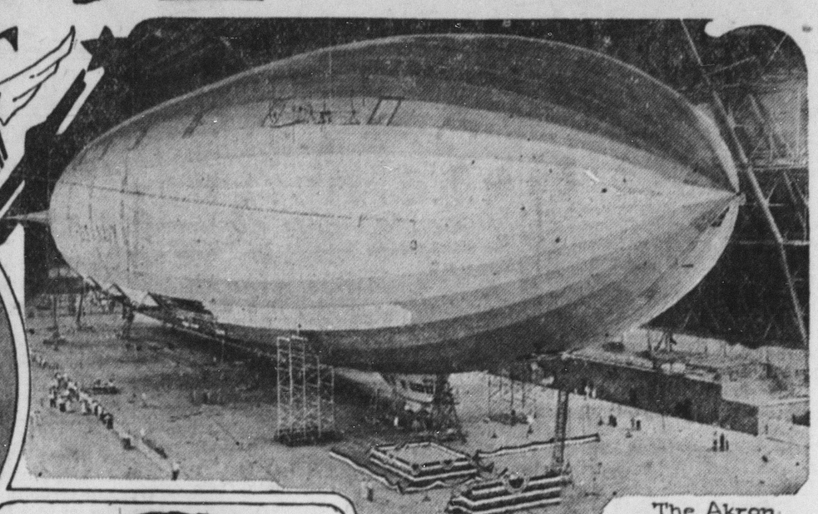
America's Leviathan of the Air

Mrs. Hoover



The Akron and dock cleared and ready for christening

Lieut. Comdr. Rosendahl
Commander of Akron

P. W. Litchfield, Pres.
Goodyear Zeppelin Corp.

By HUGH ALLEN

IN THE presence of 150,000 persons from all sections of the country, Mrs. Herbert Hoover, first lady of the land, formally christened the U. S. S. Akron, world's largest airship, in the great zeppelin dock on Akron municipal airport, Saturday afternoon, August 8.

Added to the throngs in the building who actually witnessed the ceremonies, millions of listeners tuned in on radio sets all over the world, to hear the wife of the President of the United States formally name the largest military aircraft ever built, and to hear the flutter of wings as 48 homing pigeons raced out of a hatchway near the nose of the ship.

On the platform with Mrs. Hoover were David Sinton Ingalls, assistant secretary of the navy in charge of aeronautics, Rear Admiral William Adger Moffett, chief of the navy bureau of aeronautics, Paul W. Litchfield, president of the Goodyear Zeppelin corporation, builders of the ship, and other noted figures of official and private life. Standing at attention in front of the control car of the aerial dreadnaught were Lieut. Com. Charles E. Rosendahl and his crew of nine officers and 51 enlisted men.

President Litchfield of Goodyear introduced Admiral Moffett to the crowds, and the admiral, long an enthusiastic supporter of lighter-than-air craft, predicted that the second navy airship would be even greater than the Akron in size and cruising ability.

Long before the christening the USS Akron was officially designated on Navy department blueprints as the "ZRS-4." These letters stand for "zeppelin rigid scout number four." The ZRS-4, or USS Akron, far surpasses the famous Graf Zeppelin or the British R-100 in size, speed, strength and ability to cover long distances.

In 1924, President Litchfield of Goodyear brought over from Germany Dr. Karl Arnstein and 14 other engineers and designers from the German Zeppelin works at Friederichshafen on Lake Constance. Activities of the German concern had been brought to a halt by the allies, and there was a strong possibility that the talent and experience gained by years of close association with the huge rigid airships might become scattered to the four corners of the earth.

On arrival in this country, Doctor Arnstein, who designed and supervised construction of 70 of Germany's war zeppelins, went to work on designs for large commercial ships. The United States navy then announced a design competition, the concern submitting the best design to be awarded a contract to build the world's largest airship.

Goodyear Zeppelin submitted three designs, and designs were also entered in the competition by 37 other firms. The three designs of the Akron concern, however, took first, second and third place, and in the autumn of 1928, the contract was formally awarded.

Then the zeppelin dock, the world's largest building without interior supports, was erected on Akron municipal airport, and with completion of this huge structure late in 1929, work on the ZRS-4 was started.

First, it was necessary to make girders out of the sheet duralumin that came into the zeppelin plant. These girders were made according to specific plan, and each was numbered before being transported to the dock. At the dock, they were assembled into a huge "main frame," or ring girder, whose diameter was 133 feet. This huge main frame was assembled on the floor of the dock, and later hoisted into its vertical position.

The first rivet to be driven into the frame was of gold and was squeezed into place by Admiral Moffett before a crowd of 40,000 persons. In all, there are more than 6,500,000 rivets in the framework of the ship, and each was squeezed into place by hand, workmen using tools especially designed for the purpose.

All of the main frames, which are of unusual construction, were assembled on the floor, and then hoisted into place, in the same manner as the first one, and connected by longitudinal girders.

Now, with the fabric covering of the ship all in place, the maze of duralumin girders and main frames are not visible to spectators, who are thus unable to gain an idea of the immense amount of work that went into building this leviathan of the air.

The ship has a length of 785 feet—only 9 feet longer than the famous Graf Zeppelin that has done so much to bring home to the public the practicability of lighter-than-air travel—but its diameter, 133 feet, is 34 feet greater than the Graf, accounting for the fact the Akron will have nearly twice the gas capacity of its German sister.

Total gas capacity of the new ship is 6,500,000 cubic feet, as compared with 3,700,000 cubic feet for the Graf. Instead of being contained in one huge envelope, gas in the Akron will be confined in 12 separate cells, in effect, 12 separate balloons. Each of these cells was more carefully tailored than any human garment, and was built to fit the particular section of the ship in which it is located.

To build the cells, more than 12 acres of specially woven cotten cloth was required. Half of the cells are of rubber-parrafine construction, while the remainder are of gelatine-latex construction, a new development during the past year or so.

An additional seven acres of fabric were required to make the outer cover for the Akron. The cloth was cut into panels averaging 74 feet in length, and ranging in width from 12 to 24 feet. The panels were first laced to the framework as tightly as possible, and then a single coat of clear dope, similar to that used on airplane wings, applied with a brush. Application by brush insured that the dope soaked into every pore of the fabric, and when it dried, stretched the cover taut as a drum. Following this another coat of clear dope was sprayed on with air brushes, and later, two coats of aluminum dope were applied.

Contrary to popular opinion, the aluminum dope, which gives the ship a beautiful silvery appearance as it flies through the air, is not for beauty alone. It has been discovered that this type of dope is best for reflection of sunlight and its attendant heat. Lifting gas, when heated, expands, and changes weight calculations of the airship's captain. It is best, then, to maintain as near an even temperature as possible.

In sewing together the panels, a tolerance of only one-thirty-second of an inch was allowed on the seams. This is easily understood when it is pointed out that miles and miles of seams were necessary, and had the tolerance been one-fourth of an inch, instead of one-thirty-second, an extra weight of many pounds might have been entailed.

A feature of the Akron's construction not found in any airship heretofore built, is the installation of the motors in roomy compartments inside the hull, instead of in gondolas suspended outside the ship. This refinement is made possible by use of helium, the non-inflammable, non-explosive lifting gas of which this country has a natural monopoly.

Installation of the motors inside the ship reduces the resistance set up by the suspended gondolas, and gives the ship greater speed. Also, the engine compartments are much larger than was possible in the old gondolas, and allow mechanics ample space to care for the throbbing power plants under their supervision.

Four engines are located on each side of the ship and produce a total of 4,480 horsepower. The motors, each with 560 horsepower, will propel the ship at a top speed of 84 miles per hour.

Gasoline for the motors is carried in tanks ranging in capacity up to 365 gallons each, and a total load of 20,000 gallons of gasoline may be carried. This amount of fuel is sufficient to fly the ship over a distance of 10,500 miles without stopping.

As 20,000 gallons of gasoline weigh 60 tons, it is apparent that should this amount be nearly all used up on a single flight, the ship would be nearly 60 tons lighter when it returned to its base than when it started, and consequently much harder to handle. To compensate for this, a water ballast recovery system has been installed on the Akron, which will allow the ship to return to its base weighing even more than when it started.

Above each of the motors is a series of condenser panels, through which the exhaust gases from the engines are forced, after being mixed with air. Theoretically, it is possible to recover 135 pounds of water for each 100 gallons of gasoline used, but engineers, through tests, have satisfied themselves that more than 100 pounds of water can be recovered in actual practice, for each 100 pounds of gasoline used.

A system of marine telegraph indicators will be used to convey instructions from the captain of the ship to the engine rooms.

Power is delivered from the motors to the propellers outside the hull by means of a rigid shaft and bevel gear device, mounted on sturdy outriggers. The propellers may be tilted through an arc of 90 degrees, and can thus exert thrust downward, to help the ship off the ground in a take-off, as well as in the usual horizontal direction necessary in flight. The motors are reversible, and the propellers may thus be used to pull the ship to earth if necessary, when they are tilted in a vertical position.

Just aft of the control cabin is another unique feature of the Akron. It is an airplane compartment that will hold five completely equipped fighting airplanes. The planes may be lowered through a T-shaped opening through the bottom of the hull into the air, and then released, to go about their assigned missions. On completion of these missions, the planes can return and hook on to a special trapeze, and be hoisted into the huge airship without ever having landed.

One of the most interesting things to be found in the Akron is its telephone system. As the craft is more than two-and-one-half city blocks in length, it is necessary that the captain in the control car have immediate communication with all sections of the ship. Hence, 18 telephone instruments are located at strategic points, and the captain may talk to any or all of them when he desires.

The control car contains three rooms—the first for actual flying of the ship, in which the control wheels are located, the second for the meteorologist, or weather expert, and the third for the navigator.

Quarters in which the officers will live are located above the control car inside the hull, and are equipped with bunks and chairs. Quarters for the crew are located on each side of the ship, along the gangways or catwalks that serve as passageways, and also as rigid keels. In addition to the gangways or keels along each side, there is another located in the extreme top of the Akron, making a total of three. Previous ships have had but one keel, which extended along the bottom center line.

Meals will be prepared on an especially built stove, weighing but 110 pounds. The stove has eight cooking spaces, and is sufficient to prepare warm meals for the entire crew. The first breakfast, prepared as a test of the stove and cooking equipment, was served while the ship was still in the dock at Akron, and consisted of flapjacks with butter and honey, and coffee.

The control surfaces, which are directly responsible for maneuvering the Akron, are located near the stern, and consist of four fins and movable surfaces, one pair extending horizontally, and the other pair vertically, from the hull. The fixed surfaces, or fins, give stability to the craft, and each is about the size of an average city lot. It has been estimated that four ordinary bungalows, together with two one-car garages, could be placed on each horizontal fin, with still enough room left over for a few flower beds.

Attached to the fixed surfaces are the movable surfaces. The rudders, which govern the lateral direction of the ship, are attached to the rear of the two vertical fins, while the elevators, governing the up and down movements, are attached to the horizontal fins.

In the lower vertical fin is located an emergency control room, 3 feet wide and 15 feet long. Here two men will be stationed at all times to assume control of the ship should the cables leading from the forward cabin to the fins become shot away in war time, or disabled for any cause whatever.

Following trial flights of the Akron, and her formal acceptance by the navy, it is planned to base the ship at Lakehurst naval air station for some time.

The Akron is primarily a navy ship, and was not built for passenger work. She will be assigned to missions with the fleet, and will act as a scout ship.

Ships of the same general design may easily be built for commercial work, however, and looking to this end, the International Zeppelin Transport company and the Pacific Zeppelin Transport company were organized nearly two years ago to study routes and terminal sites for Atlantic and Pacific passenger lines.

As a result of these studies, it is believed that a business man could leave his desk in New York on Saturday morning, arrive in London on Monday morning, transact business in Europe until Friday morning, and be back at his desk in New York the following Monday, in only a few days more time than it would take to make a one-way crossing on a surface craft.

Terminal site locations have been studied for sometime, but no announcement as to where the American terminal of the Atlantic line will be located has been made.

The Pacific line, it is expected, will some day operate from the west coast of the United States to the Orient, through Hawaii and the Philippine Islands.

Sleeves Feature the Velvet Jacket

By CHERIE NICHOLAS

INTRIGUING little velvet wraps continue to flourish in the style picture, both for daytime and evening wear.

At this time of the year when the cool of autumn is being foretold during midseason days, the little jacket made either of black or of bright colored transparent velvet comes as a lifesaver to many a pretty summer frock such as women love to wear and are loath to cast aside until the last call for summer ceases to resound through the realm of fashion.

And so, because of the little velvet jacket, which tops it so smartly and flatteringly, many a beloved summer frock at this very minute is being permitted to live on borrowed time."

While the velvet jackets shown in the picture are functioning as evening wraps, they may be just as suitably and effectively worn during the daytime hours. The back view of the very youthful model to the left calls attention to an exceedingly clever shallow yoke effect. As to the sleeves, they are the "last word" in artistry and novelty. The velvet which fashions this good-looking wrap is bright green and it is worn with a pale yellow firm-weave chiffon evening gown.

The other jacket, with its wide flowing sleeves and its scarf-tie neckline, is highly colorful; the transparent velvet of which it is made being bright red with red, white and black printed chiffon for its lining. It contrasts strikingly the pajama costume of black satin over which it is posed.

If there is one thing which distinguishes the popular velvet short-jacket wrap more than its sleeves, it is its color. The intent of the mode seems to be to add a velvet jacket to the costume which shall intensify the color scheme. Throughout the early Paris collections arresting color contrasts are stressed. Most unusual colors are combined, such as deep jade for the velvet jacket over purplish dark blue for the dress, or perhaps a radiant brown velvet wrap with a pale blue evening frock. The new color card places emphasis on rich shades of green, red and blue for fall, these deep autumn-like hues being especially effective in velvet.

Some of the very newest evening gowns show a stately silhouette made possible through the use of velvet which is stiffer and firmer than has been in favor for many a year. These late models mass the skirt fullness at the back and their sleeves are composed of two puffs quite like artists of the past delighted in portraying in pictures of "a lady."

WOOLENS FAVORED FOR AUTUMN WEAR

Woolens are in a most important place in the fashion picture for the coming season. And justly so, for wool no longer is a term synonymous with a heavy, bulky fabric designed for utility alone. Woolens of 1931 are in many weights and many surfaces, but the best of them, heavy or light, smooth or rough of finish, drape with the perfection which the new mode demands. They are as serviceable as they ever were, and they are beautiful as well, a fact borne in upon us recently when we visited one of the foremost woolen manufacturers of the country, says the New York Herald Tribune.

Coat fabrics for women are being woven so closely and thickly that they need no interlinings, which are clumsy things at best, and at the other end of the wool panorama are gossamer woolens which make the woolen evening gown seem an eminently practical and desirable addition to the wardrobe, rather than an extravaganza of the designer's imagination.

Women Learn to Make Permanent Waves Behave

Permanent waves are still going strong. Every woman concedes that the hard-boiled curl is a marvelous and wonderful idea. Methods have improved. Waves are wider. The process is completed in less than half the time that was necessary a few years back. Women have learned how to make permanents behave, to moisten them, pet them, pat them into alluring patterns. Brushing doesn't harm them; only makes them crazy for the moment. Combing out straight, applications of brilliantine or hot water together with clever manipulations put them in form again.

Cuban Heels Popular for Sports or Street

The Cuban heel is a smart choice for sports or street wear. It isn't like the square heel that was once characterized as Cuban but is gracefully shaped though sturdier than the spike heel. Usually of leather, it ornaments the shoe of calf or alligator. The spectator sports shoe is frequently seen with this conservative but very smart heel.

Spectator Sports Wear

By CHERIE NICHOLAS

Plaid transparent velvet in green and yellow fashions this tailored dress with velvet scotch beret to match. A green wool jacket tops this handsome one-piece frock which is collared and cuffed with white pique. Black kid pumps, a purse of black velvet with silver mountings and eggshell doeskin street gloves complete this charming outfit.

Luxury Lingerie Smart When Laden With Lace

Luxury lingerie of crepe satin white or black is smartest when heavily laden with white lace of floral pattern. The silk slip for evening wear cut with a decollete back has its skirt finished up in an extravagantly deep flounce of the lace. Black satin night robes as well as chemises are stunning when bordered with white lace.