Later as many as 19 separate gas cells would fill this interior.
COUNTY OF LANCASTER

PROTECTION AGAINST RAIDS

BY HOSTILE AIRCRAFT, OR

BOMBARDEMENT BY SEA OR LAND.

The Military authorities have issued the following Instructions to be taken by all persons on board any ship taking refuge within a Foreign Port:

The Military protection must be sought in the event of any vessel being taken into a Foreign Port. In the event of any vessel being taken into a Foreign Port, the following Instructions must be observed:

1. All persons must remain indoors or return to their houses or shops.
2. No non-combatants must remain in the streets.
3. Doctors and surgeons are requested to remain at their houses or surgeries until summoned by the authorities who will advise them where they can be required.
4. Householders and occupiers of business premises should at once turn off gas and electricity and take similar steps to prevent fire outbreaks and explosions.

The instructions in the above paragraph are to be adhered to in order to prevent serious damage to the lives and property of the civilians of this area.

H. P. P. LANE

Local governments published guidelines and instructions on how to protect against the sudden and silent attacks from the skies.

An early warning system of spies and ships at sea enabled the RFC to sortie and intercept planes in time to gain enough altitude to attack Zeppelins before they had a chance to do any damage. This Zeppelin is caught near the coast of England.

England. However no serious destruction of historic or Royal sites occurred from the frequent Zeppelin attacks.

DEFATING THE ZEPPELINS

In 1916 the airship service had a banner year with 187 sorties being flown, over one third of the total sorties flown during the entire war. Some 111 raids on England that year helped bring the level of panic there to a veritable hysteria. At the beginning of the year, weather was one of the airship's worst enemies. By 1918 end, it is estimated that out of all the days in that time period, only one quarter were considered decent enough flying weather for Zeppelins to operate in.

Once the clang of air raid alarms became commonplace in England, methods were hurriedly devised to try to destroy the brutes. Artillery and concentrated firepower seldom succeeded in ripping enough holes in a Zeppelin to cause enough escaping gas for it to lose altitude and eventually crash. A method to ignite the volatile hydrogen gas that filled the monsters was sought.

Hydrogen is very flammable, but only when mixed with oxygen. This combination creates a huge fireball when ignited. The Air Ministry in Whitehall sought a method to trigger this reaction, not knowing that the answer was already in their hands. As soon as the war had started in August of 1914, an Australian by the name of John Pomeroy had submitted plans for an explosive bullet. Other inventors such as J. F. Buckingham and F. A. Brookes also developed phosphorous incendiary rounds. A combination of their ideas helped create a round that was capable of blowing holes in the skins of the airships, causing large amounts of gas to escape and igniting the gas bag on fire. By August of

Count von Zeppelin (L) and Dr. Eckener (R) prepare to ascend in an airship on a training flight.

GERMAN NAVAL AIRSHIP BASES

Nordholz - HQ Luftschiff Division
Ahlhorn, Duren, Fuhlbusch, Hage, Kiel, Jamboli, Juterboog, Namur, Seeb, Selsrop, Tondern, Wallenoden, Wildeshausen, Wittmundhafen
Airship Manufacturers
Zeppelin Werke (Friedrichshafen) (62), Schutte-Lanz (8), Parseval (3), Gross-Basenach (1)

92 MILITARY CLASSICS ILLUSTRATED
One of the most harrowing duties for an airship crew was the defense of the ship at altitudes of 12,000 to 20,000 feet. Here a spotter and a gunner man a Maxim gun against approaching British fighters.

The skeleton of a collapsed airship. As soon as it hit the ground, and often while it was still on fire and glowing red from heat, souvenir hunters would pick it clean. Military police were often placed on guard to prevent the loss of any sensitive materials that might be of help to British intelligence.

1916, the tide began to turn for the airship division as Zeppelins began to light up the English sky as they fell to earth, struck down by the Brock, Buckingham & Pomeroy bullets.

The initial German response was to get out of the range of the bullet shooting biplanes that were responsible for their destruction. At the beginning of the airship raids, most Zeppelins flew at approximately 10,000 feet altitude. Later Zeppelins, called 'height climbers' could attain nearly twice that. There were severe tradeoffs for the increase in altitude. At 20,000 feet the outside air is about 4°F below zero. This has an obvious effect on the functioning of the engines as well as the condition of the crew. Most gondolas

An English street showing the effects of a Zeppelin raid. The actual damage caused had little or no effect on the war effort other than to "pin down" thousands of men and equipment to defend against them.

Lt. von Zeppelin as an observer attached to the staff of General Philip Sheridan during the American Civil War. Zeppelin is in the white cap in the back row.

The command gondola of an airship provided little protection from enemy bullets or the harsh elements encountered at 12,000 feet.
Zeppelin

(control cars) on the early airships had been external, mounted below the structure of the gasbag itself. With the new design, the gondola was moved up so it was flush with the belly of the ship. This eliminated the need for crewmen to ascend or descend an external ladder to access the control car from within the body of the airship.

The extra height that the airships soon acquired enabled them to reach their target and drop their payload long before enemy planes could catch up with them. The little single engine biplanes that so often gave chase to the mighty beasts took nearly one hour to reach an altitude that put them on a level with the airships. Within that critical hour, the airship could have easily come and gone. Soon tactics changed and on nights that favored Zeppelin flying, Royal Flying Corps squadrons took to the air soon after dark to hunt and destroy the airships before they even knew where they might be heading. This took a great deal of intelligence work on part of the RFC. Spies were advising of Zeppelin sorties during the mid day rendezvous and forwarding the information that an attack was imminent. Other sky watchers along the coast learned to listen for the familiar rumble of the Maybach engines. It wasn't long before Zeppelin tactics changed to meet the challenge. Drifting and silent running, as well as using the cover of clouds, aided with sub-cloud observation gondolas, aided the Zeppelin commanders to reach their destinations with as little enemy interference as possible.

AUGUST 1918

Soon it was nearly impossible for the formidable airships to wantonly raid England with the ease that had been accomplished before. The yearly total for 1918 was just 10 percent of

The Zeppelin badge on the left is an original as issued at the end of World War I. Made by a jeweler in sterling silver, it bears on its reverse the "000" Junker hallmark—a sign that the piece is really made from silver. The Zeppelin badge on the right is a modern, well-made copy. Note that it is of composite metal, not silver, and bears no hallmark. The crown is attached in a vastly different fashion from the original.

The airship badge is a subject of great myth, legend and speculation. The airship surrounded by a wreath surmounted by an imperial crown is the award given to those who were found to qualify to wear one, following the war. Note that this badge was not issued during WWI and was never worn in combat. Following the war, private jewelers produced this award and those who continued to serve the Weimar Navy were entitled to wear the badge if it had been earned during the war. The badge was garnered during the reign of Kaiser Wilhelm II and bore the symbol of his imperial crown. Many holders of the award had the crown removed when they wore the badge during the Weimar period. Other collector references state that the badge, sans crown, was indicative of an Army airship award. This is simply not true, the "missing" crown was only in deference to the new government following the Kaiser's abdication in November of 1918.
what it had been two years before. The days of massed attacks and combined operations were at an end. (In September 1916 twelve airships participated in the largest raid ever on England, only half that number flew in the final raid on August 5, 1918.)

On August 8, 1918, the German Army suffered its worst defeat of the entire war, losing tens of thousands of men, dead and prisoners, as well as the most ground surrended in a single day. General Ludendorff called it Der Tag, the black day. For the airship service Der Tag came two days earlier on the 5th when during a six-Zeppelin assault, the airship service lost L70 in a botched raid on England where no bombs had found their targets. Aboard L70 was Pour le Merite winner and chief of the airship service, Fregattenkapitan Peter Strasser. With the loss of their charismatic leader, the airship service cancelled any further raids, and until armistice the Zeppelins were used solely on sea patrol.

At the time of the Armistice on November 11, 1918, only 20 or so airships remained in service. Nearly half of them were seized by the Sailors' Soviet and destroyed following the scuttling of the High Seas Fleet in June, 1919. The remaining airships were dismantled and distributed among the allied victors as part of war reparations. The United States contracted with the Germans to produce a New Zeppelin as part of their settlement. The new Zeppelin was LZ 126, and was completed in 1924. When Dr. Eckener arrived with her in America to train her new pilots and to transfer ownership, she was officially entered into the US Navy logs as ZR-3 and christened the USS Los Angeles. Of all the airships that entered US service, she was the only one not to meet a disastrous end. Eventually she disappeared under the breakers torches.

**AIRSHIP IMPACT ON THE WAR EFFORT**

It is thought that the “pinning down” of dozens of division-strength troops, as well as the planes and munitions on the home front, severely handicapped the BEF in France and Belgium, doing more for the overall German war effort than the actual bombings accomplished. The Naval Airship service lost a total of 55 Zeppelins, 40 officers and 350 other ranks during the four years of service, a small number compared to the devastation and resource depletion that they were able to affect on the English war effort.

The German Imperial Naval Sword was a true work of art. This ivory hilted edged weapon had a lion’s head sporting a real emerald green eye on the right (starboard) side and a ruby red eye on the left (port) side, a reference to the maritime running lights of ships at sea. The imperial naval anchor and crown are embazoned on the basket and on the folding portion of the guard is inscribed the name of Oberlieutenant S. Ratz, commander of airships SL8 & SL20 during the war.