CIAMFlyer
Introduction to the Model Aircraft World
FAI AEROMODELLING COMMISSION
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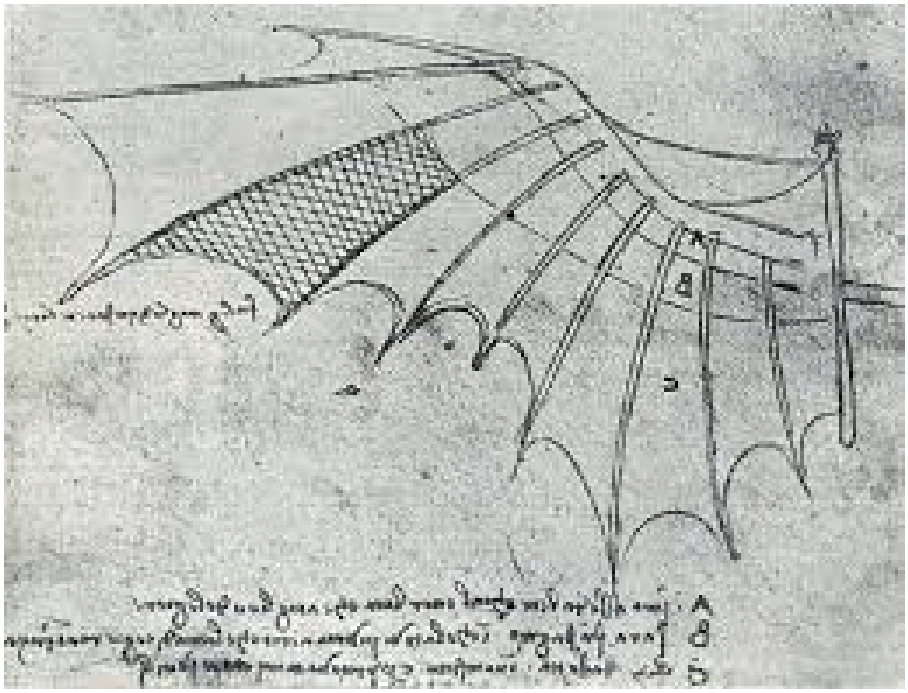
Flying like a Bird

From feathers to high-tech flying machines.

The dream of flying is as old as humanity itself. Countless ancient legends and myths, paintings and other works of art portray humans flying like birds or being carried by birds.

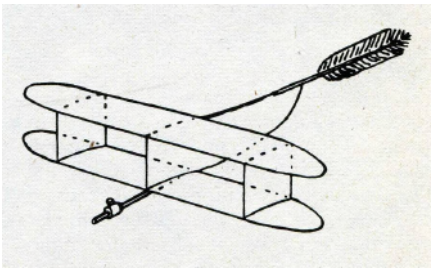


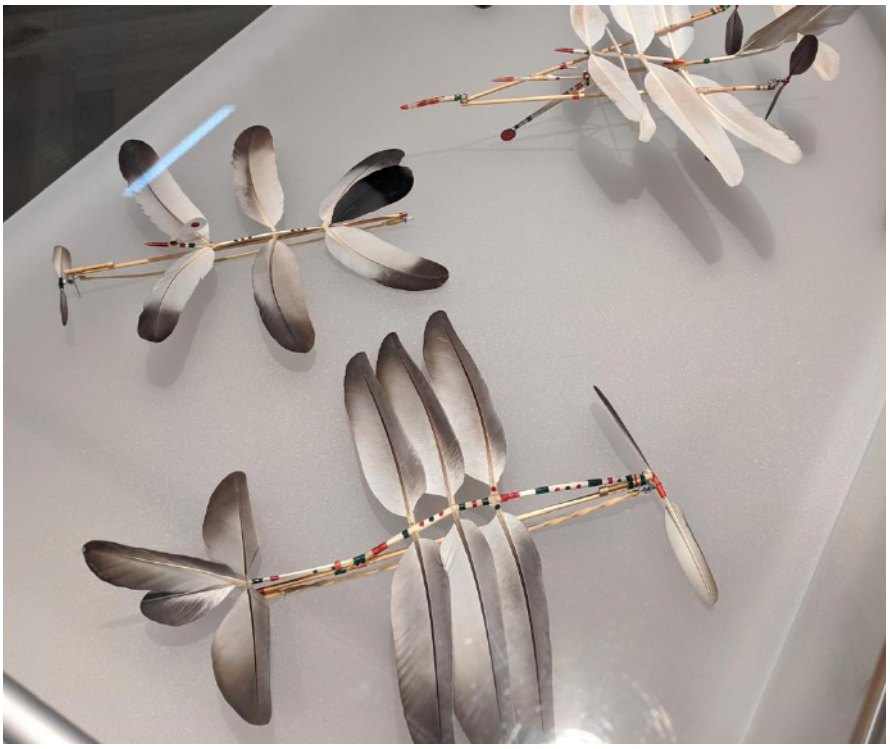
Feathers as a natural construction

Birds are identified by their feathers, with each type and species having its own distinct plumage. Feathers are protection as well as adornment and provide essential assistance when flying or swimming. From early on, aviation pioneers have attempted to mimic the flight of birds with bird wings serving as templates and feathers being used as a welcome construction material.

Bird flight for model flying machines

It is safe to assume that the pioneers of aviation often used model aeroplanes for experimental purposes. As such, aeromodelling is very likely to be older than man-carrying aviation but sadly little evidence of this remains. In more recent times, several radio-controlled flying models with birdlike silhouettes and wing shapes have been built. One very special type of construction using feathers has been described in detail in the book "Federleicht" ("Light as a Feather"), published by Neckar Verlag in Germany.



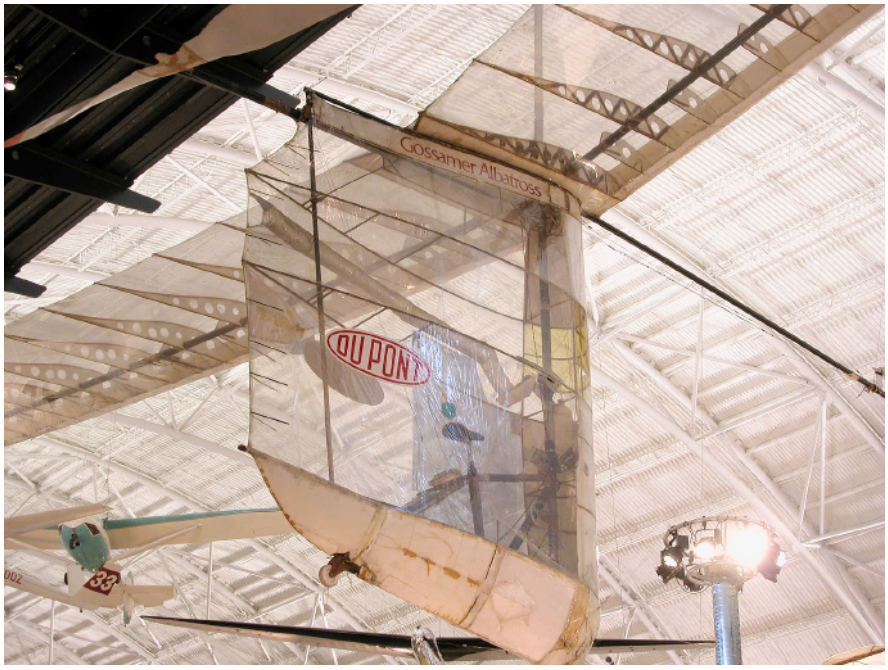


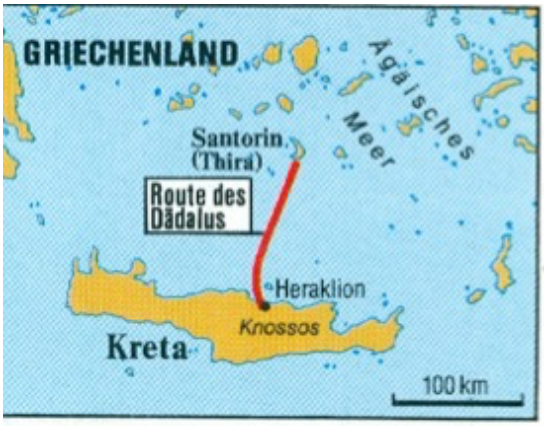
3500 years ago

According to Greek legend, Daedalus was the first human to defy gravity. Renowned artist, architect and master craftsman Daedalus was required to build a labyrinth for King Minos on the island of Crete and subsequently became a victim of his own success. Together with his son, Icarus, he was held prisoner in the labyrinth by King Minos. To escape, Daedalus constructed wings from feathers held together with wax. Father and son succeeded in taking off but unfortunately Icarus did not heed his father's warnings and flew too close to the sun. This caused the wax holding his flying apparatus together to melt and he fell to his death in the sea.

Flying with muscle power

For a long time, the main focus was on flight attempts using wings or flutter wings propelled by muscle power, a sadly futile endeavour. The motion sequences involved in bird flight are highly complex and proved to be unachievable, even for the genius Leonardo da Vinci. It was only Otto Lilienthal's gliding flights with rigid wings that brought success. For a long time after that, things around muscle-powered flight were very quiet. It wasn't until 1979, when British industrialist Henry Kremer offered a reward of 100,000 pounds sterling for a muscle-powered flight across the English Channel, that things gained momentum again. Scientists from the Massachusetts Institute of Technology, MIT, took up the challenge by developing lightweight aeroplanes, as did Paul MacCready, owner of the company AeroVironment in Pasadena, California. On 12th June 1979, racing cyclist Bryan Allen pedalled MacCready's Gossamer Albatross 36 km from Folkestone in England across the Channel to the French coast. MIT lost this race but did not give up on the challenge of flying with muscle power and has since achieved a number of world records.





1988 - the modern Daedalus

In 1984, a team of MIT scientists under the leadership of John Langford, decided to re-create the flight of Daedalus from Crete to Santorini. In terms of distance, this would beat Bryan Allen's flight across the Channel threefold. Only a year later, the MIT team travelled to Crete to research the conditions around the take-off location and flight route. As early as 1986, successful trial flights were achieved on a salt lake with the prototype "Light Eagle".

This prototype was 9 m long with an impressive wingspan of 35 m. It was constructed exclusively from lightweight materials such as balsawood, foam, plastic film, etc. and weighed only 42 kg.
The aircraft intended for the record-breaking flight was named "Daedalus" in memory of the legend. It had become even lighter, weighing only 32 kg. The variable pitch propeller had a diameter of 3.45 m. On 23rd April, 1988, the Greek racing cyclist Kanellos Kanellopoulos took off from Heraklion airfield and, thanks to a light tailwind, flew towards Santorini at a speed of around 29 km/h. It took him four hours to cover the 117 km. Unfortunately his aeroplane was hit by a gust of wind just before landing on the beach. It was unable to withstand this and broke apart. Nevertheless, the modern flight of Daedalus had been achieved.

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