Smithsonian
National Air and Space Museum

Henri Coanda Papers [Stine]

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National Air and Space Museum Archives
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Collection Overview

Repository:	National Air and Space Museum Archives
Title:	Henri Coanda Papers [Stine]
Date:	1920-1961 (bulk 1950s)
Identifier:	NASM.XXXX.0170
Creator:	Coanda, Henri-Marie, 1885-1972
Extent:	1.09 Cubic feet ((1 records center box)) 1.04 Linear feet
Language:	English , French .
Summary:	Henri-Marie Coanda (1885-1972) was born and died in Bucharest, Romania. He spent his early childhood in Paris (1886-1891), before being educated in a Romanian military school (graduated 1903). Coanda continued his studies in Berlin and Paris -- at Auguste Rodin's atelier, with Gustaf Eiffel, and as a member of the first class of L'Ecole Superieure d'Aeronautique. He made his aeronautical debut in 1910, in the world's first jet aircraft. This was followed in 1932 with the discovery of the Coanda effect in which jet streams are used to create vacuums by following curves. His other projects included prefabricated housing developments, water conversion and conservation, energy conservation and agricultural equipment. In his lifetime he contributed some 250 inventions to these diverse fields.

Administrative Information

Acquisition Information

G. Harry Stine, gift, XXXX-0170, Unknown

Restrictions

No restrictions on access

Conditions Governing Use

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Biographical / Historical

Henri-Marie Coanda (1886-1972), a Rumanian scientist and inventor, broke ground in a wide range of areas. He produced significant innovations in early aircraft design and claimed to have flown the first jet. He also identified the fluidics principle called the Coanda Effect and subsequently applied it in many of his inventions. Further, he

pioneered concepts in such diverse areas as fuel storage, pre-fabricated housing, soil regeneration, and saline water purification.

Henri Coanda was born June 7, 1886, in Bucharest, Romania. His family soon moved to France after his father, Constantin Coanda, a professor and president of the Council of Romania, became attache to the Rumanian embassy in Paris. Coanda returned to Romania in 1896 to attend military school (1896-1903). He continued his education at Technische Hochsehule in Charlottenburg-Berlin (1903-1907), the University of Liége (1907-1908), and the Electrotechnical Institute of Montefiore in Turin (1908-1909). At L'Ecole Supirieure d'Aeronautique in Paris he completed his engineering degree, graduating first in his class (1910).

During his school days Coanda became interested in aviation. While studying in Berlin he followed Otto Lilienthal's glider experiments in nearby Spandau and also built a miniature airplane powered by two rocket engines (1903). In 1906 he even went as far as Nice to meet Captain Ferdinand Ferber, who also flew a glider. When Coanda proposed the idea of a jet engine, Ferber recommended that he present the idea to Ernest Archdeacon, Gustav Eiffel, and Paul Painleve in Paris. They in turn directed him to Louis Bleriot, who helped him build model of a pyrotechnic rocket Powered airplane which he displayed in Short Hall, 8erlin in 1907. At Liege one year later Coanda constructed a Joachim glider with his roommate, Giannini Caproni, who later established Aeroplani Caproni.

Still, Coanda wished to produce a jet-powered airplane and by 1910 had perfected his craft. The plane featured a single turbine engine, fully cantilevered wings with thick airfoil sections, an integral fuel tank, retractable landing gear, a cruciform tail, and molded plywood construction. Although highly innovative, the strange-looking model made only a small stir at the Second International Salon of Aeronautics in Paris in November 1910.

One month later the plane left the ground for its first and only time. On December 10, 1910, Coanda had planned to run basic engine tests for his plane at Issy les Moulineaux near Paris, but as events progressed, Coanda found himself and his plane barreling towards the walls of Paris. He had no choice but to launch the plane up and over the barrier. Unfortunately, Coanda did not know how to fly the plane and so immediately crashed on the other side. Luckily, he was thrown clear of the wreck, for the gas exhaust had ignited the plywood plane, and it went up in flames instantly. The unfortunate loss bankrupted Coanda, and he was forced to terminate the project. Though the years scholars have disputed over Coanda's claims to the first jet flight. Those who argue against him site that he did not step forward immediately, the press did not record the event, the flight only a short distance, and the engine design differed from that of other jets.

After the tragedy at Issy, Coanda turned his creativity towards more traditional yet still inventive aircraft. In 1911 he designed and flew the first twin engine plane at Riems, France, and in 1912 he conceived the first delta wing airplane. From 1911 to 1914 he worked for Bristol Aeroplane Company in Great Britain and became their chief technical engineer. There he designed the successful Bristol-Coanda airplane. With the onset of World War I Coanda returned to France to fight in the 22nd Artillery Regiment, but the French recognized his talent in aircraft design and consequently sent him to the Delaunay-Belleville Factory at St. Denis to build airplanes. At Delaunay Coanda designed a bomber with a range of 1100 miles and also created a small, fast observation plane.

Even as late as the l930s Coanda intermittently designed aircraft. In 1933 he conceived a vertical take-off craft popularly known as the "flying saucer." Coanda saw it as the wave of the future because of its speed and its use of jet stream dynamics. Two years later Coanda tried his hand at designing a jet for a second time, but the twin-boomed model was never built.

Although Coanda never constructed a workable jet, his experiences with jet properties did help him to identify the Coanda Effect in 1932. Basically, the principle states that a fluid stream will tend to follow a curved surface' because of the vacuum it creates with that surface. Coanda first encountered the effect when the exhaust traveled down the fuselage of his 1910 plane and ignited it. Coanda later applied the principle to inventions such as his flying saucer, an automobile emissions reducer, mining safety features, and a jet sprayer.

Over the years Coanda's interests pulled him into many careers. As previously mentioned, he designed airplanes both in Great Britain and France. In 1929 he and Louis Blériot entered on a venture to build pre-fabricated houses. After World War II he tried his hand running businesses in Romania, and in the 1950s he formed SFERI-COANDA to market his inventions and experiments which included a solar-powered hydrogenerator and ideas for soil improvements. For the last thirty years of his life Coanda consulted for companies in both Europe and the United

States. Through advising the Huyck Corporation, which was working on a hydrogenerator and water Propulsion during the 1960's, Coanda became acquainted with G. Harry Stine, the donor of this collection.

Even into the last years of his life Coanda remained active. In 1970 he returned to Romania where the government named him president of the National Institute for Scientific and Technical Creation. The following year the Academy of Aeronautics of London awarded him with an honorary membership. On November 25, 1972, Henri-Marie Coanda passed away in Bucharest, Romania.

Timeline of Henri Coanda's Life

1886	Born 7 June in Bucharest, Romania
1896-1903	Attended military school, Romania
1903-1907	Attended Technische Hochschule, Charlottenburg-Berlin
1903	Built rocket-powered model airplane
1907-1908	Attended University Liége
1908	Photographed bullet in flight, first to do so
1908-1909	Attended Institute of Montefiore, Turin
1909-1910	Attended L'Ecole Supérieure d'Aeronautique, Paris
1910	Published "Wings Regarded as Jet Engines" in La Technique Aeronautique, July
1910	Displayed jet airplane at the Second International Salon of Aeronautics, Paris, November
1910	Claimed to have flown jet airplane, Issy les Moulineaux, 10 December
1911	Built first turbine-powered automobile
1911	Designed and flew first twin-engined airplane, Riems, France
1912-1914	Designed airplanes for Bristol Aeroplane Company, Filton
1912	Conceived first delta wing airplane
1914-1918	Designed French military airplanes at the Delaunay-Belleville Factory
1914	Studied electric charge on aircraft
1914	Discovered electric charge of plants
1914	Joined the French 22nd Artillery Regiment
1916	Designed strategic bomber with range of 1100 miles
1918	Constructed first airborne rocket cannon, Le Havre, France
1918	Manufactured first concrete petroleum storage tanks
1923	Originated the idea of prefabricated concrete buildings, Paris
1929	Established Societe Multicellulaires with Louis Blériot, Paris

Scope and Contents

The Henri Coanda Collection (acc. #XXXX-0170), located at the National Air and Space Museum Archives, consists of approximately one cubic foot of materials relating to Henri Coanda's experimental work. The inclusive dates are 1908-1961 with the bulk of the material covering the years 1953- 1961. The collection should prove valuable to researchers interested in Coanda's non- aviation, accomplishments, especially his hydrogenerator project. Topics

included in the collection are the aforementioned water conversion project, his soil improvement project, the Société Multicellulaires pre-fabricated housing company, his work with concrete holding tanks, and unidentified experiments. The collection consists mostly of correspondence, technical reports, and photos, many of which are uncaptioned. There are also expense records, newspaper and magazine articles, books, glass plate negatives, and a watercolor painting. Those in search of information regarding Coanda's aviation achievements might find more information in Coanda's biographical file at the National Air and Space Museum Archives located on the Mall.

Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:

- Aeronautics
- Coanda effect
- Energy conservation
- Periodicals
- Water conservation
- Works of art

Types of Materials:

- Charts
- Correspondence
- Financial records
- Maps
- Negatives
- Photographs
- Publications

Names:

- Coanda, Henri-Marie, 1885-1972
- L'Ecole Superieure d'Aeronautique

Container Listing

Series 1: Water Conservation Project

Scope and Contents: Series 1 consists of four subseries: General Documents, La Londe les Maures Installation, Photos, and Misc. All documents relating to Association Aqua, correspondence, memos, meeting minutes, and expenses are filed chronologically. All technical reports are arranged alphabetically by title. The misc. notes are grouped by handwriting.

Subseries 1.1: General Documents

Box 1, Folder 1	Documents relating to Association Aqua
Box 1, Folder 2	Correspondence
Box 1, Folder 3	Technical reports, Untitled-D
Box 1, Folder 4	Technical reports, E-Z
Box 1, Folder 5	Toulon expenses, M. Garnier/M. Glaizot
Box 1, Folder 6	Ledger

Subseries 2: La Londe les Maures Installation

Box 1, Folder 7	Correspondence
Box 1, Folder 8	Technical reports
Box 1, Folder 9	Memos
Box 1, Folder 10	Meeting minutes
Box 1, Folder 11	Expenses
Box 1, Folder 12	Genie Rural
Box 1, Folder 13	Misc.

Subseries 3: Photos

Box 1, Folder 14	Photos of the machine

Box 1, Folder 15	Photos and negatives of an installation
Box 1, Folder 16	Photos, misc.

Subseries 4: Misc.

Box 1, Folder 17	Documents, maps and newspaper articles
Box 1, Folder 18	Notes
Box 1, Folder 19	Drawings

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Series 2: Other Projects

Scope and Contents: Series 2 consists of two subseries: Documents and Photos. In the Documents subseries, both the folders and their contents are arranged chronologically. In the Photos subseries, the Unidentified experiment and "Chrysler" experiment folders are arranged by the original numbering system found on the back of the photos, and the Misc. photos are grouped by subject. The glass plates are also grouped by subject, and each subject is ordered according to its original numbering systems.

Subseries 2.1: Documents

Box 1, Folder 20	Sociêtê Multicellulaires, articles
Box 1, Folder 21	Sociêtê Multicellulaires, books
Box 1, Folder 22	Coanda Effect, photos and drawings
Box 1, Folder 23	L'Urbanisme de la Rêgion Parisienne, 1937
Box 1, Folder 24	Bio Edaphos, articles
Box 2, Folder 25	Bio Edaphos, photos
Box 2, Folder 26	Misc., articles and correspondence, 1957-1958

Subseries 2.2: Photos, Glass Plate Negatives, and Artwork

Box 2, Folder 27	Concrete railroad tank cars
Box 2, Folder 28	Watercolor "Malaesti", Brasov, 1920
Box 2, Folder 29	[Motorcycle engine 4/35]
Box 2, Folder 30	Unidentified experiment
Box 2, Folder 31	"Chrysler" experiment
Box 2, Folder 32	Damaged
Box 2, Folder 33	Misc.

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