

**Program:** Allison Rolls-Royce: A Century in Indianapolis

**Speaker:** Phillip Cagle, President, Rolls-Royce Heritage Trust – Allison Branch

**Introduced by:** John Rathman

**Attendance:** 120

**Guests:** Julia Hosek, Bill Clemens, Ray Chin

**Scribe:** Larry Hutchison

**Editor:** Bonnie Carter

Our speaker today was Mr. Phil Cagle, President of the Rolls-Royce Heritage Trust Museum. His speech was titled “107 Years of Innovation in Flight” and the subject was the history of Allison and its engine products through its many iterations up to the present day of being an important part of the Rolls-Royce Corporation. Mr. Cagle himself was a long-time employee of the company having been hired by one of our own, Doug Wagner, in the early 1980s and retiring five years ago.

James Allison, famous as one of the original owners of the Indianapolis Motor Speedway, had been a successful businessman as a printer of coupons (think S&H Green Stamps) and a manufacturer of Prest-O-Lite headlamps in the early 20<sup>th</sup> century. By 1915 however, he went in a different direction when he founded the Speedway Team Company, soon to be renamed the Allison Engineering Company. That company then became a division of General Motors in 1929, and many older people today would associate the word transmission with the name Allison as that was an important product line for the organization. Known as the Allison Division of General Motors up to 1970, the engine group went through several reorganizations, eventually in 1995 becoming a part of the Rolls-Royce Corporation.

From the very beginning the company was involved in aircraft engine development and manufacturing. As WWI began, the Allison Engineering Company took on precision engineering work for the Liberty Engine. The Liberty was the most powerful aircraft engine of its day with more than 20,000 units built in the U.S. Allison modernized thousands of Libertys and developed the technology that increased engine life by an amazing ten fold. Even at this early stage there was an association with Rolls-Royce as they licensed some of the technology developed by Allison.

Later, one of the most famous engines developed and manufactured by Allison was the V-1710. This was America’s first 1,000 shp (shaft horsepower) engine and 70,000 were built for WWII. The list of aircraft using this engine reads like a litany of historic planes, e.g. North American P-51, Lockheed P-38, Curtiss P-40, Boeing B-17 and many others. After WWII Allison was in the forefront of developing and manufacturing jet engines. Early models were the J33 and J35 that were used in the Lockheed F-80 and the Republic F-84. Between 1945 and 1958 28,000 of these engines were built. Another legendary engine was the T-56. This engine first went into production in 1954 and is still being built today, with 18,000 units being delivered in that time. Probably the most recognized aircraft using this engine today is the Lockheed C-130 Hercules. Another aircraft of note is the Lockheed P-3, an anti-submarine maritime patrol aircraft and also famously known as the “hurricane hunter.” One last important engine (there are too many to list) is the Model 250. Production of this unit began in 1963 and continues to this day with over 29,000 units being built. Including helicopters, dirigibles and standard airplanes, this engine has been used in 90 different types of aircraft.

Rolls-Royce/Allison continues to be in the forefront of technology today. At the moment there are six different engines in production. At various times the company has been involved in researching vertical take-off aircraft and has moved into the space age, becoming experts in making steel and titanium rocket cases and fuel tanks. Today there are 24 lunar modules fuel tanks on the

moon that Rolls-Royce/Allison had a hand in making. Rumor has it that John Rathman even autographed one of them!

Some take-aways from today's presentation are:

- It is not unusual to invest 20 to 25 years in engine technology development before you see it in commercial use.
- Rolls-Royce/Allison is very good at using parts/technology across the organization, e.g. compressors, combustioners and turbines in the AE family of engines (common design).
- Rolls-Royce and Allison have fit like a glove and both organizations have learned from each other.
- Visiting the Rolls-Royce Heritage Trust Museum is free. Check the website for times.  
<https://www.yelp.com/biz/rolls-royce-heritage-trust-allison-indianapolis-3>
- Do not attempt to test the durability of turbine blades with a frozen chicken!



**Phillip Cagle**