

HENRI COANDA: THE FACTS

Henri Coanda made Harry Stine trustee of all his photographs, papers and other memorabilia including his handwritten autobiography. Harry made all the information available to Terry Day. Some of the following pictures with captions by Harry Stine have never before been made public. Captions by Harry are direct from Henri Coanda so are the most historical narrative available. Students of the Coanda history can request further information from us.

Harry was a rocket scientist, later a science and science fiction writer and is known as the father of model rocketry in the USA.

Harry Stine shared his office at Huyck Research Center, Stamford, Connecticut with Henri Coanda from **1961** until **1965** when Coanda was a consultant to the company.

The story and a model of the 1910 Coanda Jet are on display in the foyer of the Aeronautical museum at Le Bourget airport outside Paris. A replica is displayed in the Romanian Armed Forces Museum (2001).

Romania's international airport is the Henri Coanda airport. Coanda became Minister for Science and a national hero.

The Coanda Effect increases lift 300% on wings and wind turbine blades by blowing a sheet of high speed air from a narrow slot above the bluff trailing edge and in some cases near the leading edge. The sheet of fluid follows the curved surface up to 180 degrees. For further details see the PDF "**Lift and the Coanda Effect**".

WORLD FIRSTS BY HENRI COANDA;

- First jet engine powered plane.
- First twin engine plane.
- First twin tail boom plane.
- First thick wings.
- First Kruger flaps.
- First "Sesquiplan" wings, re-invented 10 years later and used on Fokker's, Brequet's and Potez's planes.
- First rocket cannon; several months ahead of Dr Robert, H. Goddard.
- First static electricity dissipation rods from trailing edges.
- First method of photographing bullets in flight.
- First Fluid Amplifiers.
- First external and internal Coanda nozzles.
- First hydraulic automobile transmission.

Henri Coanda invented many other devices not related to aircraft including Coanda engine silencers and scavengers, building materials and biological innovations.



1910 Jet airplane



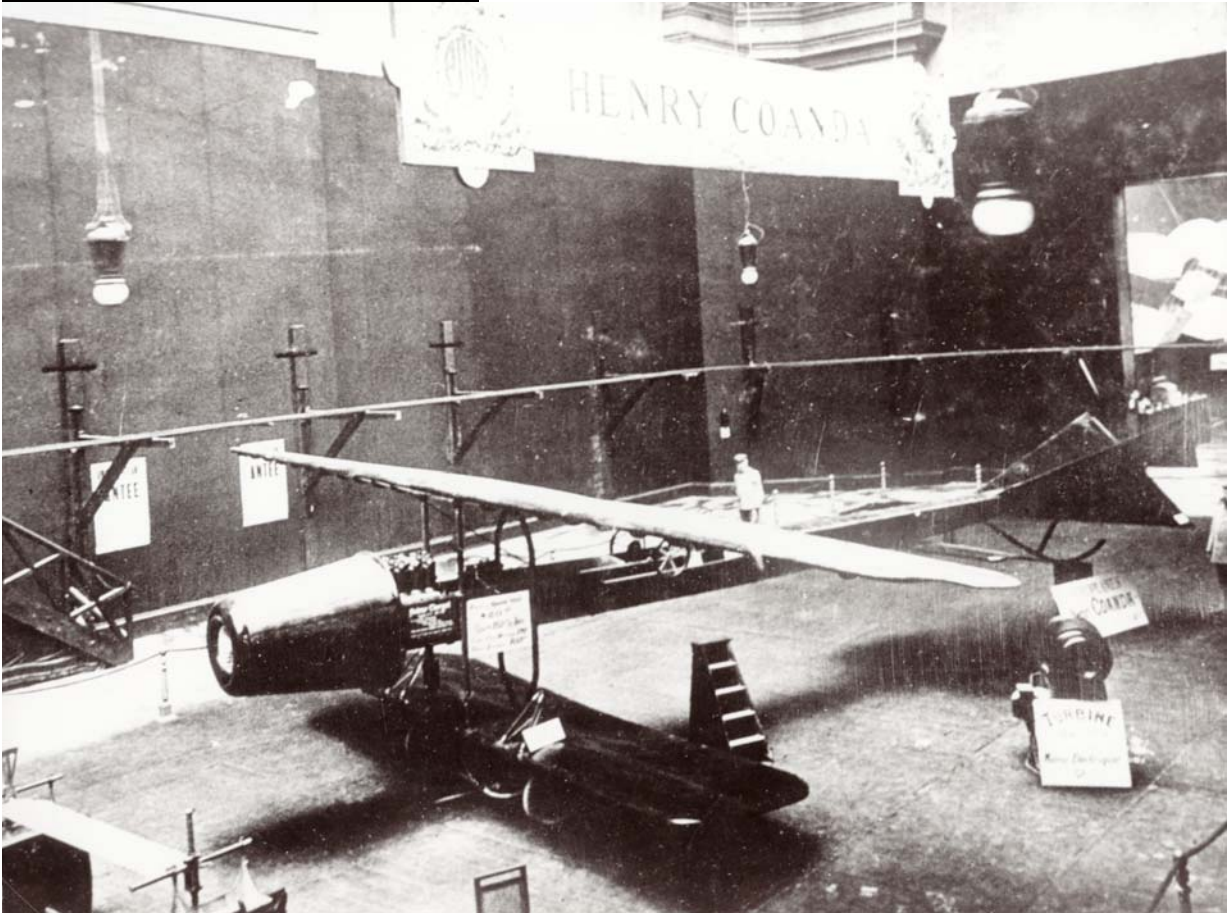
Slot blown Boeing 707, 1964



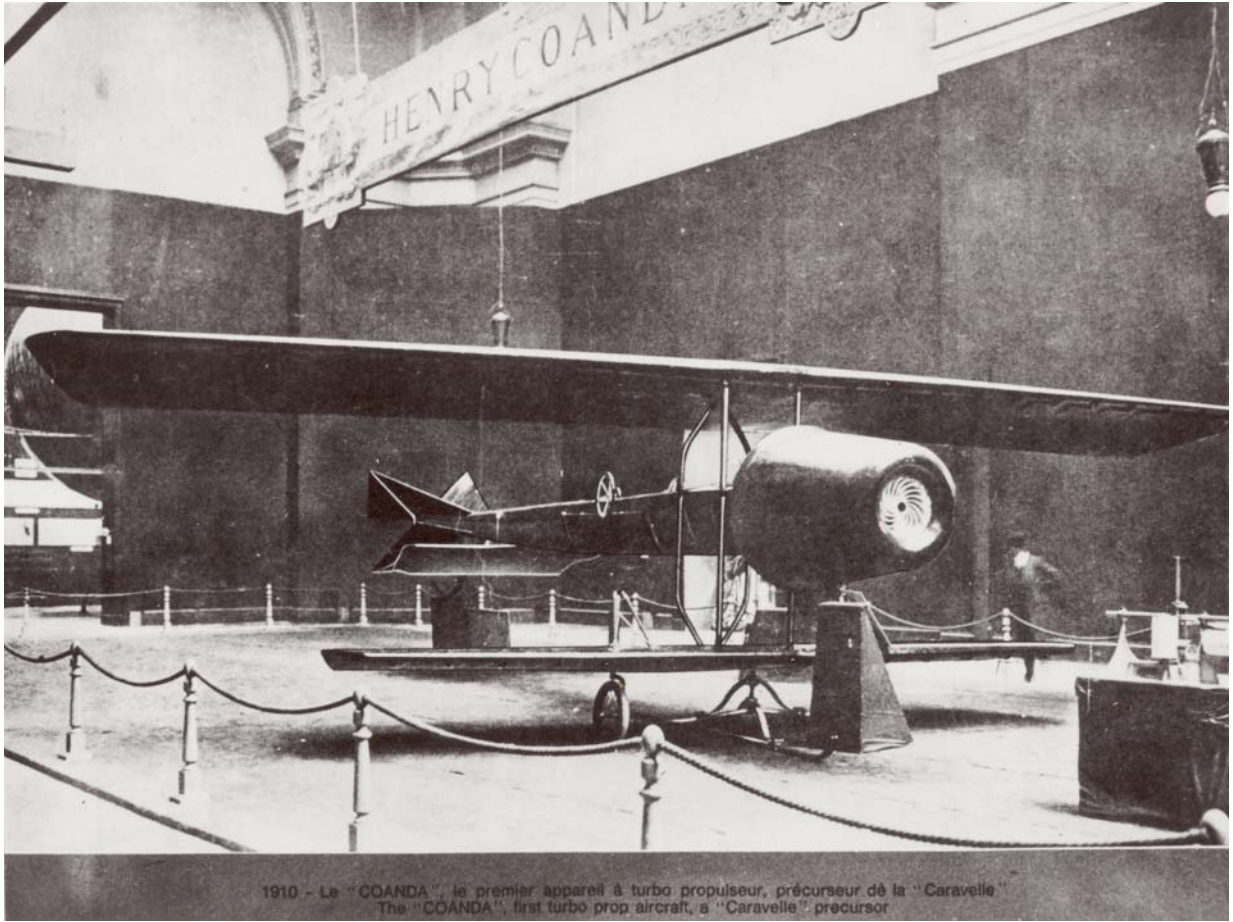
Coanda design mid 30's

COANDA PICTORIAL

All captions are by G. Harry Stine.



The **1910** Coanda Jet as displayed at the Salon Aeronautique in Paris in **1910**. It was unquestionably the worlds first jet propelled airplane. A Clerget in-line water cooled reciprocation engine drove an enclosed, shrouded fan inside the cowling. Gasoline was then added to the fan exhaust and then ignited. The aircraft used the first thick airfoils and monocoque wings without wire bracing, had semi reacting landing wheels and was built from molded plywood. Some aeronautical historians question the authenticity of the claimed first flight attempt at Issy-le-moulineaux **on 10 December 1910** where the aircraft did indeed get high enough to crash and be consumed by the ensuing fire.

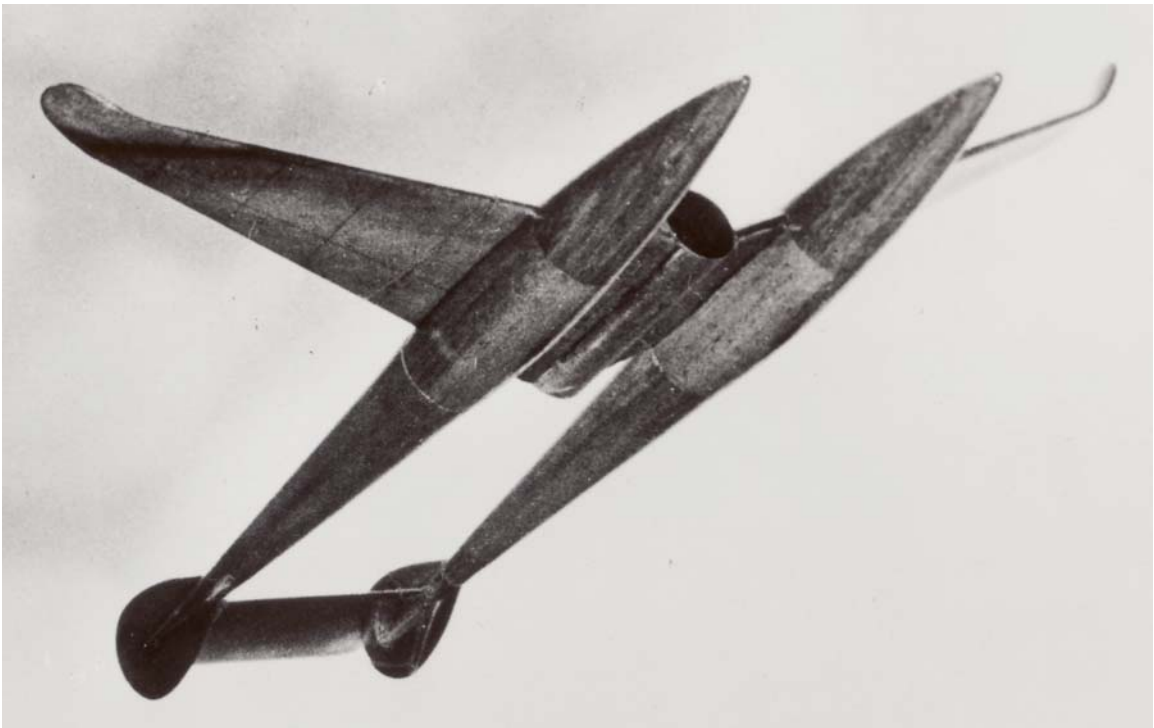
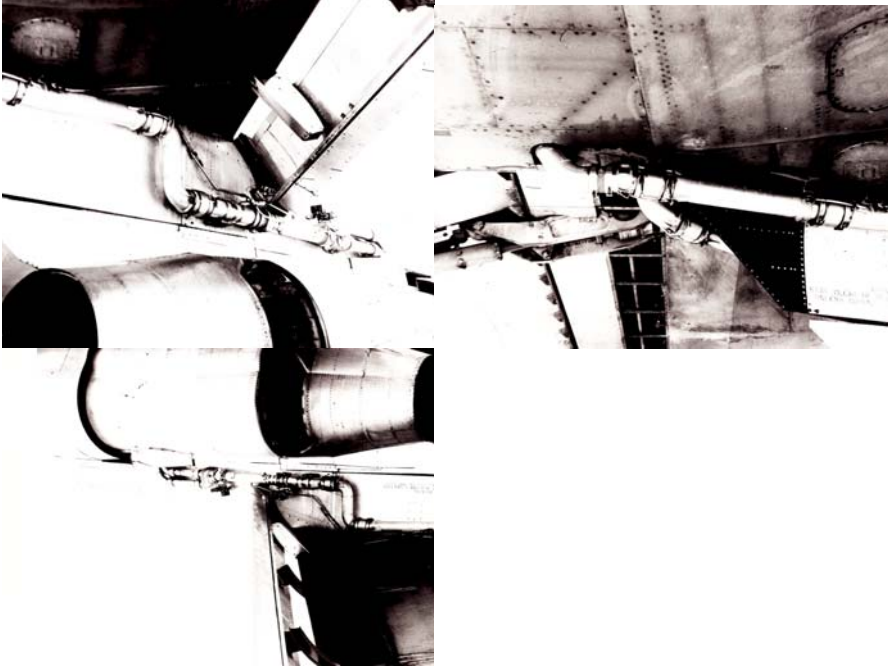


The **1910** Coanda Jet on display at the Salon Aeronautique in Paris showing the ducted rotary fan at the front of the cowling. This was driven by a Clerget in-line reciprocating engine inside the shroud.

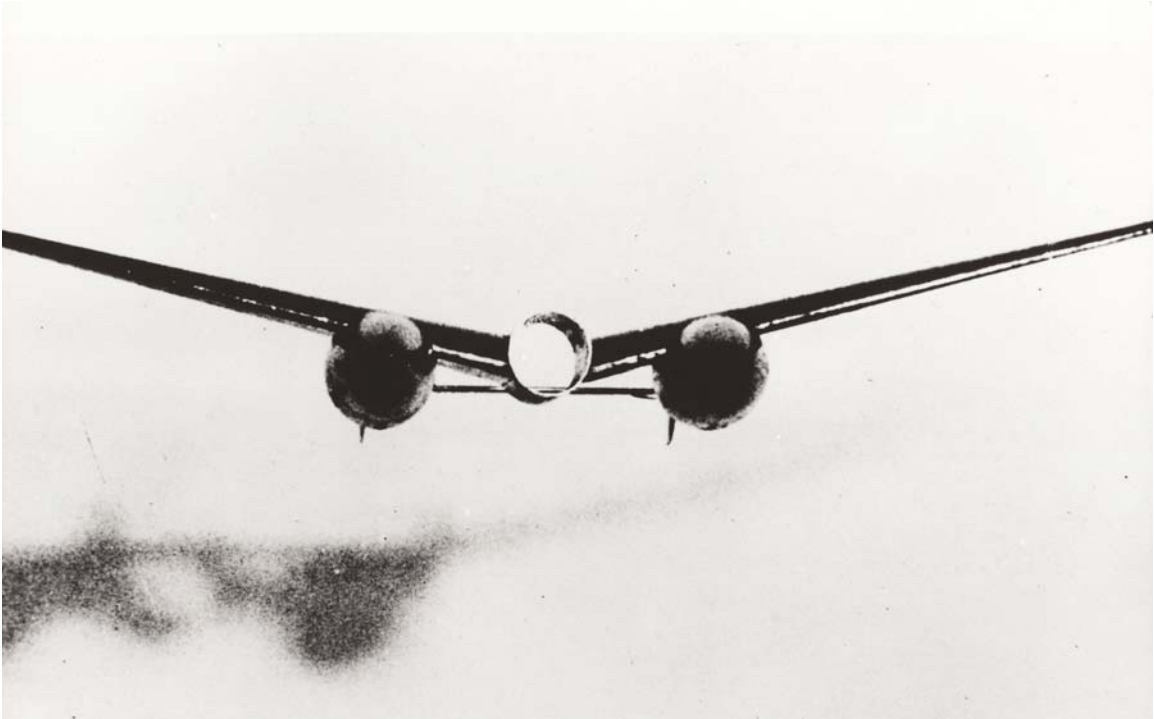


This series of seven photographs by G. Harry Stine shows the original Boeing 387-80 prototype of the 707 airliner on the ramp at NASA Wallops Station, Virginia, in June **1964**. The “Dash 80” had been modified for very slow flight using wing flaps blown by Coanda Effect. Primary air for blowing the flaps came from compressor bleed of the Number One and Number Four engines. Aircraft could fly as slow as 70 knots. *(70 knots = 80.6 mph = 129.85 kph which is about half its normal takeoff speed)*

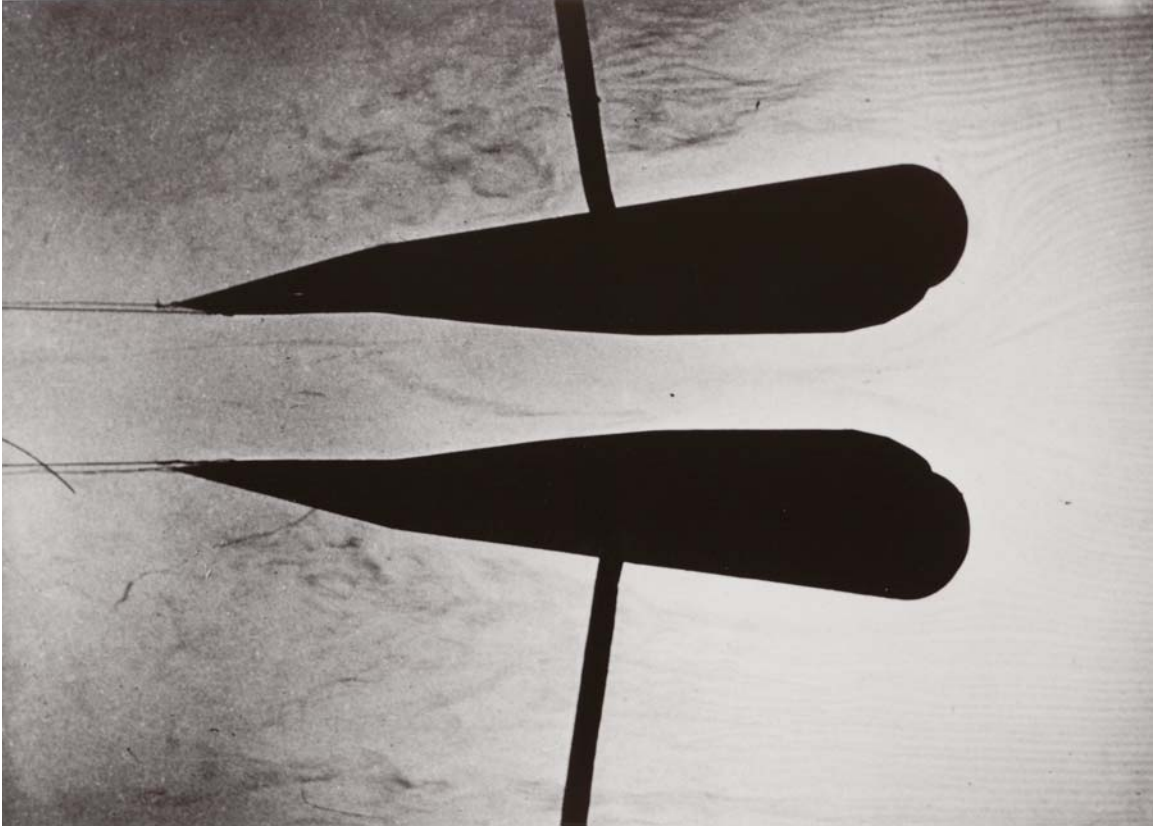




Henri Coanda's twin boom jet-propelled airplane concept developed in Paris sometime in the **1930** decade. The center nacelle is an internal Coanda Effect nozzle.



Front view of a 1930 twin-boom jet airplane developed by Henri Coanda in Paris. A Coanda Effect internal nozzle occupies the center position between twin booms supporting the empennage.



An undated photograph of a Coanda nozzle being tested in a wind tunnel in France sometime in the **1930s**.



Photographie n° I

An undated photograph of circular Coanda Effect “flying saucer” being blown by air emerging from the stepped slot on the upper surface and continuing to follow the surface to separate from the saucer lip at the four-o’clock position. The entrainment of secondary flow by the Coanda Effect Jet is clearly seen as it is drawn in from the two-o’clock position.



In **1913** while Chief Engineer at Bristol & Colonial Aeroplane Company in England; Henri Coanda proposed a canard design driven by propeller rotation on a ring in the middle of the fuselage.



Three quarter side view of Coanda's **1916** long-range bomber and recon airplane. Twin Hispano-Suiza in-line liquid-cooled engines buried in the fuselage between the wings drove twin pusher propellers aft of the tail.

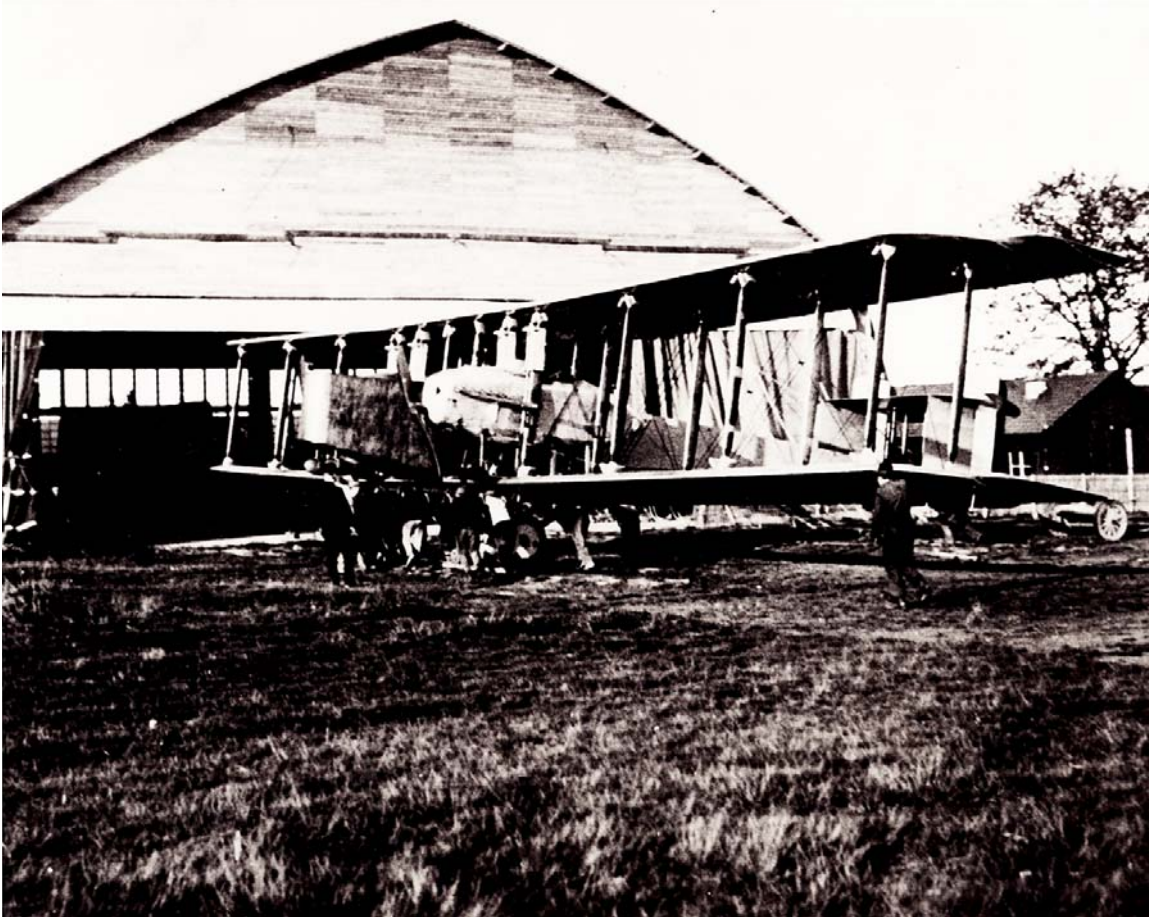
Armaments included Coanda's 5.5 inch (140 millimeter) rocket cannon. Designed at Delaunay-Belleville and completed at Angers, the plane had a range of 1,000 miles and flew non-stop on a flight from Angers to Paris to Rheims and back to Angers.



The first Bristol-Coanda B.R.7. Biplane version of the Bristol-Coanda Monoplane No 153 at Olympia in England in February in **1913**.



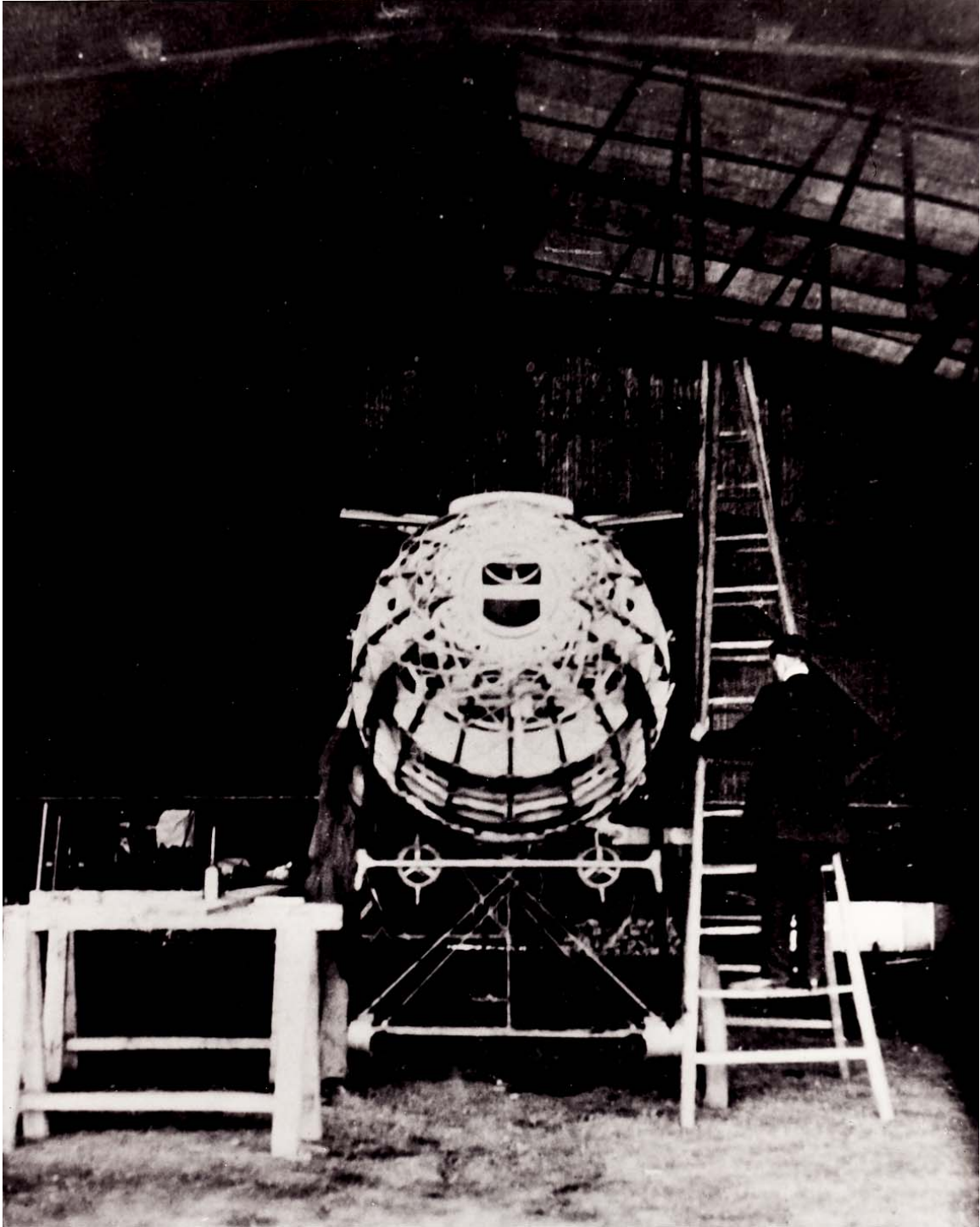
The Coanda Twin at Rheims, France in 1911. Made from spare parts left over from the **1910** Coanda Jet. It was the first twin engine airplane.



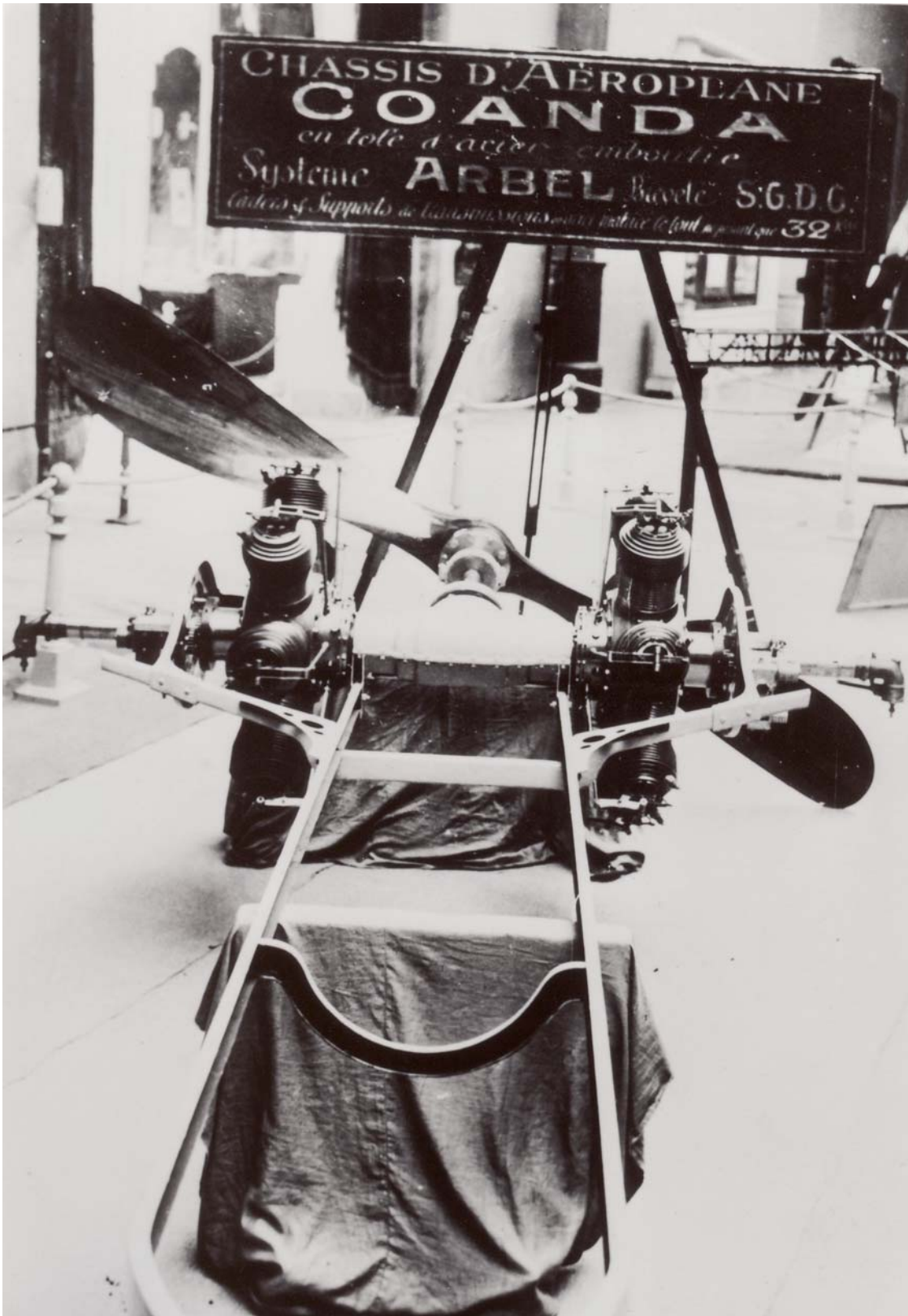
Because scarce Hispano-Suiza engines were diverted exclusively to pursuit airplanes in **1918**, Coanda was forced to discontinue work on his twin pusher bomber and devote his energies to the design of this more conventional bomber powered by two American Liberty engines. This airplane does not appear in any compilation of World War 1 and is unknown to aviation historians.



The **1912** Bristol-Coanda Monoplane photographed at Larkhill on 15 July **1912**. Harry Busteed is the pilot. This was Henri Coanda's first design as Chief Engineer of the Bristol and Colonial Aeroplane Company, Ltd. Careful attention was given to drag reduction. Lateral control was achieved by wing warping. During the Larkhill trials, the Bristol Coanda achieved a speed of 73 miles per hour (177 kilometres per hour) and a range of 420 miles (672 kilometres). Thirty six of these were built at the Bristol Filton Works. When a Bristol-Coanda undergoing Royal Flying Corp tests lost a wing, the R.F.C. was forbidden to buy any more monoplanes. The Bristol-Coanda was therefore the first and last monoplane flown by the R.F.C.

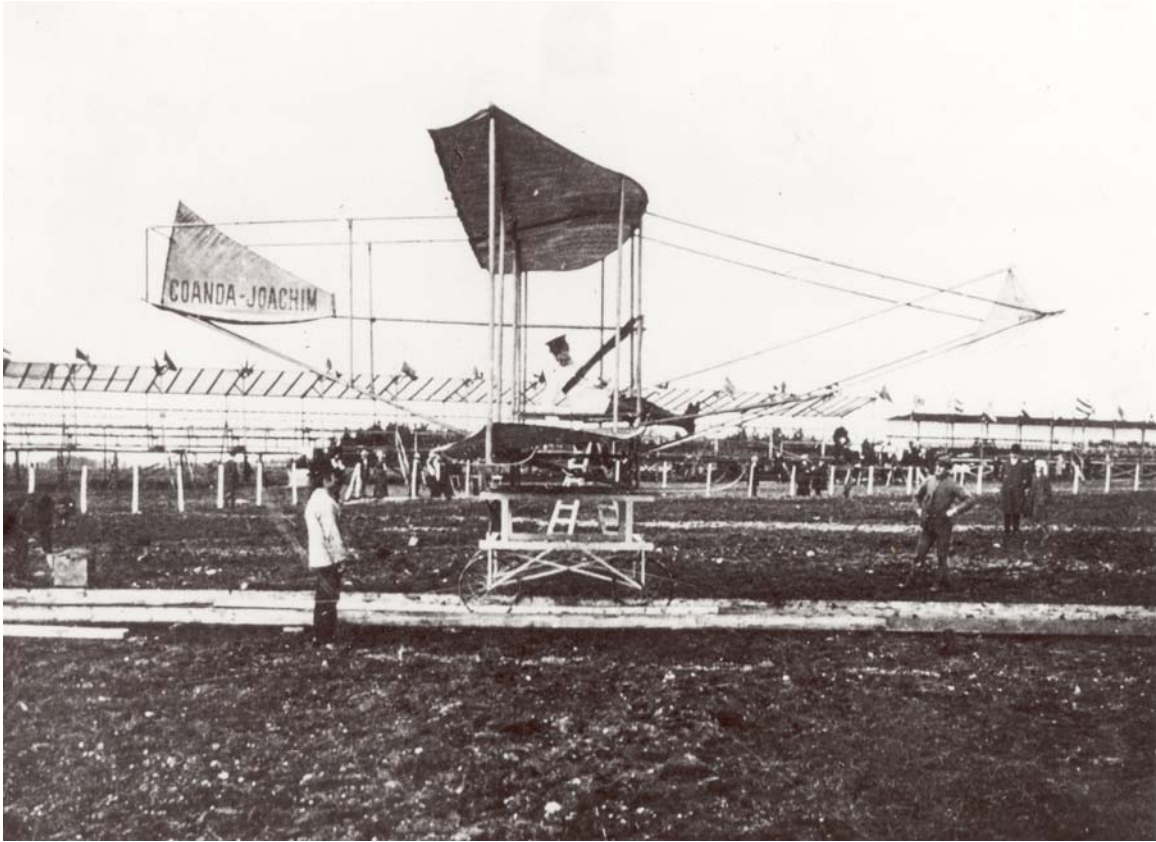


The 1916 Coanda long range bomber under construction at Angers in 1916.

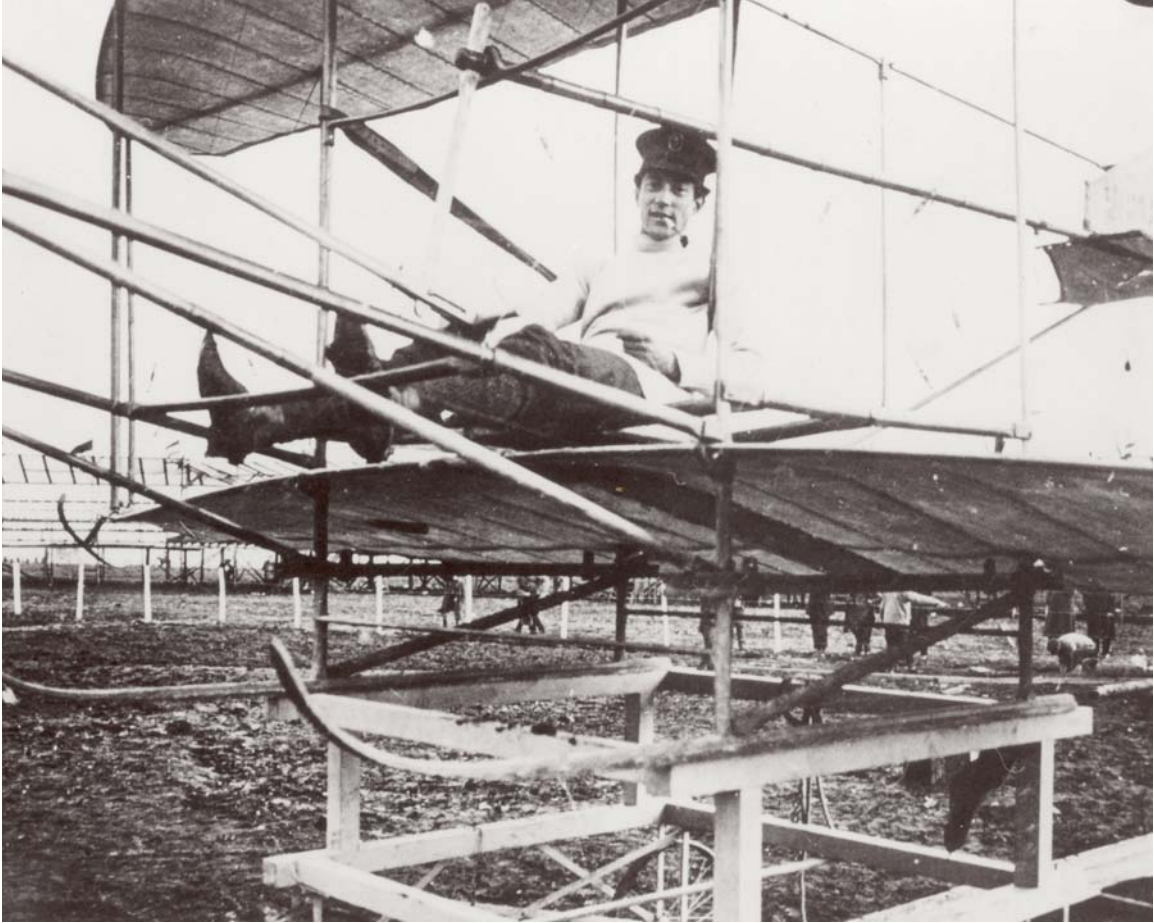


The two Gnome rotary engines of the **1911 Coanda Twin**, the first multi-engine airplane. The engines rotated in opposite directions to cancel torque and gyroscopic effects and

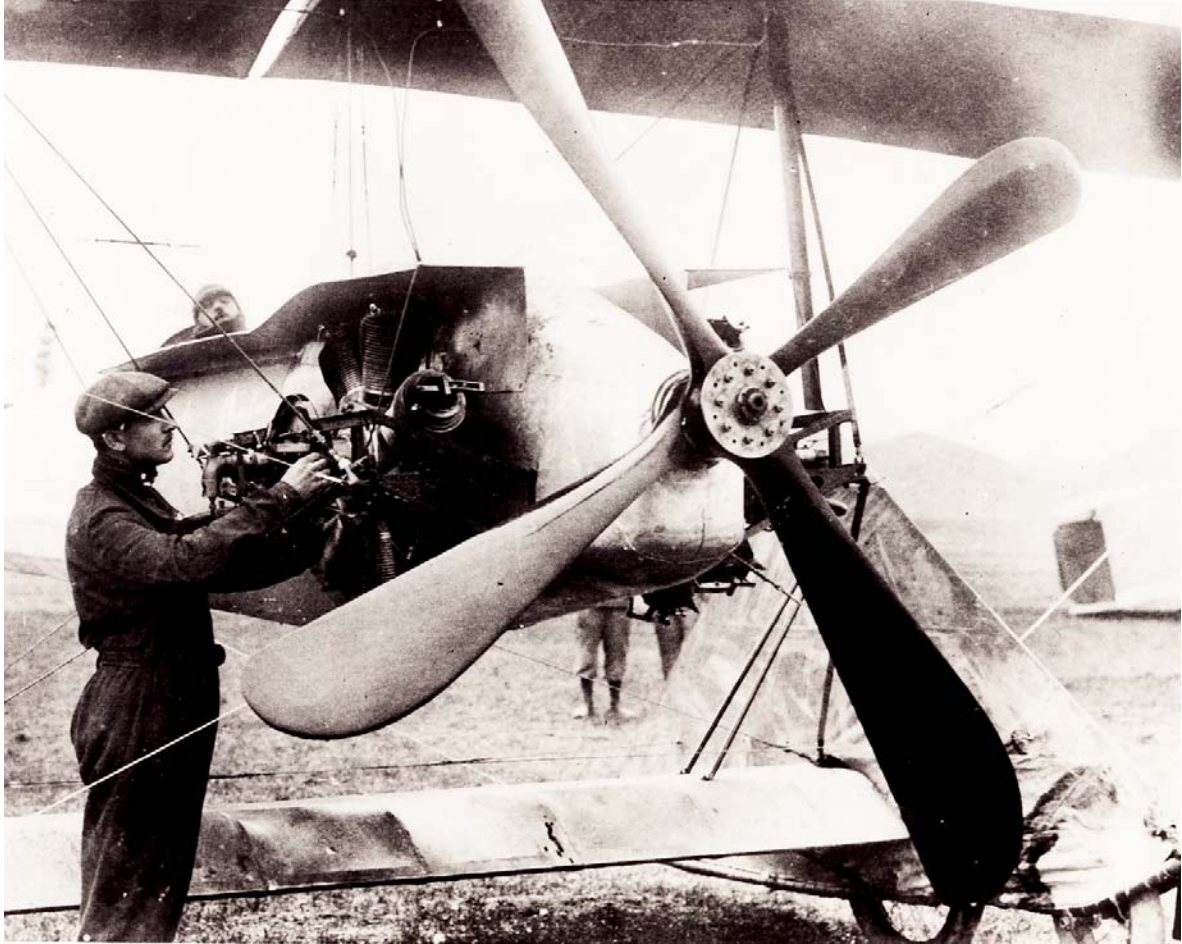
transmitted their power through crankshafts and a differential gearbox to the single propeller shaft.



The Coanda-Joachim Glider photographed at Spa, Belgium in **1908**. The biplane glider was launched from a cart on rails. Longitudinal control was by means of a forward full-flying canard surface. Lateral control was provided by an aft rudder. Henri Coanda is shown in the pilot's seat while Gianni Caproni looks on.



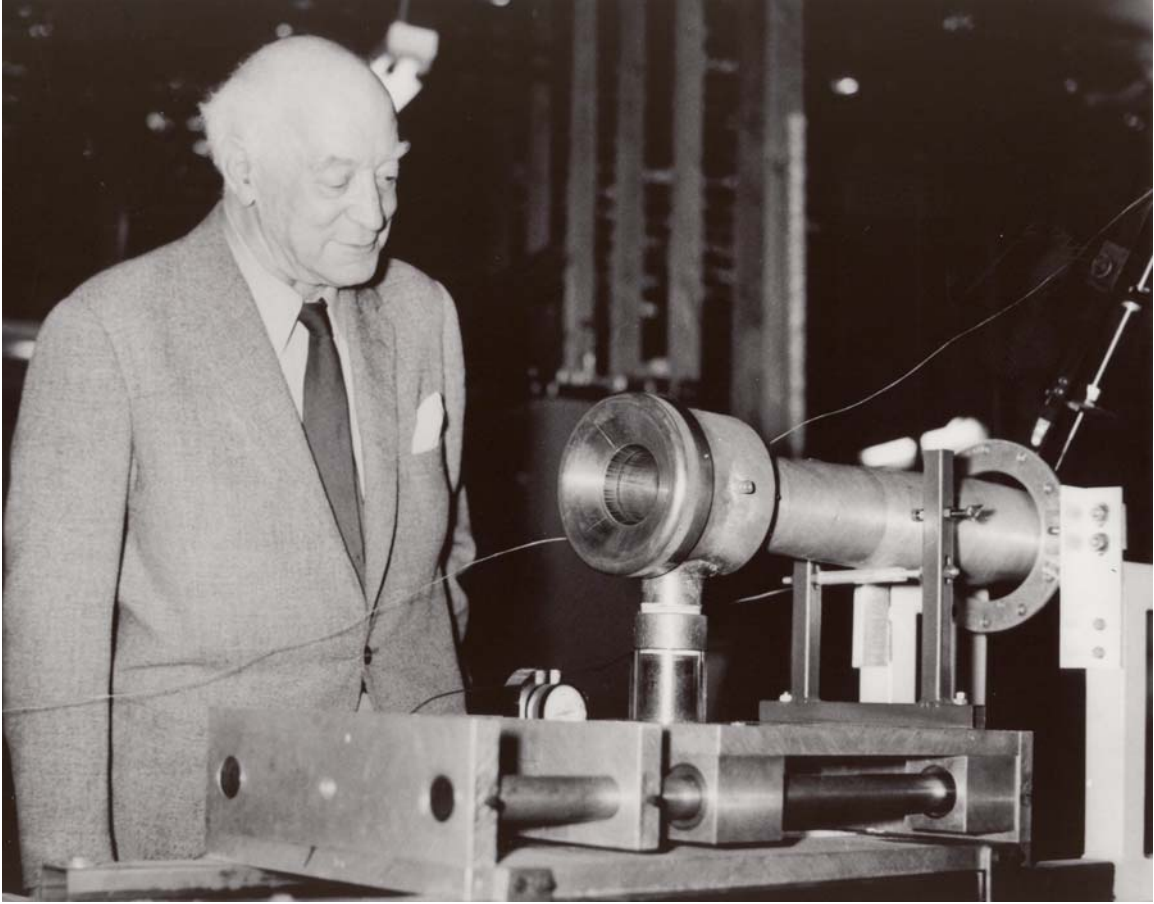
Henri Coanda seated at the controls of the **1908** Coanda-Joachim Glider at Spa, Belgium.



The Coanda 1911 Twin at Rheims. Final adjustments are made to one of the two counter-rotating Gnome engines by Coanda's mechanic, George Bonneuil while pilot Bountry-le soin looks on from the cockpit.



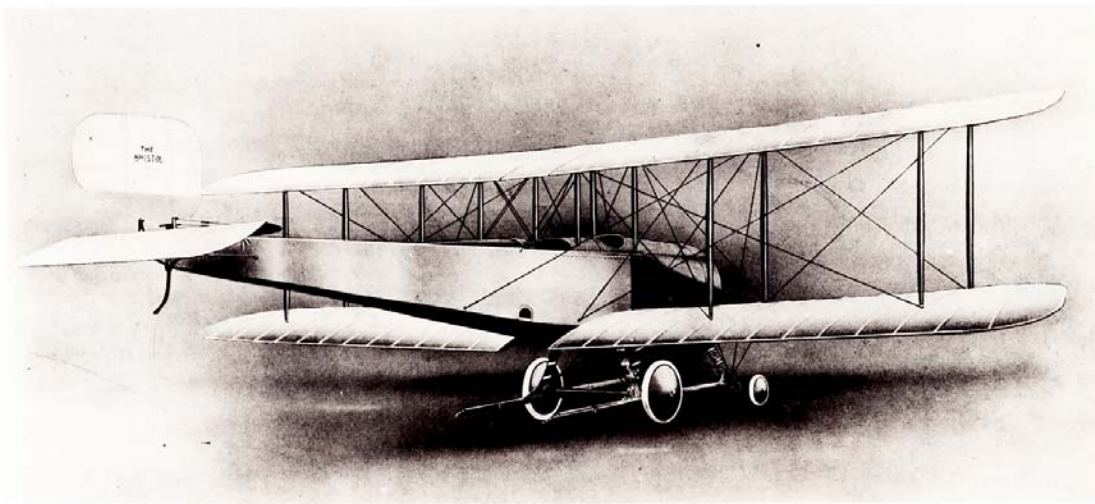
Dr Henri-Marie Coanda holding a test model of a shrouded Coanda Effect internal nozzle he designed for underwater propulsion using steam as the primary fluid. Device was tested at Huyck Research Laboratories in Stamford, Connecticut, in **1963**, but no interest was shown by the United States Navy in spite of highly successful water tunnel tests at Huyck.



Dr Henri-Marie Coanda with the internal Coanda Effect nozzle tested at Huyck Research Center laboratories in Stamford, Connecticut in **1964-1965** under contract to the United States Air Force.



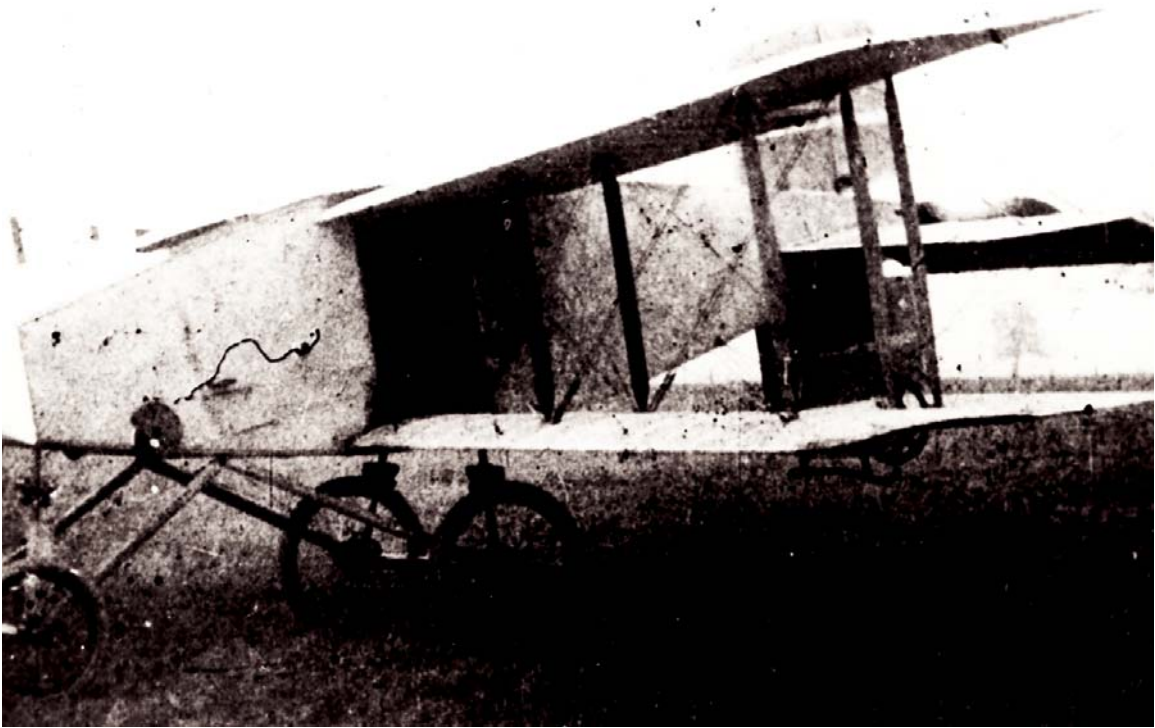
G. Harry Stine (left) shared his office at Huyck Research Center, Stamford, Connecticut with Dr Henri-Marie Coanda from **1961** until **1965** when Coanda was a consultant to the company.



The Bristol-Coanda B.R.7 was a biplane conversion of the Bristol-Coanda Monoplane. Nearly all Bristol-Coanda Monoplanes were converted to B.R.7 biplanes at Filton.



The Bristol-Coanda Monoplane in flight over Larkhill in July 1912.



The Coanda-designed **1915** single seat artillery observation airplane built at Delaunay-Belleville for the French government. A single pusher propeller aft of the empennage was driven by means of a long shaft. For better visibility, the pilot sat in a cockpit forward of the wings. Wings could be folded for road towing.



Left to right: Dr. Henri-Marie Coanda, his wife Marguerite and G. Harry Stine photographed in Stamford Connecticut in late **1964**.

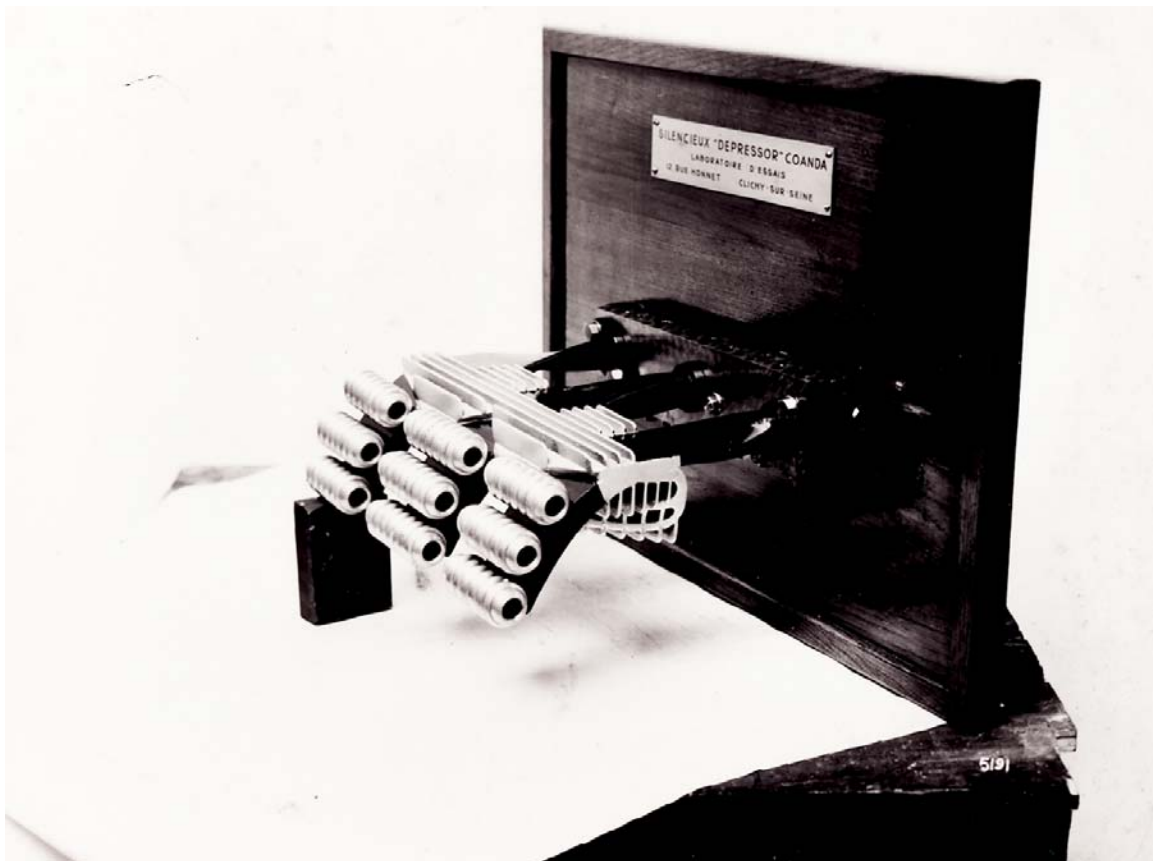


In **1965** the National Air and Space Museum of the Smithsonian Institute in Washington D.C. was given a complete set of drawings, photographs and specifications of the **1910** Coanda Jet prepared by Huyck Corporation under the first supervision of Dr. Coanda. Here at the presentation in late **1965** are (left to right), Paul Gerber, Dr Coanda, Museum director Paul Johnston and aircraft curator Louis Casey.

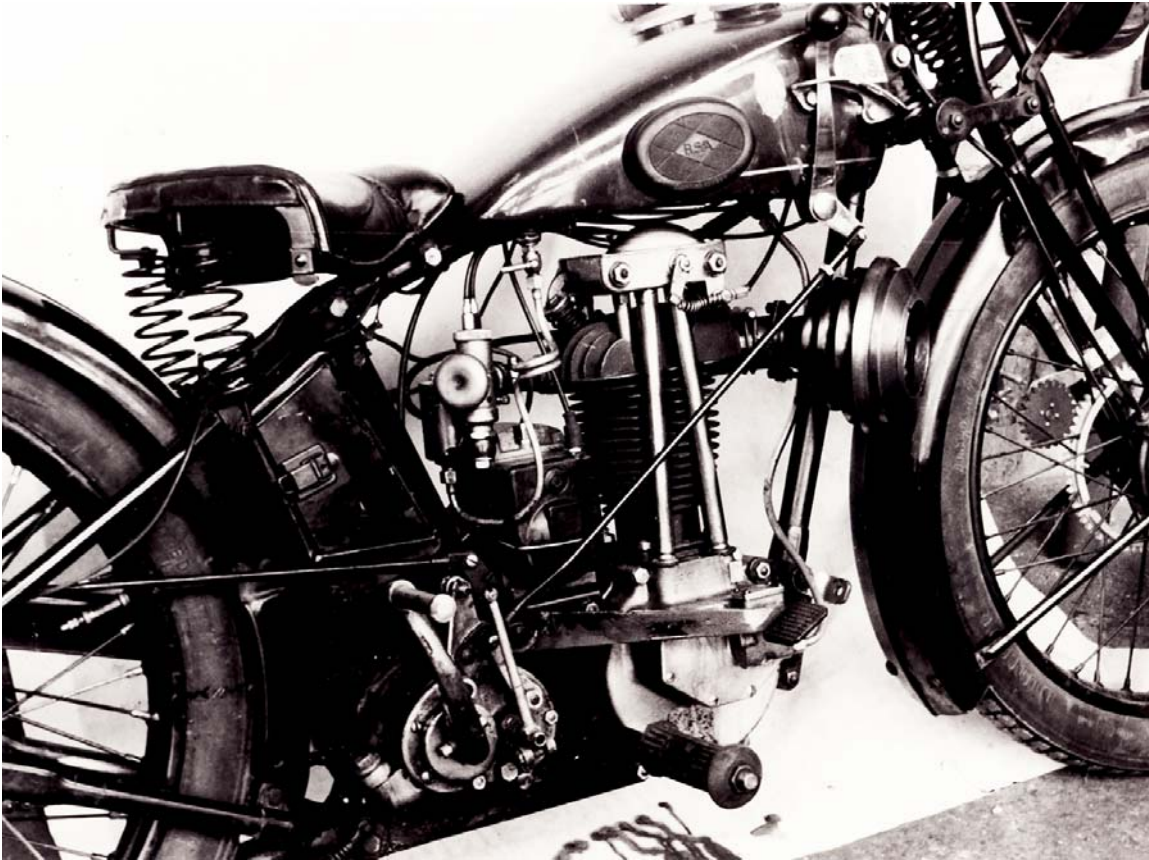


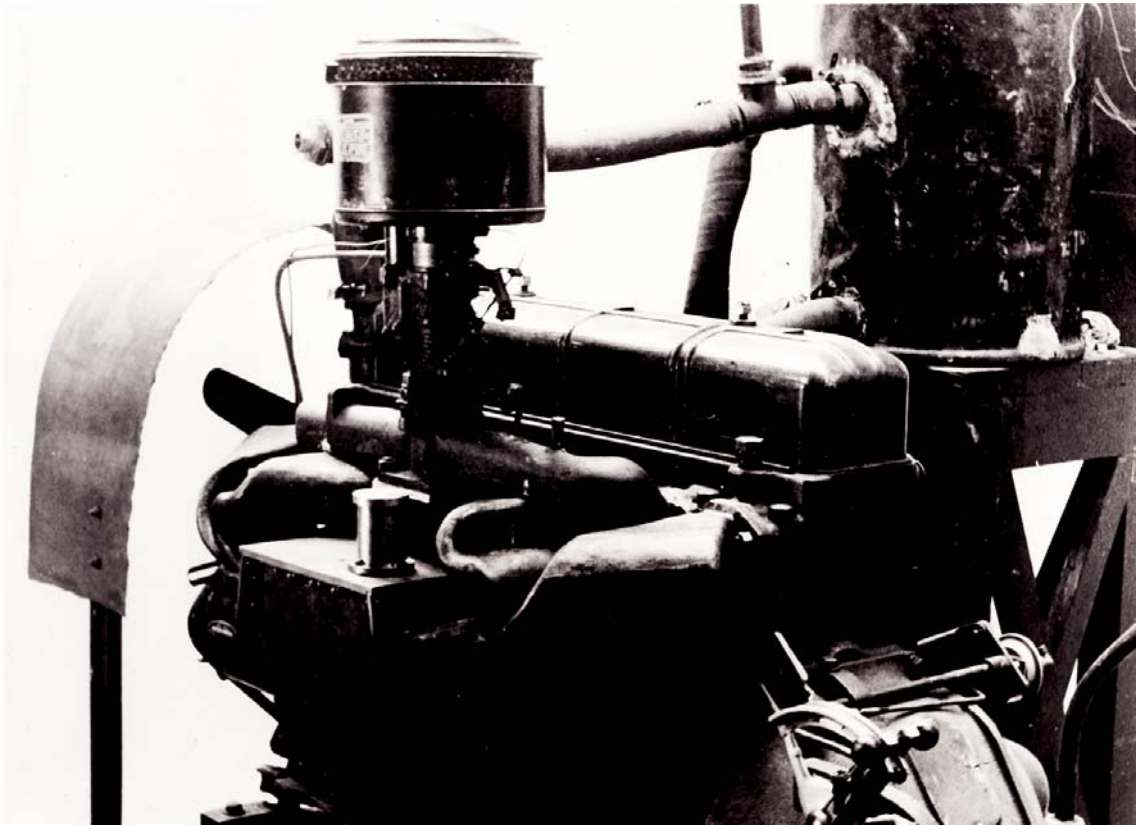
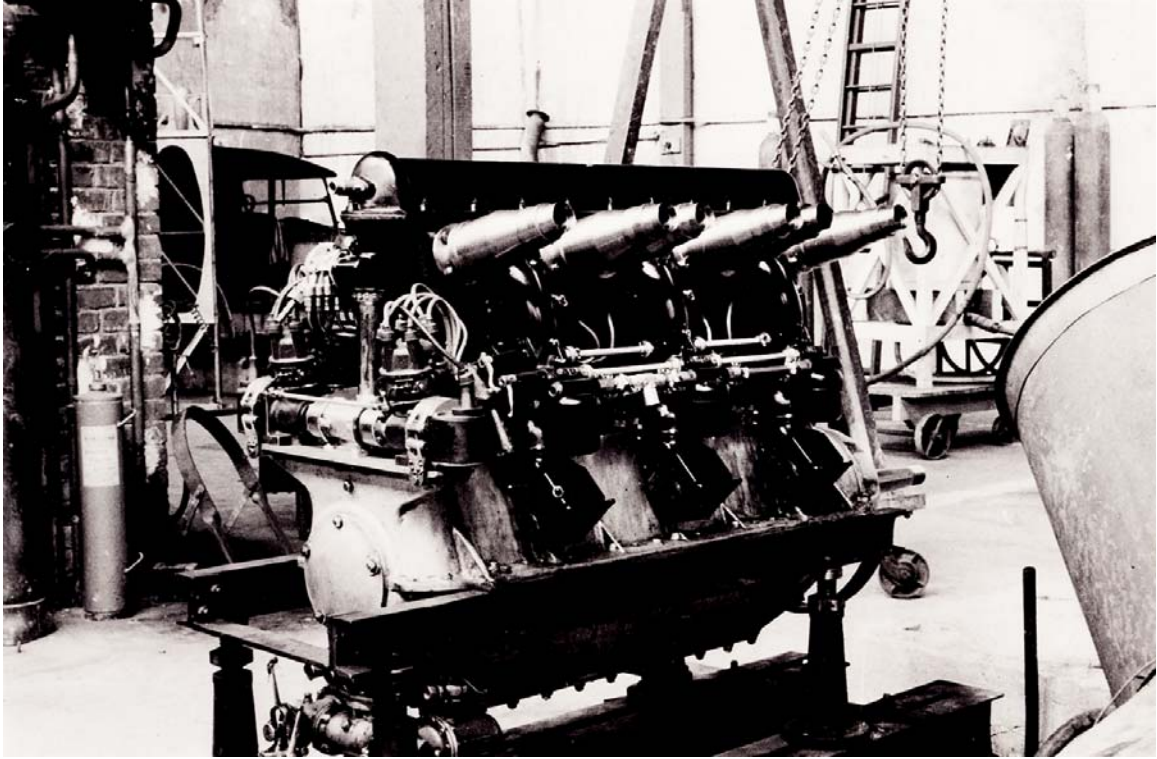


Two photos showing Henri Coanda at the wheel of a small race car he designed that used Coanda Effect silencers not only to quiet the engine but to increase scavenging and thus horsepower.

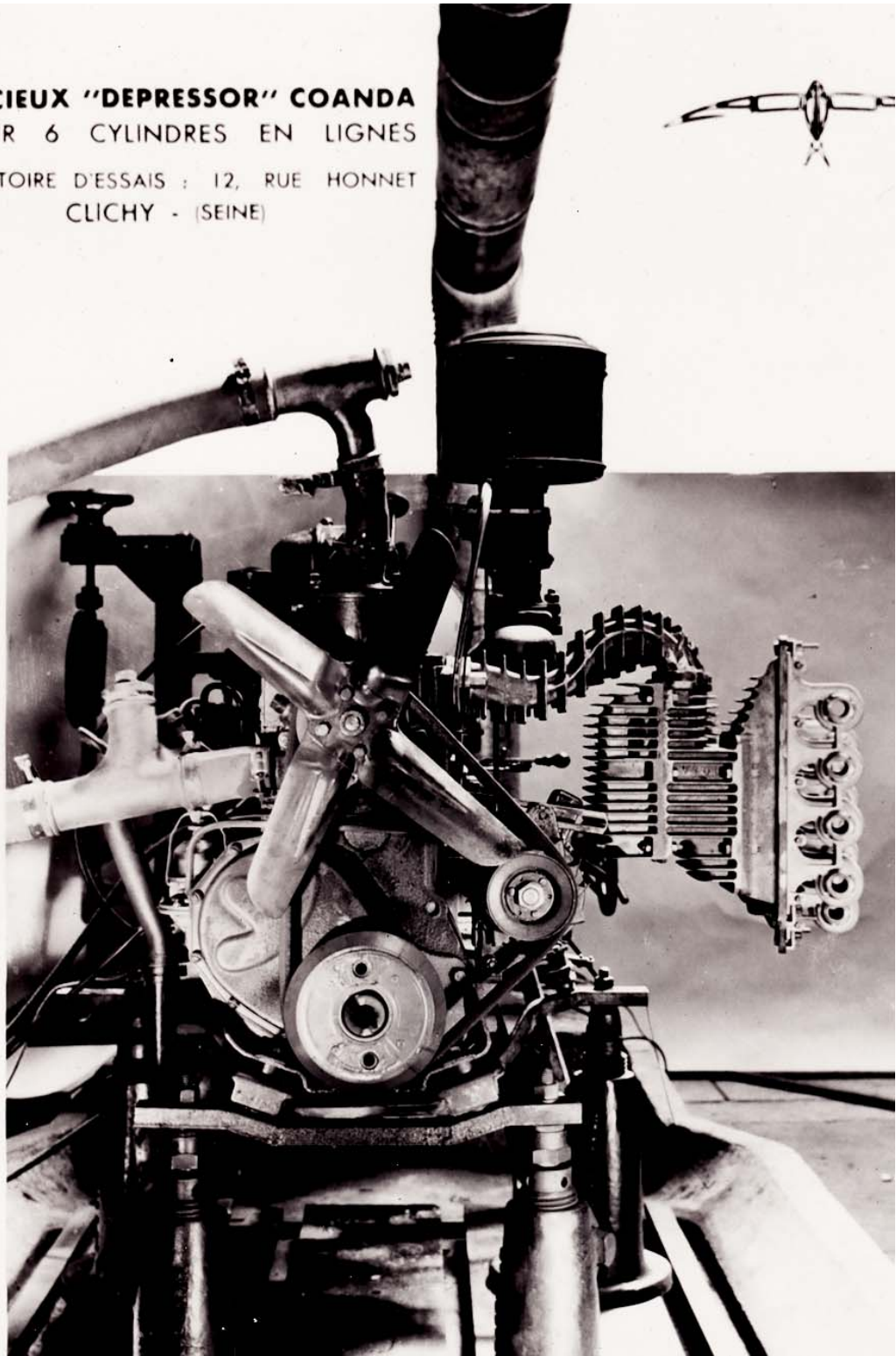


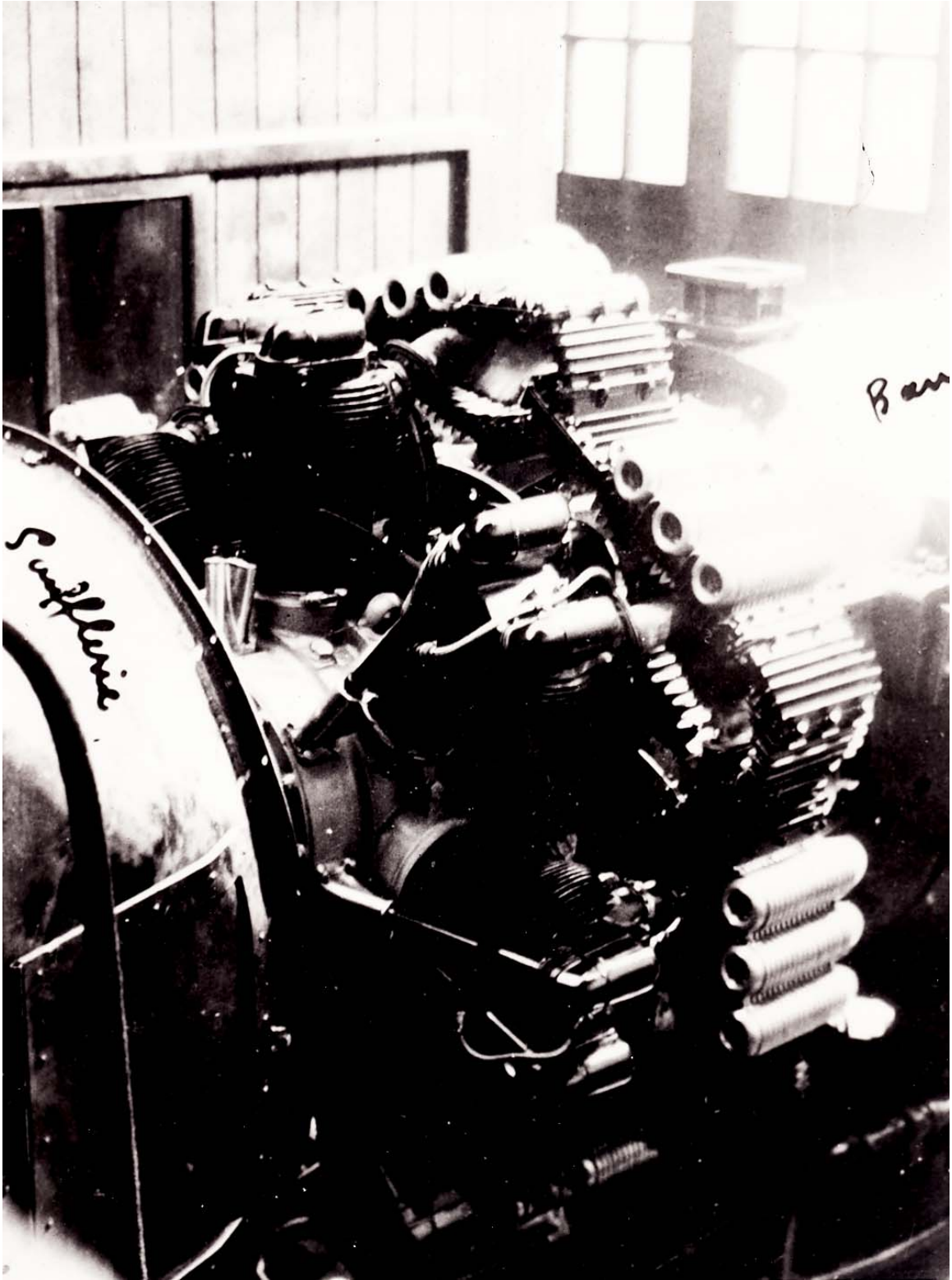
A series of *six photographs* of Coanda's silencer and exhaust scavenger devices for internal combustion engines using Coanda Effect. This work was done sometime in the **1930s** in England. Dates, locations and subject matter of the photographs are unknown.





SILENCIEUX "DEPRESSOR" COANDA
MOTEUR 6 CYLINDRES EN LIGNES
LABORATOIRE D'ESSAIS : 12, RUE HONNET
CLICHY - (SEINE)





Attaché Militaire
à la Légation de Roumanie
en France.



CERTIFICAT DE SURSIS D'APPEL

N° 600.

Conformément à la demande des Autorités Militaires Françaises N° 33015-3/11 en date du 28 Février 1917 et suivant les instructions du Ministère de la Guerre de Roumanie (n° 3937 du 9 Octobre 1916) un sursis d'appel est délivré au sujet roumain:

Coanda Henri, né à Bucarest en 1885, ingénieur-constructeur, domicilié à Paris, 34 rue de la Verrière, à St. Denis s/Seine, qui travaille pour la défense Nationale.

Ce sursis n'est valable qu'autant que l'intéressé fera partie de l'administration ou de la maison désignée ces dernières devront prévenir immédiatement le MINISTRE DE LA GUERRE FRANÇAIS, Etat-Major de l'Armée, (Bureau des Sursis), ainsi que le Service Régional du Contrôle de la Main-d'Oeuvre, du départ ou du renvoi de l'intéressé.



Paris, le 2 Mars 1917.
L'attaché militaire
Lieutenant-Colonel

Copy of Henri Coanda's document identifying him as a Rumanian national and a member of the French Foreign Legion, posed to aircraft design and construction at Delaunay-Belleville on 2 March 1917.



One- fifth scale model of the Coanda twin as displayed at the 1911 Salon Aeronautique in Paris following the air show at Rheims.



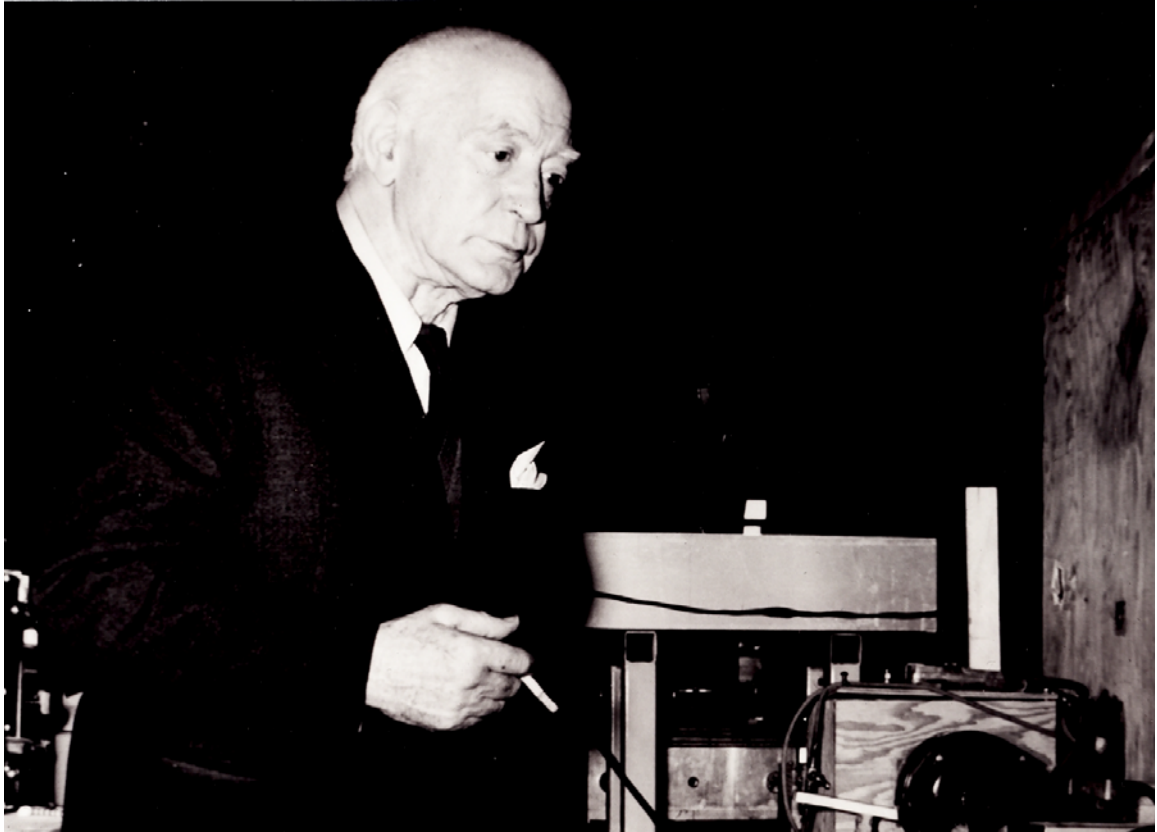
The takeoff of the **1911** Coanda Twin at Rheims with Bountry-le-soin at the controls.



Henri Coanda was an artist and sculptor as well as an engineer. This is the “stamp” he designed for use at the Salon Aeronautique in Paris in 1911.



Two photographs of Dr Henri Coanda taken at the Huyck Research Centre Laboratories at Stamford, Connecticut in late **1964**.









Two photos of Dr. Henri-Marie Coanda taken at the Huyck Research Center Laboratories, Stamford Connecticut, in the winter of **1964**.



Dr. Henri-Marie Coanda photographed at the offices of Huyck Corporation in Stamford, Connecticut in late **1961**.