



Giants in the Sky: Zeppelins

Part 2, 1919-1940

by Ralph Reiley

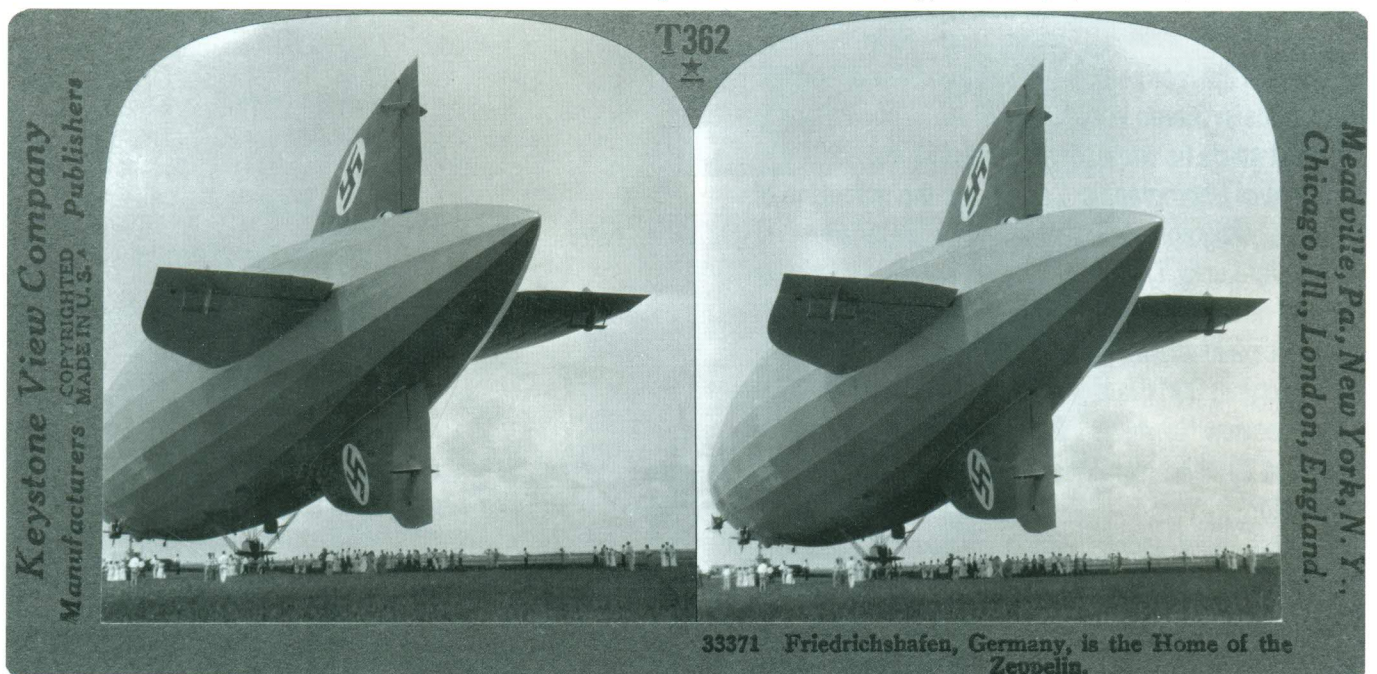
The use of zeppelins in the First World War was only partially successful. As strategic bombers they proved miserably inadequate for the task, but were quite effective as a terror weapon. As long range scouts for the navy, they were unequalled by any other aircraft. They could stay aloft for days at a time, and at a fraction of the cost of operating a navy cruiser. As scouts, they were underutilized during the war. The Germans never used the zeppelin for spotting enemy supply ships for the U-boats, a job they would have done very well. The Allies did use smaller semi-rigid airships for anti-submarine patrols, a job they performed to deadly effect for the U-boats.

The victors of World War One dictated harsh terms to Germany. These terms included turning over all completed airships, and the Zeppelin works dismantled. For the French this was revenge, for the British, it was to eliminate a rival in the future airship passenger business they hoped to monopolize. England, Belgium and Japan each received a zeppelin, and broke them up into scrap metal. The zeppelins earmarked for the United States were destroyed by their former crews, who could not bear to see their beloved ships fall

into the hands of their enemies. This act of defiance indirectly saved the Zeppelin works from being closed down by the Allies.

In 1920, DELAG, Deutsche Luftschiffahrts-Aktiengesellschaft, German Airship Travel Corporation, started flying LZ-120, the *Bodensee*, a small commercial passenger zeppelin which included a first class section. In 1921, it was confiscated by Italy and renamed *Esperia*. It was mainly used by the Italian military, and occasionally for passenger service, until 1928, when it was scrapped.

Keystone No. 33371, "Friedrichshafen, Germany, is the Home of the Zeppelin." The tail of Graf Zeppelin, LZ-127. Taken after 1933, when Germany was under Nazi rule. A law had required all civilian aircraft to have the swastika painted on the rudder. Dr. Hugo Eckener thought this would damage the reputation of his airship and airline. He argued publicly against this order issued by Dr. Goebbels, the Nazi Minister of Propaganda, which led to Eckener being removed as head of the Zeppelin works. (Larry Moor collection)



"Hugo Eckener am Fenster des LZ 127."
Hugo Eckener at the window of the LZ 127. A view from a German series of stereoviews of the Graf Zeppelin. Dr. Eckener is in the window of the control room on the bridge of the Graf just prior to leaving Friedrichshafen on the round the world trip of 1929.



"Graf Zeppelin-LZ 127."
Another view from a German series of the Graf Zeppelin, taken in Friedrichshafen as the ship left for one of two round the world trips, one sponsored by Hearst and one by Eckener for Germany. The Hearst sponsored flight began and ended in Lakehurst and was reported exclusively in Hearst papers around the world, but not in Germany. Eckener had reserved some rights for the German press, so the German round the world flight began and ended in Friedrichshafen. After

Friedrichshafen, Tokyo was the next stop, then Los Angeles, then Lakehurst, then then back to Friedrichshafen.

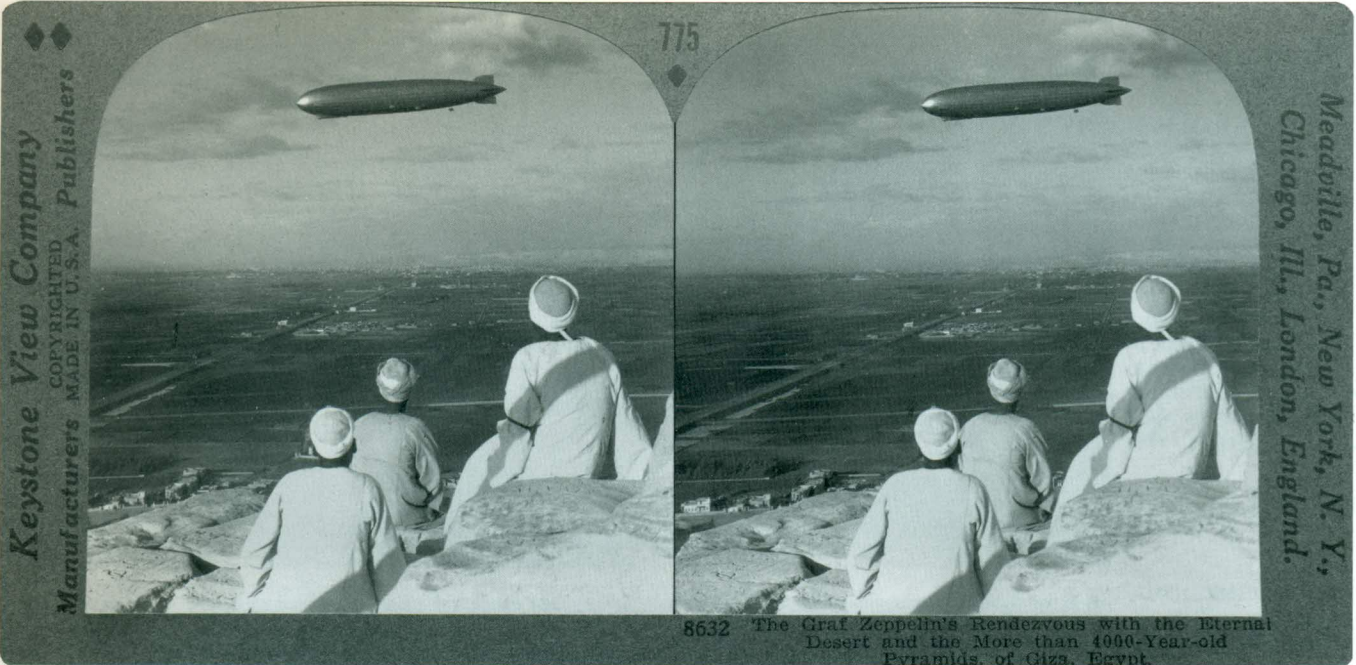


In 1921, DELAG flew LZ 121, the *Nordstern*, to Stockholm. Upon its arrival back in Germany it was confiscated by the French and was renamed *Mediterranee*. In 1920, the French received LZ-114 as war reparations. It was a long range zeppelin, and originally intended to bomb New York City, but the war ended before the airship was fully constructed. It was renamed *Dixmude*, and the French operated it successfully from 1920 to 1923. One night in 1923, it disappeared over the Mediterranean without a trace. No survivors, bodies, or wreckage were ever found, although fishermen reported seeing a very bright glow in the sky the night it disappeared. The French continued to fly *Mediterranee* until 1926, when it was decommis-

sioned and scrapped, ending their airship program.

The British had been working on airships since 1909, initially with poor results. During the war, LZ-76 came down in England with punctured gas cells. By the time it hit the ground, virtually all its hydrogen was lost, and the crew was unsuccessful in destroying the wrecked zeppelin by setting it on fire. Although the airframe was damaged in the crash landing, the airship was nearly intact. It was closely copied, and airships R-33 and R-34 were the result. Both were ready to fly in 1919. On July 6, 1919, the British stunned the world when R-34 arrived in Mineola, on Long Island, making the crossing in 108 hours. It was an amazing feat of aeronautics, but nearly ended in disaster, as there

were only a few gallons of gas left in the fuel tanks when the ship arrived in the United States. The return trip took just 75 hours, making this flight the first successful double crossing by air of the Atlantic Ocean. Both the R-33 and R-34 were damaged in storms and scrapped. With the lessons learned from R-33 and R-34, the British began work on more airships. The most well known of them were R-100 built with private funds, and R-101, built with government funds. They are also known as the Socialist and Capitalist Airships. On July 29, 1930, R-100, the Capitalist ship, set off to Canada, making the rounds over Canadian cities and Niagara Falls. It returned triumphantly to England on August 13, 1930. The R-100 proved that airships could deliver passengers throughout the British Empire, at speeds unmatched by the passenger ships, and with the same level of lavish comfort and style.



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8632 The Graf Zeppelin's Rendezvous with the Eternal Desert and the More than 4000-Year-old Pyramids of Giza, Egypt

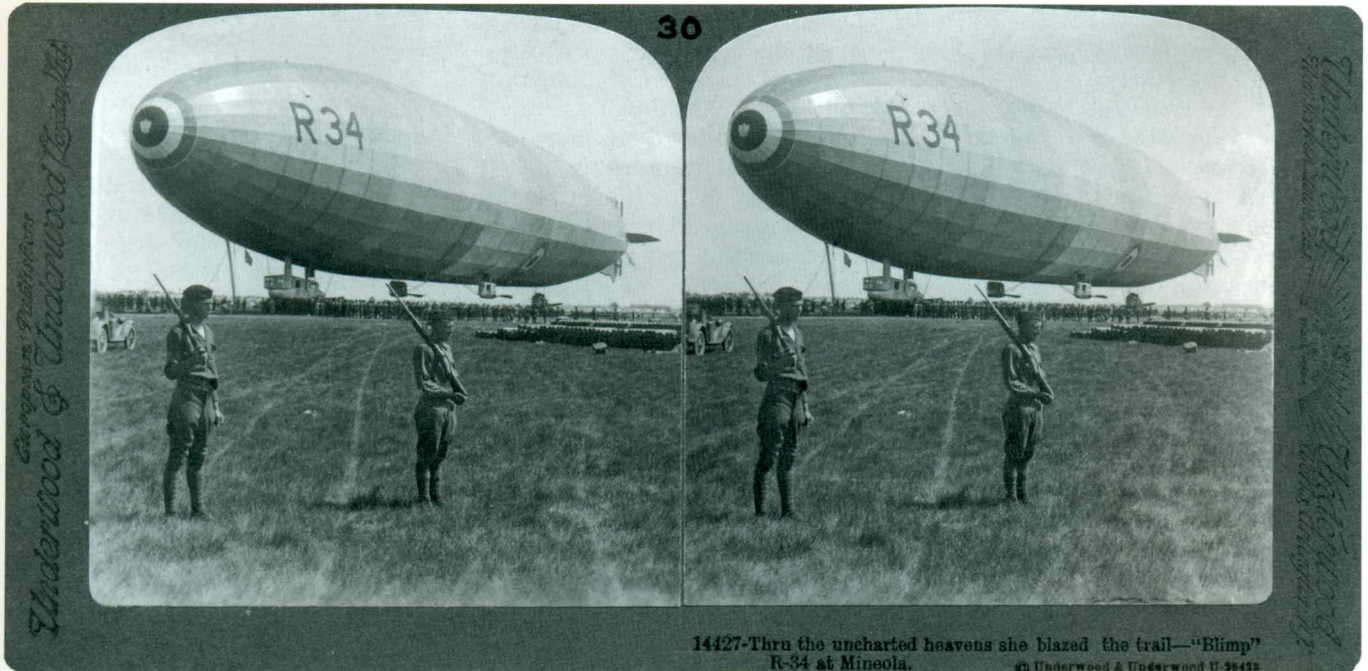
The R-101, the Socialist Airship, was to fly Lord Thomson, the new Viceroy, to India. Lord Thomson was also the Secretary of State for Air, a cabinet post in charge of the Air Ministry. The shake-down flight had been delayed, and the engines were not fully tested. The few short test flights indicated the ship was under-

Keystone No. 8627, "The Graf Zeppelin's Rendezvous with the Eternal Desert and the More than 4000-Year-old Pyramids of Giza Egypt." A view by Keystone's George Lewis (SW Vol. 20 No. 5.) of Graf Zeppelin flying over the pyramids in Egypt on one of its Middle Eastern flights that was heavily financed by air mail carried for stamp collectors. Dr. Ecken-er went to great efforts to create photo opportunities for his airship to promote travel by zeppelin. (SW Vol. 23 No. 5.) (Larry Moor collection)

powered and overweight. The British Viceroy demanded that he fly to India with no delays, and ignored all

concerns raised about the condition of the airship, as nothing was to interfere with his schedule. The R-101 set off on its maiden flight to India and on October 5, 1930, crashed over France. It was caught in a storm, and had come down very low to the ground. It unexpectedly dived, hit the ground, and then caught fire. There were only six survivors of the 54 crewmen and pas-

Underwood & Underwood No. 14427, "Thru the uncharted heavens she blazed the trail "Blimp" R-34 at Mineola." This Underwood view was acquired by Keystone in 1920, and became a standard Keystone war view. The British R-34 was copied from the German zeppelin, L-33. The R-34 left Britain on July 2, 1919, and arrived in Mineola, Long Island, after a flight of 108 hours with virtually no fuel left. The American ground crew had no experience handling large rigid airships, so Major E.M. Pritchard jumped from R-34 by parachute to direct them, and thus became the first person to reach American soil by air from Europe. This was the first East-West crossing of the Atlantic and was done two weeks after the first non-stop Atlantic crossing by Alcock & Brown in a Vickers Vimy bomber. (Robert Boyd collection)



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14427-Thru the uncharted heavens she blazed the trail—"Blimp" R-34 at Mineola. © Underwood & Underwood U 36432



32415 At Los Angeles in August, 1929, Graf Zeppelin Air Cruise Around the World

Keystone No. 32415, "At Los Angeles 1 August 1929, Graf Zeppelin Air Cruise Around the World." From Friedrichshafen, the zeppelin flew across Siberia, and the next stop was Tokyo, where the passengers and crew were treated to a lavish celebration lasting several days. From Tokyo the airship made the first crossing by air of the Pacific Ocean. Three days later, the Graf made landfall near San Francisco, turned south and headed to Los Angeles. Then it headed to Lakehurst, making a circle over Chicago and New York City on the final leg of the Hearst funded trip. The cruise ended when the Graf flew back across the Atlantic, circled Berlin then landed at Friedrichshafen. Larry Moor collection

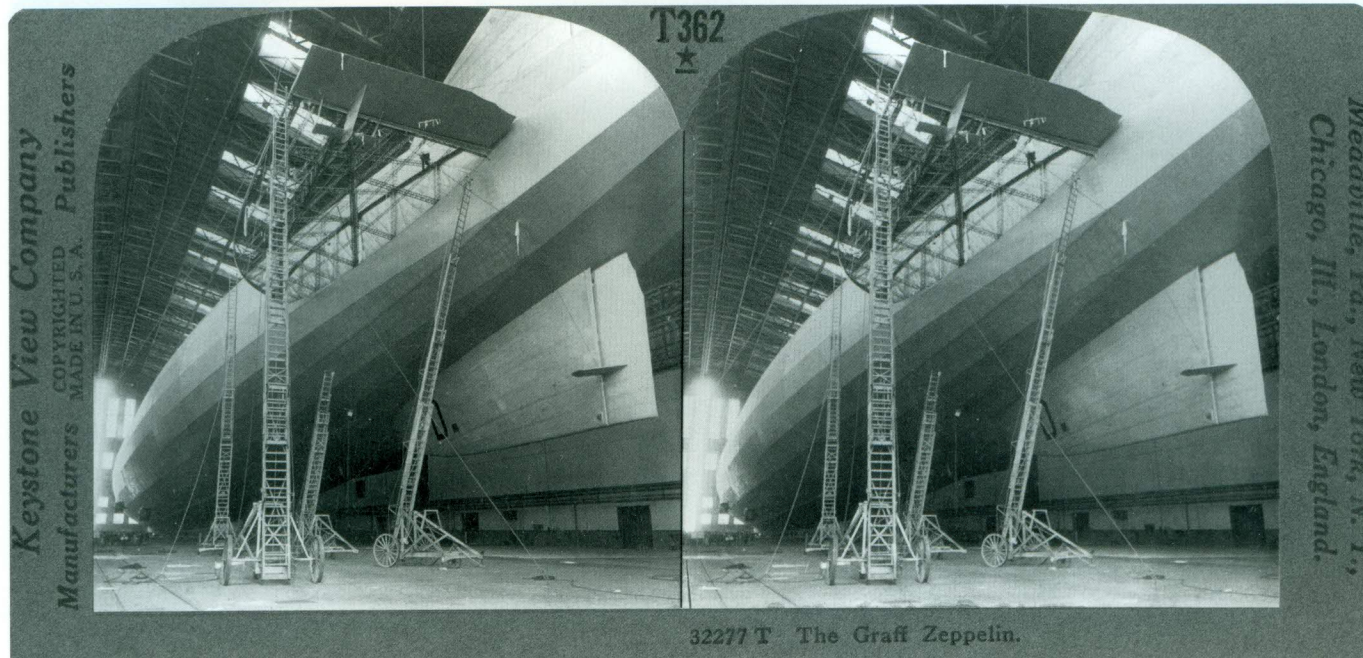
sengers. The crash of R-101 marked the end of the British airship program. The R-100 was put in a hanger and was found to have a number of structural problems requiring extensive repairs. Rather than spending money on repairs, the airship that cost more than £1,000,000 to build, was scrapped in 1931 and sold for less than £600. This left only the

Americans and Germans flying giant airships.

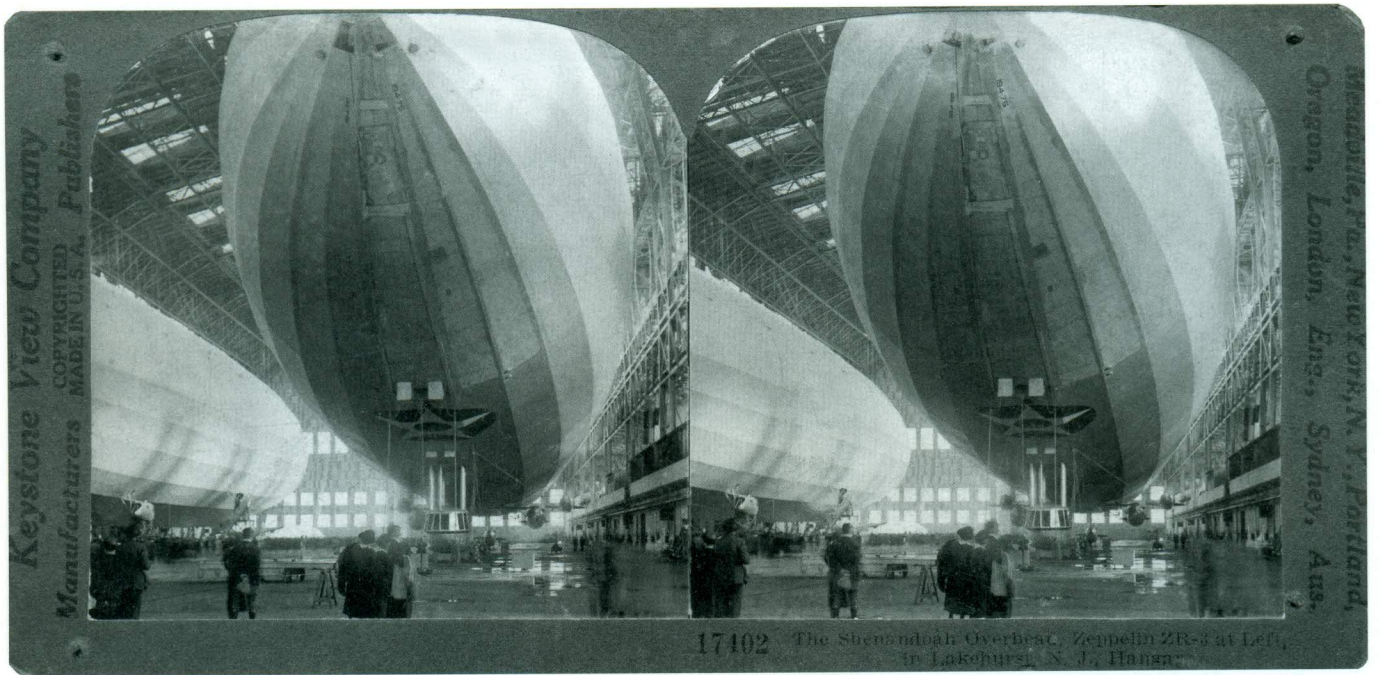
During the First World War, the United States became interested in

airships. Both the army and navy wanted airships, but congress voted for funding for one airship program, and the navy won out. Work was begun on the navy airship facility at Lakehurst, New Jersey, and Goodyear built a shed for blimps in Akron, Ohio. In 1919, work began on ZR-1, the *USS Shenandoah*. The US government also had the British building them an airship, a copy of R-34. The Americans maintained that Germany

Keystone No. 32277, "The Graf Zeppelin." The Graf Zeppelin in the hanger at Lakehurst after its maiden flight from Germany to the United States in October, 1928. On the trip over the Atlantic the airship flew through a storm that tore the top fabric surface of the horizontal stabilizing fin. Repairs were made in the air, with the engines running at the slowest possible speed. The crewmen patched the stabilizing fin well enough to finish the flight. This view was taken during the repair process prior to the return flight to Germany.



32277 T The Graf Zeppelin.



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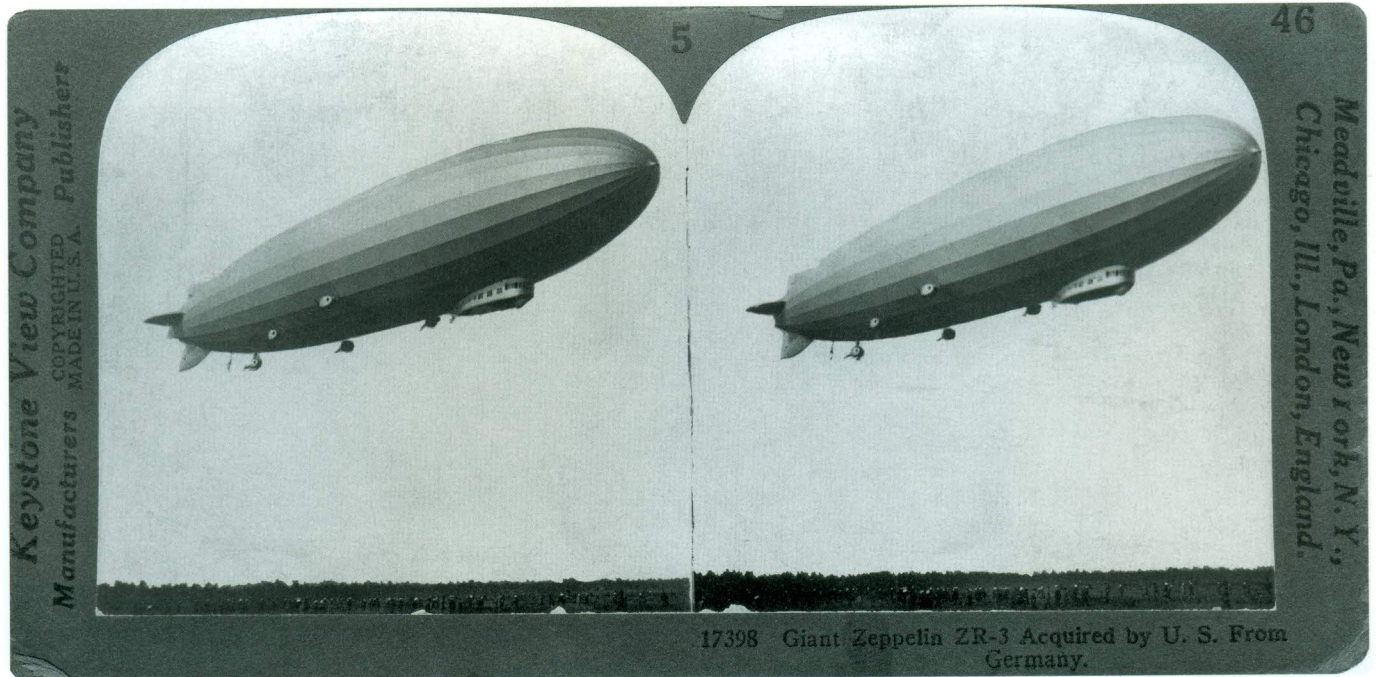
17102 The Shenandoah Overhead, Zeppelin ZR-3 at Left, in Lakehurst, N. J., Hangar.

owed them an airship as war reparations, but the crews had destroyed the airships earmarked for the USA. Neither the British or French were thrilled with the idea of the Germans again building zeppelins, but the US navy worked out a deal for the Zeppelin works, with Dr. Eckener at the lead, to build a passenger air-

Keystone No. 17404, "The Shenandoah Overhead, Zeppelin ZR-3 at Left, in Lakehurst, N.J. Hangar." A rare view of two US Navy airships side by side. The Shenandoah was copied from a downed WW1 German zeppelin. The ZR-3 is USS Los Angeles, built by the Zeppelin works in Friedrichshafen. In this view, the command gondola of Shenandoah is prominent, hanging from the airframe as was typical of World War One German zeppelins. It was found that attaching the gondola directly to the airframe was much safer. When Shenandoah broke up in the air the gondola tore loose and fell from the airframe. Also note the open hatches forward of the command gondola where crewmen would drop landing lines for the ground crew. (Larry Moor collection)

Keystone No. 17398, "Giant Zeppelin ZR-3 Acquired by U.S. From Germany." The USS Los Angeles, a Zeppelin built in Germany for the US Navy and paid for by the German Republic as war reparations. This was a not so bitter pill for the Germans as the money for the construction of the airship stayed in Germany in the form of wages for those who built the airship. The Los Angeles was 658 feet long and held 2,472,000 cubic feet of gas, while its five 550-hp. Mayback engines gave it a top speed of 76 mph. This airship was handcrafted by the Zeppelin workers who feared that it might very well be the last airship they ever built. It became the most reliable American airship, the only one to be retired. (Larry Moor collection)

ship with the German Republic paying for its construction as war reparations. Dr. Eckener set to work designing LZ-126, later to be named ZR-3, USS Los Angeles. Eckener believed LZ-126 might be the last German airship ever built, and decided that it might as well be the best airship ever built by the zeppel-



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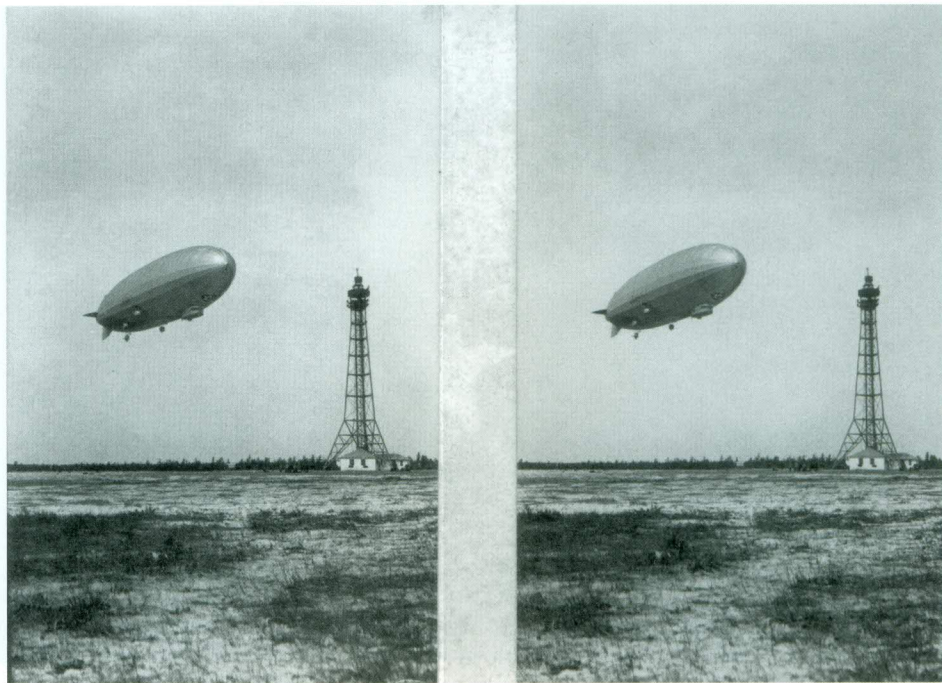
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17398 Giant Zeppelin ZR-3 Acquired by U. S. From Germany.

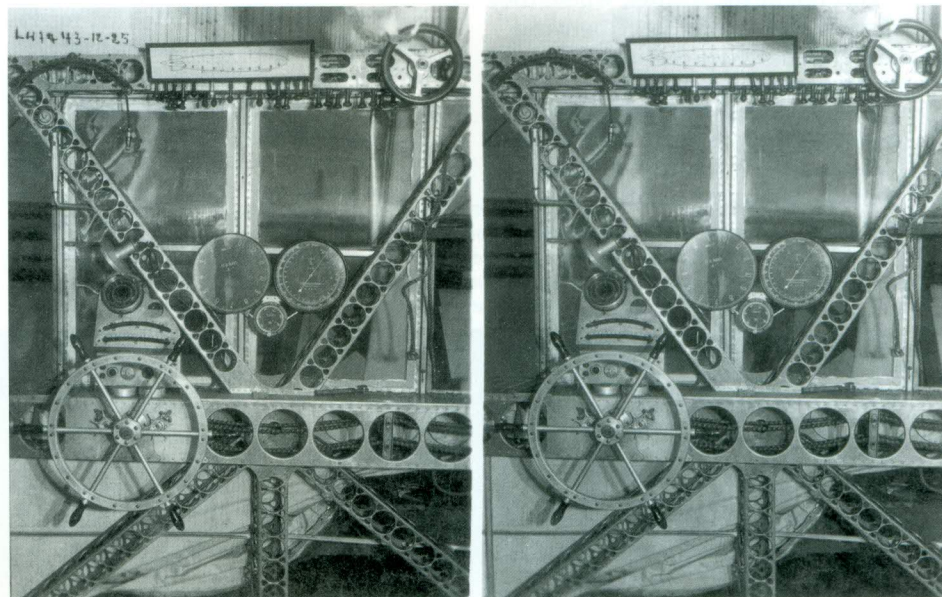
lin works. Every detail of the design and construction of LZ-126 was given lavish attention. Eckener was also hard at work developing the world wide airline network, just in case the zeppelin works would be allowed to remain in operation.

In 1923 the US navy finished ZR-1, *USS Shenandoah*, a close copy of LZ-96, which had come down in France after having lost its hydrogen from punctured gas cells. It was one of the super height climber zeppelins and proved to be a poor choice of airship to copy. The airframe of LZ-96 had been lightened so the ship could fly high with a large bomb load only in extremely good weather conditions. No German advisors were used during design and construction, so this detail was unknown. The *Shenandoah* was the first airship to use helium in place of highly flammable hydrogen. Helium is a by-product of oil production, and the USA had a monopoly on the gas. It does not burn, has 92% of the lifting capacity of hydrogen, and in 1923 was very expensive. On September 3, 1925, after 57 very successful flights, *Shenandoah* was caught in a storm with wild air currents over central Ohio. The storm began twisting the airship, and it broke up into three pieces. The wreckage was spread out over several miles. Twenty-nine of the forty officers and men of the crew survived the crash. Most died when the control gondola fell from the airship frame when it started to come apart. The use of helium in place of hydrogen prevented an explosion, which resulted in more survivors than was usual in an airship crash. The next morning, souvenir hunters were at the wreck, and the dazed survivors could do little to stop them. It was pillaged and reduced to such a state that investigators could not determine the cause of the crash, with even the dead robbed for souvenirs.

The British built R-38 for the United States, basing it on R-34, which was copied from the German airship, LZ-76, another airship with a lightened frame. In 1921, R-38 was the largest flying machine in the sky and was intended to patrol for six days before returning to base. It had been painted in US Navy colors, and was to be ZR-2. On August 23, 1921, it was on its shake-down flight before being turned over to the US Navy. The gas cells had been filled with hydro-



U.S. Naval Air Station photo No. LH1994, "U.S.S. Los Angeles being hauled into mast" dated 4-13-24, Lakehurst, NJ. A US Navy stereoview as an official record of the airship. This is the tall mooring mast the airship was attached to when a gust of wind sent the tail up, and the airship stood on its nose, perpendicular to the ground. All crewmen aboard found a strut or girder to hang on to, but spare parts and tool boxes fell through the ship and exited through the nose of the airship. While little damage was done, a new mooring mast was designed to hold the ship very close to the ground, to prevent accidents of this kind.

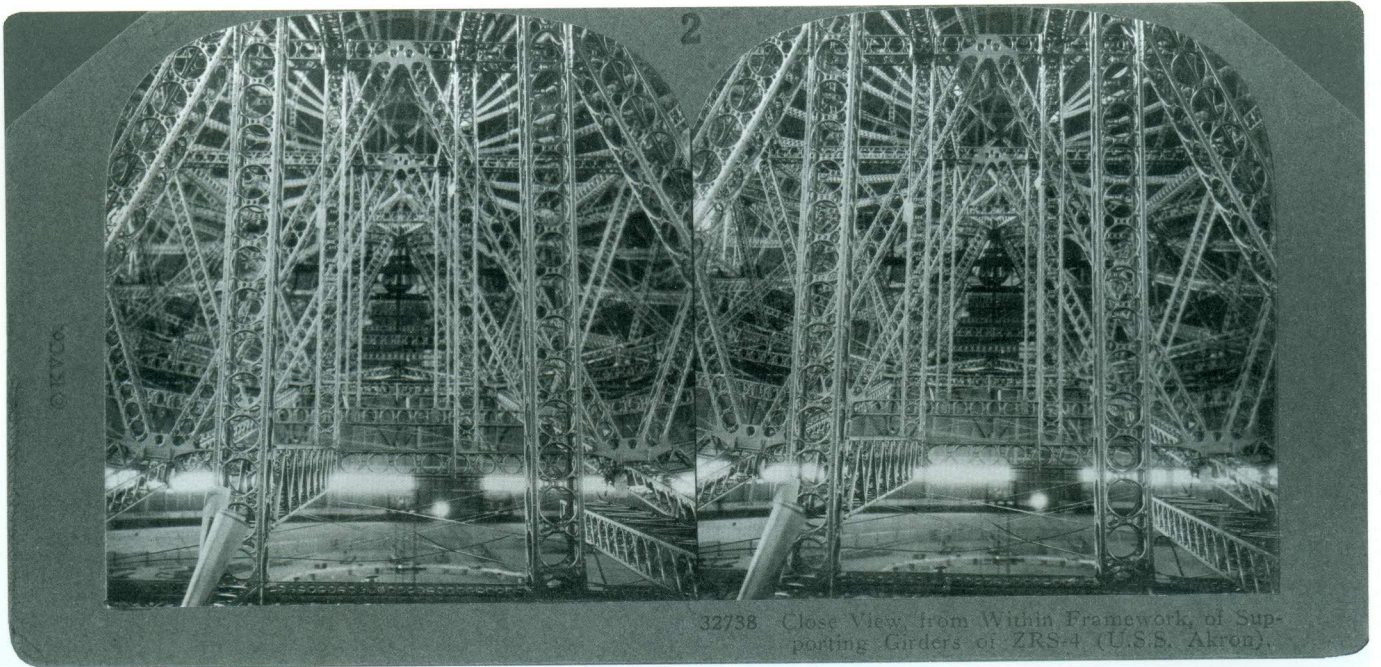


U.S. Naval Air Station photo No. LH1443, "Elevator operator's station, control car, U.S.S. Los Angeles" dated 12-10-25, Lakehurst, NJ. A US Navy stereoview as an official record of the Airship. The Elevator station was located on the left side of the control car. Above the elevator control wheel is a diagram of the airship, with cords used to drop ballast and vent helium from various areas along the airship.

gen, as the British did not have helium. A sudden storm came up, and the ship was caught in wild air currents. It began to twist and break apart, then caught fire and crashed into the Humber River. Only one of the seventeen American sailors and

four of the 32 British airmen on board survived the crash. They were in the tail section, which came down slowly with a leaking gas cell that did not explode.

In October of 1924, LZ-126 left Friedrichshafen piloted by Dr. Ecken-



32738 Close View from Within Framework of Supporting Girders of ZRS-4 (U.S.S. Akron).

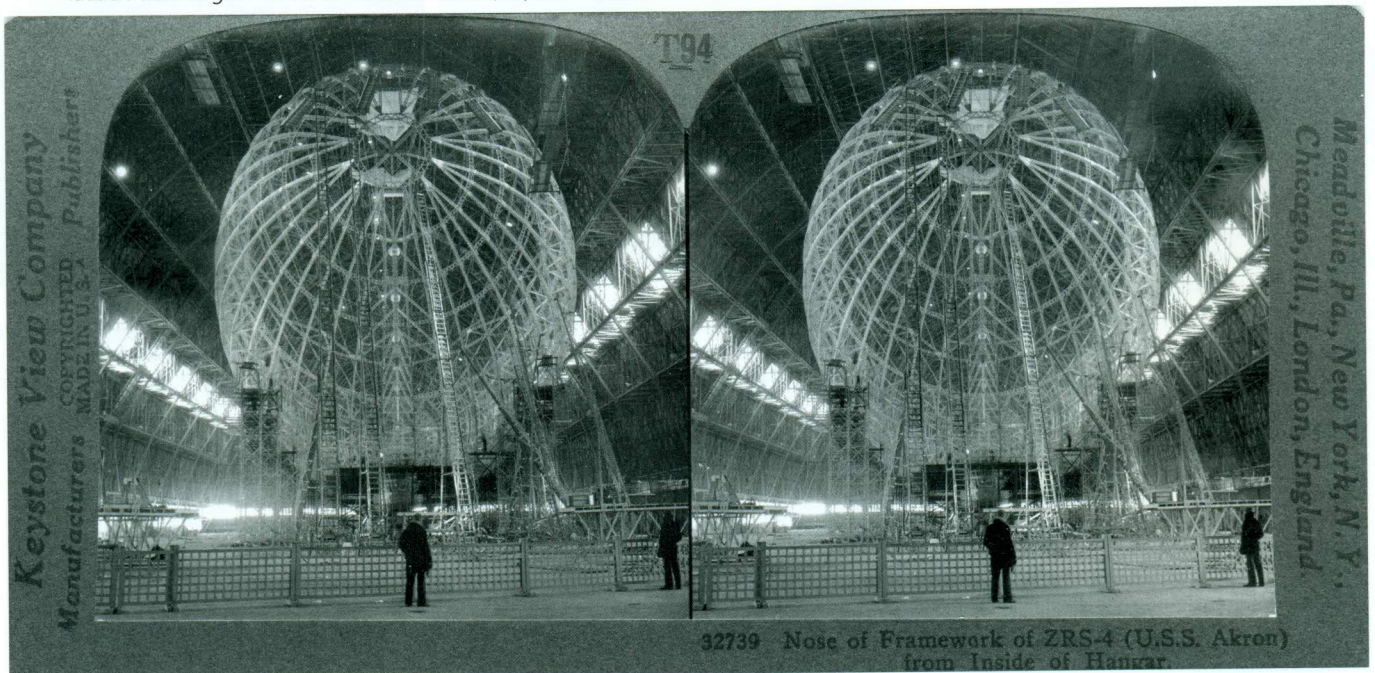
er. It was re-named ZR-3, the *USS Los Angeles*, and landed at the new Naval Air Station at Lakehurst, New Jersey. Upon his arrival, Eckener and his crew were given a heroes' welcome in New York City, complete with a ticker tape parade, gala dinners, and nights out at the theater, where they were brought up on stage between acts. Eckener's delivery of *USS Los Angeles* greatly mended Germany's reputation with the United States, and the world. The *Los Angeles* was

Keystone No. 32738, "Close View, from Within Framework of Supporting Girders of ZRS-4 (U.S.S. Akron)." The duralumin framework is very well illustrated in this photo looking toward the front of the airship during construction. In contrast to the World War One era zeppelins, there was no censorship concerning airships or their construction. Those directing the construction and use of airships in the USA seemed to go out of their way to encourage any positive publicity, including allowing Keystone photographers access to the airships under construction. (Mike Griffith collection)

the most successful airship of the US Navy. It was the only one that never crashed, and was used extensively for nine years. It flew a total of 4,398 hours, covering a distance of 172,400 miles, and served in both

the Pacific and Atlantic fleets. The British and French refused to allow the Germans to build war ships, so *USS Los Angeles* was built as a passenger zeppelin, complete with sleeping rooms, a passenger dining room, and a first class galley. It served as an observatory and experimental platform, as well as a crew training airship. It was retired in 1932, and was briefly re-commissioned in 1933,

Keystone No. 32739, "Nose of Framework of ZRS-4 (U.S.S. Akron) from Inside of Hangar." A view taken from the front of USS Akron under construction in the Goodyear airship shed in Akron, Ohio. The complex framework of the airship frame is supported by cables hanging from the roof of the hangar and scaffolding on the floor. Note the large extension ladders used to gain access to the framework. (Larry Moor collection)



32739 Nose of Framework of ZRS-4 (U.S.S. Akron) from Inside of Hangar.

Detail from Keystone No. 32766, "Mrs. Hoover Christens the Akron, the Largest Airship in the World at Akron, Ohio, Aug. 8, 1931." Ceremonies christening USS Akron, which was begun in 1929 as a joint venture of Goodyear and the Zeppelin works. Zeppelin contributed engineers and craftsmen to Goodyear for construction of American zeppelins. (Eckener hoped teaming up with Goodyear would allow sales of US helium to



Zeppelin.) At the end of the ceremony, a flight of doves was released from the nose of the airship. Mike Griffith relates that John Waldsmith's mother Lois, a young girl at the time, was there. Much to her dismay, her friend was chosen over her to hand Mrs. Hoover a bouquet of flowers during the ceremony. (Larry Moor collection)

after the crash of USS Akron. In 1939 it was dismantled and sold for scrap metal.

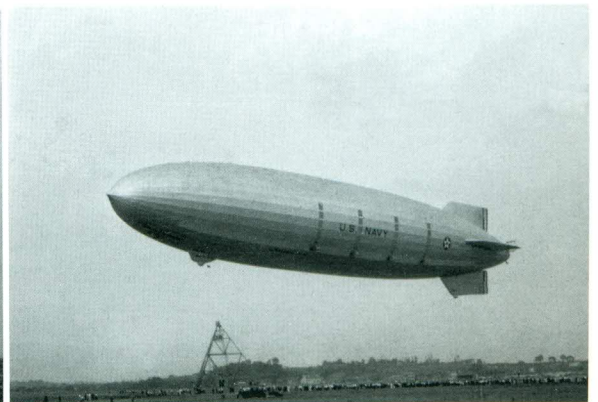
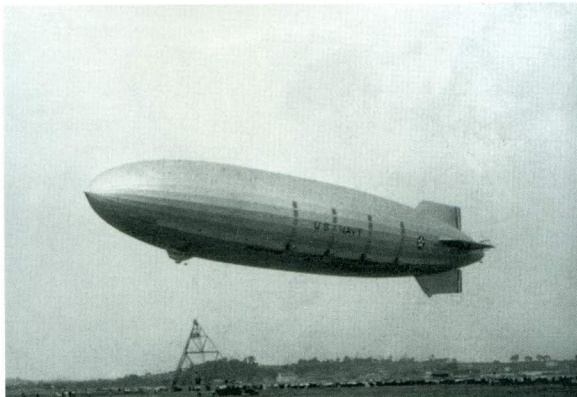
The USS Akron, ZR-4, was completed in 1931. It was built in Akron, Ohio, with German advisors from the Zeppelin works. Tests with USS Los Angeles and a parasite scouting aircraft proved very successful, so USS Akron was built to carry four F9C Sparrowhawk biplanes that were specially designed by Curtiss for the airship. The aircraft were used to further extend its scouting range, making it a flying aircraft carrier. The airship took flight without the aircraft on board. They were loaded in the air by flying up under the airship to be taken inside the aircraft hanger bay. The biplanes had a hook mounted on the top wing and the airship had a "trapeze" on the end of a crane. The aircraft latched the hook onto the trapeze, then the crane raised the aircraft into the hanger bay. The crane was also used to lower them out for takeoff.

The USS Akron had a history of unfortunate ground related accidents, but flew well for two years, including a number of trans-continental flights. On April 3, 1933, with a new captain in command, the airship was caught in a severe storm off the coast of New Jersey. The ship was caught in a strong updraft, followed almost immediately by a strong downdraft. Rudder controls became unresponsive, and ballast was dropped, but it did not stop the descent. The last emergency bow ballast was dropped, and the ship nosed up. The tail hit the ocean and was torn away. This was fatal damage to the structural frame, and the ship quickly broke up, settled into the ocean and sank. Only three of the 89 officers and men of the crew survived. Most who had survived the crash drowned in the heavy seas, as no life jackets or life rafts were carried.

The USS Macon, ZR-5, was the last US Navy airship. It was also built in Akron, Ohio and was commissioned

in 1933, a sister ship to Akron. It carried five Sparrowhawk aircraft, life jackets and life rafts. While crossing the continent, the top rudder fin and the structural ring it was attached too were damaged by strong turbulence encountered in passing over the mountains in Arizona. Temporary repairs by 2x4 planks and rope were used while awaiting proper replacement parts. In February, 1935, USS Macon was ordered out for a fleet maneuver exercise, after the replacement parts had arrived but had not been installed. On February 12, 1935, off Point Sur, California, USS Macon was caught in a storm and winds tore the top rudder fin off the ship, causing a failure of the structural airframe where the rudder fin was attached. The loss of the rudder fin crippled the ship's steering system, plus rear gas cells were damaged and started to leak. There was some confusion in communications between the crew in the tail section and the commander in the control gondola. The order was given for all engines to stay at full speed, and ballast to be dropped. The loss of helium in the tail section caused the nose of the airship to rise, and with the engines at full speed, it quickly reached pres-

Detail from Keystone No. 32771, "Airplanes, The U.S.S. Akron, One of the Largest Dirigibles in Flight." USS Akron low over the triangular mooring mast. This was the second model mooring mast. It had a diesel generator to power the winch that pulled the nose of the airship snug to the mast. The first model mooring mast was much taller, and allowed for air currents to affect the airship. (Larry Moor collection)



sure height, where the gas expanded so much it had to be vented to prevent the gas cells from bursting. When some measure of control was regained, the ship started a shallow dive. With the loss of most of the ballast, the crew could not stop the ship from descending. Despite the best efforts of the crew to save the ship, the damage to the frame and loss of ballast was fatal. The airship settled into the ocean, and despite rough a rough sea, it held together long enough for the crew to abandon the ship in good order. The life jackets and life rafts allowed 69 of the 71 officers and men of the crew to survive the crash. The Germans were now alone in flying airships.

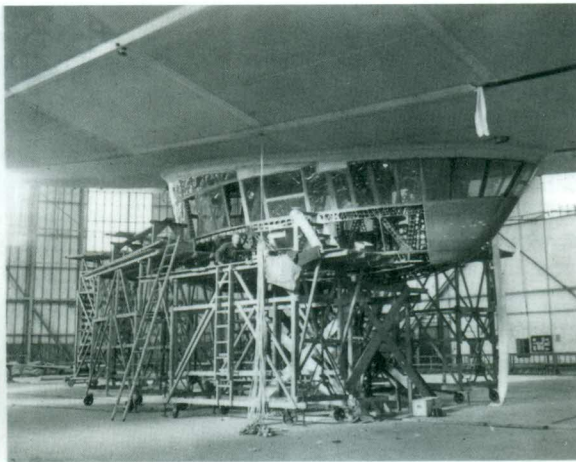
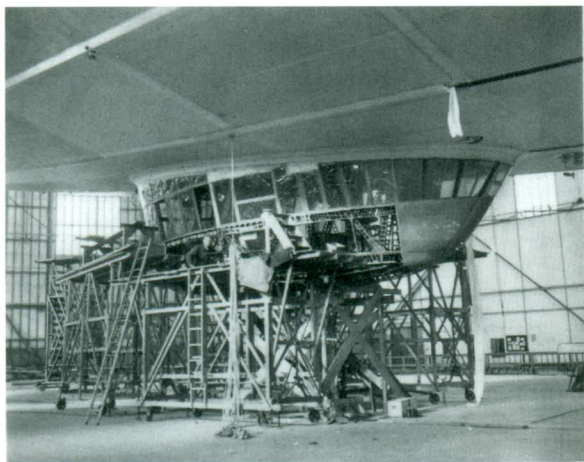
After 1925, the strict conditions of the Versailles Treaty were relaxed in some areas. One area was zeppelin construction, which allowed Dr. Eckener to begin work on passenger airships without the threat of having them confiscated. A grand airship was planned, LZ-127. It was named *Graf Zeppelin*, in honor of Graf Ferdinand von Zeppelin, the airship's inventor. Building LZ-126 for the USA did much to help the zeppelin works

stay in business in the chaos of post war Germany, but money was still tight, and work on LZ-127 was slow, even with Dr. Eckener scouring Germany for money. Finally, in September, 1928, LZ-127 was ready for its first flight, and DELAG was back in business. There was only one airship, but a number of airship captains and crews were on standby from former DELAG employees to former navy and army airship crewman and officers. Dr. Eckener chose to fly to the United States to publicize his new airship and airship travel. He knew the future for airships was with helium, and helium was in America. The cooperation of the USA was vital to the future of German airships.

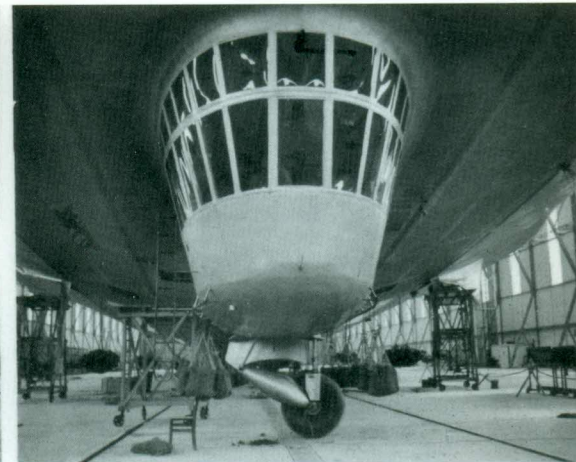
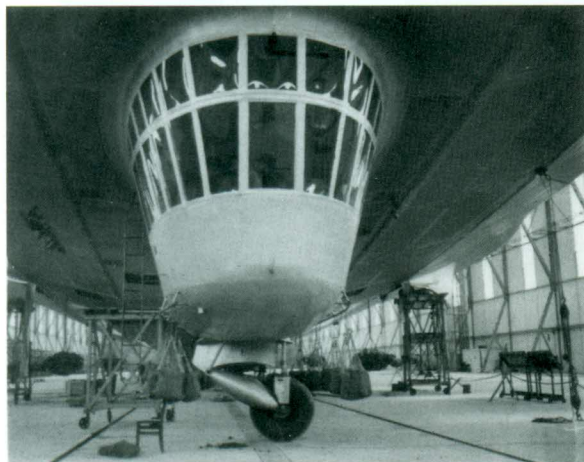
The *Graf Zeppelin* was a marvel. (See SW Vol. 23 No. 5.) It had 20 rooms to accommodate 40 passengers, a dining room/lounge, a tiny all electric galley, and a state of the art radio room. The food was simple, but good, there was a well stocked wine cellar, and the rooms, while not as large as a cabin on an ocean liner, were as comfortable as a Pullman railroad car, and most of the rooms had a window. The *Graf* was

the size of an ocean liner and carried just 40 passengers, but carried them in first class style and comfort. The passengers on the first flight included a number of government officials, US Navy airship officers, and newspaper reporters, including Lady Grace Drummond-Hay. She was a reporter for Hearst news, who became the first woman to travel by air across the Atlantic. She would become a frequent flyer by zeppelin, and very important in promoting airship travel. The *Graf Zeppelin* had nine years of continuous service. It made 590 flights, traveled over one million miles, carried 13,110 passengers, and never suffered a serious accident, or caused injury to a passenger.

On October 11, 1928, *Graf Zeppelin* arrived at the new airship base at Lakehurst, New Jersey, the first aircraft to carry paying passengers across the Atlantic Ocean. Commemorative airmail letters were carried for stamp collectors, and some cargo, including a live crocodile. In 1928, an aircraft crossing the Atlantic was still a major event, and Eckener and his crew were given another ticker

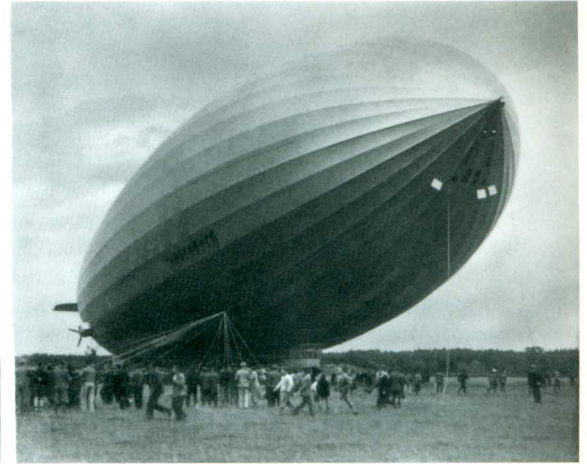
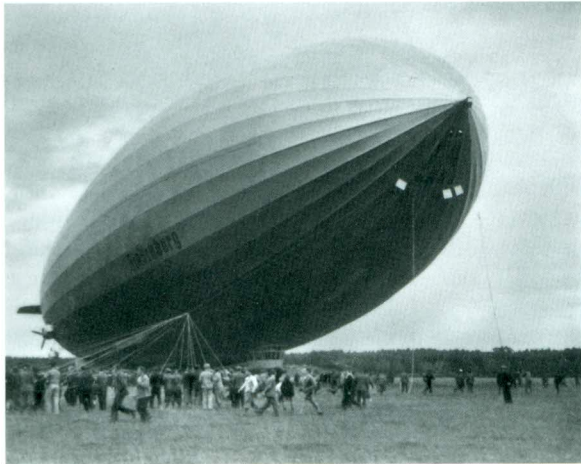


View No. 9 from a German series, "LZ 129 Fuhrergondel fast vollendet." (LZ 129 Commander's gondola nearly completed.) The final metal panels are being applied to the command gondola, as well as the fabric panels of the airship frame which was covered in thousands of panels that were laced to the frame and the seams covered with fabric strips as seen here.



View No. 17 from a German series, "Hindenburg, Fuhrergondel mit Landerrad," (Hindenburg, Commander's gondola with landing wheel.) The airship is in the final stages of construction here. The gas cells have been partially filled with hydrogen, as indicated by the sandbags hanging from the command gondola. The wheel under the gondola was to help the airship move as it was being walked into or out of the hanger by the ground crew.

View No. 19 from a German series, "Hindenburg Landung." (Hindenburg Landing.) The airship has come down low and ground crewmen are walking it into the hanger. Landing lines were dropped from the front and rear of the ship. The command gondola also had rails attached for the ground crew. The "Spider" was a device attached to each landing line so that many men could add their weight to one line. Further back than the name, the Olympic Games circles were painted on the side of the airship to publicize the 1936 Munich Olympics. The Nazis used the games for as much propaganda as they could, including having the Hindenburg circle the stadiums.



tape parade in New York City. They were treated to more gala dinners, nights out at the theater, and then Eckener went to Washington D.C. to meet with President Coolidge to negotiate airship landing sites and helium.

To create more publicity for his airship, and the idea of airship travel, Dr. Eckener planned a round the world flight in 1929, with 39 paying passengers. The tickets for the round the world trip only paid for part of the cost of the flight. Hearst offered to fund much of the cost in exchange for exclusive rights to the story for his reporter, Lady Grace Drummond-Hay, who had a room to herself, as she was the only woman on board. Stamp collectors also financed a portion of the trip with airmail letters, and the German government contributed the rest. The round the world trip would be the first with paying passengers, the first to fly over the length of Siberia, and the first non-stop flight across the Pacific. The flight was headline news for its duration of 21 days, 5 hours and 11 minutes, of which 12 days and 11 minutes were spent in the air. The flight around the world went east, opposite the rotation of the earth. At each city where the airship landed, the crew and passengers were treated as honored guests, with each celebration lasting for several days. The stop in Tokyo was especially lavish, and included a dinner with the Japanese emperor. The *Graf Zeppelin* received constant weather reports during its flight, greatly aiding Dr. Eckener in adjusting his flight path, catching tail winds, and

determining which storms to avoid and which were safe to fly through.

In 1930 a regular passenger service route opened for *Graf Zeppelin*. The zeppelin left Germany for Spain and picked up passengers bound for Brazil. From Brazil, the ship headed for Lakehurst, New Jersey, and then back to Germany. Eckener's dream of a fleet of airships was starting to come together, although helium from the USA was still in negotiation, and fixed wing aircraft were catching up to the zeppelin's ability to cross the oceans with passengers. The *Graf* made 64 successful flights to Brazil before the *Hindenburg* disaster ended all passenger flights.

In 1931, an arctic flight was planned and carried out. There was a rendezvous with a Russian icebreaker and sacks of airmail were exchanged, as stamp collectors financed a large portion of the flight. Large areas of the arctic were photographed and mapped for the first time. This was a very successful flight, in contrast to the disastrous Italian expedition led by General Umberto Nobile in the huge semi-rigid airship, *Italia*, a few years before. Airmail was always an important funding source for *Graf Zeppelin*, and led to several flights to Egypt and the Middle East, for publicity and airmail letters. On one of these flights Keystone photographer George Lewis was on hand and made well known views of the airship from the top of the Great Pyramid in Egypt.

In 1933, political events in Germany altered Eckener's plans dramatically. Adolf Hitler and the Nazi party came to power. Eckener had

been on Hitler's enemy list since the 1920s. Hitler had wanted to use the Zeppelin shed at Friedrichshafen for a Nazi rally, and Eckener had refused him. He had little regard for the Nazi cause, and was very public with his views. One of the early Nazi laws required every civilian aircraft to have the swastika painted on the rudder, for Nazi propaganda. This included Eckener's *Graf Zeppelin*. He protested very publicly about the order, but in the end, he had to comply, and the swastika was painted on the left side of the upper and lower rudder fins. He was successful in refusing Dr. Goebbels' request to have huge swastikas painted on the sides of the zeppelin. Eckener was too popular to be murdered or put in jail just for the crime of being so publicly ornery and contrary, so Goebbels issued orders that Eckener was to be a non-person. His name and photo would not appear in German newspapers or magazines. He was not to be mentioned on German radio, or seen in German newsreels.

Eckener and his airship had been invited to Chicago to participate in the Century of Progress Fair of 1933. (SW Vol. 33 No. 2, page 29.) Eckener was allowed to pilot the ship, although his name was never mentioned in the German Press. His reception in America on this trip was very different than his previous journeys. Tensions were building against Nazi Germany, and the swastikas painted on the rudder of his airship only aggravated anti-German sentiments. He met with President Roosevelt, and did his best to finish negotiations regarding a supply of helium, but he returned to Germany without a signed agreement. The US government had enacted laws to prohibit the sale of helium to any

foreign nation, reserving it for its own airships. While the law was not specifically anti-German, by 1933, the Germans were the only other nation with airships.

Work had started on LZ-128, as a hydrogen ship like *Graf Zeppelin*, but stopped in 1935 when work began on a new helium ship, LZ-129. This ship was designed to use helium even without a commitment for a supply of the gas from the USA. The LZ-129 was the largest and most lavish airship ever built. Dr. Goebbles hoped Eckener would name the airship after Adolph Hitler, but he chose to name it after the late Paul von Hindenburg, a man who Eckener greatly admired. The new airship was 800 feet long, 135 feet in diameter, and held seven million cubic feet of gas in its lifting cells. It had a dining room, a lounge, a reading room, and 25 rooms for 50 passengers on the upper level. The lower level had a bar, showers, and a smoking room, luxuries *Graf Zeppelin* did not have. The passenger rooms had heat and running water, more luxuries not found on *Graf Zeppelin*. The *Hindenburg* began flying to the United

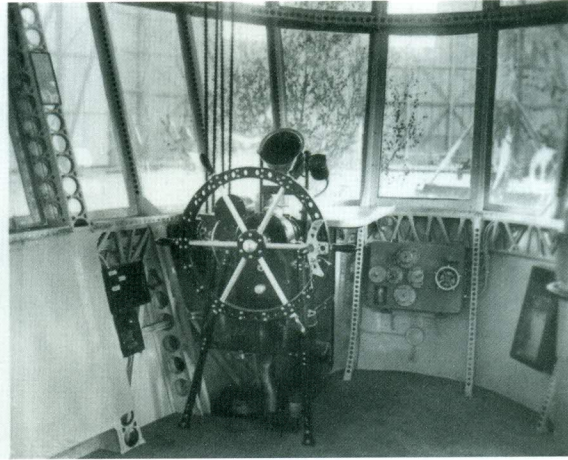
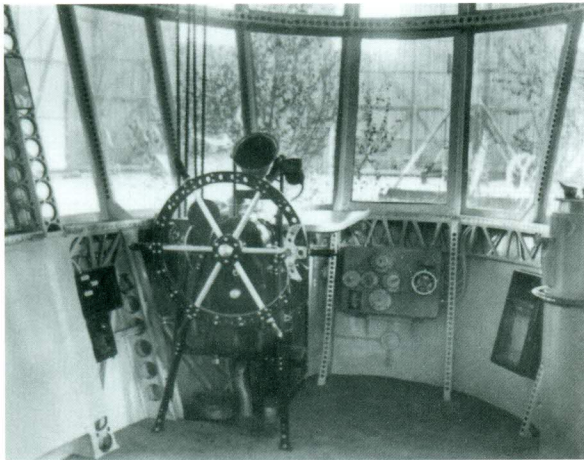
States in March of 1936. It made the flight in two and a half days, while ocean liners took five days or more for the trip. All cigarette lighters and matches were confiscated before takeoff. Passengers could smoke in the pressurized smoking room, where a steward lit all cigarettes, cigars and pipes. The lighters were returned as the passengers left the ship.

Also in 1935, Eckener was removed from his duties at the Zeppelin works, DELAG was disbanded and reorganized under the state sponsored Deutsche Zeppelin-Reederei, DZR, German Zeppelin Transport Co. One of his subordinates, Max Pruss, a highly decorated zeppelin commander from the First World War, and a Nazi party member, took his place. Hitler, Goebbels, and Goering all thought the zeppelins were obsolete and dangerous. They all refused to fly in them, but their majestic presence created too much good propaganda to waste.

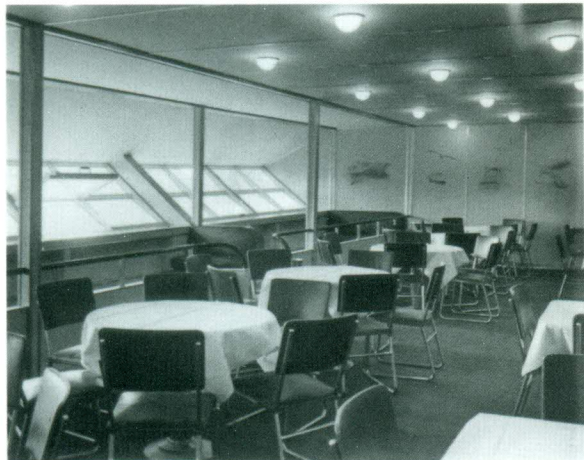
The *Hindenburg* had made 10 trouble free crossings to Lakehurst by May, 1937. On May 6, 1937, the airship was coming in at 6:00 pm, 12

hours late, at sunset, and it was coming in fast, as a thunderstorm was approaching. The airship had dropped the landing lines, and the ground crew was assembling under the airship to walk it to the mooring mast. A fire broke out just forward of the top rudder fin, and 34 spectacular seconds later, the largest airship ever built was a smoking pile of twisted metal.

The actual cause of the fire has never been determined. Sabotage is a popular theory, as there had been a number of bomb threats, but security was very tight. All passengers and crew were searched before the airship left Friedrichshafen. All baggage had been carefully searched before the flight, and the ship had been inspected from end to end before take-off. Several crewmen who survived the crash were lowering landing lines at the tail end of the ship. They heard a loud *whoomp*, the sound a gas oven makes when lit, then they saw the glow of a fire inside the airship. Their testimony was basis for the sabotage theory. The idea of a zeppelin man sabotaging his own ship was unthinkable to

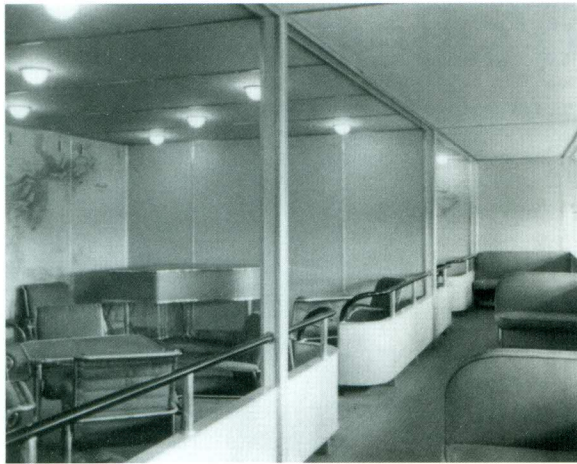


View 21 from a German series, "Hindenburg, Seitensteuerstand in der Fuhrergondel." (Hindenburg, Steering control in the command gondola.) The wheel controlling the rudder fins was always in the front and just left of center in all zeppelin airships. The elevator control wheel was always on the left side, behind the rudder wheel.



View 23 from a German series, "Hindenburg, Speiseshal." (Dining room on the Hindenburg.) A view looking from the dining room, across the promenade area to the angled windows that provided excellent views of the ground below. While the passenger rooms were compact, the dining room and promenade were quite spacious for an airship. The tables and chairs were specially made for the Hindenburg, and were very lightweight.

View No. 27 from a German series, "Hindenburg, Halle mit Blüthnerflügel." The dining room was on one side of the airship, and on the other side was the passenger lounge seen here with the reading & writing room beyond. Passenger rooms were in-between the dining hall and lounge. Note the light weight aluminum baby grand piano built especially for the Hindenburg by Blüthner, a well known piano manufacturer. On inner walls are murals of famous explorers, their vessels, and maps of their voyages.



View No. 29 from a German series, "Hindenburg, Rauchsalon." (The smoking room on the Hindenburg.) The smoking room always maintained positive pressure so no hydrogen could ever leak in. Smoking on a zeppelin was quite a novelty and it was a very popular room, usually quite crowded. The small Hindenburg Bar is visible through the door.



the surviving crewmen, and the passengers had little access to non passenger areas of the airship. While sabotage was an unlikely cause, it cannot be totally ruled out, as it was by the official investigation committee. A static electric discharge setting fire to leaking hydrogen was the official explanation, although this had never been the cause of a fire on a zeppelin before. The official explanation was politically expedient for the United States and Germany, but left many people unsatisfied, as politically motivated government investigations usually do.

The coating used to waterproof the airship's fabric covering contained aluminum powder and iron oxide, both used in solid rocket fuel, and both very flammable. There is a theory that a static discharge was the cause. Landing lines were dropped and as they hit the ground, the static electricity built up on the airship was harmlessly discharged into the ground. It is possible that some fabric panels discharged and some did not. This could have generated a static spark between a charged panel and a discharged panel. This spark

could have ignited the fabric skin of the airship, and the burning fabric ignited the hydrogen. Eckener wrote later on that he thought that the upper tail rudder fin was damaged in the tight turn onto the landing field, causing damage to the airframe like the *USS Macon*, and that lead to a hydrogen cell leak, and then the fire. With a number of plausible causes to choose from, no surviving witnesses or confessions, and the evidence destroyed with the burning of the ship, the exact cause will probably never be known.

The crash was caught on film, and was reported live on the radio. It was one of the first modern great disasters to be recorded in progress. The *Hindenburg* had a crew of 61 men and officers, and was carrying 36 passengers. The captain, Ernst Lehmann, is credited with saving lives by his actions in keeping the airship just off the ground in the final few seconds, allowing more time for people to escape. He survived the crash, but died shortly afterwards from the burns he received. Max Pruss, Eckener's successor as head of DZR, was also in the

Control Cabin. He survived the crash, but was horribly burned. The death toll was high, 13 passengers, 22 crewmen, and 1 ground crewman, a total of 36 fatalities. Most survivors had severe burns, but a few had only bumps and scratches. These were the first fatalities and injuries of any zeppelin airship passengers since DELAG/DZR began in 1909. The wreck of *Hindenburg* marked the end of airship travel. The *Graf Zeppelin* was over the Atlantic, in route from Brazil to Germany when it received the news of the *Hindenburg*. The captain kept the news from the passengers until they were on the ground in Germany. Afterwards, *Graf Zeppelin* flew a few propaganda flights in Germany before the Second World War began. The new war put an end to its flying days.

One more airship was completed after the crash of *Hindenburg*, LZ-130, *Graf Zeppelin II*. Its first flight was on September 14, 1938, and its last was August 22, 1939. It was the same size as *Hindenburg*, but was configured for 40 passengers, in larger rooms. It flew a few propaganda missions

(Continued on page 33)

Zeppelins

(Continued from page 23)

before moving into the shed next to *Graf Zeppelin*. The airships were too slow and vulnerable to risk using them in the new war, and if they were lost to enemy action, the propaganda backlash would be immense. In April of 1940, Herman Goering, commander of the Luftwaffe, ordered both airships to be broken up for scrap metal, and then the zeppelin sheds were torn down.

Dr. Eckener survived the war, and hoped to revive his dream of airships carrying passengers around the world. It was not to be. By 1945, fixed wing aircraft were carrying passengers across the oceans, not in the same style or luxury as airships, but with greater speed. The jet airliner was in development, promising even greater speed. The dream of zeppelins filling the skies lives on in the hearts of zeppelin enthusiasts around the world, and there is some very interesting and promising conceptual work being done with large airships today. But, for most us, seeing blimps covered with advertising, is all that reminds us that Giants once flew the skies.

As stated in Part 1 of this story of zeppelins, I have received an amazing amount of help with this article, from an international group of collaborators; Larry Moor, Mike Griffith, and Steve Hughes from Georgia, Robert Boyd from Virginia, John Waldsmith from Ohio, Bill Wissel from California, Didier Rebourg from France, and Martin Kohler from Germany. All of them have all been very generous with photographs from their collections and their knowledge of the history of airships and stereo photography.

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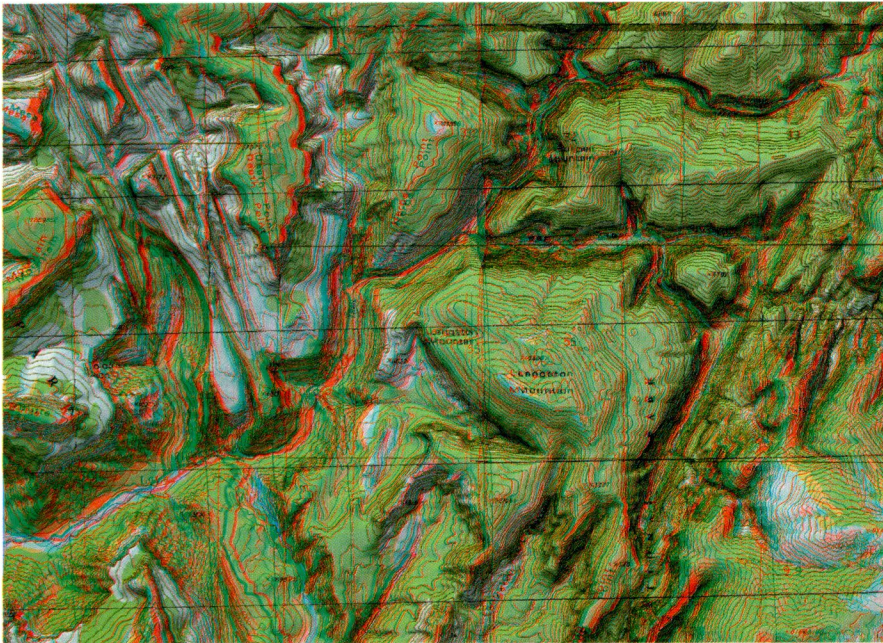
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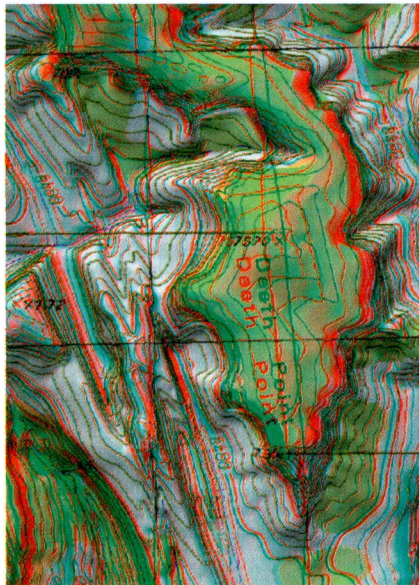


Topographic map of the Bear Trap Canyon area near the north end of Zion National Park. The contour maps, originally created using stereoscopic photogrammetry, have been returned to their three dimensional state, but remain topographic maps complete with elevation lines, numbers and names of features. "Adapted from 7.5 minute quadrangles of the US Geological Survey and US Forest Service. Using GIS and other software, the image was draped over a 1/2 arcsecond digital elevation model to get shaded relief. The map was then displaced by the digital model to make the anaglyphic image." ©2011 2i3D Stereo Imaging

demonstrated on this issue's cover), the squarely viewed anaglyphs in this Atlas can prompt even the most stereographically experienced reader to try touching some of the higher peaks or reaching into the deepest canyons.

As in the earlier 3-D atlas by Steven and Benjamin Richardson, *3D Atlas of Salt Lake Valley's Tri-Canyon Area* (SW Vol. 35 No. 2 page 11), the Zion atlas provides a small map beneath each image identifying its location in the section grid.

Many of us who have visited Zion National Park only saw Zion Canyon (pages 67 and 59) and some other points nearby. The *3D Atlas of Zion National Park* provides a chance to discover how much more this amazingly complex park has to offer, and to pick at least a few destinations for our next visit. In the meantime, we can be that Giant, checking it all out from 20,000 feet. 🏔️



Detail from the Topographic map of the Bear Trap Canyon area on page 23. Maps in the book are 11 inches wide with a scale of one inch equaling 2,000 feet. This intriguingly named feature is reproduced at about the same size as in the book. On some maps, a few names and elevation numbers are tricky to read after being draped over the steep slopes and drops of the 3-D model but names (like "Death Point") on the higher elevations or on mesas are easy to read.