

The Golden Age of the Great Passenger Airships

Graf Zeppelin & Hindenburg

**Harold G. Dick with
Douglas H. Robinson**

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Chapter 1: *How I Got Started with Airships*

I was seventeen years old when I entered the **Massachusetts Institute of Technology** in the fall of 1924, never thinking that so much of my life in the future would be intimately bound up with the big airships. Although **MIT** in **1913** had been the first institution of higher learning in the United States to offer a course in **aeronautical engineering**, I was aiming for a degree in **mechanical engineering**.

I was however attracted by the Army Air Service's ROTC program and signed up for this, though initially nothing much happened beyond expeditions to the old East Boston Airport, and rides around the area with National Guard pilots still flying World War I Jennies and de Havillands. Six weeks of summer camp at Langley Field in **1927** were something else: I got to occupy the nose cockpit of a twin-engine Martin bomber and, even more thrilling, **had my first flight in an airship**. This was an army blimp, a "**rubber cow**," one of the TC ships built by Goodyear (though I did not know it at the time). Underneath the fabric bag I rode with the crew in an open gondola suspended by a multitude of cables, with the two engines on outriggers attached to the car. It was fascinating, floating in the air - a different kind of flying from the small, fragile airplanes - and **the memory stayed with me**.

In 1929 I received my S.B. degree and a commission in the Air Service reserve. A year later, along with twenty-four other graduates of such prestigious institutions as Georgia Tech, NYU, and my own MIT, **I was selected by Goodyear Tire and Rubber Company for a three-month staff training program**; at the end we could choose the department to which we wished to be assigned. Knowing that Goodyear was constructing airships through its subsidiary, the **Goodyear-Zeppelin Corporation**, I felt some stirrings of the interest aroused by the flight at Langley Field, **but decided in the end to go into mechanical goods design**.

Here I enjoyed an early success. The **ailing V-belt department** was working only half a shift per day because of a lack of orders; the Goodyear product was inferior to the competition. I helped to rewrite the company handbook on belting design and developed a **new V-belt which was so successful** that the department was shortly working three

Chapter 1: *How I Got Started with Airships*

full shifts per day! Perhaps this incident brought me to the attention of **Paul W Litchfield**, the president of the Goodyear Tire and Rubber Company.

While Goodyear, as a large manufacturer of rubber products, had been building pressure airships of rubberized fabric since 1911, **Litchfield had been impressed with the giant Zeppelin-type rigid airships**, for which he saw a great future in both the military and commercial fields. Thus, in **October 1923**, he had entered into an agreement with **Dr. Hugo Eckener**, representing the Zeppelin Company of Friedrichshafen, whereby the **Goodyear-Zeppelin Corporation of Akron, Ohio**, would receive the **North American rights to the Zeppelin patents**, while the **Luftschiffbau Zeppelin would receive not only German rights to any American patents, but also 10 percent of the stock** in the American company. Furthermore, key Zeppelin Company personnel would come to America to convey the parent firm's expertise to Goodyear-Zeppelin. **Thirteen engineers**, headed by **Dr. Karl Arnstein**, chief stress analyst of the German firm, in fact **arrived in America in October 1924**.

Figure 1:

Dr. Karl Arnstein and his "twelve apostles," the original group of Germans who came to Goodyear as an engineering and design nucleus for the Goodyear-Zeppelin Corp. Here the group is shown aboard ship in October 1924. From left to right, front row: Schoettel, Schnitzer, Arnstein, Brunner, Klemperer; center row: Mosebach, Rieger, Liebert; back row: Bauch, Keck, Hilligardt, Helma, Fischer. (Photo courtesy Kane)

In **1928**, Goodyear-Zeppelin won an important U.S. Navy contract for the construction of two **6,500,000 cubic foot rigid airships** - later named the **Akron** and the **Macon**. By late 1930, not only was the design of the big ships going ahead, but the huge "**Air Dock**" had been completed and the construction of the **Akron** had gotten under way. At the same time, the Goodyear-Zeppelin design department was something of a German "closed shop," and Mr. Litchfield felt it was time that some of his bright young Americans should be added to the staff.

Chapter 1: *How I Got Started with Airships*



Figure 1

Thus, it came about that **one day late in 1930**, three of us were summoned to Mr. Litchfield's office, where the great man told us of his desire to have some Americans involved in the rigid airship adventure. A charming and persuasive individual, Paul Litchfield argued that there was **a great future with the development of the rigid airship**, and it would be in our own interest to transfer to Goodyear-Zeppelin. For **George Lewis** and myself, "**the oracle had spoken**," and we promptly joined the Goodyear-Zeppelin staff.

Over the next four years, I worked in the Project Department, which was responsible for overall layouts of proposed airships, weights and performance calculations, and the like. More interestingly, **I was admitted to a select group** of about ten junior engineers

Chapter 1: *How I Got Started with Airships*

with Goodyear-Zeppelin who were to be given overall experience and training **to fit them in every possible way** for responsible future positions in the design and construction of rigid airships. The lessons to be learned were not merely theoretical but also practical. After all, even the giant **Graf Zeppelin** was simply a powered balloon; hence we were taught practical aerostatics through free-balloon flying, **then going on to train in the small Goodyear blimps**, which at least gave us some idea of the problems of handling the huge rigids.

Figure 2:

Federation Aeronautique Internationale (F.A.I.) dirigible balloon (blimp) and spherical balloon (free balloon) licenses. Most blimp flying was in the Goodyear Defender. Free ballooning was in an 80,000-cubic-foot balloon inflated with coal gas (mostly hydrogen). Both licenses are signed by Orville Wright. (Photo by Harold G. Dick)

I am still proud of the fact that my **Federation Aeronautique Internationale Spherical Balloon Pilot Certificate No. 1074**, dated October 27, 1933, and my **Dirigible Balloon Pilot Certificate No. 249**, dated May 25, 1934, **were signed by Orville Wright**. The man who had made the **first controlled powered flight at Kitty Hawk** on that historic December 17, 1903, was still living in Dayton as the elder statesman of aviation!



Figure 2

Meanwhile, at the highest corporate level, to which I did not have access, the prescribed contractual relationship between Goodyear-Zeppelin and the parent firm, the **Luftschiffbau Zeppelin**, was not proceeding as expected. While Dr. Eckener, the chairman, was always a friend to President Litchfield and American airship men

Chapter 1: *How I Got Started with Airships*

generally, at lower levels in the Zeppelin Company **there was jealousy and resentment** that Zeppelin "**trade secrets should be shared with the Americans**. In particular, Dr. Eckener's ideal transoceanic airship, the **7,062,000 cubic-foot LZ 129**, later christened the ***Hindenburg***, was in the preliminary stage of construction, and Goodyear-Zeppelin was naturally desirous of obtaining full information about this craft, which **represented an impressive advance over the *Graf Zeppelin* of 1928 vintage**.



Figure 3:
Dr. Hugo Eckener, the dean of all airship men. He had no use for the Nazis and if he had not been such a world-famous figure he would most probably have been liquidated in the purge of the "Night of the Long Knives" in June 1934.

Figure 3

Dr. Eckener's response was to suggest that Goodyear-Zeppelin send to Friedrichshafen some of their blimp pilots to fly on the *Graf Zeppelin's* scheduled passenger flights to South America. I knew nothing of this arrangement before early 1934 when some of us were meeting with Mr. Litchfield and one of Goodyear's vice-presidents, **Joe Mayl**, remarked that he understood that arrangements had been made with Dr. Eckener to **send over some of our blimp pilots to fly in the *Graf Zeppelin***. Since fools will go where angels fear to tread, I spoke up and asked, "**Why not send engineers who know something about flying and find out what it's all about?**"

Chapter 1: *How I Got Started with Airships*

Mr. Litchfield changed the subject immediately but next day, I later learned, all hell broke loose. Dr. Arnstein, the chief designer at Goodyear-Zeppelin, immediately agreed: **reports from a trained engineer on progress with the construction of the LZ 129 obviously would be worth more than the observations of the blimp pilots.** Mr. Litchfield also felt the need to have a trustworthy and qualified representative of Goodyear-Zeppelin reporting to him from Friedrichshafen. Within exactly one week of my brash remark, **George Lewis and I were told to pack our gear**, as we were going to Friedrichshafen **to fly with the Germans aboard the *Graf Zeppelin*** and to follow the construction of the LZ 129. We were told by Dr. Arnstein to **send him frequent technical reports** on the progress of the new ship, while Mr. Litchfield wanted me to keep him informed on the general situation.

Thus, **early in May 1934**, George and I found ourselves aboard the ***SS President Harding*** en route to Europe. It would be fourteen months before I would see the United States again. I knew I would enjoy the direct support and concern of President Litchfield, as shown, for example, in a handwritten letter that I still treasure:

Sept. 16, 1934

Dear Hal,

Yours of 9-4-34 at hand, and Engineer Pilot Dick and Hell-of-an-engineer Lewis are hereby ordered to equip themselves with red flannels, and dig in for a cold German winter. About April 1st *you* are ordered to Akton, Ohio, U.S.A., fully trained and capable of designing and constructing rigid airships as well as operating them. If *you* qualify on this assignment, maybe *you* can convince the Washington Bureaucrats that an airship is not a *haufenmist*; if not, the wood shed for *you* both. Given under our hand and seal, this cool September morn,

The Goodyear-Zeppelin Corp.

by *P W. Litchfield*
Pres. GZC