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California Pioneers of Santa Clara County

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Thank you for the opportunity to present my essay for consideration in the 2005 historical essay contest. Preparing this work has been both a challenge and a delight.

Per the contest rules, the construct of the essay is as follows:

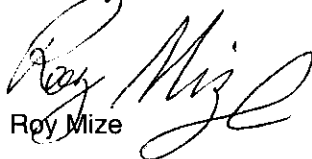
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Total Pages Including Graphics & Photos	30 pages

An addendum and a separate historical photo section have been included for the benefit of future researchers. These pages, as well as the pages for photo credits and bibliography, are not included in the essay page count. Essay rules stipulate a maximum of 30 pages of essay text and I believe my total of 21 pages of text, plus photos, meets this criterion.

Resources for this essay were extracted from work done for an ongoing book in process. To the extent content between this essay and the book overlap, all rights of use are hereby granted to the California Pioneers of Santa Clara County per contest rules.

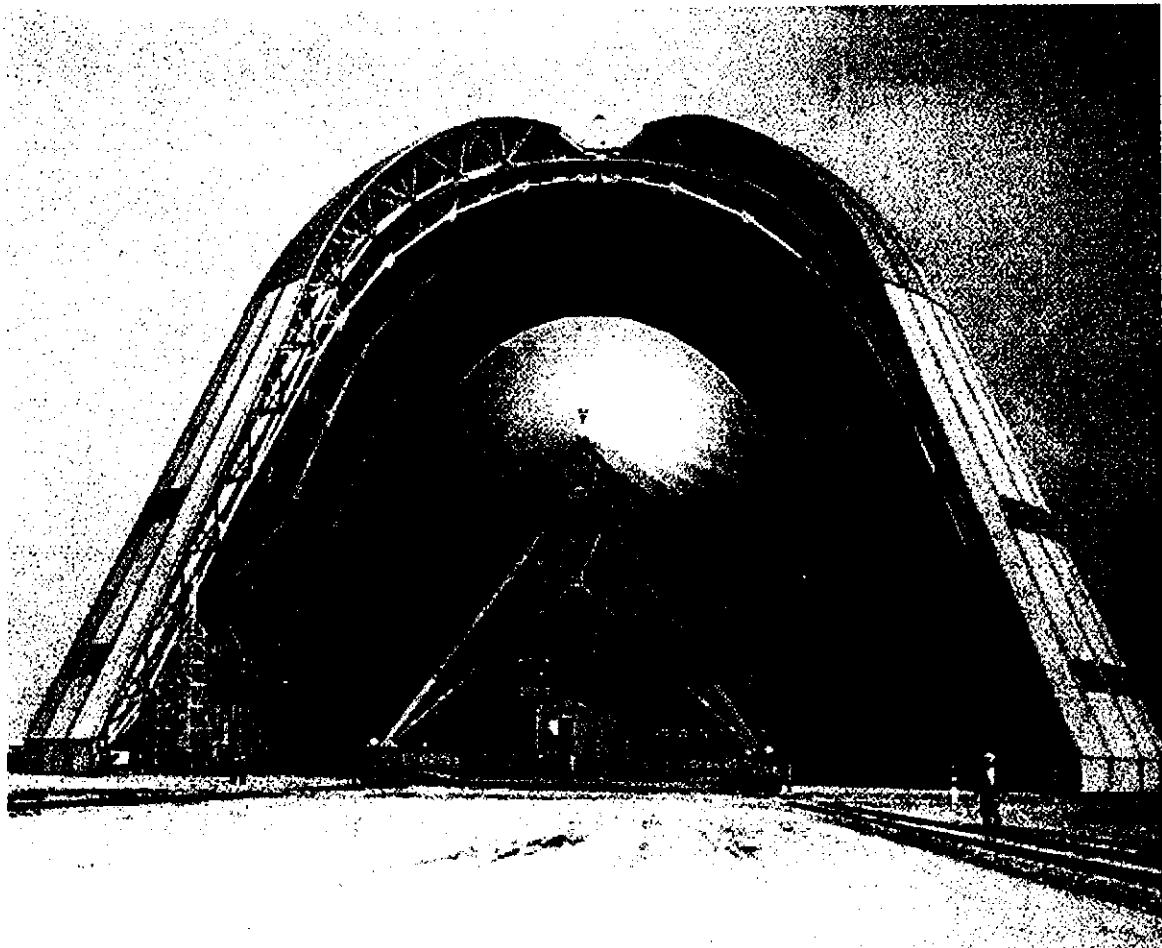
Thank you again for allowing me to participate in the process of documenting our history.

Sincerely,


Roy Mize

Aviation Pioneering in the Santa Clara Valley

Balloons Gasbags and Dirigibles



California Pioneers of Santa Clara Valley
2005 Essay Contest

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AVIATION PIONEERING IN THE SANTA CLARA VALLEY

PEOPLE, PLACES AND EVENTS BETWEEN 1856 AND 1935

Introduction:

In the last part of the 19th century ancient dreams of aerial conquest became reality and Santa Clara Valley was as much a part of the coming age as almost anywhere else in the U.S. San Jose hosted the first Santa Clara Valley balloon exhibition in 1856 as part of a public advertising display at 'the barbecue grounds'¹ just west of the city line. Such shows were a staple of Valley festivals and fairs until about 1910 when the aeroplane took their place and captured the imagination of people in the 'Valley of Hearts Delight'.

Balloons, aeroplanes, and the pilots who flew them formed the triad of early Valley aviation history. A Santa Clara University professor, John Joseph. Montgomery, experimented² with gliders in the 1880's, nearly 20 years before the Wright Brothers. Montgomery is now recognized as the aeronaut who made the first heavier-than-air piloted, controlled flight⁴² in 1884. The first two successful American dirigibles^{20&21}, engine powered gasbags with a metal keel, were fabricated and assembled¹ in the Valley. Roy Frances^{3&4} (Los Gatos) and Robert Fowler⁵ (Gilroy), two famous (in their time) 'early birds' (pilots who flew before 1916) came from Valley. They were racers, stunt pilots, and record breakers. Unlike many others, they both lived to a ripe old age. And two of the most notable names in aviation history, Allan and Malcolm Loughhead⁶ (pronounced 'Lockheed') lived for a short time in the hills above Los Gatos. They stayed with their mother, Flora Haines Loughhead, a well-known woman writer⁴³ in the nineteenth and early twentieth century, who also farmed prunes and grapes.

Airports came later and every Valley town from Palo Alto to Gilroy wanted one. Sometimes they were farmer's fields, sometimes more elaborate, but every town gripped by aviation fever had one. Most are now gone, covered over by the homes of Silicon Valley. Like many early pioneers, the places they built, the training schools they started, even their names, are now forgotten.

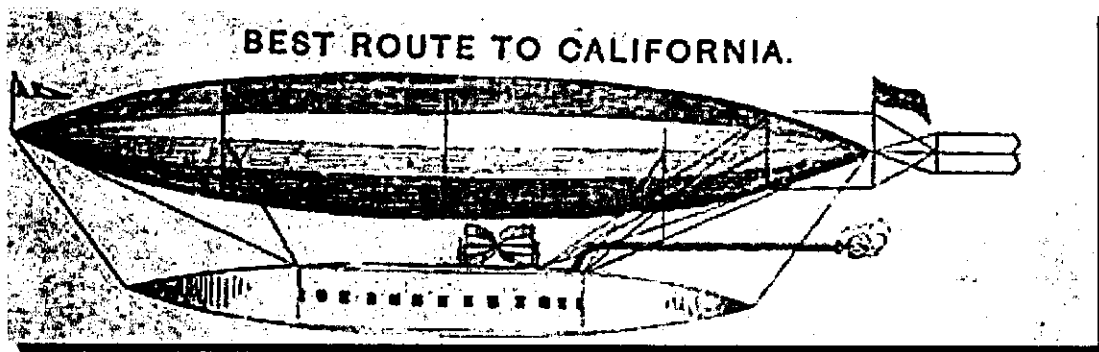
These pages tell one part of the story about Santa Clara Valley's early aviation experience; the part about lighter - than - air conveyances from hot air balloons to the Goliaths of the skies, the dirigibles. Some material isn't directly associated with Santa Clara County, but all of the history presented is part of the progress of air development in our Valley. This essay is a small tribute to the people and their achievements.

AVIATION PIONEERING IN THE SANTA CLARA VALLEY

PEOPLE, PLACES AND EVENTS BETWEEN 1856 AND 1935

Balloons Gasbags and Dirigibles

This is a story about places and people who pioneered early aviation in Santa Clara County. Long before the Wright Brothers there were aerial contraptions that included hot air or hydrogen filled balloons and big gasbags; all of which carried people. Some were guided only by the wind. Some flew with coal or alcohol fueled engines to make steam for power used to navigate through the air using rudimentary rudders or paddles. Some were even called aeroplanes although they had no wings. Aeroplane, or airplane, didn't have the meaning that it does today.



Rufus Porter's Proposed Aerial Transport⁵⁸ to the California Gold Fields - 1849

Sixty-three years after George Washington witnessed the first balloon ascension⁷ in North America, San Jose witnessed California's first recorded balloon ascension¹ on September 17, 1856. The event was chronicled¹ by journalist Alfred Doten, who wrote about 'Professor Wilson's balloon ascension at the barbecue ground west of town'.

'Professor' was an adjective often given to enterprising 19th century persons to denote someone who had made some kind of achievement, and not necessary one of education⁸. Although 'Professor' Wilson may or may not have been academically trained, whoever he was, he most certainly was an enterprising, courageous, and daring individual. American public balloon exhibitions started in the 1830's with 'Professor' John Wise in Pennsylvania⁹, and continued thru the early part of the 20th century. But in 1856, ballooning was still an evolving art and not the carnival show that it later became.

How Early Balloons Were Built and Used

No other accounts of the San Jose ascension have been found, so we don't know anything about the construction of Professor Wilson's balloon. How it was constructed can be considered based on contemporary accounts of the way nineteenth balloons were built¹⁰. In those days balloon panels⁷ were fabricated from tightly woven cotton cloth, such as linen, muslin or silk, in order to reduce gas or air leakage through the fibers. Sewn together, the panels formed a cover which was usually coated with a flexible varnish to keep the heated air or gas from leakage thru the bag or thru the seams. The bag itself was enclosed in a rope truss so that optimum shape could be maintained as it filled with air or gas. The truss also helped to maintain the balloon shape when it was in the air and to keep it from bursting because of gas expansion. Reduced air pressure at higher altitudes and the heat of the sun increases the volume of gas inside a balloon and the balloon envelope gets larger.

Professor Wilson's balloon was probably a hot air balloon⁷; a large cloth gas bag positioned on a platform and heated by a fire. This would have provided enough force to allow an ascension of about two or three thousand feet high and 15 minutes to 20 minutes in duration before the air in the bag would cool, slowly deflate, and allow the balloonist to safely return to the ground.

There were two other ways to achieve lift for a balloon in 1856. The first was to use coal gas. However, city coal gas in sufficient quantity for anything but a very small balloon would not have been readily available in 1856 San Jose¹. Another, and more expensive, method was to use hydrogen⁹. Hydrogen could be produced in two ways: by pouring superheated water over



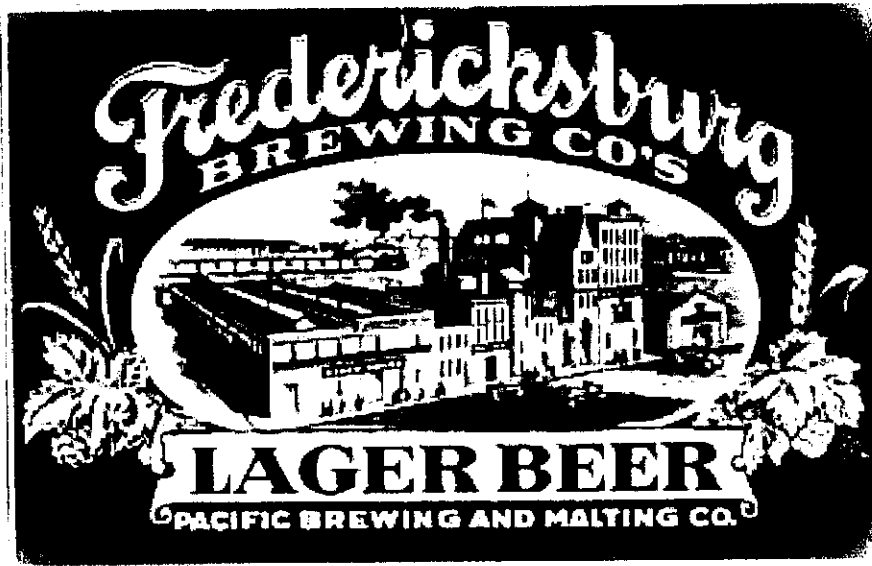
red-hot iron, or by using sulfuric acid and iron⁹. Iron would have been readily available in San Jose's blacksmith shops, and given that the Almaden mines were close by, sulfuric acid could also have been available. However

the facility needed to prepare hydrogen, store it, and the preparation time required to capture the gas, makes the use of hydrogen gas very unlikely, as shown in this 1860s photograph

Most travelling show balloons were large enough to support a small basket carrying one or two persons. But sometimes the rope trusses containing the balloon were attached just to a large iron ring. The balloonist held tight to the ring as it lifted into the air and only his strength kept him from dropping to his death until the gasbag deflated and returned to the ground. 'Professor' Wilson's balloon must have had a basket because any enterprising journalist, like Mr. Doten, would surely have written about the exploits of someone who entrusted his life only to a strong grip as he ascended two or three thousand feet into the air.

After the Civil War, balloon ascensions became a feature of every major civic celebration. California Admission day, San Jose founding day, Fourth of July, and the annual Rose Festival were local events that almost always featured balloon ascents. The show balloons were often brightly colored and many had intricate designs painted on the panels.

At times the balloons also had advertising or logos for a local business such as Hales Department Store or a local brewery such as San Jose's Fredericksburg Brewery. Towards the



end of the nineteenth century parachute jumps were often added to the shows. Billed as 'dives of death', the jumpers were both women¹² and men¹¹. The routine was pretty much the same – ascend to 3000 feet or

so, jump out, open the parachute, and float gracefully to the ground under the brightly colored canopy.

Sometimes a balloonist had a 'rip' patch¹¹ that allowed gas to rapidly deflate the balloon. When used, it would appear that something bad was happening, but in reality the gas remaining in the balloon was usually enough to allow a safe descent. Parachute jumps were a beautiful sight and rapid deflations were thrilling. If all went well, and it usually did, the show was a success. But it was no press person's imagination about a description of chills and thrills. Jumps were dangerous and uncontrollable balloon landings were often hazardous.

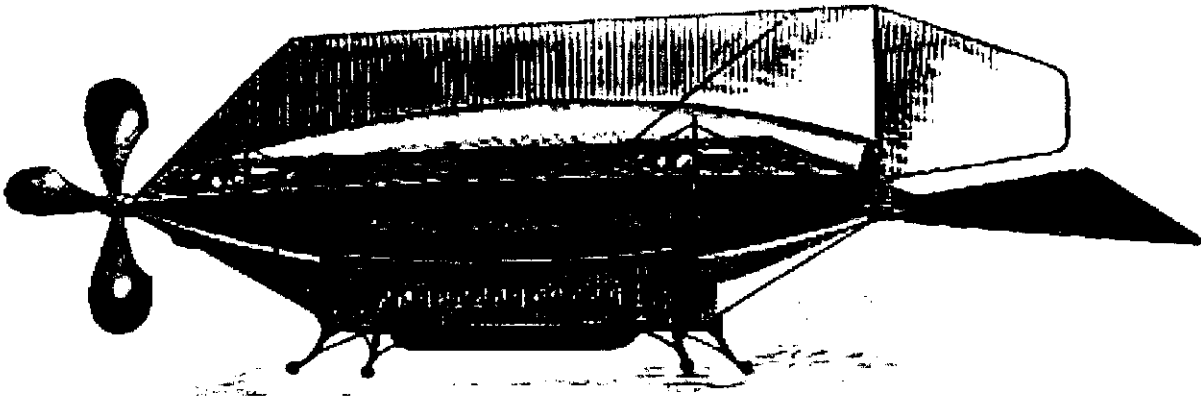
The Great Airship Mystery of 1896

During the years balloon exhibitions became a staple of annual events, the Valley of Heart's delight matured, and the economy of the Santa Clara valley grew and prospered. Technology in the Valley focused on the business of agriculture until it became famous around the world.

Valley people enjoyed the aerial displays each year but didn't give the visions behind them much thought - until 1896. In November of that year, startling reports of mystery airship sightings came from virtually every city in Central and Northern California¹³. The San Jose Daily Herald repeated stories of local sightings. Other papers, especially the San Francisco Call, gave the airship stories full front-page coverage.¹⁴ The first sightings were in early November of 1896. Then new reports were made and new stories¹⁵ said "on November 22, the mystery airship came back. It passed over Sacramento and appeared over Oakland, San Francisco and San Jose as well. During the next few days the airship was sighted all over California. The peak night was November 25, when it appeared in eleven places around the state, including Auburn, Chico, Fresno, Hayward, Napa, Oakland, Pasadena, Petuluma, Sacramento, San Lorenzo and Visalia." The sightings continued for more than a week and a new headline: 'November 27, 1896 San Jose (CA) Mercury SAW MOVING LIGHTS. / Another Visit From the Stranger of the Skies. / MANY PEOPLE SAW THE SIGHT. / All of the Firm Belief That the Airship Passed Over San Jose Last night'.

In his book 'The Amazing Airship of 1896'; author James L. Cambias states that "From the beginning, the phenomenon was referred to as the "airship." Though it was almost always seen at night, witnesses claimed they could see a vague shape behind the bright light. They spoke of cigar-shaped gasbags, flapping wings, and great wheels like those of a paddle-wheel steamer. A few said they heard voices, either in American accents or unknown tongues". Persons of unquestionable trustworthiness said they had seen cigar shaped forms with flashing lights moving quietly across the sky. Such witnesses included Mayor Adolph Sutro of San Francisco. H.H. Hart¹³, a former California Attorney General, was in Sacramento when he sighted the airship. Many others of equal reliability and stature across the state also said they saw the lights of an airship, or at least what looked like an airship.

The sightings were never explained - except in San Jose! In his book 'The Amazing Airship of 1896' Cambias refers to headlines in the November 27, 1896 San Jose (CA) Daily Herald: "*AIRSHIP "BUSTED". Proprietor Dow Gives the Whole Snap Away. / Sent Up Lighted Balloons At Night. / The True Facts in regard to the Airships. / The Snap Given Away.*" Who was proprietor Dow? The book and the news article didn't say. So who knows what was the truth about airship sightings. Maybe they looked like this 1896 woodcut:



Even Hale's department store got into the act with a November 29, 1896, Christmas poem entitled "THE PROBLEM SOLVED. All About the Air Ship"¹⁵. The nine stanza poem was really an advertisement that had Santa Claus riding an airship when he arrived in each city where Hale's was located.

THE PROBLEM SOLVED. All About the Air Ship¹⁵

I

A great many people have seen a strange sight

Travelling about in the skies.

They think it's a big airship with a light,

But don't know whither it flies.

II

Well, we got a tip from the man in the moon,
Who saw the same thing up there.
He said it would be down to visit us soon,
And that we had better prepare.

III

It was an airship, plumb full of toys,
And Santa Claus handled the sails.
It flew by the moon with a terrible noise,
Headed directly for Hale's.

IV

So all over this state he's traveled by night,
Visiting all of Hale's stores.
Sacramento was first to see the strange light
Of Santa's flying corps.

V

San Jose comes next on his visiting list.
He looked at our store down there.
Salinas and Stockton were of course not missed.
Petuluma claimed a share.

VI

And you know that last Tuesday he visited here.
Well, Hale's was the place where he stopped.
You could tell by the lights that his ship was near,
But no one knew where he dropped.

VII

Well, he lit on our roof with his flying machine

And emptied out all of his toys –

'Twas the biggest assortment we've ever seen - -

For good little girls and boys.'

VIII

He opened the skylight and dropped them all down.

And fixed them in our bazaar.

Then he got in ship and soon left the town

To visit some other big star.

IX

As the airship has come and left the toys here,

Tomorrow we'll start our sales.

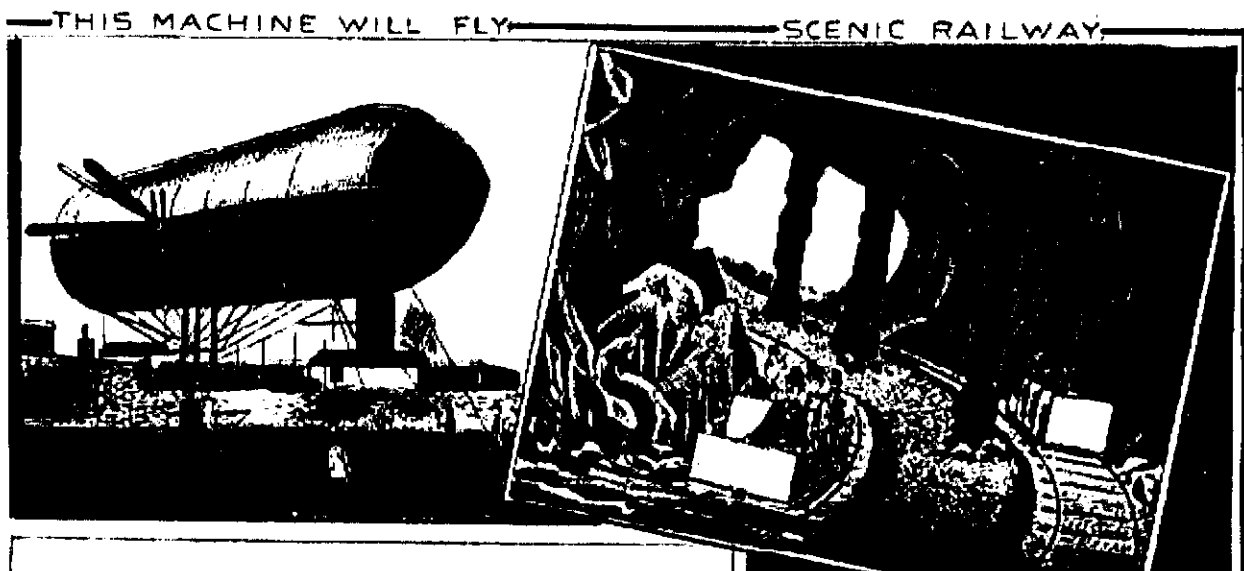
And whatever you want, don't have the least fear,

Santa Claus left it at Hale's.

The Beginnings of the Modern Airship In California

Whether airship sightings were fact or fancy, aviation fever was growing around the world, in the eastern and mid-western United States, and also in California. In 1869 a small alcohol fueled, steam powered airship flew near South San Francisco¹⁶. In the 1870's a non-flying airship was displayed at an exhibition in San Francisco¹⁷. There were rumors about airships being developed in Northern California near Yosemite in 1892¹⁸ and in Alameda⁵⁷ across the bay from San Francisco. An airship was listed as an exhibit at the 1894 California Mid-Winter Exposition in San Francisco; an extravaganza modeled on the great 1893 Chicago Colombian Exposition¹⁹.

The 1894 machine is a mystery because only one of several published official fair brochures displayed a drawing of the airship. The brochure with the drawing was apparently the first printing. Later brochures¹⁹ did not show the drawing and an exhaustive record of the exposition by the noted California historian, Hubert Howe Bancroft⁵², did not make any reference to an airship or large powered balloon. But the fact remains is that one of the early exposition brochures did picture an airship, hence the mystery!



1894 California Mid-Winter Exposition

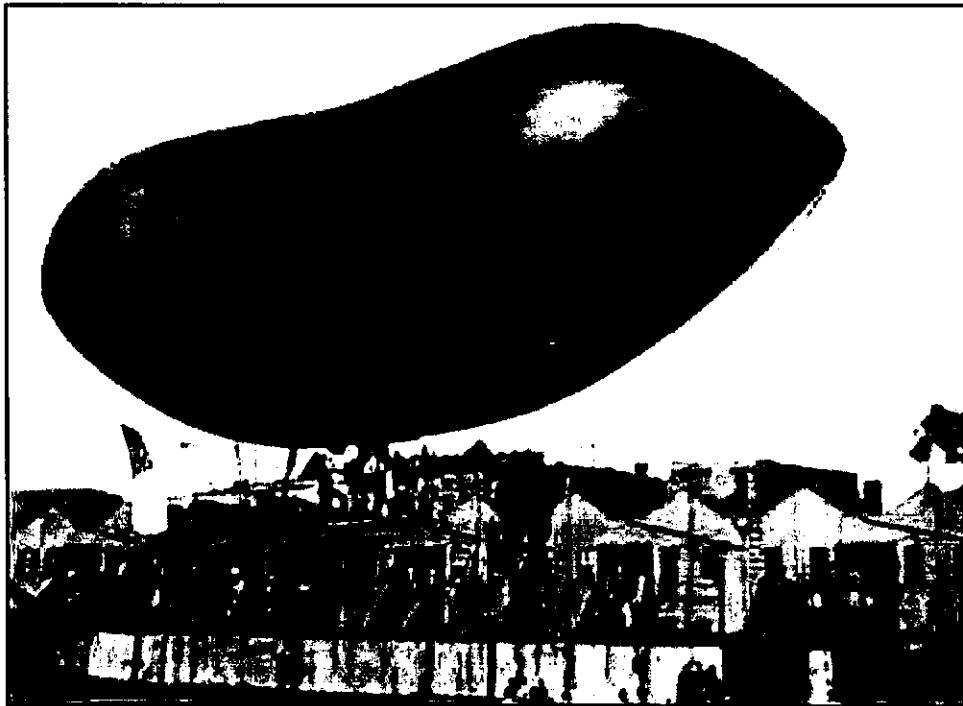
There were no recorded American airship flights until 1903, nine years after the 1894 exposition in San Francisco. The 'first' powered American airship flight took place in San Francisco in 1903²⁰. Actually, there were two 'first' flights and experts still argue which should be given the credit. The initial 1903 flight started its ascent from the Polo Grounds in San Francisco's Golden Gate Park but ended in the ocean near Point Sur after the engine quit and the winds blew it out to sea. The splashdown and failure to return to the beginning location were the reasons the flight hasn't always been given the credit that it deserved. The second dirigible flight occurred in 1904²¹. It was a smaller airship and made a modest flight circling over Oakland at about 500 feet high. However, it completed its journey with both a successful ascent and descent and landed at a pre-designated location, unlike the earlier flight.

San Jose Built Airships – Greth and Baldwin

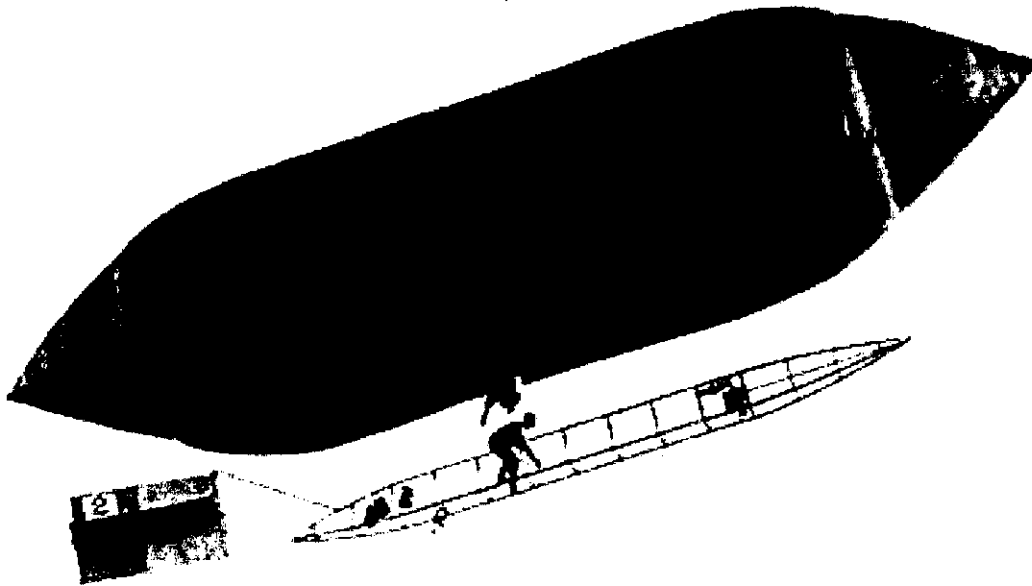
Although every history book that describes the two flights say ‘San Francisco built dirigibles’, but the two successful American dirigibles were actually built and assembled in San Jose¹. The California Eagle, flown in 1903, was conceived and built by Dr. August Greth²⁰. The California Arrow conceived and built by ‘Professor’, later ‘Captain’, Thomas Scott Baldwin, was flown in 1904²¹. Both were completed¹ in the Rose Pavilion sheds, which were located on The Alameda, near the current intersection of Cinnabar and The Alameda. A San Jose institution, the Fredericksburg Brewery²⁴, was across the street from the sheds.

Because of the similarity in names, some historians, who didn’t do their research well enough, have confused the two machines. One even credited Dr. Greth with conceiving and building Captain Baldwin’s dirigible. Almost every historical review ignores the Santa Clara Valley role¹ because both Baldwin and Greth incorporated their companies in San Francisco and made their flights outside of the Valley. Greth started his flight²⁰ from the Polo Grounds in Golden Gate Park and Baldwin started from an amusement park in Oakland²² at 57th and Telegraph Streets. Some records state that in 1902 Baldwin’s balloon company was located in San Jose, but directories don’t indicate whether or not he was still in San Jose at the time of the 1904 flight. Other directories do show that his balloon factory was in San Francisco, possibly on Lynch Street, before the 1906 earthquake. After the earthquake Baldwin moved his balloon operations to Hammondsport, New York, the hometown of motorcycle racer and aviator, Glenn Curtiss²².

Little is known about Dr. Greth or if he lived in San Jose for any extended time. His company was founded in 1897 and there is a record of a son, Frank Charles Greth, who married²³ Bettina Parry March 13, 1907, in San Francisco. Contemporary accounts say that August Greth emigrated to the U.S with knowledge of French airships and intended to build them here. Since airship developments were occurring in New York and other parts of America, his reasons for coming to California are not recorded. Perhaps he believed Californians would be more receptive to new ideas and ventures, much as in modern day Silicon Valley. In any event, as a Frenchman he would have been welcomed into both the San Jose and San Francisco French communities of the Pellier's, Mirrasou, Masson, the De Young's, and other generational descendants of the original French and Swiss-French immigrants.



Greth's California Eagle

Thomas Scott Baldwin and His San Jose Built Airship

Thomas S. Baldwin²⁷, the developer of the California Arrow²², is much better known than Greth. However, San Jose's eminent historian Clyde Arbuckle dismissed¹ Baldwin as a type of person whom "were seldom paragons of modesty and particularly one who styled himself Captain". Baldwin's friends described him as a jovial man, who was known to tell a good story²⁷. Arbuckle did have a reason for his statements about Baldwin¹. In a 1904 San Jose Mercury interview Baldwin said that much of the support he received in San Jose was because of help from Father R.H. Bell, Santa Clara University. Father Bell later wrote the Mercury disavowing any part in Baldwin's activities. In the same San Jose Mercury article, Baldwin responded to questions about the California Arrow dirigible. He "praised the persons who helped him most in its fabrication. 'Mrs. DeWitt Welch, of 389 West Santa Clara Street' he said 'labored faithfully for many days in constructing the gas bag and the weaving the network of ropes from which the car was suspended.'" He also gave credit to "cycleryman Charles V. Randall, of 391 West Santa Clara Street, for constructing the mechanical parts of the machine."

Clyde Arbuckle also wrote that Baldwin's "showman's carelessness with the truth seems to have persisted, however, and, at last report he had run afoul of the law somewhere in the Pacific Northwest." Allowing these comments¹ to stand is a mystery since Arbuckle was something of an early aviator himself⁵¹. When he published his noted 1986 history of San Jose and surrounding areas¹, he must have known that Captain Thomas Scott Baldwin was one of the most noted, and revered, of early aviators²⁶. Baldwin is credited²⁷ with inventing, along with his brother, the first modern parachute in 1883. In 1887 he is also credited with making the first successful jump with that parachute into Golden Gate Park. He went on to become an internationally known showman, travelling around the world with his balloon, even appearing before royalty. Baldwin also designed and flew an airplane of his own, started the career of Glenn Hammond Curtiss - the father of American aviation manufacturing²⁸, was hired by the U.S. government to advise the Army on aerial experimentation, and at the age of fifty-six joined the U.S. Army in World War One. Given the rank of Captain²⁷ - U.S. Army, his adoption of the term 'captain' during his show days became a reality. For meritorious service he was promoted to Major during the war. Thomas Scott Baldwin died in 1923 and is buried in Arlington National Cemetery in Virginia²⁷.

In the early 20th century, Baldwin became interested in dirigibles, having seen the exploits of the Brazilian Santos-Dumont³⁰ in France and the early large German Zeppelins. He decided to design an American dirigible that would fly and could be controlled like the European semi-rigid dirigibles. The new creation was called The California Arrow²². But to be a success, it needed a reliable engine. The only one that seemed to be light enough for the airship was from the French company who supplied Santo-Dumont's engine. It proved to be too heavy for Baldwin's new American design. Baldwin must have courted serendipity. He saw a motorcycle with a lightweight engine that looked strong enough for his need. Its builder, Glenn Curtiss, was famous as the 'fastest man in the world'³¹. He had driven a motorcycle to a new record, over 137 miles per hour, on the sands of Ormond Beach, Florida.

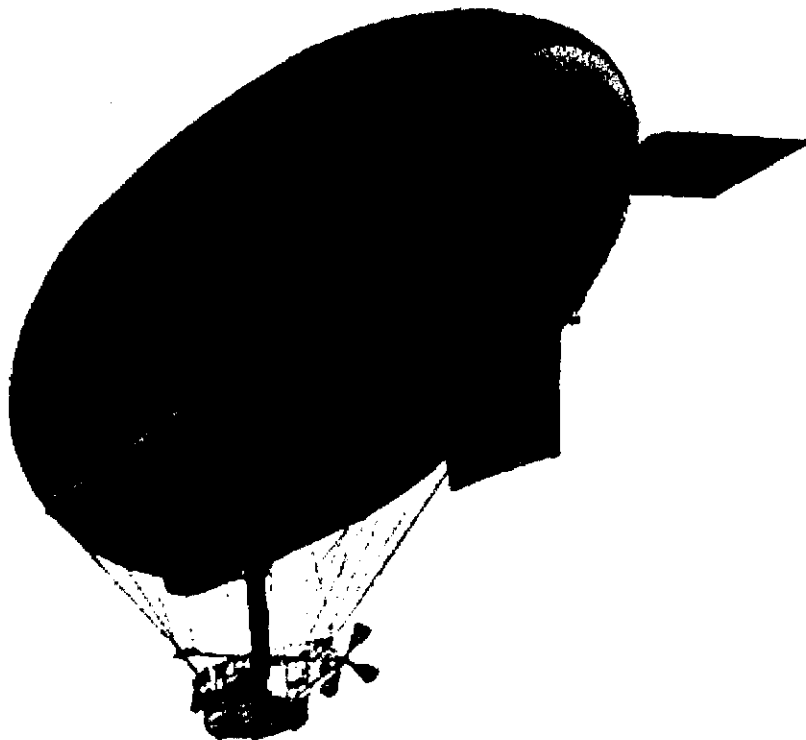
Baldwin contacted Glenn Curtiss about using a Curtiss motorcycle engine to power his new airship. The ensuing partnership had several notable results. One was making Baldwin's new airship a success³². Another was collaboration with an Alexander Graham Bell group called the AEA, Aerial Experiment Association³³. Curtiss had joined the group at the invitation of Dr. Bell who had also asked Curtiss about engines for flight experiments. Baldwin was later invited to visit and returned a number of times. He was always warmly received by the AEA.

The Beginnings of the Dirigible in America

The Curtiss engine for Baldwin's San Jose built California Arrow proved satisfactory. With it the Arrow made several successful flights, including a highly publicized appearance at the 1904 St. Louis Louisiana Purchase Exposition³⁴. These flights led Baldwin to propose that the US government buy one of his airships for military aerial experimentation. Baldwin built dirigibles for both the Army and the Navy. In 1908 the U.S. Army bought the SC-1 (Signal Corp Number One)³⁵. In 1915³⁶, the U.S. Navy also ordered an airship, designated as DN-1 for the Department of the Navy, Number One³⁷.

Baldwin's 1908 airship was not stable enough for military missions and no more were purchased by the Army. Although the Navy's 1915 airship order had an improved design, the DN-1 was later proved to be overweight and leaked hydrogen from her gasbags. It was damaged on her maiden flight as it entered its floating hangar and was never flown again. However, the potential aerial reconnaissance use for dirigibles was such that the Navy refused to give up after the problems with its first airship³⁸. The DN-1 experiment ignited an interest in naval airships, and after World War One, that pre-war interest evolved into the dirigible program that gave Santa Clara Valley both Moffett Field and Hangar Number One. Hangar Number One is the giant clamshell-door building in Mountain View with the black top and silver sides. It once housed the USS Macon, one of the largest man-made machines ever built⁴¹.

**1917 Connecticut Aircraft Company *DN-1*
United States Navy airship (BuNo) *A-127***



The Navy's first airship, *DN-1*, made its first flight at the Naval Aeronautic Station Pensacola on 20 April 1917. Its performance was very unsatisfactory on several levels and, after only two additional flights during the remainder of the month, it was damaged and abandoned, never to be flown again. The *DN-1* was built by the Connecticut Aircraft Company, largely to the designs of Captain Thomas Scott Baldwin whose unique experience as constructor and aeronaut of LTA airships made him particularly qualified.



US Navy Airship DN-1

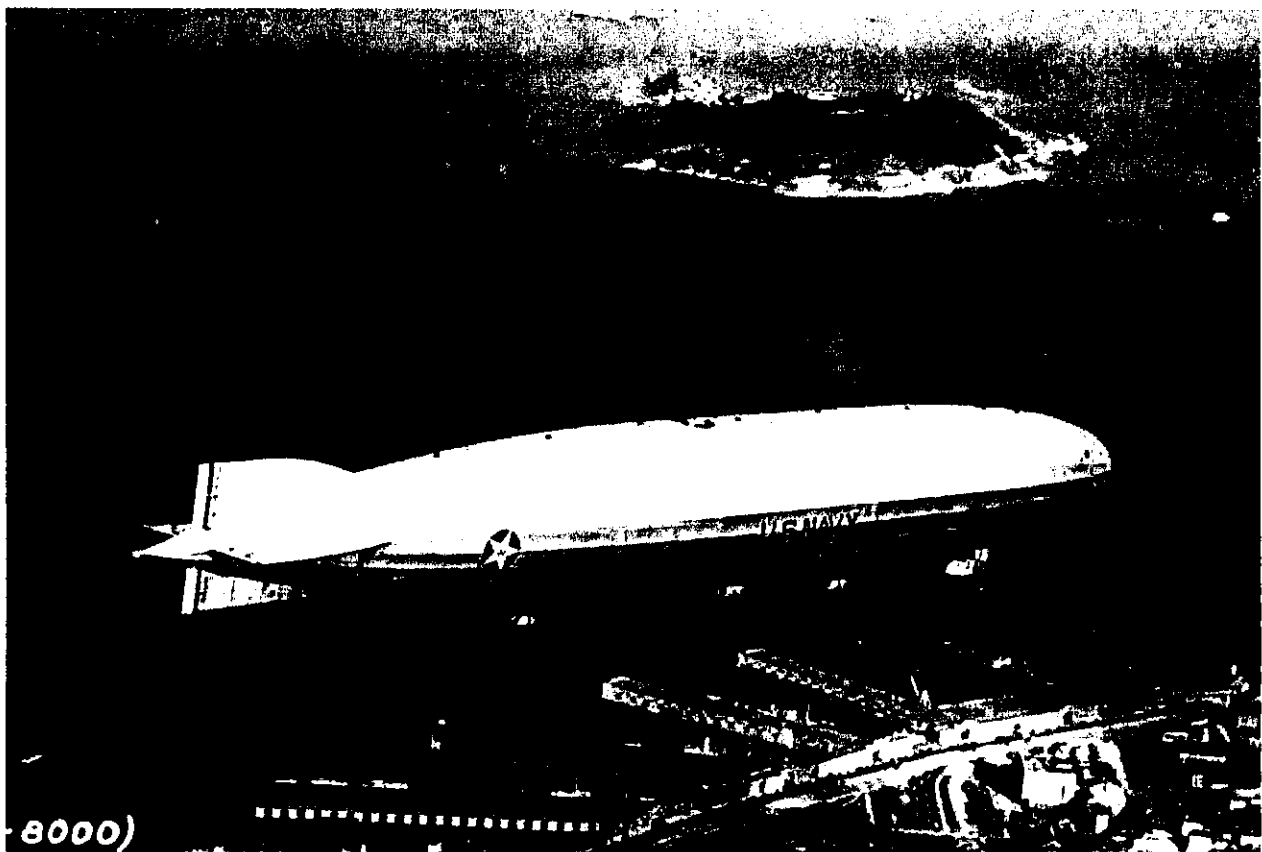
After World War One, the U.S. battle experience with German Zeppelins seemed to show that the giant ships would be a factor in any future conflict. German airships used an aluminum alloy called duraluminum that was lighter than any metal previously used in airship construction³⁵. Duraluminum also allowed an airship lifting capability that indicated there could be real economic potential because of their ability to carry freight and passengers over long distances.

As part of World War One reparations, the US had expected to receive two existing, operational Zeppelins, but they were sabotaged and destroyed before delivery could be made³⁷. Determined to have its own airships, the US Navy embarked on a program to build a US airship fleet. The first two of five U.S. Navy rigid airships, ZR1 and ZR2, were "funded by Congress in 1919, as part of the Fiscal Year 1920 Navy appropriations legislation". The ZR2 was built in Great Britain using a British airship design. It used the identifier³⁵ R38 **while under construction**. Upon delivery in the U.S. it was to re-identified as the U.S. Navy ZR2 upon delivery. The R38 "crashed³⁶ on one of its trial flights over England in August 1922, killing 44 persons of whom 16 were U.S. Navy personnel". The designator ZR2 was never used again.

The USS Shenandoah

Dirigible ZR1 had a more promising future³⁵. Her design was based on that of the German dirigible L49 captured⁶¹ in France in 1917. The design was extensively modified to meet American requirements, including the substitution of helium for hydrogen. The first rigid airship built in the United States, she was primarily intended for naval purposes. It was also expected that she would serve as an experimental prototype for commercial airships, of which great things were then anticipated. Design work began in September 1919 and was completed in early October 1921. Named USS Shenandoah at her christening, the vessel first flew in early September 1923 and was placed in commission slightly over a month later.

During the final four months of 1923, and the first weeks of 1924, Shenandoah made several flights around the eastern United States, giving the American people their first view of an U.S. owned rigid airship. It also provided valuable training to her "as yet inexperienced crew." Although the Shenandoah did make one flight to the West Coast, San Diego, she never made it to the Santa Clara Valley. "On 3 September 1925, during the first leg of a publicity flight to the Midwest, USS Shenandoah encountered violent weather over southern Ohio, broke up in flight and was a total loss³³. Fourteen of her complement lost their lives in this tragedy."³⁵



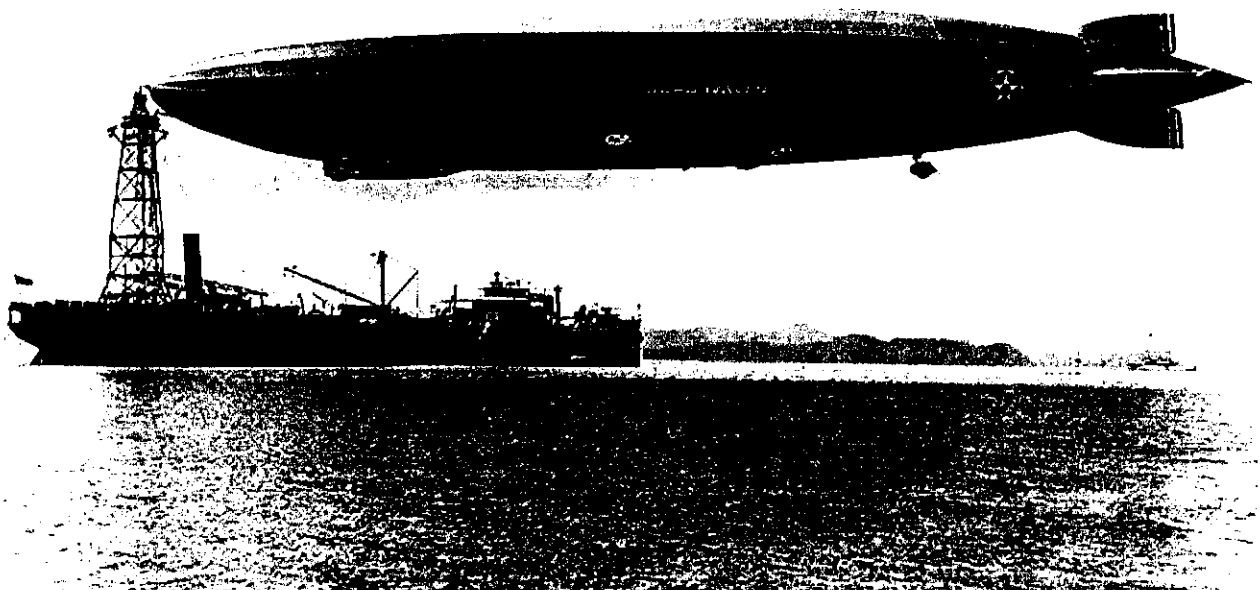
USS SHENANDOAH

The Shenandoah fell victim to a design flaw. The German design on which it was based was for a high flyer, in excess of 20,00 feet. The lightweight frame wasn't built to sustain the stresses of low altitude maneuvers. It also couldn't withstand the twisting caused by the storm over Ohio.

The USS Los Angeles

USS Los Angeles (ZR3), the second US Navy rigid airship, also never made a flight to Santa Clara valley³³. Although it ultimately was the most successful of all of the Navy's rigid airships. Operating from East Coast moorings, it was used principally as a test system for naval operations.. The Los Angeles was the only US airship not built in the US and the only one to use hydrogen for any flight³⁵. Built in Friedrichshafen, Germany, by the Zeppelin Company as the LZ126, the Los Angeles was "partially funded by German World War I reparations and was conditional on her being employed for "civil" purposes. Completed in August 1924 under the builder's number LZ-126, she departed Germany in mid-October 1924 for delivery to the Navy.

Photo # NH 65301 USS Los Angeles moored to USS Patoka, off Panama during the winter of 1931



After a three day trans-Atlantic flight, the Los Angeles arrived at Naval Air Station Lakehurst, New Jersey, where her hydrogen lifting gas was replaced with non-flammable helium." The Los Angeles was the only one of the Navy's airships that was not destroyed by a natural disaster. It was decommissioned and scrapped in 1939³⁵.

The Beginnings of Moffett Field

The last two rigid airships authorized³⁵ by the US Navy, the USS Akron and the USS Macon, were designed to be stronger and more capable than the USS Shenandoah and USS Los Angeles. The airship designators were changed from ZR (Zeppelin Rigid) to ZRS to reflect the new design. They would be built by a brand new company³⁵ that combined the resources of a large U.S. company, Goodyear Tire and Rubber, and the expertise of the German Zeppelin Company³⁵. The partnership was called the Goodyear Zeppelin Company and was located in Akron, Ohio, near Goodyear's headquarters. "The deal assured the United States a position in airship manufacturing. It also provided a future for the Zeppelin Company in the economically uncertain times of post World War One Europe"³⁵. Once built and commissioned, the Akron was to be based on the East Coast of the United States at the Lakehurst Naval Air Station in New Jersey³⁵. The Macon was to be based on the West Coast.

There was intense competition for the Macon's future home port between locations in Southern and Northern California⁴⁰. Ninety-four communities entered bids. Southern interests trumpeted fog problems in the 'San Francisco area and Northern interests bellowed equally loud about desert heat. Spearheaded by one of the earliest woman real estate agents in the bay area, Laura Thane Whipple, a drive to obtain the site for Northern California was begun. In a rare show of community cooperation, cities from around San Francisco bay raised \$476,000 to buy an 1000 acre farmland tract known as the Ynigo Ranch, adjacent to the towns of Sunnyvale and Mountain View. It was then offered to the government for one dollar.

The Navy accepted the Ynigo Ranch, and what is now called Moffett Field⁴⁰ became the new center for Naval Airship operations on the Pacific coast. Originally the airbase was to be called 'Mountain View – Sunnyvale Naval Air Station', but the connotation of 'Mountain' in the title worried eastern leaders in Congress who supported naval aviation and airships⁵⁰. Before the field was commissioned, the name was changed to NAS Sunnyvale, even though 3/4 of the base was within Mountain View's jurisdiction. It was later renamed NAS Sunnyvale, Moffett Field, after the death of Rear Admiral William Moffett⁴¹. Admiral Moffett (1869-1933), was a Medal of Honor winner and battleship commander who had long supported the development of Naval Aviation. He died⁴⁷ when the airship USS Akron (ZRS-4) crashed in April 1933 during a violent thunderstorm off the coast of New Jersey.

The USS Akron and Santa Clara Valley

Both the Akron and the Macon had ties to Santa Clara Valley. At its commissioning, Lou Henry Hoover, wife of then President Herbert Hoover and a Palo Alto resident, christened⁴⁸ the USS Akron (ZRS-4) in Akron, Ohio. The USS Macon (ZRS-5) wasn't ready to fly by the time NAS Sunnyvale was to be dedicated, so the USS Akron took her place⁵⁰. Akron was a news dream, photogenic, record breaking, impressive! In 1931 she carried the most people ever to enter the skies - two hundred and seven. Akron made only one flight⁵⁰ into the Valley, at the commissioning of NAS Sunnyvale, but the event was memorable! Over 100,000 people crowded fields and highways around the naval air station to see the arrival of Navy's newest aircraft carrier (the Akron and the Macon carried five small pursuit/scout planes⁵¹ within the airship hull). But this ship wasn't coming by sea. It was coming by air. A *Palo Alto Times* reporter described the Akron's arrival in terms of awe: "Suddenly, about 7 a.m., the recently completed USS Akron, which would be based in Lakehurst, New Jersey, dropped ghostlike out of the clouds. The silver dirigible stretched across the sky, two and a half times the length of a football field. The crowd cheered. "It was a never to-be-forgotten sight."



USS Akron Moored at NAS Sunnyvale / Unfinished Hangar Number One in Background

Clyde Sunderland, a well-known Oakland commercial and aerial photographer, had an assignment from the *Oakland Tribune* to photograph the 'Queen of the Skies', as she was to arrive at NAS Sunnyvale on May 13, 1932. The following are extracts from his report⁴⁹ on the trip to photograph the arrival of the USS Akron to NAS Sunnyvale:

"In the distance like a small bright speck against the dark background of Mt. Tamalpais we first sighted the Akron, to us no larger than a pinhead, nosing her way toward us. Immediately we flew to meet the giant ship. Owing to the great expanse of fog, there were no buildings, trees, or anything with which to compare this ship in size, in fact there was not even another plane in the sky, we had the Akron

all to ourselves. It reminded me of a toy balloon just lazily floating in space as if it had no place to go and all the time in the world to get there. Only as we came right up to it did it seem to take on its giant size and proportions." "I can assure you that the Akron floating majestically high in a golden dawn, riding above a sea of fleecy white fog clouds that blotted out the Golden Gate and shut the airship from the thousands of early morning watchers in San Francisco and Oakland, was the most beautiful sight I had ever seen."

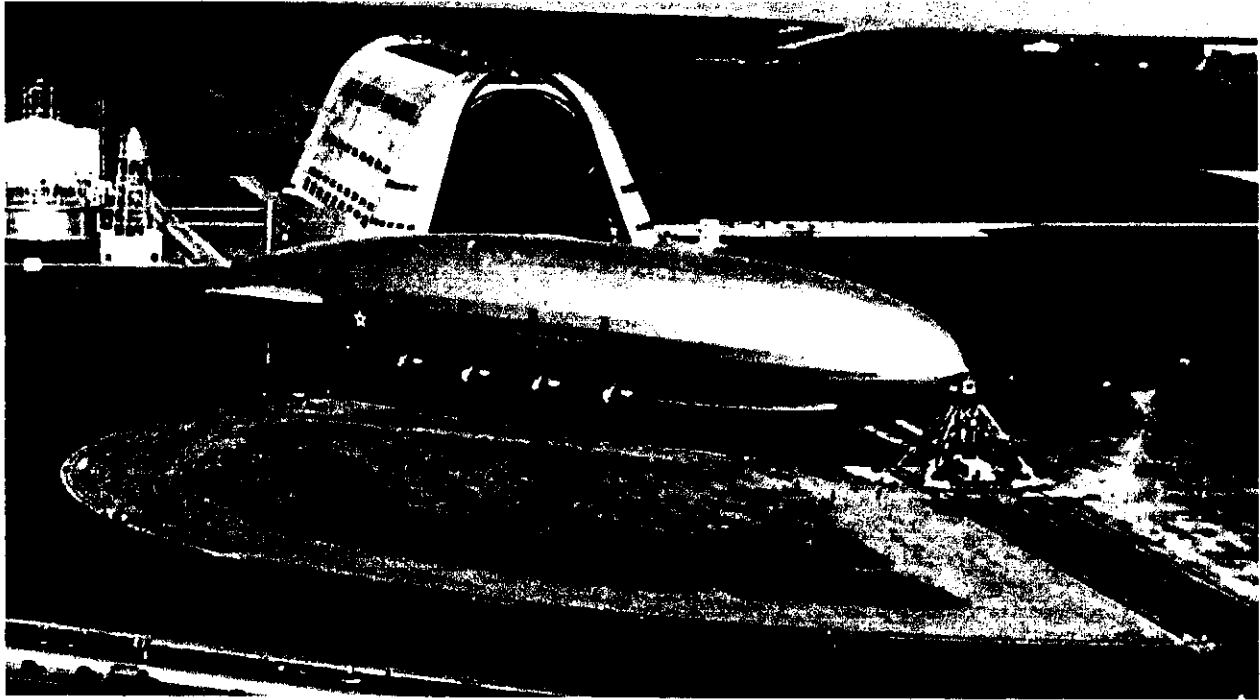
The arrival of the USS Akron was perhaps the most significant event that ever occurred in Santa Clara County, or for that matter, the entire Bay area. According to a contemporary account, "More than 100,000 people - enough to fill Stanford Stadium - packed the bayside fields where they huddled in cars and sat in bleachers set up by concessionaires. Vendors sold hot dogs, sandwiches and pies. Sixty-five state troopers were called in to handle the traffic on the still-uncompleted Bayshore Freeway where cars inched ahead four abreast en route to the site"⁵⁰. The Akron flew down San Francisco bay and descended into NAS Sunnyvale. She slowly approached the temporary mooring mast that had been erected in front of the unfinished, but already huge, structure of Hangar Number One. Once the mooring lines were attached to the mast, the Akron was ready for public display.

After the official welcoming ceremonies were complete, the Akron's crew and on-site personnel started their inspection. When the post flight review and maintenance were complete, the airship was made ready for flights in support of fleet operations and simulated war exercises. Akron ranged as far north as the Canadian border and back down the California coast to demonstrate how an airship could be an effective sky weapon. After several additional publicity flights around San Jose, San Francisco Bay, and the ocean off central California, the Akron returned to NAS Sunnyvale to refuel and prepare for her flight back to the East Coast³⁵.

On June 1, 1932, the Akron was moored in front of Hangar Number One in the center of the mooring circle. When ready, she cast off and started her journey across the U.S. to her home port at Lakehurst, New Jersey. She would never fly west again⁴⁷! Eleven months later, on April 4, 1933, the Akron fell victim to the violent vagaries of nature. Heavy storm winds off the New Jersey coast battered the Akron and forced her down into a roiling sea near the Barnegat Lightship. Seventy-three of the 76 men on board died³⁵, including Rear Admiral William A. Moffett. The USS Akron, ZRS-4, became the second US airship destroyed by stormy weather.

The USS Macon and Santa Clara Valley

The USS Macon was the reason the gigantic Hangar One⁴² was built, but Moffett Field itself was constructed to serve as the Northern Sector base for West Coast airship operations³⁵. The Macon was commissioned in Akron, Ohio, on March 11, 1933. After a series of tests in Ohio, and later at the US Navy airship facility at Lakehurst, New Jersey, the USS Macon started her transcontinental journey to her new home at Naval Air Station Sunnyvale. The airship arrival was elegantly described in the pamphlet text of Moffett Field's 60th anniversary celebration: "With nearly as much fanfare as marked the arrival of the Akron, the Macon cruised into the skies over Mountain View on Oct. 16, 1933, and docked without difficulty at its new home. 'The new 785-foot air giant was free from the oil smudges that marred the Akron's appearance on its arrival here and seemed as silvery as if she had just taken to the air, noted a *Palo Alto Times* story.'" The Macon slipped down from the clouds and slowly approached the mooring mast attached to the railcar that moved back and forth on two parallel narrow gauge railroad tracks. The railcar was centered on the mooring circle in front of Hangar Number One. Once the lines were attached to the mast, and engines stopped, the Macon was ready for public display and to once again show waiting crowds the latest in US Navy technology.



USS Macon at the Mooring Mast - NAS Sunnyvale

Lt. Commander Herbert Wiley, the Macon's captain and a Palo Alto Resident from 1933 to February 1935, had served on all three of the Navy's previous airships. He understood the need for training, morale, and public relations. From October 1933 to February 1935 the Macon performed admirably in her naval operations support assignments³³. There were 'spy' missions, long range detection and scouting assignments, and search duties. Most missions were planned by the Navy's bureaucracy, but in one instance, the Macon's captain, Lt. Commander Herbert V. Wiley³⁵, used his initiative to create a special scout and locate sortie to prove the naval value of the Macon³³ as an effective weapon of war. Wiley was one of the most experienced airship navigators in the Navy. He had served as navigator and executive officer on the USS Los Angeles, as well as on the USS Akron. Wiley was also one of only three survivors from the Akron disaster³⁵. Wiley's unplanned mission was to find President Franklin D. Roosevelt, who was aboard the heavy cruiser USS Houston en route to Honolulu for a conference. The heavy cruiser New Orleans was escorting the Houston.

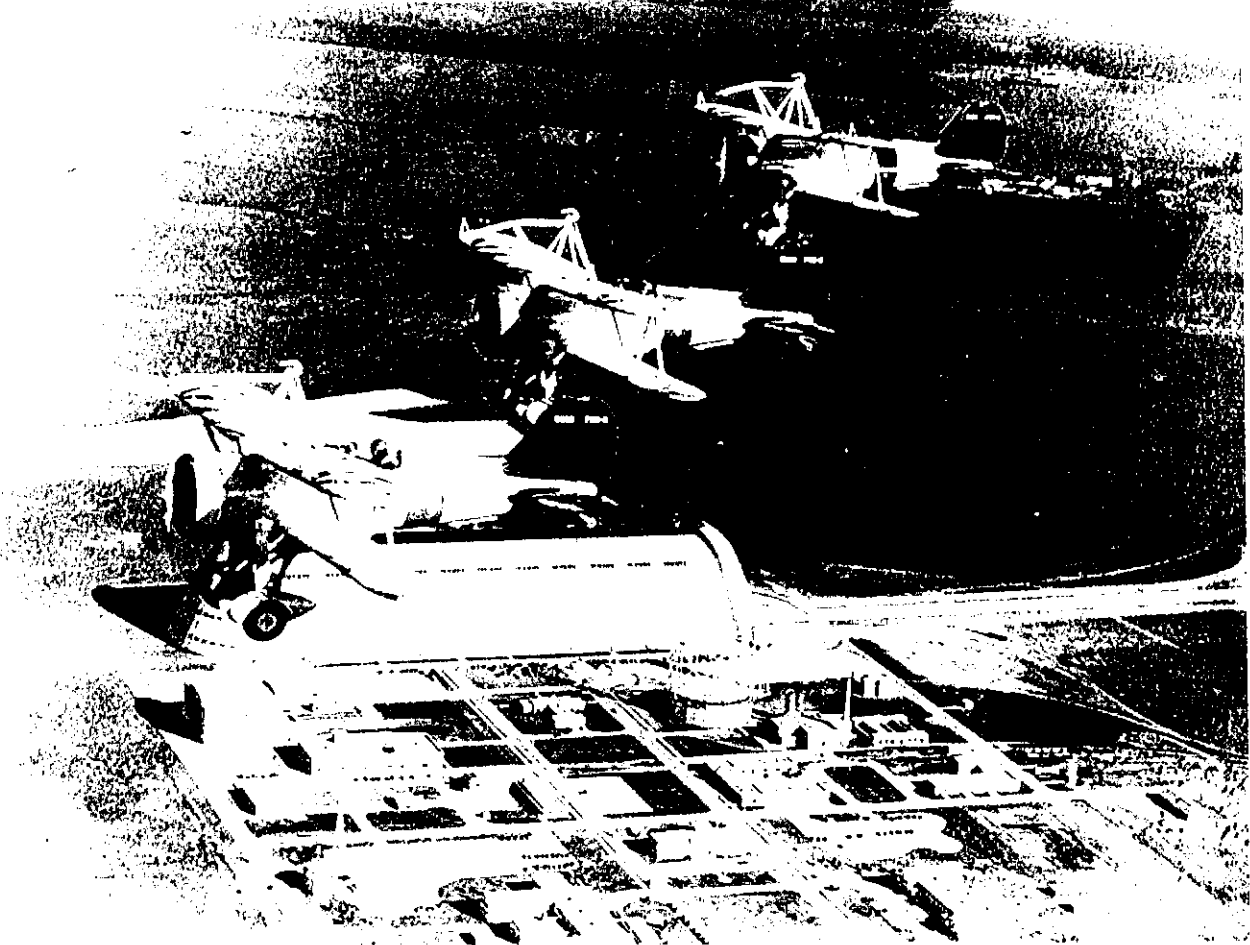
The Houston and New Orleans couldn't hide from Wiley in ocean hunt and seek operations. Even though he wasn't privy to any details about the Houston's course, Wiley used newspaper reports about Houston's departure time to calculate the approximate location of the ships between the Panama Canal and the Hawaiian Islands. He then took the Macon on a scout and locate mission to find the Houston and President Roosevelt. Over 3500 miles from NAS Sunnyvale and over two days out, the Macon's scout planes located the ships without being seen. Still out of sight, Macon dropped down out of the clouds to retrieve her scout planes. She then proceeded on an intercept course towards the cruisers. Officers and men aboard the ships were shocked to see the Macon slip out of the overcast and hover nearby³⁵. An airship was probably the last thing that was expected since they were so far out to sea. Macon again lowered one of her F9C-2 scout planes and released it. Flying over the Houston, the plane dropped two waterproofed mail packages onto the Houston's deck. Ever conservative in his training, Commander Wiley's pilots had practiced such a drop before leaving Moffett Field. Wiley's superiors weren't amused. Admiral Stanley, chief of naval operations said, "We considered it a publicity stunt and that he (Wiley) had no business doing it." "The president, however, was tickled. The stunt showed that the Macon was capable of the kind of scouting for which it was intended"⁶². As the Macon's scout plane was being retrieved and drawn up into the belly of the ship, the President radioed 'Well Done' to commend them for their "fine performance and excellent navigation"³⁵.

The flight also initiated another Navy first³⁵. Previously, F9C-2 scout planes had landing gear and wheels to allow them to function as standard land-based fighters. On this mission, landing gear was removed from two of the planes. Pilots believed that if a plane ditched into the sea, it would be safer without the drag of the undercarriage and landing gear. The flights also proved that the planes operated better without the added weight. Top speed was increased by nearly twenty percent and flight time by nearly an hour. The latter was accomplished by adding extra fuel in a new thirty-gallon tank in place of the structure that had been removed.

The presidential search was the last major mission³⁵ for the Macon. She successfully scouted seven times in support of more formal naval exercises. In February 1935 the Macon departed NAS Sunnyvale on her eighth formal mission. It was the last time a rigid airship would ever use Moffett Field. Lt. Commander Wiley had reported about Macon's condition and her need for final repairs. In a cross-country journey from New Jersey, the ship's framework had been overstressed in a storm over Texas. All four tail fins had been damaged. However, repair work had been done piecemeal because of the perceived need to show that airships were not just expensive showpieces, but that they had an important role in the future of the US Navy. On this eighth mission, Macon was operating independently as part of fleet maneuvers. Early on February 11, 1935, the battle group left San Diego and Long Beach harbors on its way to San Francisco. On the same day, and flying from Moffett Field, the Macon went Southwest over the ocean. Under orders, she was to perform a scouting sortie to locate and identify each ship in the fleet formation while remaining unobserved and undetected.

With scout planes operating at extended range (sixty miles) on each side of the mother airship, the Macon could search an area nearly 200 miles wide. Nothing in 1935, except another airship, could fly as far or search as well as the USS Macon. In addition, her lifting and carrying capacity was measured in thousands of pounds rather than the several hundred pound capacity of contemporary aircraft. The Macon's over the ocean search pattern was roughly rectangular. The east line was more or less a few miles from the California coast and the west side was a somewhat meandering path about 200 miles out to sea. The bottom of the rectangle started approximately on a westerly line from Long Beach harbor and the limit of the northerly line was west of Point Reyes. Somewhere inside this box was the fleet. Macon found and identified all of the ships and plotted their progress per orders. And per orders, she remained undetected! When Lt. Commander Wiley reported that their tasks were complete, the airship was released from the exercise and headed towards home, towards NAS Sunnyvale - Moffett Field.

Photo # NH 77426 F9C-2s from USS Macon fly over Moffett Field, California. 1934



Working her way up the California coast from several miles west of Santa Barbara, the Macon encountered heavy storm winds near Point Sur lighthouse, just below Monterey Bay. Strong, gusty crosswinds suddenly hit the Macon on her port (left) beam. Her upper tail fin, damaged when the ship encountered turbulence over Texas several months earlier, proved not to have been properly repaired³⁵. Part of a duraluminum airframe fractured and punctured three of the rear helium gas cells. The broken airframe no longer supported the giant upper fin. It tore off and was blown away. Metal fragments also severed some of the steering controls⁵³. Except for engine controls, the Macon was almost helpless. As gas vented into the air, the Macon's tail dropped from level and the ship began to rise with a nose up angle⁵³.

Nearly out of control, the stricken airship quickly rose from about 1000 feet to nearly 5000 feet. Lt. Commander Wiley quickly ordered ballast release and that fuel and water also be dumped to try and level the airship. Any crew not needed to operate the engines and maneuvering controls were ordered to the ship's nose to add extra weight in hopes of leveling the airship. Nothing worked. Wiley then ordered that a SOS be transmitted and prepared the Macon for ditching.

As helium slowly leaked from the rear gasbags and escaped into the air, crewman put on their life jackets and made ready to abandon ship. Just before the giant ship slipped into the sea, Wiley ordered the engines to be reversed so that they would be at dead stop. Whether this order was a result of his experience on the USS Los Angeles or his narrow escape from death on the Akron, where he was one of three survivors, the maneuver saved the lives of his Macon crew. The airship descended tail first, then slowly settled into the cold waters of the Pacific - very near the Point Sur spot³⁵ where Greth's California Eagle²⁰ had landed some thirty-two years earlier.

The End of An Era

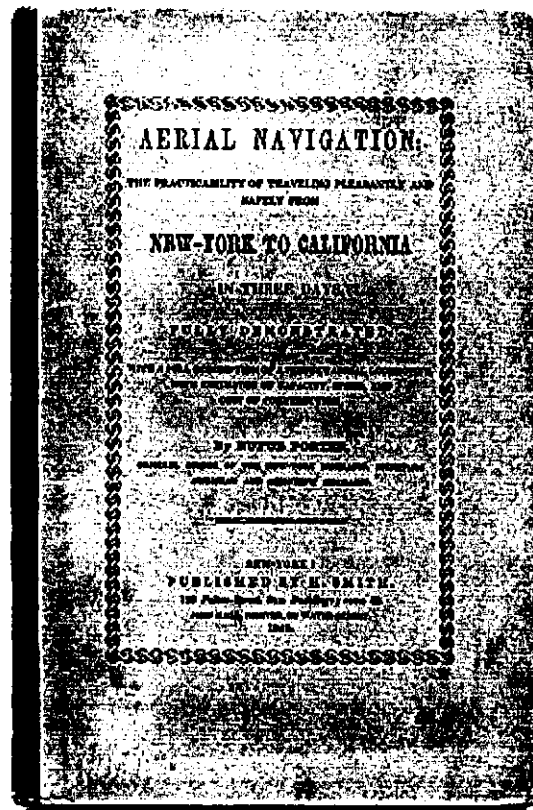
Eighty-one of the 83 crew and officers on board survived the crash of the USS Macon. NAS Sunnyvale - Moffett Field, as an operational airship base, did not. The USS Macon was the last rigid structure dirigible ever used the US Navy. And with the Macon gone, there was no more need for Moffett Field⁵⁰. Only the advent of World War Two saved NAS Sunnyvale - Moffett Field from extinction.

...

POSTSCRIPT

This essay began with a graphic of Rufus Porter's Aerial Locomotive, sometimes called 'Aeropot'; the first airship specifically designed to carry people, and to carry them to California. Porter was a visionary, a scientist, and not the crackpot many uniformed historians make him out to be. A well-known inventor in his day, he "patented a distance measuring appliance, a horsepower mechanism, a churn, a life preserver, a cheese press, and a revolving rifle. The rights to the revolving rifle were sold to Samuel Colt for 100 dollars"⁵⁹. He also founded two magazines^{58&59}, one of which is still published today - 'The Scientific American'.

In 1935, The Minnesota Historical Society⁶⁰ decided to republish Porter's 1849 pamphlet: *'Aerial Navigation - The practicability of traveling pleasantly and safely from New York to California in Three Days 'in Three Days'*. The introduction to the 1935 reprint about the first airship for California travel was written by Lieutenant-Commander H. V. Wiley, USN, captain of the last rigid airship ever flown in California and in the United States, the USS Macon.



Addendum

Final notes about airships.

1. Airships are described in three ways:
 - Balloons (having no structure other than the gasbag):
 - Semi-rigid – a gasbag with a keel (long metal structure usually hung beneath the gasbag,
 - Rigid: gasbags contained within a metal structure which may be covered with metal or some other material.
2. The Baldwin and Greth dirigibles were semi-rigid airships, as was the Baldwin Navy Dirigible DN-1 and the Army Dirigible SC-1.
3. All of the post World War One dirigibles were rigid airships.
4. The designator 'ZR' stood for 'Zeppelin Rigid' design. The 'S' was added to the designator for the Akron and Macon because of the improved design.
5. A sixth dirigible, ZMC-2 was authorized by Congress and built. It was a smaller, metal covered airship that played no significant part in US Naval airship history. Although a dirigible, it was classified by the US Navy as a blimp, resulting in its being overlooked in most compendiums about rigid airships. The ZMC-2 was the only successful metal covered airship ever built. It was scrapped in 1941 for its metal content (duraluminum).
<http://nasgi.org/zmc2.htm>
6. In the early 1930's there were also a few free flyers (gas balloons) and a non-rigid airship (Blimp J-4). The narrative does not discuss them because they also played no significant part in US naval airship history. The J4 was at Moffett Field for a brief period.
7. Valley historians will note that one significant balloon user was omitted from this essay. The related balloon events were not included because Professor John Montgomery, Santa Clara University used balloons only as part of his flight experiments with gliders.
8. Although most airship historians use the terms "built", 'build', or 'constructed' to describe how an airship comes into being, the terms 'erect' and 'erected' were used by the Goodyear Zeppelin company.

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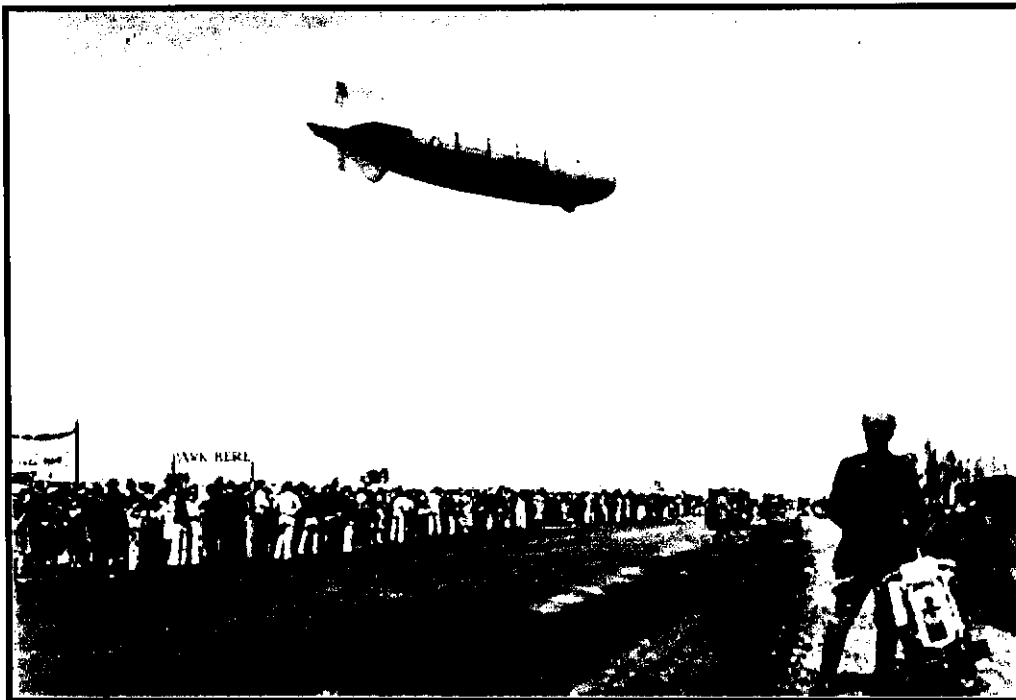
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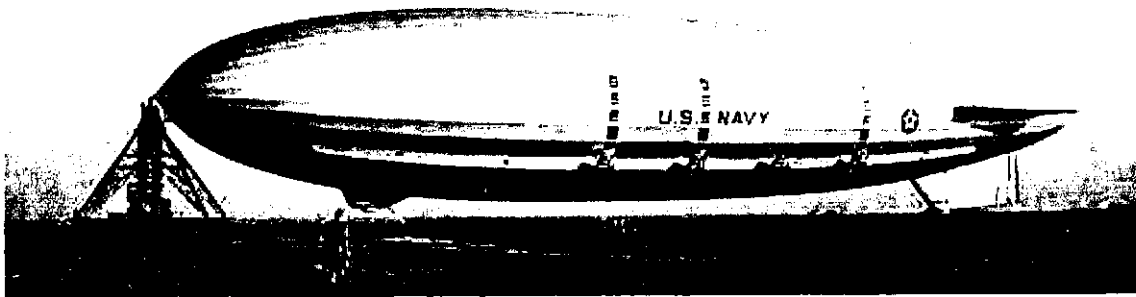
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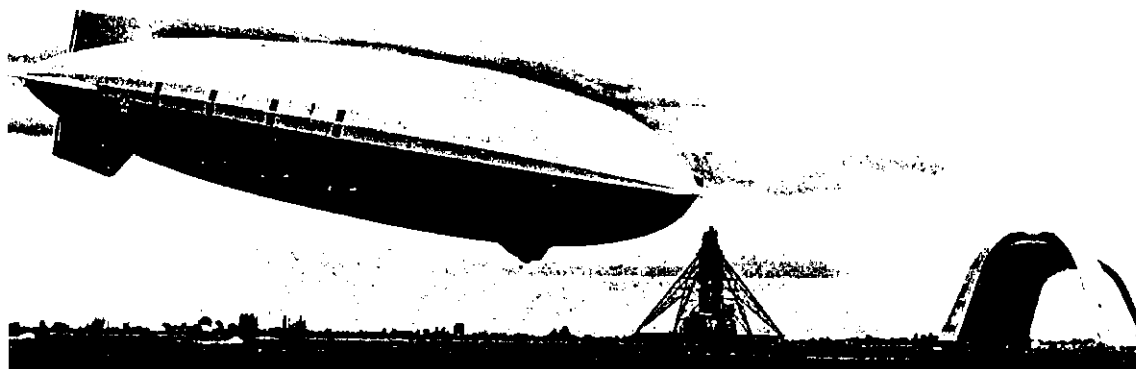
Akron Visit to NAS Sunnyvale - Looking South Along Hwy. 101

<http://www.moffettfieldmuseum.org/gallery/displayimage.php?album=lastup&cat=0&pos=2>



USS Macon at the mooring mast - NAS Sunnyvale Archives - California Historical Society
http://www.californiahistory.net/9_pages/hard_crash.htm

Photo # NH 82710 USS Macon at Moffett Field, California



Macon moored at north mooring mast Navy Historical Center
<http://www.history.navy.mil/photos/images/h82000/h82710.jpg>



Peck, Rosendahl, Wiley / Archives - University of Akron
<http://www3.uakron.edu/archival/arnstein/peck.htm>

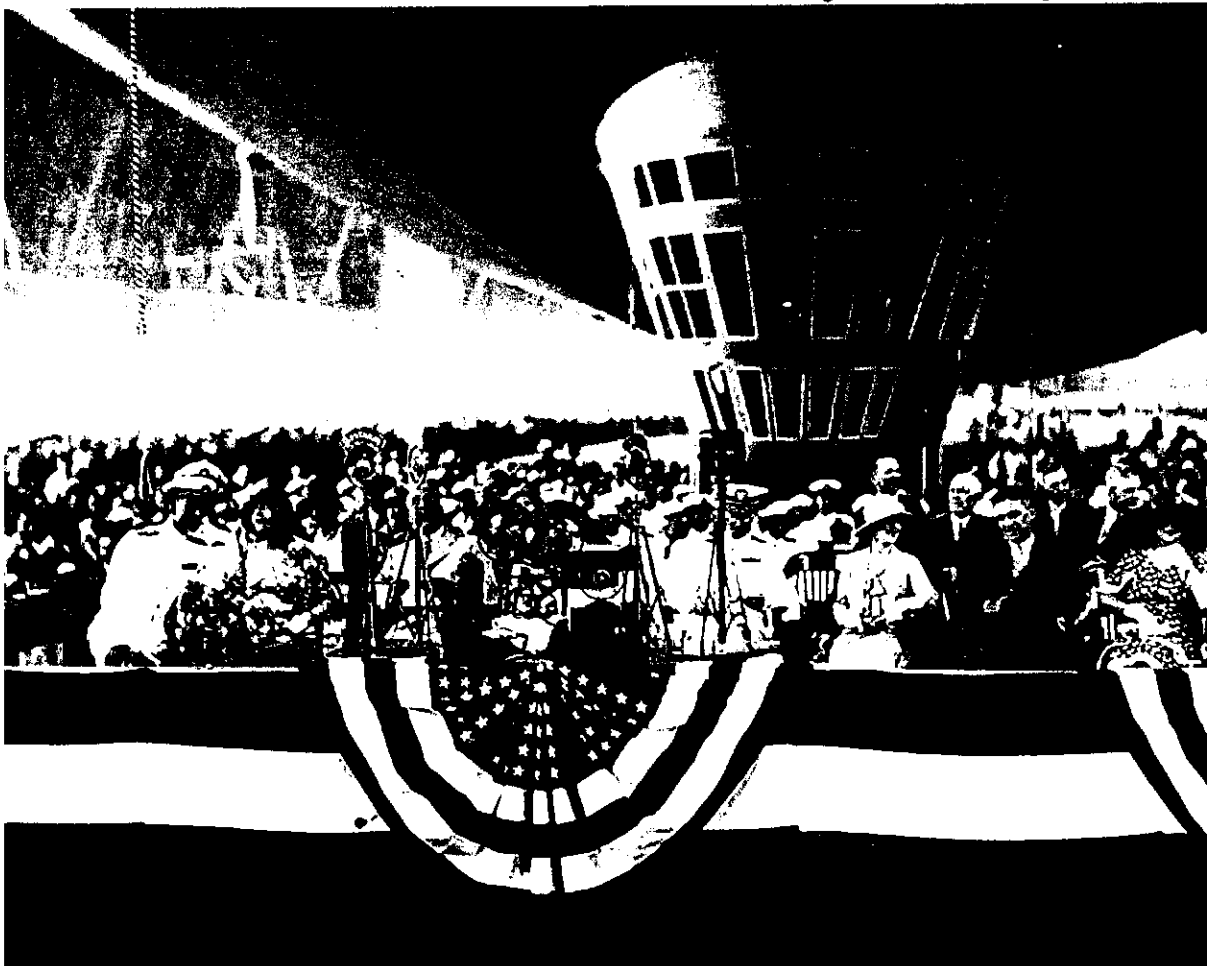


Hangar Number 1 with railcar tracks & open doors GRIN-Great Images In NASA (Dayton Center)
<http://dayton.hq.nasa.gov/IMAGES/SMALL/GPN-2000-001790.jpg>

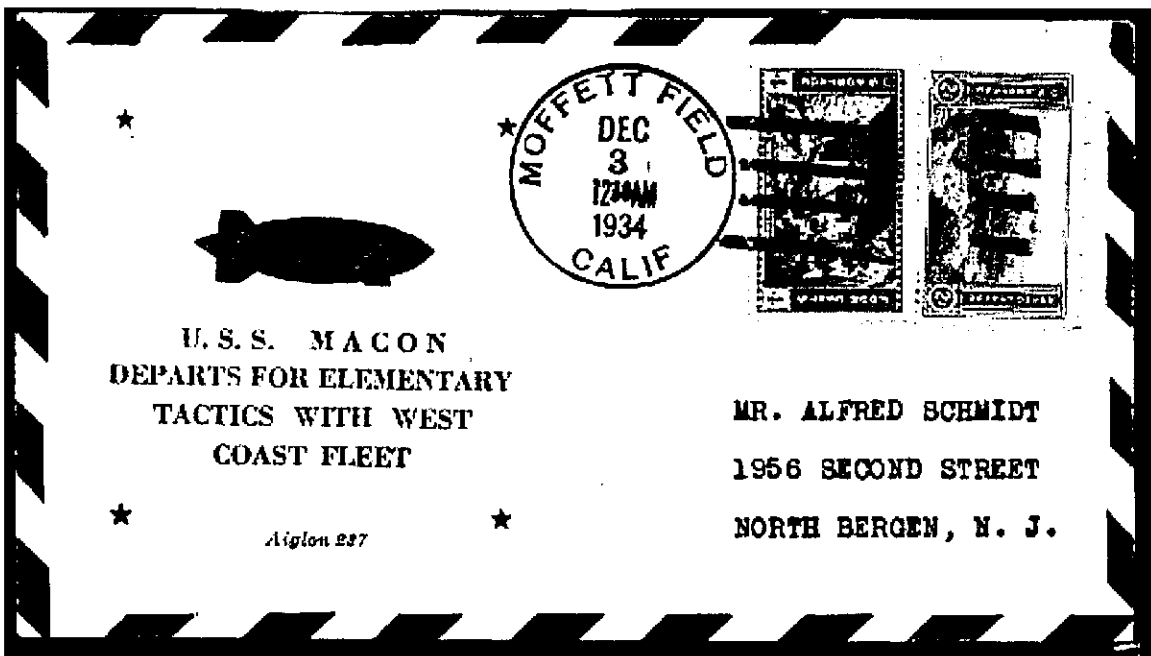


Blimp J4 prior to first flight from Sunnyvale - 1933 Moffett Field Museum
<http://www.moffettfieldmuseum.org/gallery/displayimage.php?album=16&pos=15>

Photo # NH 42167 Mrs. Herbert Hoover and other notables at christening of USS Akron, August 1931

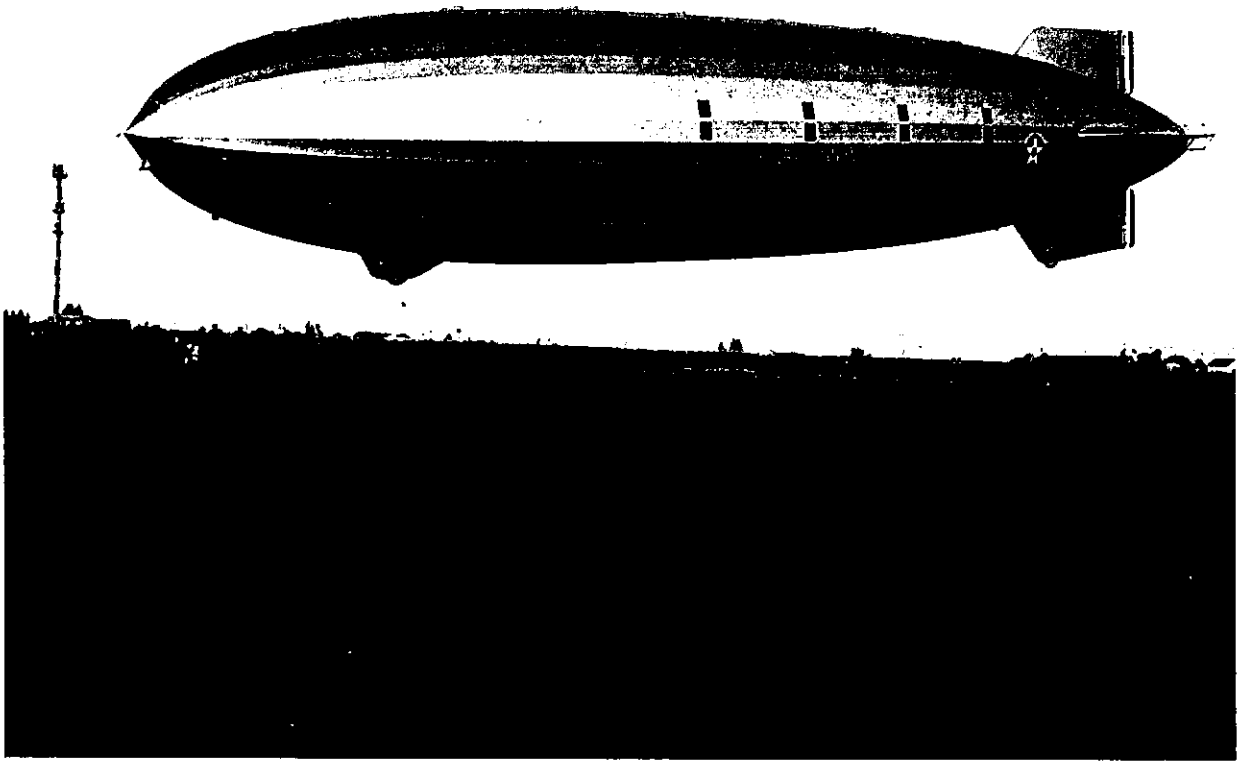


USS Akron Christening - Lou Henry Hoover on right Next to Admiral Moffett
<http://www.history.navy.mil/photos/images/h42000/h42167.jpg>

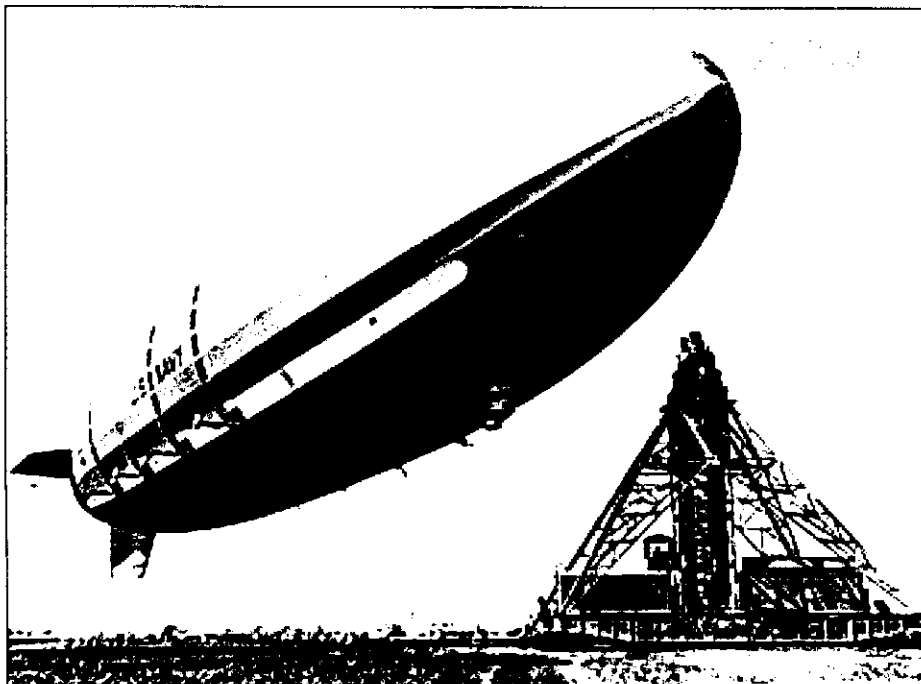


U.S.S. Macon Letter USS Macon 12/03/34 Mellone #6, Aiglon Society cachet in green
<http://stampauctionnetwork.com/xx/E021/21434.jpg>

Photo # NH 42156 USS Akron approaches the mooring mast at Sunnyvale, California

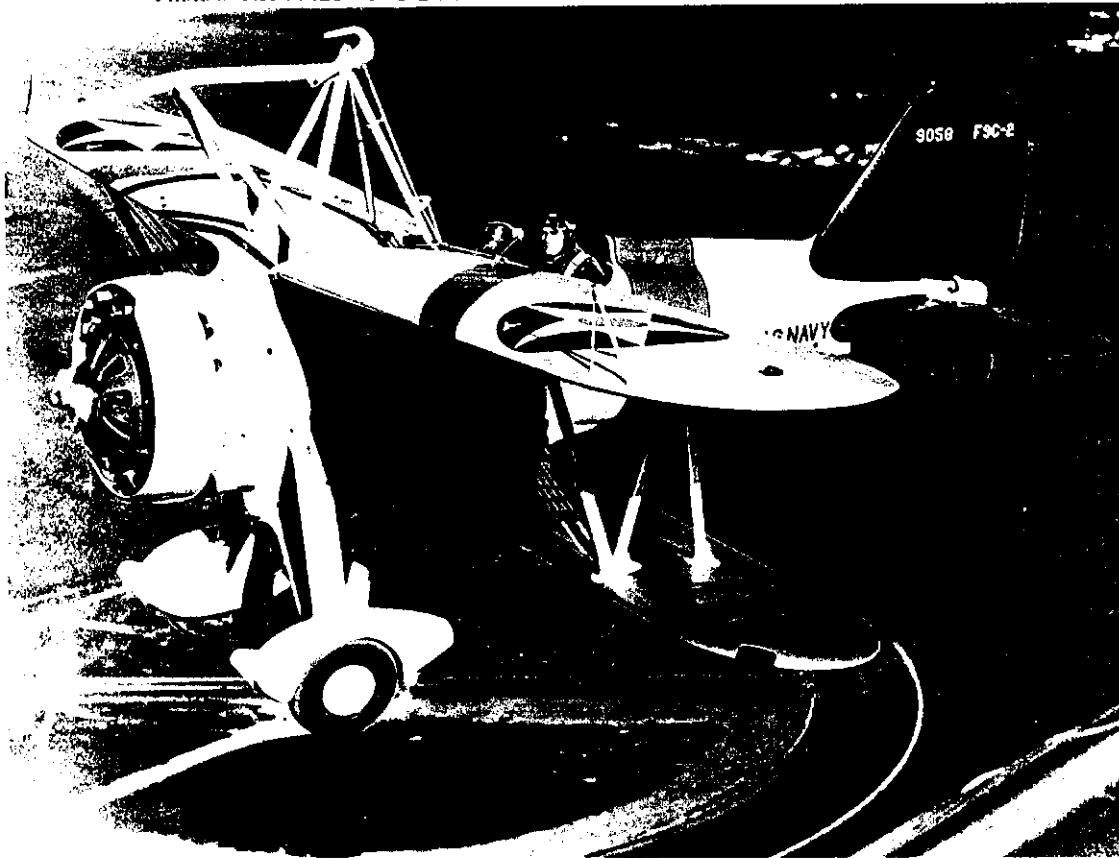


USS Akron approaching NAS Sunnyvale Mooring Circle - Navy Historical Center
<http://www.history.navy.mil/photos/images/h97000/h97976.jpg>

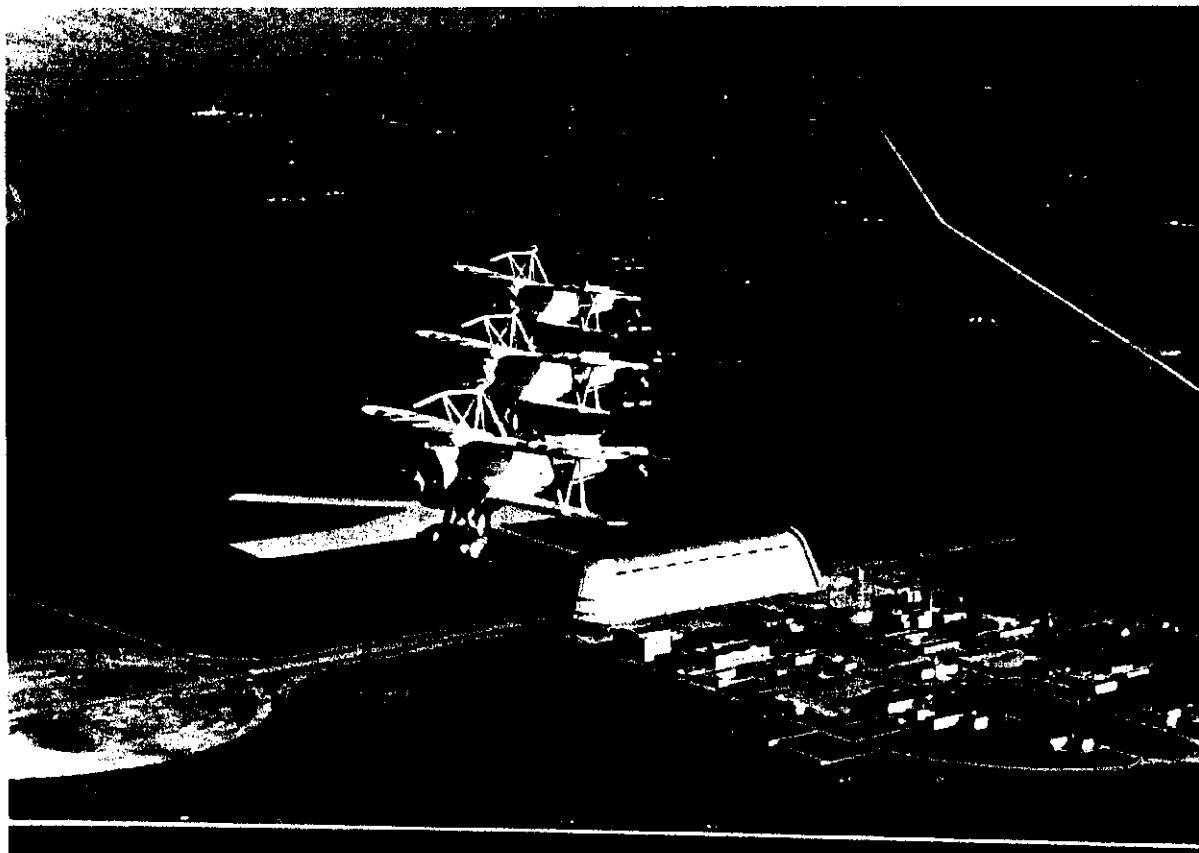


MoffettHistoricalMuseum - Macon Mooring Operations at the Mast
<http://www.history.navy.mil/photos/images/h97000/h97976.jpg>

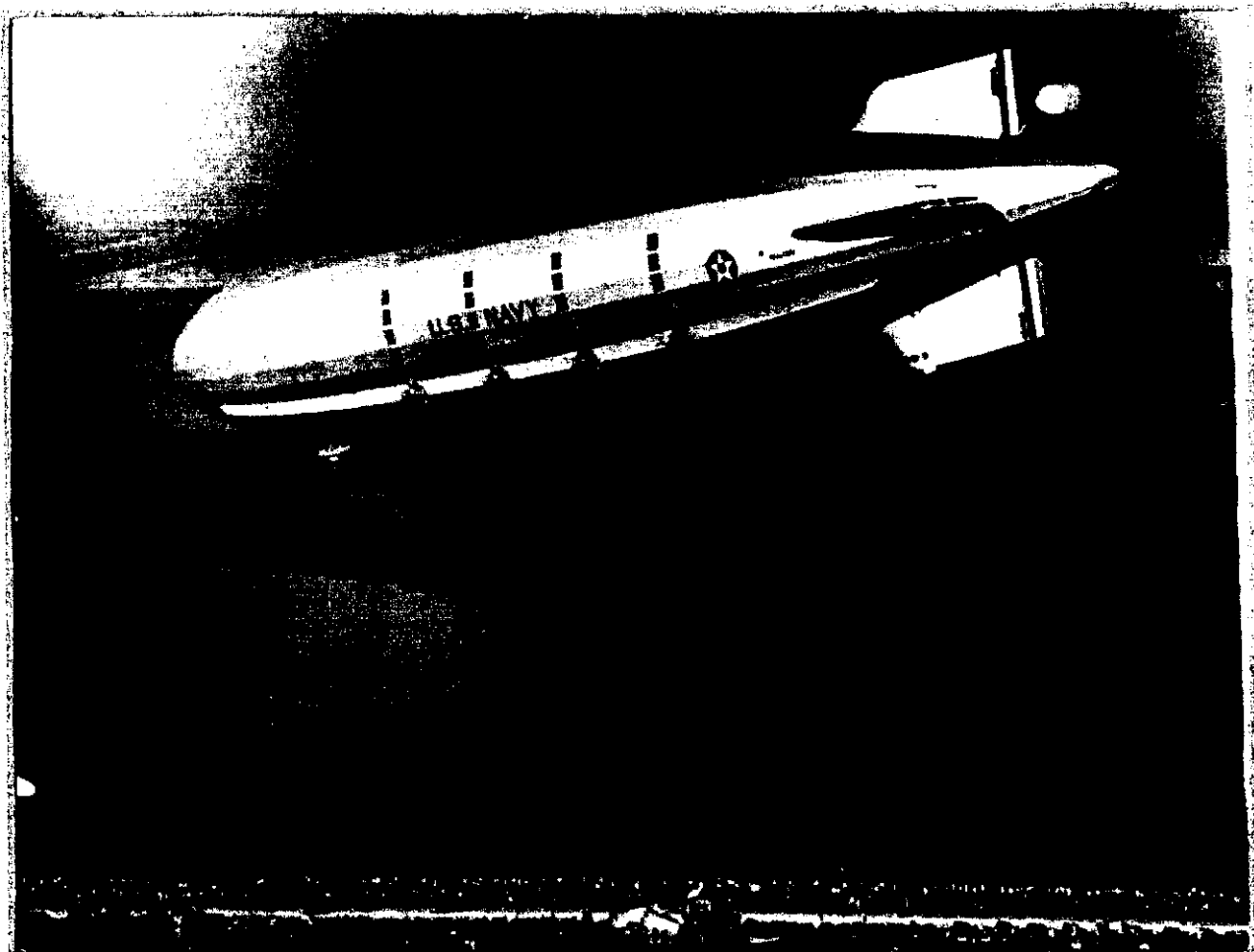
Photo # NH 77428 F9C-2 from USS Macon over Moffett Field, California. 1934



Navy Historical Center <http://www.history.navy.mil/photos/images/h77000/h77428.jpg>

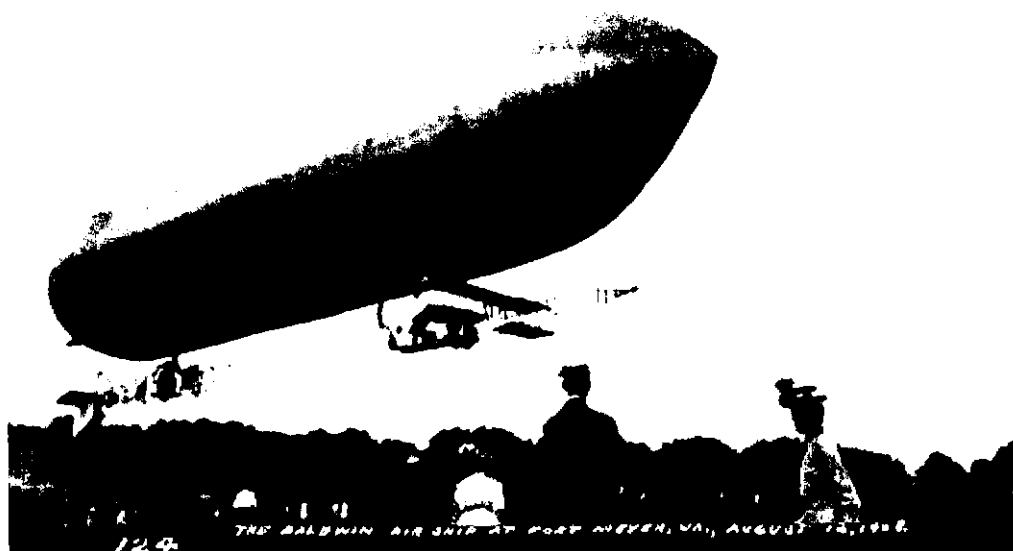


Sparrow Hawks Over Moffett <http://www.jimlyons.com/hawksovermoffett.html>



MaconSCUeduMoffett263.jpg <http://content.scu.edu/cgi-bin/viewer.exe?CISOROOT=/svhocdm&CISOPTR=267>

Baldwin airship SC-1



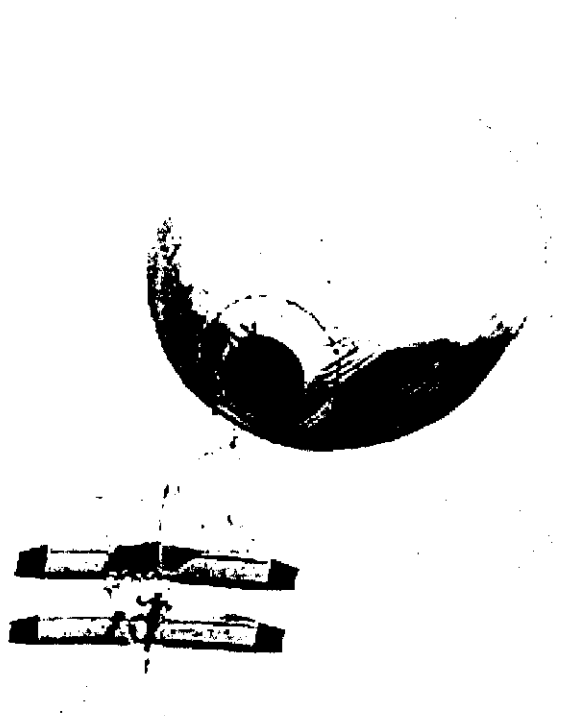
The Baldwin airship at Fort Meyer, Virginia, August 12, 1908

Rosebud's WWI Early Aviation Image Archive

<http://204.83.160.230/archive/airships/1908.08.12.Baldwin.airship.Fort.Meyer.jpg>



Montgomery Balloon at Rose Festival <http://www.flyingmachines.org/mont.html>

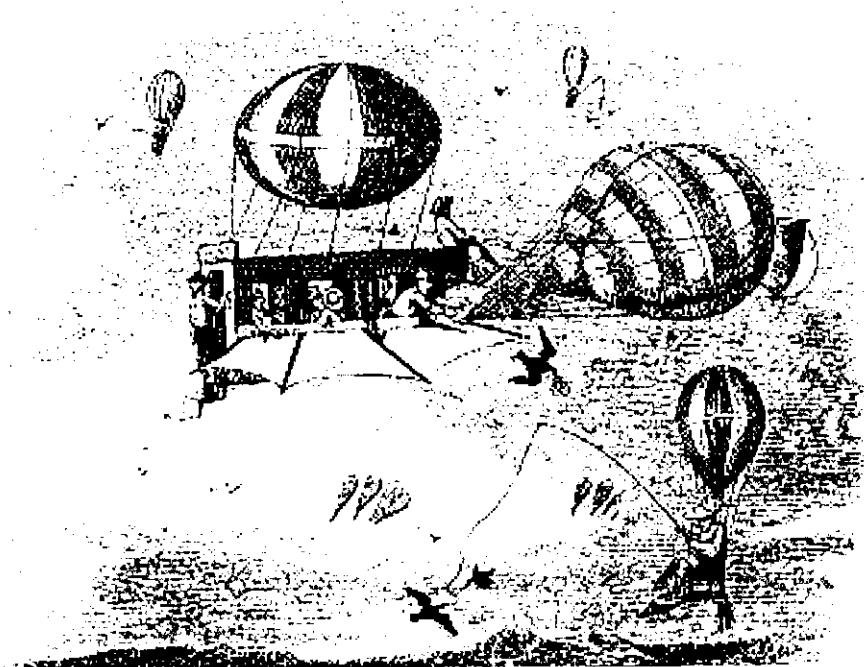


Montgomery Balloon with Pilot Daniel Maloney <http://www.flyingmachines.org/mont.html>



Civil War Balloon Intrepid

[http://www.centennialofflight.gov/essay/Lighter_than_air/Civil War balloons/LTA5G2.htm](http://www.centennialofflight.gov/essay/Lighter_than_air/Civil_War_balloons/LTA5G2.htm)
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Stamp Auctions Website: Droege Computing Services, Inc. Sale - E021
<http://stampauctionnetwork.com/xx/xxe02110.cfm#17>



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<http://stampauctionnetwork.com/xx/xxe02110.cfm#17>