

THE ASCENSION OF COUNT ZEPPELIN'S AIRSHIP.

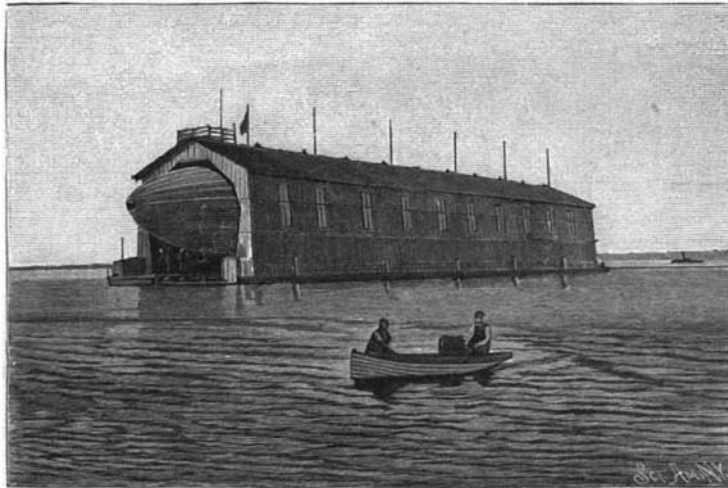
The second day of July will long be remembered by aeronauts, for on that day occurred the first ascension of the great airship just completed by Count Zeppelin, the cavalry officer of Wurtemberg, who has so long been superintending the construction of his balloon in a huge floating house on Lake Constance, a site admirably adapted for work of this kind, as it offers ample space and in case of accident the results are likely to be much less disastrous than on land.

The frame of the balloon, which is 416 feet long and 38 feet in diameter, is composed of aluminium trellis work and holds seventeen balloons of comparatively small size, thus dividing the body of the airship into compartments, an arrangement the advantages of which are quite apparent. When fully inflated, the airship will contain 11,300 cubic meters (399,059.5 cubic feet) of hydrogen gas, and will, consequently, have a lifting capacity of 10 tons. The propellers are actuated by two Daimler motors of 15 horse power each, one being placed in the car at the front of the ship and the other in the rear car. The occupants of these cars can communicate with one another by telephone. By means of a weight arranged to slide on a rod under the airship, the latter can be made to move in a horizontal or an inclined plane, as desired.

Count Zeppelin, like all originators of great schemes, has had many unexpected difficulties to contend with, not the least of which was, probably, a tempest which tore his great floating house from its moorings and did other damage, which was repaired only at great expense of time and labor as well as of money. Numerous other accidents interfered with the ascension of his balloon, but finally June 30 was officially given out as the date of the first trial. On that day thousands of people gathered on the shores of the lake, and the water was covered by a fleet that included craft of all kinds from the fisherman's primitive boat to the most modern private steam yachts and launches, all filled with would-be spectators of the event. They were doomed to disappointment, however, for the inflation of the airship was not completed and so, of course, no ascent could be made; nor was all ready on the second day, but toward night of that day the raft on which the airship rested was towed out on the lake a short distance. Even on the third day it seemed doubtful for some time whether any ascension could be made, but finally, just before eight o'clock, the raft and the balloon were again towed out of the house, the last rope was cut at three minutes after eight, the sliding weight was quickly regulated, and the airship began to move, trying to rise in a graceful curve, which, however, was interrupted at a height of about 150 feet by what seemed to be a rather strong current of air,

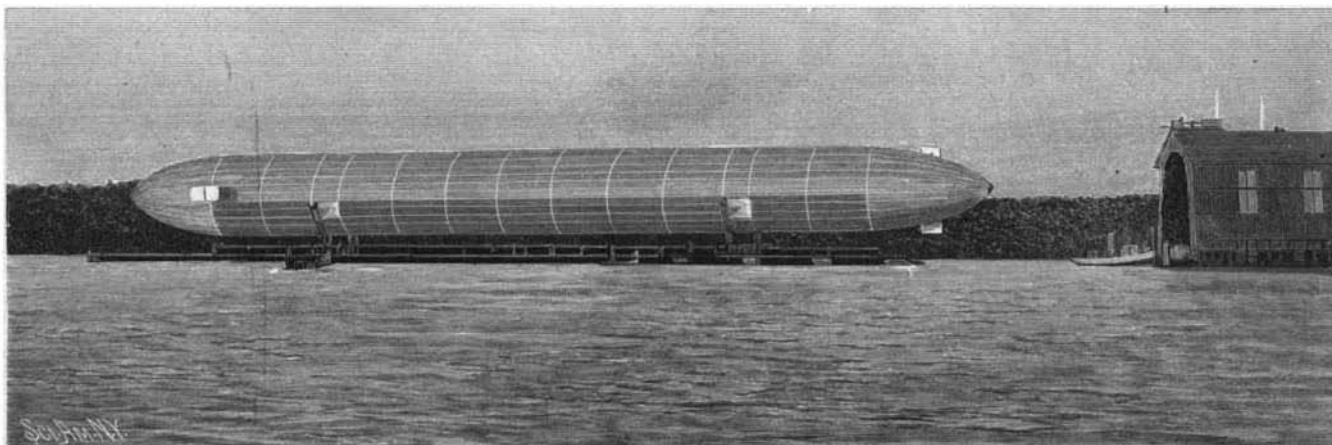
speed of 26 feet per second. During this trial trip Count Zeppelin occupied the forward car with an amateur, Mr. von Bassus, of Munich, and an engineer, while in the rear car were the African explorer, Eugene Wolff, and a machinist.

Although all the hopes and expectations of the promoters and friends of the enterprise were not realized



VIEW OF FLOATING HOUSE WITH BALLOON.

by the results obtained at the ascension of July 2, these results are interesting and important, and, as far as the ascent and descent are concerned, are entirely satisfactory; but it was evident that the amount of energy developed by the propellers was insufficient. Instead of the promised speed of 32 feet per second, a speed of only 26 feet per second was really obtained; moreover, in its present shape, the airship can scarcely be called dirigible. It is very certain that some de-



COUNT ZEPPELIN'S BALLOON ON ITS RAFT IN FRONT OF THE FLOATING HOUSE.

vised changes will have to be made, and on the nature of these changes will depend its ultimate success; for if they concern only the motors, such alterations will probably be quickly made, but it is evident that radical changes must also be made in the steering apparatus. A steering device should be entirely removed from the domain of chance; if ropes are required for its manipulation they should be so arranged that there would be absolutely no danger of their becoming entangled with other ropes, or of their breaking. A steering device that will not obey the hand of the helmsman promptly and under all circumstances is worse than none. It should not be forgotten that changes in the machinery may involve an increase in the weight of the balloon itself, thereby causing a change in the static conditions, which have been considered the strongest point of this airship.

The Zeppelin airship belongs to the class of so-called aerostatic balloons or dirigible airships which hold a mid-

dle ground between the purely dynamic flying machines and the manually-operated devices, resembling in this respect what are known as "balloon flying machines"; that is, those airships in which hydrogen is used only for keeping the apparatus suspended, while mechanical power is employed for driving and steering it. The first notable trial of such an aerostatic bal-

loon was made by Henry Giffard in 1855, and this was followed in 1872 by that of Dupuy de Lôme and Paul Hânlein, and in 1879 by that of Tissandier. All of these experiments were without important results, and the French captains, Renard and Krebs, were the first to bring an airship back to its starting point after a voyage of twenty minutes, having developed a speed of 19 feet per second. This record, which they obtained with the "La France," a balloon built by them, that made an ascension on August 9, 1884, has been equaled by no one since.

One thing is very certain, and that is that no airship of the Zeppelin type will ever carry many people, although it may be useful for military purposes and possibly for exploring expeditions that are not of too extended a character; but, on the other hand, the enormous expense incurred in the building of such an airship would be a serious obstacle in the way of its use. About \$24,000 was invested in this undertaking, and it cost \$2,380 to inflate the balloons for the ascension on July 2.

Much of the above data has been obtained from articles that have been published in *l'Illustration* and *Ueber Land und Meer*.

A Great Achievement.

The news that the steel viaduct across the Gokteik Gorge, in Burmah, will be completed well within the contract time, brings to the front another great achievement, illustrating American superiority in engineering works. The construction of this bridge was awarded the Pennsylvania Steel Company, of Steelton, for the reason that this plant was able to promise the completed work in one-half the time asked by the closest English competitor in the bids. The difficulties to be surmounted were uncommonly trying. Thirty-five skilled American mechanics were sent to Burmah for the important operations, and their dwellings,

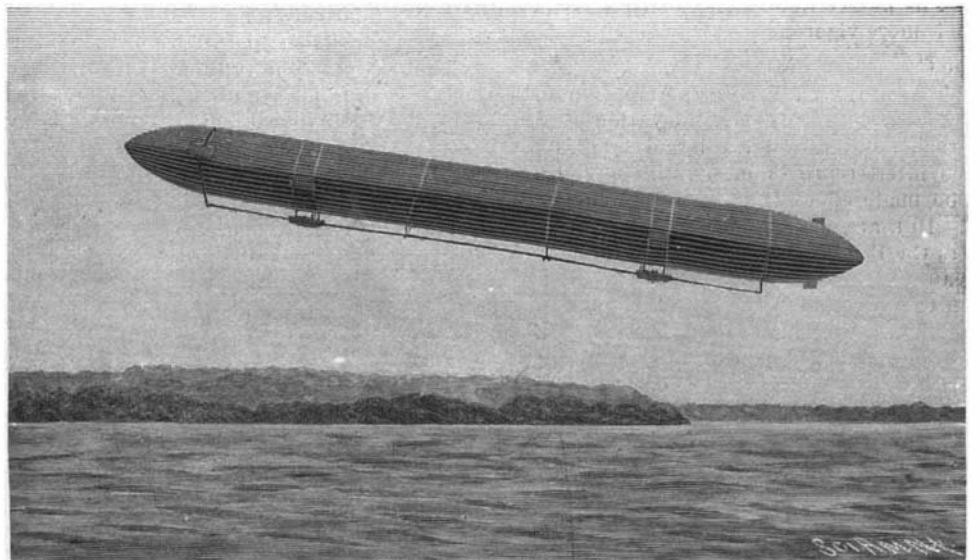
clothing, medical stores, machinery and material had also to be forwarded by steam and rail half [around the world. Floods washed away much of the railroad between the gorge and Rangoon, the base of supplies. But the bridge will be finished on time. The structure is to be 2,300 feet in length, and the supports, all of structural iron, vary in height from 20 feet to 220 feet. The base of the highest

towers covers 135 feet on each side. The scene is 150 miles from the nearest seaport, and all the material had to be transported, even to scaffolding, and the largest crane ever built, with an overhang of 164 feet and a lifting power of 25 tons in handling girders. The bridge will open a direct railroad line from Rangoon through to China. The company which ordered the big bridge is partly under the control of the British Government. Well informed engineers have stated that this work of American



COUNT ZEPPELIN.

but it is said that the line connected with the sliding weight became entangled with a line from one of the side propellers. After that it was carried along with the wind in the direction of Immenstaad, where it descended to the water at 8.20, having attained a height of something over 1,300 feet and covered a distance of three and a half miles, traveling with the wind, at a



BALLOON IN THE AIR.

mechanical genius in India is one of the greatest feats of modern times, and of more importance, both as an engineering achievement and a victory for American ability, than the famed Atbara Bridge.—Bradstreets.

STEAM power is to be superseded by electricity in the Government dock yards at Kiel, Germany.