The Lighter-Than-Air Society
Newsletter

Issue # 10 January 2013

The Lighter-Than-Air Society's 60th Annual Meeting and Banquet

On Saturday, November 10th, The Lighter-Than-Air Society held its annual meeting and banquet at the Martin Center at The University of Akron. This year's event celebrated the 60th anniversary of the group that was founded on December 10, 1952 in Akron.

The Chairman of The LTAS, David Osterland, read a proclamation from Akron Mayor Don Plusquellic, which established December 10, 2012 as Lighter-Than-Air Day in the city. The proclamation noting this honor will be displayed at our Lock 3 Historical exhibit in downtown Akron.

Dr. Drummond holds up a girder from the USS Shenandoh

Dr. Jerry Drummond, associate professor at the College of Engineering, spoke to the group about the aerospace program at the University of Akron.

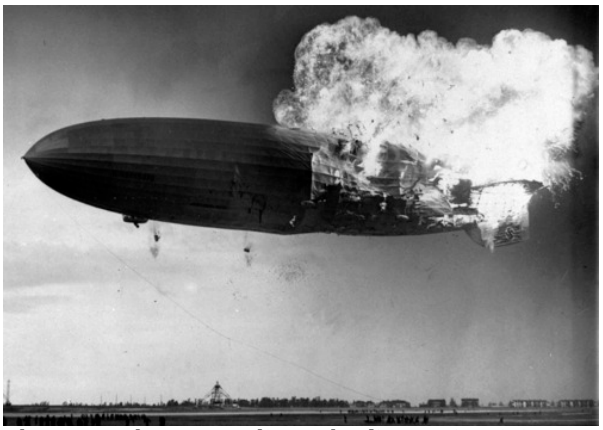
*(see **Banquet** on page 7)*

"What Destroyed the *Hindenburg*?"

Discovery Channel Documentary Is Latest Attempt to Test Familiar Scenarios

By Eric Brothers

After 75 years, the definitive answer to: "What doomed the passenger zeppelin *Hindenburg*?" remains elusive – but not for want of theories. The cable network Discovery Channel's "Curiosity" Series is merely the latest effort to try to unravel the mystery in its episode: "What Destroyed the *Hindenburg*?" produced by Blink Films and first broadcast December 16, 2012.



The experts hope to replicate the disaster in miniature.

*(see **Hindenburg** on page 3)*

Send your email address to
ltasohio@gmail.com
and help us communicate with you.

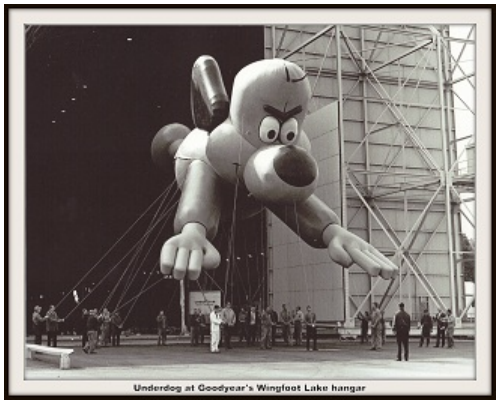
Dr. and Mrs. A. Dale Topping Lighter-Than-Air Virtual Museum is unveiled

As part of its 2012 Annual Banquet last November, The L-T-A Society celebrated the 60th anniversary of its founding by unveiling the new **Dr. A. Dale Topping Lighter-Than-Air Virtual Museum** as part of the Society's website presence.

Initially, the online Virtual Museum includes displays of items from the Society's collection relating to the *USS Shenandoah*

One of the USS Shenandoah *girders recovered from the crash site. The image can be rotated 360º*

disaster, a propeller from the *USS Akron*, an inflation tube used with barrage balloons during World War II, the original plaque from the *Daniel Guggenheim Airship Institute* building, and pictures of some of the many Macy's Thanksgiving Day Parade balloons manufactured by the Goodyear Tire and Rubber Company.



Underdog *"flies"out of Goodyear's Wingfoot Lake hangar*

The views of different items include slideshows, images that can be rotated 360º, and close-ups of some item details.

During 2013, plans are to expand these exhibits with additional items and add new exhibits of other items in our collection.

This Virtual Museum was made possible through a generous grant made by Mrs. Dale Topping in memory of her late husband. In recognition of this, the virtual museum includes a biography of Dr. Topping written by Eric Brothers.

18-foot propeller from the USS Akron

Second World War kite balloon inflation tube

LTAS Board of Trustees Appoints Officers for 2013

For 2013 the Board of Trustees has appointed David N. Wertz as Chairman of the Board and John S. Cunningham as Vice-Chairman. Sandy Bee Lynn and Alvaro Bellon will continue their previous appointments as Secretary and Treasurer, respectively.

The Board is looking for a member to fill the position of Chair of Membership. If you are willing to serve in this capacity, please contact any of the above mentioned officers.

*(**Hindenburg** from page 1)*

In the hour-long program, three experts and their team of assistants at the Southwest Research Institute in San Antonio, Texas investigate four possible scenarios that test expendable, 80-ft.-long, functional, lighter-than-air models of the airship. Constructed of a lightweight quasi-rigid girder framework and covered with a spray-glue tacked, aluminized Mylar skin, each zep model is able to float outdoors on a tether, thanks to several representative gas cells containing a total of 8,000 cu. ft. of hydrogen.

The investigators are: Steve Wolf, described as an "explosives expert"; Jem Stansfield, "aeronautical engineer"; and Dan Grossman, "airship historian" (although not stated, he is the creator of the airships.net website).

A rapid-fire account notes it took 4 1/2 years to build the *Hindenburg*, which used 14 miles of aluminum (duralumin?) girders and 85 miles of steel wire in its construction. Mention is made of five American, British and French hydrogen-filled airships destroyed by fire from 1918-1937, but they aren't named (did they mean the ill-fated *Wingfoot Air Express, Roma*, R.38/ZR2, R.101 and *Dixmude* – or some other combination?)

The trio briefly discuss the hypotheses for the source of the fatal fire, including gun shots and engine back-fire but, but they quickly settle on testing four major ones to "solve, once and for all" the cause of the inferno that consumed the *Hindenburg* in 34 seconds.

To test the sabotage theory, the team used a mini-explosive device placed in the hull aft between gas cells. Technically convincing, the propagation of the fire mimicked the real conflagration caught on newsreels May 6, 1937 with an initial explosion and rapid burning. If this test is accurate, it exonerates the airship and its design, because the tragedy can then be blamed on terrorism. Passenger Joseph Spah is mentioned as a suspect, perhaps because he had access to the ship's interior to feed his dog in flight (and maybe because there are newsreels that show his acrobatic act), but the program concedes he had no motive to plant a bomb. Oddly, no mention is made of the contested assertion made by author H.H. Hoehling that crewman Erich Spehl had both political motive and opportunity to plant an incendiary device.

Two of the 80-ft. models burned much like the original.

There are still other possible scenarios, and the next one tested on a model is "Fire on the roof," which simulates a static-electricity spark igniting hydrogen vented in front of the upper fin. Lab tests vividly illustrate that a mix of 10% air with hydrogen ignites with a flare-up of yellow-orange flame, but igniting a 20% mix of air and hydrogen yields an explosive pop, but there is no ensuing flame.

Stansfield believes the actual fire was a combination of both an initial pop of hydrogen-in-air inside the hull followed by slower-burning hydrogen supplied by bursting gas cells. However, when the top of the model was ignited electrically, the cover and then the cells burned, but there was no explosion, no mushroom of flame, as witnessed in 1937.

Next, the notorious "incendiary paint" hypothesis is explored. The show mentions its source as an "ex-NASA scientist" but does not name Dr. Addison Bain for the controversial theory of the 1990s, which was detailed in articles written by Richard Van Treuren that appeared in several issues of *Buoyant Flight*. The aluminum-powder and iron-oxide doped fabric of the LZ-129 was alleged to have burnt quickly, as does the explosive thermite, of which a lab sample is purportedly shown blazing furiously. The show supposedly recreates the treated fabric, expected to burn rapidly compared to a similar but untreated square of fabric. However, neither the show nor its associated websites reveal any details on the materials or chemicals used to duplicate the actual airship fabric, so the demonstration lacks context. When ignited, both test squares hung vertically (not stretched horizontally, as on the top of the airship) burn at almost identical rates with no thermite reaction. Whether a hydrogen-rich atmosphere would have accelerated the burning is not clear, if that even makes a difference. The investigators take less than two minutes to dismiss this theory, which can't be duplicated on their aluminized Mylar covered models anyway.

Building to a climax, the show saves the best conjecture for last, a fire originating in the hull between gas cells. The program notes the LZ-129 was tail heavy before landing, despite repeated efforts to compensate. This leads to the conclusion that hydrogen was leaking into the hull or gas shaft, either from a gas cell torn open by a broken bracing wire or via a stuck-open valve. (A valve reportedly had stuck open before but no details are given.)

Another lab demo showed how static electricity could have created a spark between patches of electrically isolated, rain-dampened outer cover and nearby girders underneath once the airship was electrically grounded by wet, conductive landing lines. But do 10,000-volt sparks from a generator mimic the actual static discharge?

The only eye-witness to be interviewed was Mark Heald, aged 8 in 1937, who, along with his father, claimed to have seen the blue glow of St. Elmo's Fire forward of the upper fin just moments before fire erupted.

In the lab, those faint blue flames are recreated on an electrically grounded, 3-ft. simulated metallic hull and fin zapped by high voltage from a plate suspended above. How closely this resembles atmospheric conditions is not stated, but it looks impressive.

Again in the lab, a vertical plastic tube about 6 ft. high is used to represent a vent shaft. Smoke to track circulation and hydrogen are fed in from the bottom while a steady flame from a blow torch representing St. Elmo's Fire is held at the open upper end. A yellow flame sporadically issues from the tube's top, but most convincing is the moment when the stream of hydrogen is diminished. A large "Whump!" is heard as the torch flame flashes-over and ignites the air-hydrogen mix in the tube. This moment could be a possible recreation of the glowing [flames] and muffled detonation between gas cells 4 and 5 observed by LZ-129 crewman Helmut Lau at the beginning of the conflagration.

The clincher would have been to have a tiny recreation of the enclosed vent shaft filled with an air-hydrogen mix and a topside St. Elmo's Fire-simulating spark generator installed in the 80-ft model to replicate the separate lab demos, but this did not happen. Only an electrically ignited bit of wadding in an unenclosed shaft area – similar to the one used in the sabotage example – was used to show how an electrostatic spark on the fins could arc down the shaft (or into the hull space) to ignite the proper air-and-leaking hydrogen

mixture with an appropriate detonation. The resulting flames then ignite the nearby gas cells with a hydrogen-rich, visible burning. Then cells burst one-by-one, progressing forward as the airship drops, tail-first. It was not clear if the experimenters let any hydrogen diffuse aft; likely not.

In any case, the final 80-ft. model, buoyed about 20 ft. up on its tether, was sacrificed to the inevitable conclusion that "it looks like the actual disaster." Yes it did, but the conditions weren't replicated exactly enough to be 100% conclusive. Maybe with a little more time and money, this most plausible scenario could have been more accurately recreated, if only with a partial hull model of sufficient size to represent the actual airship structure and prevailing conditions.

While falling a bit short, this show still builds on a similar show, "Hindenburg Mystery" by the Discovery Channel's "MythBusters" that aired in 2007, at least in budget for model replicas, if not in sheer entertainment value. As another excuse "to blow stuff up," the "Curiosity" episode adds a bit of science to the discussion about the loss of the *Hindenburg*, but it still does not resolve the cause of the tragedy absolutely, conclusively, for all time. That is something which never can be known with 100% certainty.

This newsletter is published by:

The Lighter-Than-Air Society
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News from our Website's Front Page

Goodyear Zeppelins Take Shape

The largest project that the Zeppelin Luftschifftechnik has ever undertaken in its history is now taking shape. All suppliers are working hard on the Zeppelin components. The first container with 21 longerons has already arrived at Goodyear in Akron, Ohio. Currently the tailfins and the passenger car are being assembled in Friedrichshafen. In January, the hull for the first Goodyear airship will be delivered to Friedrichshafen, where it will be measured and tested before shipping to Akron.

Tailfins for Goodyear's first Zeppelin NT
Photo courtesy of Deutsche Zeppelin Reederei

The joint venture was named 'Full Circle' by Goodyear and Zeppelin employees – because the historic collaboration between the two companies has been renewed after 75 years. At the end of World War I a team of German engineers emigrated to Akron to develop airships with Goodyear. As a result of this the cooperation, the Goodyear-Zeppelin Corp. was created and built two airships, the USS *Akron* and USS *Macon*, and the successor company, Goodyear Aircraft, built more than 300 blimps.

As a result of Goodyear's decision to replace its existing fleet of blimps with three Zeppelin NTs, this partnership has indeed come "full circle".

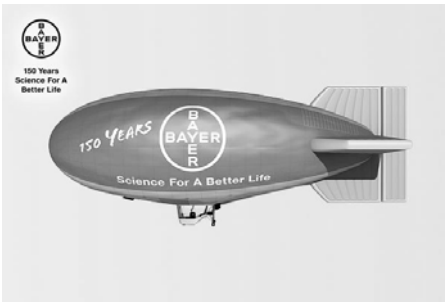
Source: Zeppelin Brief

Can you help with information about the USS Macon?

John J. Geoghegan, a professional author, writing a non-fiction book about the USS *Macon* (ZRS-5), seeks first person (eyewitness) accounts of life aboard the airship. Letters or personal diaries from officers, crew, ground handling personnel etc. would be especially helpful. If you have, or know of, such material please contact Geoghegan either by mail: 1040 Canada Road, Woodside, CA 94062; or by email: johnjgeoghegan@yahoo.com. You can also contact Mr. Geoghegan through our Contact Us section, just be sure to put USS *Macon* in the subject.

Bayer is celebrating its 150th anniversary with a stately airship.

Floating lightly in the sky requires solid workmanship on the ground, first. Ralf Kremer and Johannes Pröfrock have assembled no less than 123 tubes made of aircraft steel in recent weeks to construct the frame of the gondola for the anniversary airship.



"Things start getting complicated in spots where several tubes meet. The end of a tube in this case must have up to five fitted elbows," Kremer explains. With precision work of this kind, the cutting machine is not always adequate, and the experienced carpenter and airship pilot has to use a file.

All the tubes are now temporarily connected. "A nice example of statics," Kremer says, rapping on the gondola's frame. Over the next few weeks, it will be turned into an elegant airship for Bayer. With it, Bayer will be visible in the sky worldwide at its major locations – over the Sydney Opera House, over the Corcovado in Rio de Janeiro. Further appearances are planned over the Statue of Liberty in New York City and in Shanghai and Tokyo.

But right now, the gondola frame is still lying on the floor upside down, and a layperson can only guess where the front and back are, or where the benches and two-cycle engine will be installed when it is finished. Kremer and his coworkers are now wrapping numerous straps around the steel tubes to mount various pieces of equipment. After that, the gondola frame will be taken away for welding. "Special welding methods exist that are approved for the special safety requirements in aviation," explains Wolfgang Hassa, Head of Technical Sales and Production at Gefa-Flug.

The schedule for the zeppelin [actually, a hot-air airship] in Bayer blue and green is tight: The test flight is scheduled to take place in January. On February 28th, the imposing advertising platform emblazoned with the Bayer cross and the slogan "Science For A Better Life" is to be unveiled at the Spring Financial News Conference in Leverkusen. In March, the airship will be packed up and flown to Sydney, where it will make its first appearance.

Source:Bayer.com

*(**Banquet** from page 1)*

Six students of the aerospace program attended and one of them, Ian Maatz, spoke about the program from a student's perspective, commenting on competitions they have participated in around the country.

Board member Eric Brothers paid tribute to Dr. Dale Topping and his widow, Anne, who sponsored the Virtual Museum. Alvaro Bellon then unveiled the museum, on the LTAS website (www.blimpinfo.com).

Bellon, Treasurer of The Lighter-Than-Air Society, was this year's recipient of the P. Rendall Brown Lifetime Achievement Award for his tireless work on behalf of the Society. The award was presented by Ren Brown.

David Smith, of Airship International Press, presented the first print of the USS *Akron* lifting off from the Goodyear-Zeppelin Airdock in Akron on its maiden flight on September 23, 1931. The original art work was commissioned by Smith and the Airship International Press.

Kari Fry, caricature artist, again drew likenesses of attendees. She was assisted by her husband, Ryan Novak, who developed the Virtual Museum software.

Guests participated in a silent auction. Over 30 auction items, donated by members and friends of the Society, were bid on. They included a hot-air balloon ride for two, a girder from the Akron/Macon airship era, wine baskets and a ride for two on the Goodyear blimp, among other items. The more than $5,000 raised will go towards the Society's operating expenses.

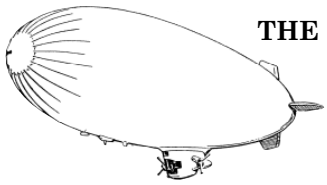
Airship Ventures Ceases Operations

Airship Ventures, operators of the world's largest passenger airship, the Zeppelin *Eureka*, have announced that despite history-making successes and a stellar performance and safety record, they ceased operations on November 15, 2012.

"Operating this unique aircraft has been an inspiring experience and it is with a very heavy heart that we've come to this point requiring us to cease operations and ground Eureka," commented Airship Ventures CEO Brian Hall. "Our team is the best at what they do and their dedication to *Eureka*, our passengers and our dream of flying a Zeppelin in the USA has been remarkable. I'm beyond sad to disband their talents and leave Moffett Field, our friends and fans without an active airship."

Blending the romance of the "golden age of aviation" with the latest in high-technology, Airship Ventures, founded in 2007, brought a Zeppelin NT airship to the USA for flightseeing, science missions, media and advertising operations.

Passenger flights began in 2008 in the Bay Area and Long Beach, and most recently expanded to California's beautiful wine country. 2012 saw the addition of behind-the-scenes educational ground tours of the airship. The *Eureka* also performed a wide variety of special missions for government, science and research groups, including recent expansion into airship design, research and development.
Since its founding, the company had faced challenges including the economic recession that impacted regular passenger numbers and demanded the need for a regular sponsorship partner for the company to remain viable. Adding to this, a world helium shortage increased the company's operating costs and pressure for a long-term sponsor that had not materialized.



THE LIGHTER-THAN-AIR SOCIETY
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U.S.A.

ADDRESS SERVICE REQUESTED

PURPOSE: *To further knowledge pertaining to the history, science and techniques of buoyant flight; to encourage the use of lighter-than-air transportation; and to establish and maintain a library and museum on lighter than air.*

Everyone is welcome to join

The LTA Society Membership Application

Name _____

Address _____

City _____ State _____ Zip Code _____

Email address_____

Types of membership available:

□ Active Membership, U.S. & Canada: $25 per year
□ Active Membership, **all other countries:** $35 per year
□ Benefactor Membership: $100 per year

□ New Membership
□ Renewal
Please mark your envelope ATTN NEW MEMBERSHIP or ATTN RENEWAL to speed processing.
□ **Please note:** My address has changed to the one written above

Make checks or money-orders in U.S. funds payable to **The Lighter-Than-Air Society** and mail to:
THE LIGHTER-THAN-AIR SOCIETY, 526 S. MAIN ST., STE. 406, AKRON, OH 44311 U.S.A.

Be sure to look at our *newly designed* website at www.blimpinfo.com for the latest on Society meetings and activities, news, color photos of our latest events, and links to other Lighter-Than-Air sites!

Are your dues and email address current?
Include your email in all correspondence and we can keep you up to date on Society news and events.