

# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

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The Campos Basin is the main sedimentary area already explored on the Brazilian coast. It extends from the vicinity of the city of Vitória (ES) to Arraial do Cabo, on the north coast of Rio de Janeiro, in an area of approximately 100,000 square kilometers. The exploration of this Basin began with the discovery of the Field of Garoupa and had its commercial beginning in 1977, in the field of Enchova, with a production of 10 thousand barrels per day in a floating platform.



An oil rig can be two ways, on land under the name of on-shore platform and in the sea is called off-shore platform and is a large structure used in offshore drilling to house workers and the machines required to drill wells in the ocean floor for the extraction of oil and / or natural gas, processing the extracted fluids and shipping the products to the coast. Depending on the circumstances, the platform may be attached to the sea floor, may consist of an artificial island or may float. The largest oil rigs have a process capacity of around 200,000 barrels of oil per day, with associated gas production of approximately 2 million cubic meters per day.



Macaé is a Brazilian municipality in the state of Rio de Janeiro, Brazil, located 180 kilometers northeast of the state capital, and is known as the National Capital of Petroleum. Macaé has lived in great population growth since the 1970s, when Petrobras chose Macaé to be the headquarters of its operations in the Campos Basin. Oil is Macaé's greatest economic force. All personnel working on the oil fields of the Campos Basin are transported by helicopter to their jobs, departing from Macaé.



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

**INTRODUCTION:** The definition of the word helicopter - Helicopter (from the Greek ἑλιξ helix(spiral) and πτέρυξ ptéryks(wings)) is a type of rotary wing aircraft, heavier than air, propelled by one or more larger horizontal rotors (propellers) which, when rotated by the engine, create support and propulsion required for the flight. Because the rotor blades rotate around a mast, they are classified as a rotary-wing aircraft. Because the rotor blades rotate around a mast, they are classified as a rotary-wing aircraft, which distinguishes them from conventional (airplane) winged aircraft.



Jakob Bernoulli was the mathematician who studied the spirals, is considered the father of exponential calculus. The propeller and vortex can be seen as types of three-dimensional spirals.

**Spiral:** The movement - In spiral math is a flat curve that revolves around a central point (called pole), moving away from or approaching a given law.



Angels are celestial and spiritual beings, according to biblical accounts, which have wings.



**Wings:** The flight - In zoology, a wing is a member or appendage of an animal, morphologically adapted for independent flight. This definition excludes the anatomical structures that allow the sliding flight. The wings appear in distinct groups of animals, not due to the existence of a common ancestor, but as an example of the phenomenon of evolutionary convergence in response to ecological pressures favorable to the ability to fly.



Wing Week Celebration.





# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

THE DREAM OF FLY: The dream of Icarus



The history of aviation dates back to prehistoric times. The desire of flying has been presenting mankind since the day when the prehistoric man began to watch the flight of the birds and other flying animals. Throughout history there are several records of unsuccessful flight attempts. Some even tried to fly by imitating birds: using a pair of wings (which were nothing more than a wooden skeleton and feathers, imitating the wings of the birds), placing them in the arms and swinging them. It is believed that around 400 BC Archytas, a scholar of Ancient Greece, built a wooden pigeon capable of "flying" for about 180 meters. This wooden pigeon would be the first flying machine that moved by its own means. Around 300 BC the Chinese invented the kite, as well as the techniques of making it "fly" in the air. A kite is a rudimentary type of glider. For hundreds of years several people believed that their bodies would fly or float in the air if they used wings, placing them in their arms and swinging them, taking as an example the flight of animals capable of flying like birds or bats. Naturally all attempts to fly using such paraphernalia failed, with various fatalities occurring in these unsuccessful attempts to fly with such human-propelled aircraft.



Icarus was the son of Daedalus and a slave of Persephone. Daedalus, expelled for having killed his nephew Perdix, took refuge on the island of Crete. After the birth of Minotaur, he and his son Icarus built the Minotaur's maze, in which he imprisoned the monster. After the death of the Minotaur, Daedalus was imprisoned, along with his son, in the labyrinth. Then they constructed artificial wings from the honey wax of bees and feathers of birds of various sizes, molding it with their hands to become like wings of truth. That way he managed to escape. But he warned his son not to fly very close to the sun, so that he could not melt the wax of his wings, and not too close to the sea, for he could make his wings heavier. However, Icarus did not listen to his father's advice and was driven by the desire to fly near the sun, and eventually crashed and fell in the Aegean Sea, and drowned in the area that now bears his name, the Icarian Sea, near Icaria, a island southwest of Samos.



Santos Dumont: Pioneer of aviation

Flying has always been mankind's great dream, from angels with beautiful white wings open under the sky to the commercial, walking, and warplanes that cross our skies in the thousands today. Flying like a bird or as the almost mythological figure of Superman permeates our childhood dreams and even when we reach old age. There's no denying it, we all dream about flying someday. Although dreams lack details to be properly disintegrated in their codes, for they speak the language of the human soul, to dream that flying is essentially to love life and want to enjoy it. But be calm, fly the following lines and find out all that the horizons of your dreams can show you.





# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

THE DREAM OF FLY: Children toys



The paper airplane is a toy made in general of a single sheet of paper, usually uncut and without the use of glues or adhesives, using only the folding technique. Hence, the practice of building paper airplanes is often referred to as origami. There are several models of paper airplanes that can be made by children.



Gyrocopter is a child's toy with a propeller that actually flies that can be found until now in several versions, but none was as popular as the Pyrocopter, which are those lollipops that had been sold for some time and that came with a kind of propeller, that when we finished consuming the candy we would play spinning the toothpick like a helicopter. Made with a plastic toothpick and a metric-sized propeller designed to give spectacular aerodynamics, the pyrocopter was the most consumed "toy" of the 80s, 90s and early 2000s.



Toy is an object or a playful activity, aimed solely and especially for leisure, and usually associated with children, also sometimes used to describe objects for the same purpose, aimed at adults. The toys are of vital importance for the development and education of the child, for fostering the symbolic development, stimulating their imagination, their reasoning capacity and their self-esteem. Among the main types of toys that children like we can mention model and paper airplanes, balloons, parachutes, kites, dirigible helicopters and spaceships, the dream of flying begins in childhood.



Kids love to play with model airplanes. The model airplanes vary in size from simple toys to scales of up to 50% of the original aircraft.

All children have dreams, like flying an airplane, a helicopter, a spaceship, flying. All of them are bubbling minds that turn their jokes into unfulfilled aspirations. For this reason, it is up to us to foster children's dreams and allow them to realize them.



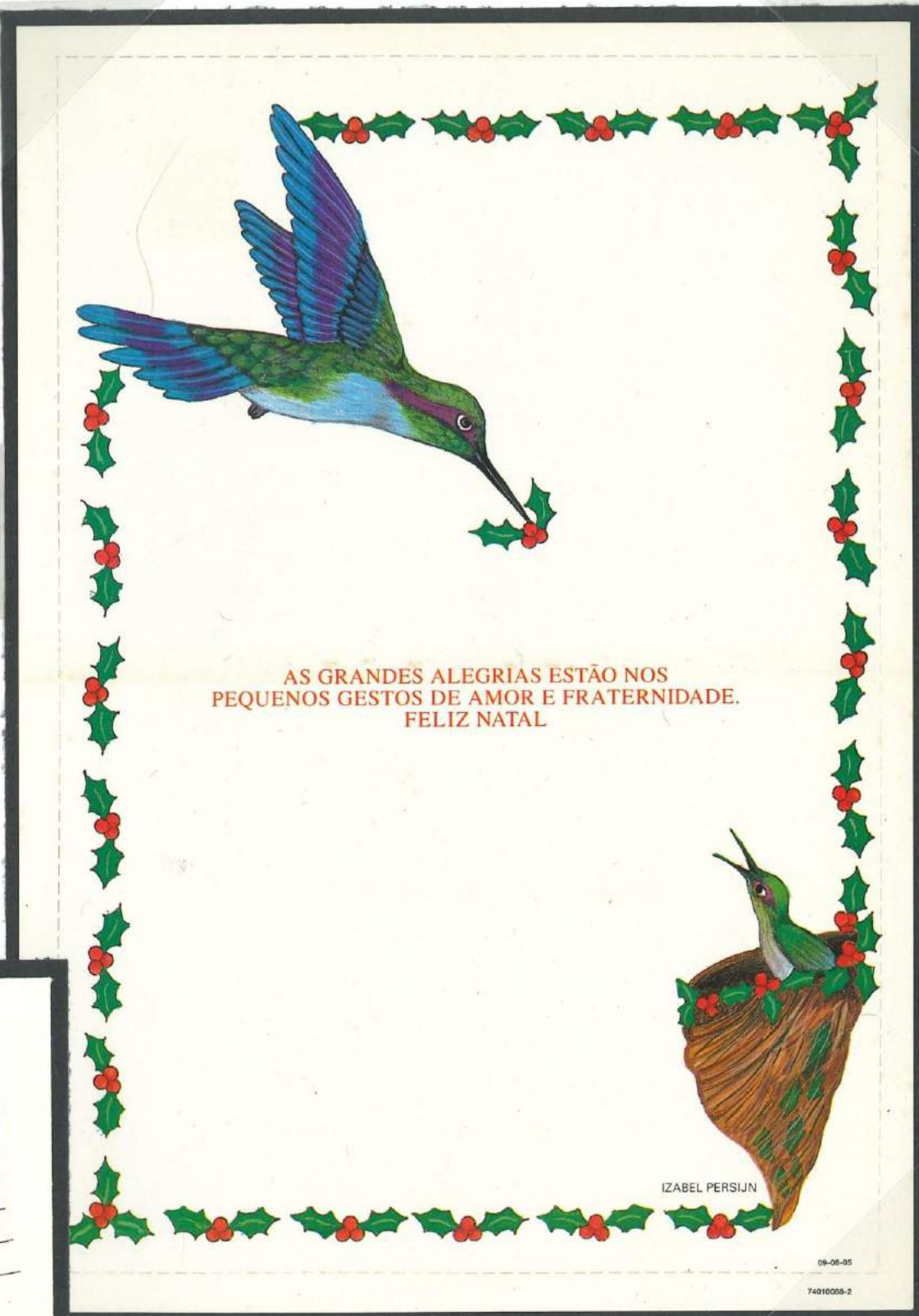


# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

HUMMINGBIRD: The inspiration of helicopter flight



Tudo o que é livre é potencialmente cristão \*\*\*



AS GRANDES ALEGRIAS ESTÃO NOS PEQUENOS GESTOS DE AMOR E FRATERNIDADE. FELIZ NATAL

IZABEL PERSIJN

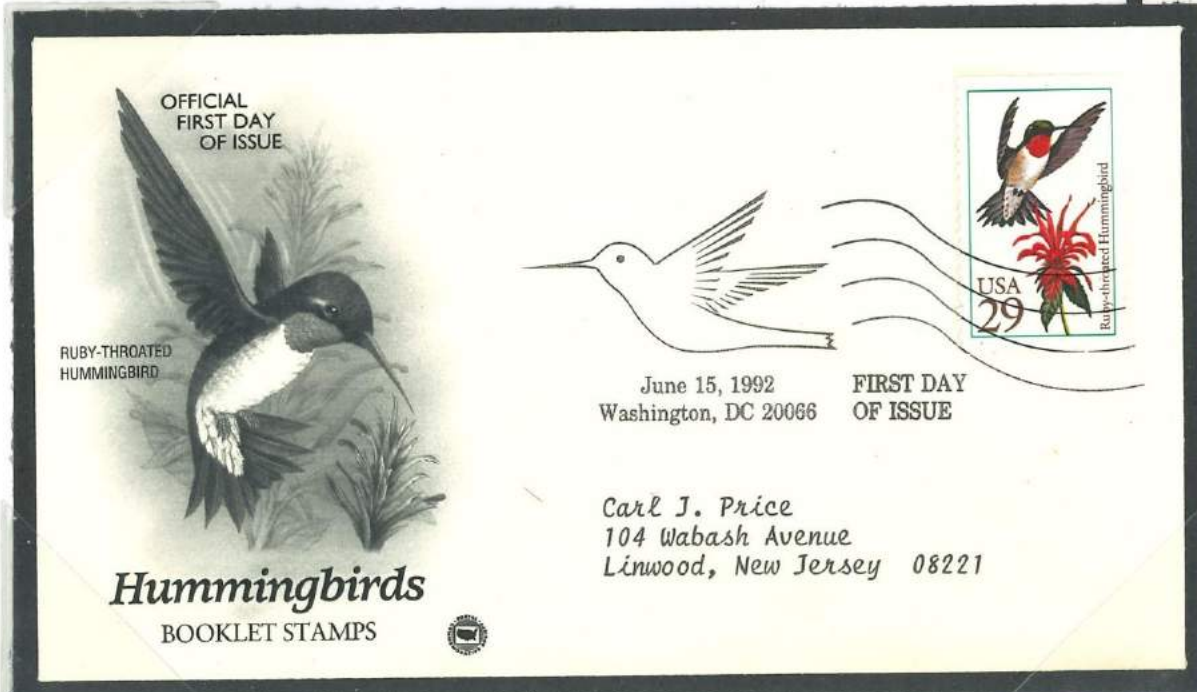
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Hummingbirds are the only bird that can carry out the flight backwards, being able to carry out flights upwards, downwards, straight and to the sides, besides to stop in the air and to remain for the time that wishes. In addition to the features in relation to your flight, hummingbirds are an important plant pollinating agent, so your image is almost always related to flowers.



The hummingbird is the bird that served as inspiration to idealize the movement of helicopters, a bird that stops in the air and flies in reverse side.



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Carl J. Price  
104 Wabash Avenue  
Linwood, New Jersey 08221

Hummingbirds  
BOOKLET STAMPS

The hummingbird, is a bird of the family Trochilidae, composed by 108 genera and 322 known species. Among the distinguishing characteristics of the group are elongated beak, nectar-based feeding, eight pairs of ribs, fourteen to fifteen cervical vertebrae, iridescent plumage and an extensible and forked tongue. Hummingbirds are small birds, which measure on average 6 to 12 centimeters in length and weigh 2 to 6 grams. The beak is usually long, but the precise shape varies greatly with the species and is adapted to the shape of the flower that forms the basis of the feeding of each type of hummingbird. A common feature is the forked and extensible tongue used to extract nectar from flowers. The skeleton and muscular constitutions of the hummingbirds are adapted to allow a fast and extremely agile flight. They are the only birds capable of flying in reverse and staying motionless in the air. The wings are very fast and can exceed 80 times per second.



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

THE FIRST IDEAS AND THE PIONEERS: Leonardo da Vinci



Leonardo di Ser Piero da Vinci, or simply Leonardo da Vinci - as he was known all over the world - was born on April 15, 1452, probably in a town near Vinci, Italy. Leonardo da Vinci died in Clos Lucé, France, on May 2, 1519.



Leonardo Da Vinci deserved the title of most versatile artist of which we have news. Painter, draftsman, sculptor, anatomist, botanist, architect, astronomer, in addition to war engineer and hydraulic engineer among other crafts. In addition to becoming one of the best-known and admired painters to date, he is also considered to be the most talented person he has ever lived. His scientific productions have never been highlighted as artistic ones. It remained in drafts and encodings, but still, they were geniuses.



Leonardo da Vinci's "helicopter", or aerial helicoidal screw, or simply aerial screw, was yet another of Leonardo da Vinci's extremely innovative designs. This project was designed in 1493, 450 years earlier than what we know today as a helicopter, to fly for the first time.

The artist was fascinated by nature: he loved to observe her, admire her, and study her to gain knowledge. He appreciated the infinite works and harmonies of standards. He said that a good artist should also be a good scientist to better understand and describe nature. Curious, Da Vinci liked to investigate events such as the operation of the mills, the flights of the birds, among others. In 1498, he made the first attempt of a flying machine for men. Leonardo da Vinci was one of the greatest exponents of the Renaissance, cultural, intellectual and artistic movement that represented the transition between the Middle Ages and Modernity.



Leonardo da Vinci is remembered for being one of the greatest geniuses in the history of mankind. His contributions went beyond the arts and his works, such as The Last Supper and Mona Lisa, are some of the most famous and reproduced paintings of all time. Self-taught, Leonardo da Vinci spent his youth in the city of Florence at the time of cultural and artistic effervescence. Then he lived in Milan, Rome, and finally in France. He had always recorded everything in his notebooks: sketches, thoughts, emotions, plans, and other reflections. In some notes, he used codes. Creative to the extreme, the artist had a special ability to blend art with science. He was both a perfectionist and a procrastinator. He was a vegetarian, for humanitarian reasons. Leonardo da Vinci had a special interest in human anatomy. He spent entire nights in hospitals to understand how the body works. He made several drawings to illustrate his studies. Another of his famous works is The Vitruvian Man (1492), a drawing of a human figure with perfect proportions and with arms and legs open inside a circle and a square.



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

THE FIRST IDEAS AND THE PIONEERS: Etienne Oehmichen, Juan de la Cierva, Paul Cornu and Igor Sikorsky



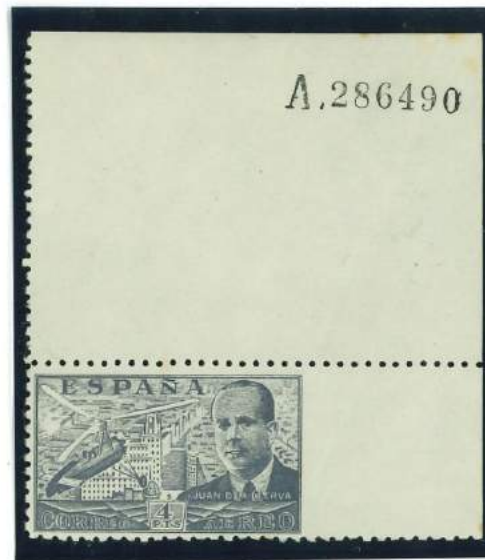
Etienne OEHMICHEN - 1884-1955  
Inventeur de l'hélicoptère

Étienne Oehmichen (Châlons-sur-Marne, 15 of October of 1884 - Paris, 10 of July of 1955) was a French engineer. There are controversies about the first helicopter flights, it would have been carried out by the Frenchman Étienne Oehmichen, who flew 1 kilometer in 1924. With his helicopter, he made the first closed circuit with vertical takeoff and landing. He is considered the inventor of the helicopter.

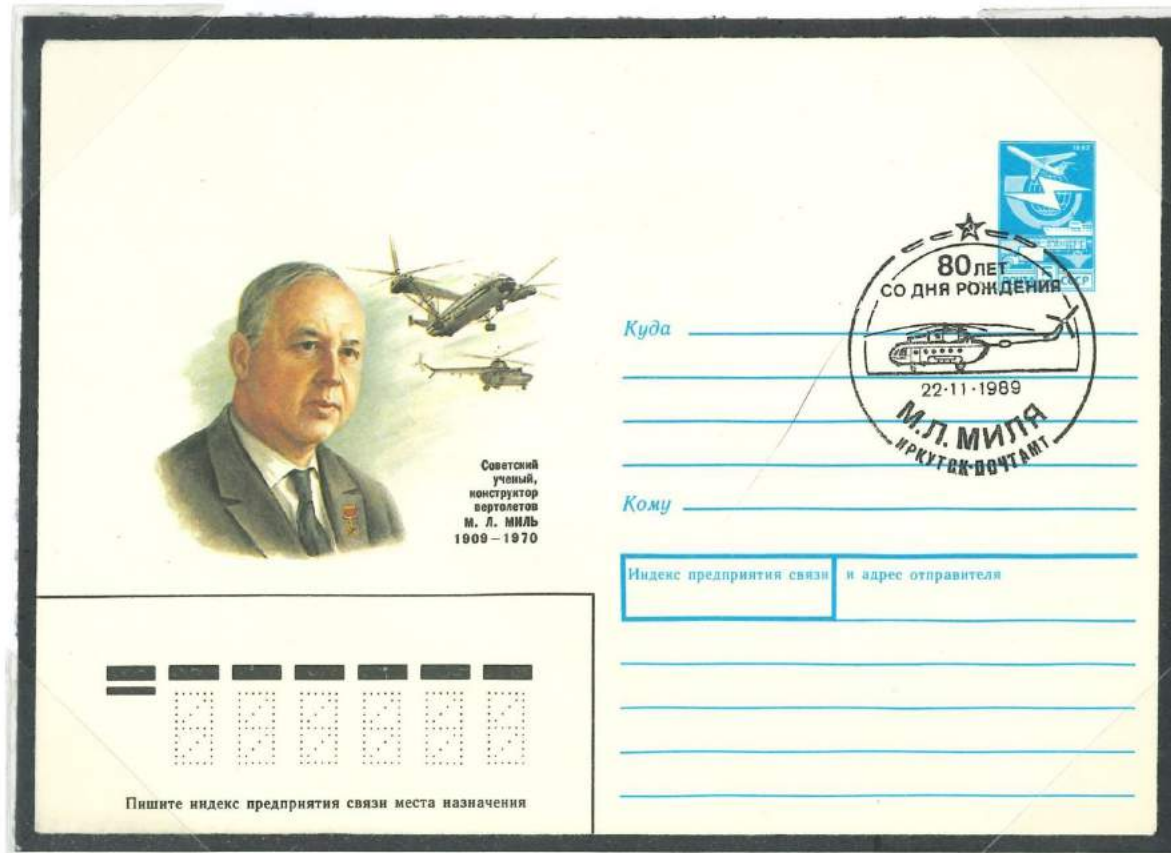


Paul Cornu (1881 - Lisieux, June 6, 1944) was a French engineer who designed and built the first helicopter to perform manned free flight.

Cornu held the first flight on November 13, 1907 in Lisieux. The apparatus rose about 30 cm above the ground for 20 seconds, propelled by a two-rotor ship, powered by a 24-horsepower engine. However, the project was abandoned, after some flights, after it was found that the aircraft was difficult to handle.



Juan de La Cierva y Codorniu, 1st Count of La Cierva (Murcia, September 21, 1895 - London, December 9, 1936) was a Spanish aeronautical engineer. Its greatest achievement was the invention of the autogyro in 1920. After four years of development, La Cierva invented the articulated rotor that resulted in the first successful world flight of a rotorcraft in 1924 with the C-6 prototype.



Советский  
ученый,  
конструктор  
вертолетов  
И. И. СИКОРСКИЙ  
1889 - 1972



Igor Ivanovich (Kiev, 25 of May of 1889 - Easton, 26 of October of 1972) was an aviation pioneer. Born in Kiev capital of Ukraine (at the time, part of the Russian Empire), Sikorsky later naturalized himself am. He designed the first four-engined plane and developed the first hull seaplanes for Pan American Airways in the 1930's. He also led the development of the VS-300 helicopter in the usual configuration - a main rotor and a rotor vertical antitorque, on the tail. Sikorsky is responsible for the production of serial helicopters and other events related to the history of the helicopter.



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

THE EVOLUTION OF THE HELICOPTERS: The aerial helicoidal screw of Leonardo da Vinci, Steam-powered Helicopter, PKZ-2, D'AT3 from Ascanio



One of Leonardo da Vinci's most visionary projects is the so-called aerial helicoidal screw. It is a machine that would be able to fly by means of a helix in a spiral shape that revolved around an axis, and that should be propelled by four men. Da Vinci's helical screw was, in fact, a precursor object of the helicopters we see today.

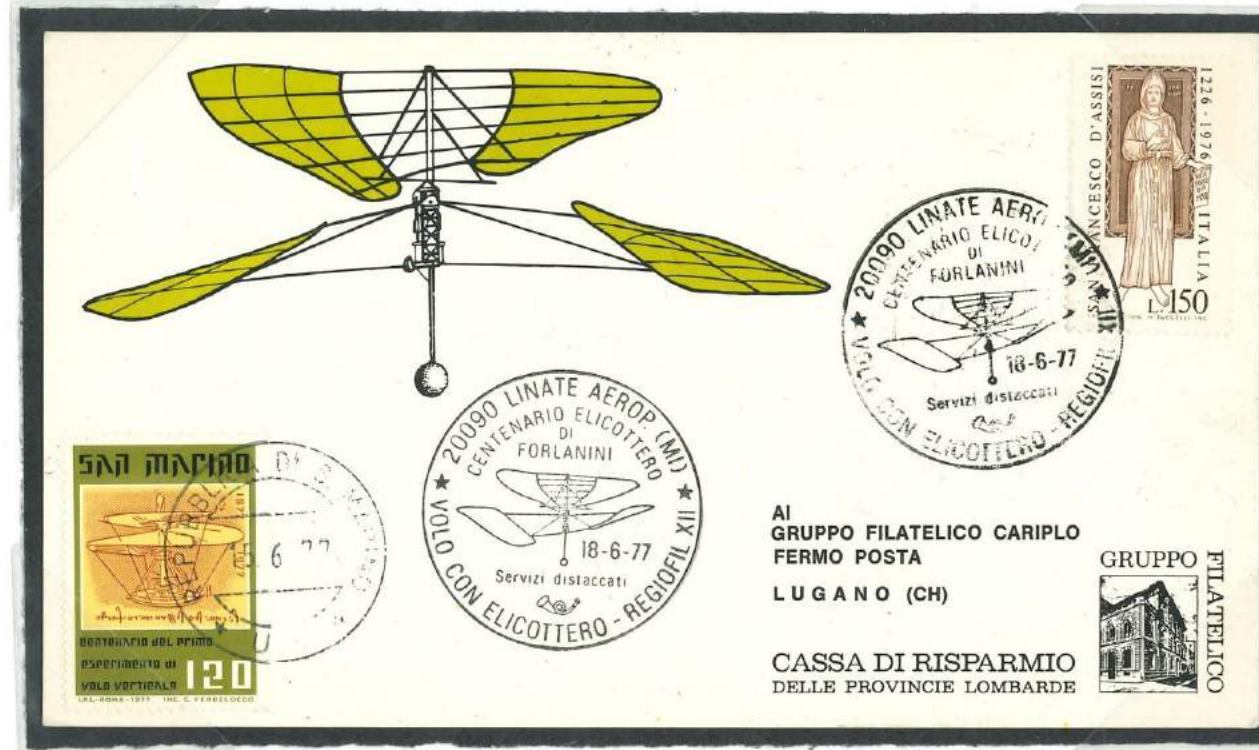


"If this screw-shaped artifact is well constructed, ie made of linen covered with gum and rotated quickly, the said screw-shaped artifact will 'pierce' the air with its spiral and will rise high," says the painter and Italian inventor on record made in one of Leonardo da Vinci's notebooks.



Da Vinci's studies were based on numerous scientific researches, such as gravity, air resistance, human anatomy, and many others. The sketches he made never materialized, he did not create any of these flying machines, but the fact of idealizing them about 500 years before being invented proves the man's great interest in flying and also the incredible intellectual ability of Da Vinci.

Enrico Forlanini - A pioneering Italian engineer in scientific aviation born in Milan, military career pioneer builder of a steam-powered steerable helicopter model, which rose about 12m (1877) from the ground, which is considered to be the first motorized helicopter. He attended the Scuola di Applicazione di Artiglieria e Genio, where he graduated as a lieutenant (1870) and graduated in industrial engineering from the Scuola di Applicazione del Politecnico di Milano. He continued his military career and began building a steam-powered helicopter in Alessandria. During his first flight, in Milan (1877), the vehicle was shown at Teatro alla Scala, reaching a height of 13 meters. He designed and built the first Italian airship, Leonardo da Vinci (1909).



In 1843, an English inventor mounted a steam-powered helicopter, but he barely got off the ground.

The first real helicopter was built in Austria-Hungary on World War I. Yet during 1916 Major Stephan Petrochy proposed the idea of replacing observation balloons by a new-type of machine. He suggested that a helicopter would be more reliable and less dangerous than hydrogen filled balloons.



Corradino d'Ascanio was an Italian engineer, born in Popoli (Italy) on February 1, 1891, died in Pisa (Italy) on August 6, 1981. In 1925 he founded a Society with Baron Pietro Trojani, with whom he develops your helicopter. The third prototype, the D'AT3, commissioned by the Ministry of Aeronautics and piloted by Major pilot Marinello Nelli, flew at the Ciampino aerodrome on October 13, 1930.





# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

THE EVOLUTION OF THE HELICOPTERS: Autogyro from Cierva, Sikorsky Helicopters, MIL Russian Helicopters

A MIL RK-12 is a Russian / Soviet Tandem type helicopter, which is a type of helicopter equipped with two rotors, one front and one rear, used for cargo transportation and personnel.



**AUTOGIRO**

FABRIKANT Cierva Autogyro Company	DIAMETER ROTORBLADEN 9,8 m
LAND Spanje	LENGTE ROMP 7,3 m
EERSTE VLUCHT 1923	HOOGTE Onbekend
TYPE Autogyro	GEWICHT Onbekend
MATERIAAL prototype C.4 Hout en plaatstaal	TOPSNELHEID 63 km/u



**PIONIEREN  
IN DE LUCHT**



HELICOPTERS OF THE SOVIET UNION  
БЕРТОЛЕТЫ СССР  
FIRST DAY COVER ПЕРВЫЙ ДЕНЬ

Autogyro or Gyrocopter is a type of aerodynamic whose in-flight support is provided by rotating wings. Unlike the helicopters, the rotor rotates independent of the motor, in autorotation, as a resultant aerodynamic movement ahead. Propulsion is provided by a conventional propeller driven by a motor. The first autogyro was the C.4, developed and built by Juan de La Cierva, having made the first flight



Sikorsky Aircraft Corporation is a North American manufacturer of helicopters based in Stratford, Connecticut. Sikorsky was founded in 1925 by the aeronautical engineer Igor Sikorsky.



Autogyro model C4



Autogyro from la Cierva

40. BÉLYEGNAP



AEROFILA 67  
VII. FISI KONGRESSZUS  
BUDAPEST

Mil Mi-1 is a Russian / Soviet helicopter used for cargo and personal transportation, used by several countries for civilian and military purposes.

Igor Sikorsky developed the Sikorsky R-4, the first stable, fully controllable helicopter to go into full-scale production in 1942. Today, Sikorsky is still one of the leading helicopter manufacturers, producing well-known models such as the UH-60 Black Hawk and the SH-60 Seahawk, as well as experimental models such as the Sikorsky S-72 X-Wing.



The Vought-Sikorsky VS-300 is an American single-engine helicopter designed by Igor Sikorsky. It had a single three-blade rotor originally powered by a 75 horsepower (56 kW) engine. The first "free" flight of the VS-300 was on 13 May 1940.



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

## PARTS OF THE HELICOPTERS: Propeller and Cockpit

Propeller is a term designating a set of blades with the same center, which when rotated according to its axis causes propulsion and each blade describes in space a trajectory that is, in fact, a geometric propeller. This propulsion or traction instrument is usually coupled to some kind of motor that pushes the surrounding (usually air or water) converting rotational energy into translational and displacing the object to which it is attached (examples: airplanes, helicopters) or the fluid around it (eg fan). The propeller blades act as wings and produce force obeying Bernoulli's principle and Newton's third law, creating a pressure difference between both surfaces of the blades.



The helicopter is nothing more than a plane with movable wings: propellers. But - unlike the airplane, which only moves forward - the helicopter can hover in the air and even walk back, because its blades are always moving. The process is not at all simple, because the natural tendency of the thrust caused by the rotation of the blades (the so-called torque) would make the ship spin like a top.



When the engine is turned on, the main propeller turns, pushing the air down. By the principle of action and reaction, air applies an upward reaction force to the propeller; the difference in pressure generated by it due to the passage of air more quickly on it than below generates pressure difference and the union of these two effects is what makes the helicopter rise.



The machine's flight is a veritable aerodynamic prodigy, the result of a complex combination of counterbalancing forces. Its support, for example, comes from the wings, which, when inclined against the flow of air, produce a force upwards. The helicopter is a device capable of flying vertically by having a propeller on the top, which functions as a propellant. There are propellers with different numbers of blades.



Showing propellers with 4 blades.

The cockpit is a zone usually located in the front part of an aircraft, from where the pilots control it. The cockpit includes a series of flight instruments, such as speedometer, artificial horizon, altimeter, directional turn, engine instruments and joystick. Depending on the type of aircraft, a flight deck may accommodate more than one pilot.



Showing the pilot inside the cockpit.



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

## PARTS OF THE HELICOPTERS: Rotor and Landing Gear



Landing gear is one of the main aircraft equipment used for take-off and landing.



Showing a landing gear for helicopters landing on rivers and seas.



Here showing the landing gear used to land in the snow. This type of landing gear is mainly used in aircraft that circulate in Antarctica, Alaska and the Arctic.



Rotor is everything that revolves around its own axis producing rotating movements, commanding the flight of the machine. In aviation, the rotor in the helicopter is the basic component of the aircraft intended to provide the necessary lift to the flight, it is the combination of several rotating wings and a control system that generates the aerodynamic lift force that supports the weight of the helicopter and the thrust which neutralizes aerodynamic drag on the flight forward. The rotor of a Helicopter is not to be confused with the propellers of an airplane; it incorporates joints that allow the movements of the blades in the axes to provide the change of the pitch, the beat and the drag. The step change motion is what allows the change of the angle of attack of the blades to vary the lift generated after the aircraft leaves the ground.



Rotor is located on the top of the helicopter.



Skiing, built in alloy steel, equips small and medium sized helicopters.



Conventional with two front tires and two rear tires.



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

## PARTS OF THE HELICOPTERS: Tires

A pneumatic tire (from the Latin *pneumaticus*, in turn from the Greek *πνευματικός*, derived from *πνεῦμα* "blow"), better known by tire, is a circular artifact made of rubber, for use in automobiles, trucks, airplanes, helicopters, motorcycles, etc. Aviation tires have very different characteristics from the tires we see on a daily basis on cars, motorbikes, among others. Aviation tires have to be very resistant to temperature variations, as they are subject to variations of -45 °C, -50 °C, -60 °C or lower even when the aircraft is in flight. Air pressures should be inspected when tires are cool. It should be waited at least two hours after the flight before inspecting the pressures (three hours in hot weather). Very usual procedure, nitrogen supply has a number of advantages, tires lose less pressure with the passage of time, since the rubber is less permeable to this gas than to compressed air.



Here showing the main tires factories used in cars and aviation. Continental was founded in Hanover, Germany, in 1871. Today, Continental is among the world's top 5 suppliers in the tire industry. In 1889, Edouard Michelin took over the company, which was renamed "Michelin et Cie". Michelin developed the first detachable bicycle tire. That same year, Charles Terront won the Paris-Brest-Paris race cycle race on detachable MICHELIN tyres.

The origin of Pirelli dates back to 1872, the year Giovanni Battista Pirelli founded a limited partnership, "G.B. Pirelli & C.", in Milan to produce elastic rubber items. In 1873, the first plant for the production of rubber items was built in Milano. Later, the rubber band production line for carriages was started (1885) and the first tyre for velocipedes was launched (1894) which resulted from a number of innovations in the preparation of materials and manufacture of tyres.



Showing some examples of tire landing gear, one of the most used in helicopters. They are used in landing and take-off of the aircraft, supporting all their weight in the tires, which must have the appropriate rubber composition and composition.





# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

## PARTS OF THE HELICOPTERS: Engine




GE Aviation, a subsidiary of General Electric, is headquartered in Evendale, near Cincinnati. GE Aviation is among the largest suppliers of aeronautical engines, offering mostly commercial aircraft. GE Aviation is part of the General Electric conglomerate, which is now one of the largest corporations in the world. GE announced the completion of the GE38 turboshaft engine project, which was selected to power the upcoming Sikorsky CH-53K helicopter.

An engine is a device that converts other forms of energy into mechanical energy in order to drive movement to a machine or vehicle. Turbo-shaft ("turboshaft") is a type of gas turbine used to produce shaft power instead of jet thrust. Turbo-shaft motors are commonly used in applications that require a sustained and high power, besides having high reliability, small size and light weight. They are mainly used in helicopters, auxiliary power units (APUs), boats and ships, tanks, hovercraft, and stationary equipment. A turbo-shaft engine can consist of two sets of main parts: the turbine and the power shaft. The turbine consists of the compressor, combustion chambers with ignitors and fuel injection nozzles. The power shaft consists of additional turbine stages, a clutch system and the output shaft. The turbine produces the expanding hot gases and drives them to the power shaft.

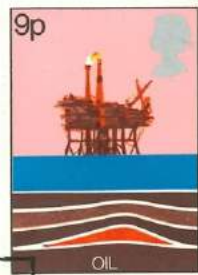
An engine is a device that converts other forms of energy into mechanical energy in order to drive movement to a machine or vehicle. The absolute majority of current mechanical helicopters use turbines or turbine engines.



**Overhaul  
&  
Services**

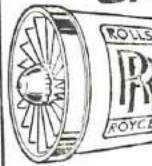


**EAST  
KILBRIDE**



9p

**OPEN DAY**



Sept. 2nd 1978  
EAST KILBRIDE  
GLASGOW



The Rolls-Royce Thrust Measuring Rig (TMR), was a pioneering vertical take-off and landing (VTOL) aircraft developed by Rolls-Royce in the 1950s.

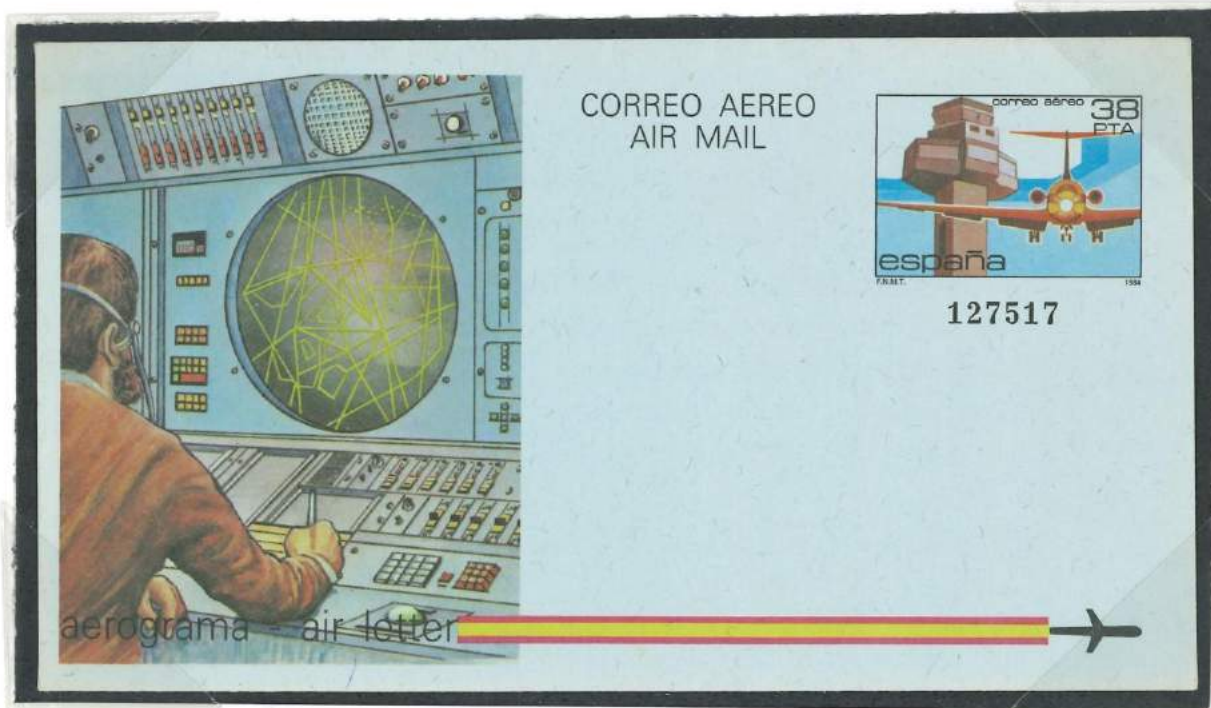
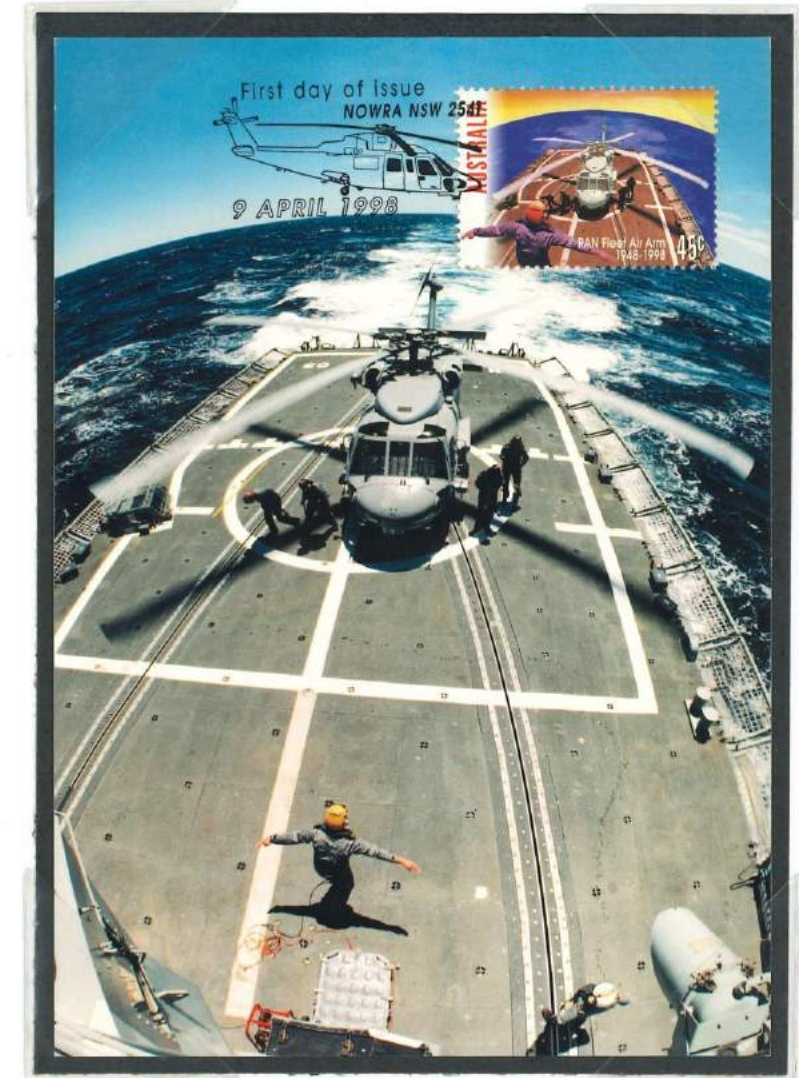
The company was founded in 1906 as Rolls-Royce Limited and from 1973 assumed the name Rolls-Royce Motors, which is an English automobile company subsidiary of the German BMW group, being one of the most renowned in the world. The brand, synonymous with quality and high standard of comfort. RR provides turbocharged engines for some helicopter factories such as Robinson Helicopter Company and Westland.



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

AIR TRAFFIC CONTROL: Manual Control with Flags, Control Tower

Air traffic control is a service provided by ground controllers who monitor, guide and monitor aircraft travel (usually airplanes and helicopters) in the air and ground to ensure a safe, orderly and expeditious flow of traffic. Air traffic controllers provide flight indications and authorizations, in accordance with the operational characteristics of the aircraft and the traffic conditions at any given time. Such authorizations may relate to the route, altitude and / or speed proposed by the aircraft operator for a particular flight, and pilots shall evaluate and / or comply with the instructions / authorizations received.



The control tower is a part of the airport responsible for air traffic control in the vicinity of this aerodrome. Usually it is the highest structure of an airport, and its height can vary from a few meters to several tens of meters. It has this height according to its need of vision of the areas whose aerial control it does, whether on land or in the air. Formally the Control Tower provides the so-called Airport Control Service in addition to the Alert Service and Flight Information Service. The control tower may or may not have radar for viewing nearby air traffic. The radar facilitates the work of air traffic controllers and increases the safety and reliability of the tower's operations. The communication between the control tower and the aircraft pilots is through communicating radios. Not all airports have a control tower.

The famous control tower that exists in the airports, in fact, performs only a small part of this process and usually stops worrying about the plane as soon as it takes off the runway. Depending on the route, between the moment you ask permission to leave and the final landing, the pilot can contact more than ten different people on the radio, as responsibility for the flight goes from one control station to another. The sky seems infinite, but with so many planes in the air you have to coordinate everything very well to prevent one from crossing the other's path.



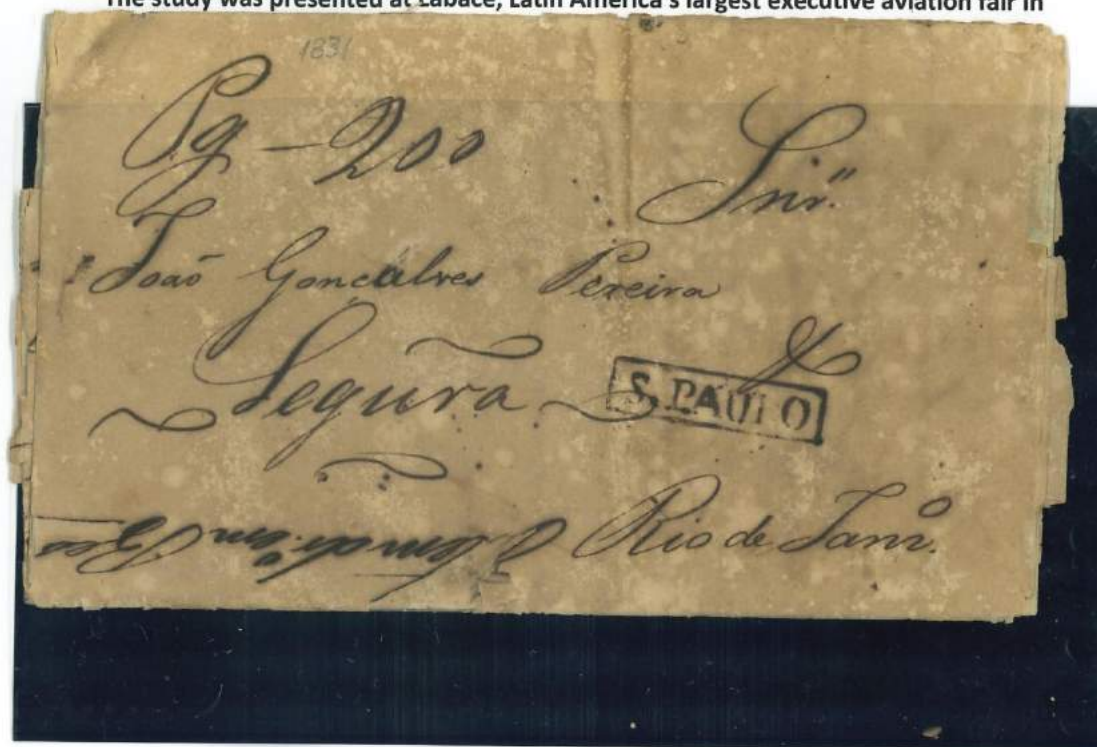


# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

HELICOPTER LARGEST FLEET: São Paulo, New York and Tokyo



According to studies, São Paulo is the city with the largest fleet of helicopters in the world. In second place was New York in the United States and third in Tokyo, Japan. The study was presented at Labace, Latin America's largest executive aviation fair in

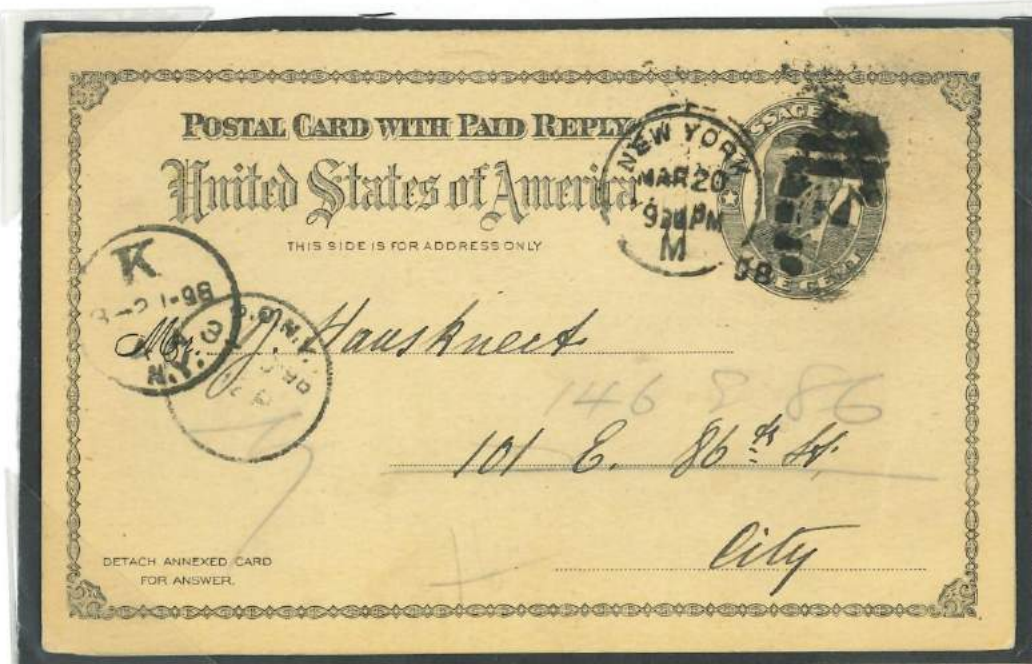


Every five minutes, at least 4 helicopters land or take off in the city of São Paulo, which today has the largest transportation fleet in the world. In the capital alone, there are 411 aircraft registered, according to a survey carried out in 2013. Currently Sao Paulo is the only city in the world that has exclusive air traffic control for helicopters.



In the case of New York, there are 120 registered helicopters. And its main airport is John F. Kennedy International Airport. There is already a Uber Helicopter service in New York called Uber Copter, with flights between JFK and Manhattan.

Tokyo is the third largest city in the world with the highest airflow of helicopters. There are sightseeing and business flights from Narita International Airport to downtown Tokyo.



VI ARRIVES AT KENNEDY AIRPORT that with this exceptional Journey serve peace. We invite all to pray serve this great cause which we can and present; to pray that all may and favor peace, that we may for the achieve the aim we have set before blessing in the Vatican as trip started).  
CLYDE J. SARZIN  
Port Washington, L. I.  
New York, U.S.A.

Antarctic Flight by helicopter  
From 砕氷艦しらせ  
To 昭和基地  
Date 平成7年1月2日  
Type/Numbers 61/8185  
Mission 0-2 (物資輸送)  
Pilot and 2尉成瀬樹  
Signature

HORST KÜHLHOF  
Wupperweg 2  
D-46236 Dorsten  
Germany



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

HELICOPTER MODELS, FACTORIES AND INTERNATIONAL FAIRS: Eurocopter, Alouette, Gazelle, Aerospatiale, Dolphin, Heli Baby, Boeing, Mc Donnell-Douglas, Lynx, Kawasaki, Harbin, Focke Wulf



Aerospatiale – Alouette III



Eurocopter



Eurocopter HH-65 Dolphin



Dolphin



Gazelle



Aero HC2 – Heli Baby



Dolphin 2



BO 105



Aerospatiale AS 355F-1 Twin Squirrel



Gazelle



Boeing A-64 Apache



Burby Helicopter



Mc-Donald-Douglas MD 900



Harbin Z-19



Mc-Donald-Douglas MD 500



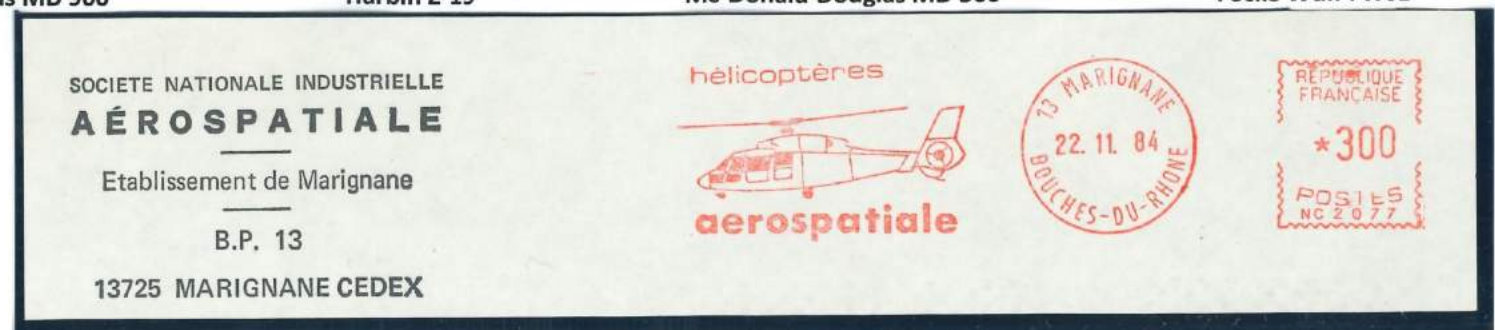
Focke Wulf FW61



Lynx – WG 13



Kawasaki-369 HS



Aerospatiale – Helicopter Factory



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

HELICOPTER MODELS, FACTORIES AND INTERNATIONAL FAIRS: Kamov, Bell, Sikorsky, AS, MBB/Kawasaki, Monte Carlo Fair



Portrait of Kamov and helicopter models  
KA-10, KA-22, KA-26, KA-27 and KA-50



KA-26



Monte Carlo Helicopter Fair



Sikorsky S-92



KA-32



KA-26



Bell 206B Jetranger 111



Sikorsky Helicopter



AS-61



MBB Factory



MBB/Kawasaki BK117



Sikorsky R-4



Sikorsky S61N



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

HELICOPTER MODELS, FACTORIES AND INTERNATIONAL FAIRS: Westland, Mil Mi, Tandem Helicopters, Chinook, Italian Fair



Mil Mi-17



Westland-WG-30



Westland-WS61 Sea King



Westland Helicopters

## TANDEM MODEL HELICOPTERS



Mil Mi-6 – common stamp and decal on back



CH-47 Chinook

Tandem is a type of helicopter with two rotors, a front and a rear. They rotate counterclockwise: the front rotates counterclockwise and the rear clockwise, without the blades colliding with each other. Thus each negates the torque effect produced by the other. In order to turn right, the front rotor moves to the right and the rear to the left, to turn left the front rotor to the left and the rear to the right. Tandem helicopters, in addition to reaching high speed, carry greater amounts of weight.



Mil Mi-17



Italian Air Fair



Tandem Helicopter Model Mil Mi B-12 – Postal Stationery, Decal on Back, Common Stamp, Color Proof.

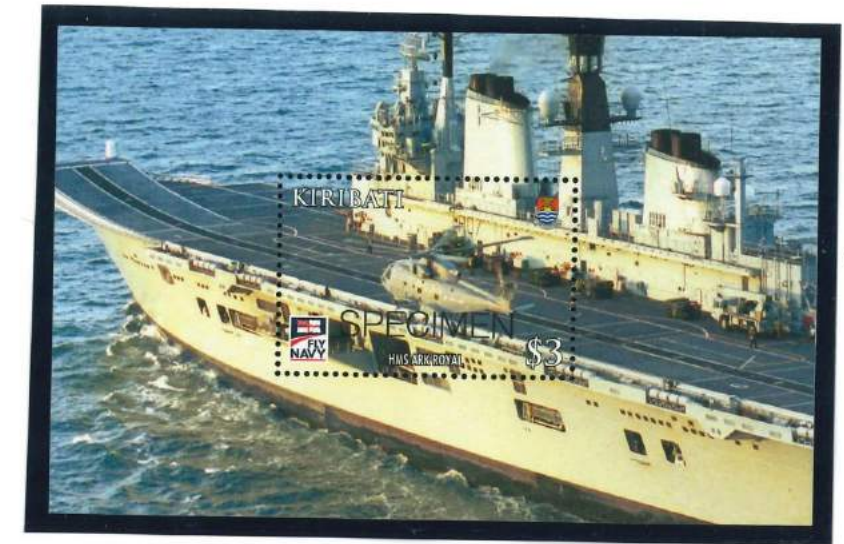


# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

ACTIVITIES WITH HELICOPTERS: Military Activities – Army, Navy and Air Force



Helicopter carrier is a term relating to an aircraft carrier whose primary purpose is to transport helicopters. Naval Aviation is the branch of military aviation intended to operate in a maritime environment, usually in cooperation with naval forces. Naval helicopter mission: attack submarines and surface targets Search and Rescue, Administrative Transport as well as Troop Transport.



A military helicopter is a helicopter used by military forces. They exist for different military functions, the most common being air transport. Some armed forces also have attack helicopters and specialized helicopters for specific missions such as air reconnaissance, C-SAR, anti-submarine fighting, and land-mine fighting. The AH-64 Apache helicopter from Boeing IDS is considered the best attack helicopter in the world, being employed in several hostile environments and with high success rates in its missions. Military helicopters can carry more weight than civilians, as well as being obviously more resilient to withstand enemy attacks. This second characteristic is remarkable in Apache, one of the most important machines of the present time. The loaded arsenal can vary greatly.



The Jeanne d'Arc (R97) is a helicopter carrier cruiser of the French Navy. It was built by the Brest Arsenal from 1959 to 1961, its launch to the sea was on 30 September 1961 and has served the French Navy ever since. He was removed from service in 2014. With its full endowment, the Jeanne d'Arc carried 600 people, including 51 officers. To handle the ship 425 squares alternate in the 24 hours of the day.



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# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

ACTIVITIES WITH HELICOPTERS: Police Activity, Rescue and Astronauts Rescue



The mission of the Aeropolicial Service is to carry out air support in ostensive policing, in the relief of the population, in civil defense actions, in military police actions and operations, and in military fire services, in support of federal, state and municipal bodies throughout the national territory, in missions public security and / or civil defense, in the transportation of authorities and in all other actions for the preservation of public order, in accordance with the guidelines of the Commander-in-chief.



The use of helicopters in search and rescue operations in a forest, mountain and forest region involves extremely high risks. If in urban areas the risks are already considerable, in remote areas these risks are much greater. Conceptually, helicopters are considered spinning wing aircraft, which depend on combining a number of factors so they can fly. For such an aircraft to be able to rescue a victim, for example, who is injured on a mountainous slope, all these factors will have to be favorable. Otherwise, either the mission will have to be aborted, or it will be executed with extremely high risks for the crew, and for the victim herself. The Aeronautical Search and Rescue System is organized and structured to develop Search and Rescue operations in line with international and national commitments and standards, which aim to locate aircraft occupants or vessels in distress, rescue victims of aeronautical or maritime accidents with security and intercept / escort aircraft in emergencies.



Spaceships returning to Earth usually land in the sea, and the astronauts are rescued by helicopters.

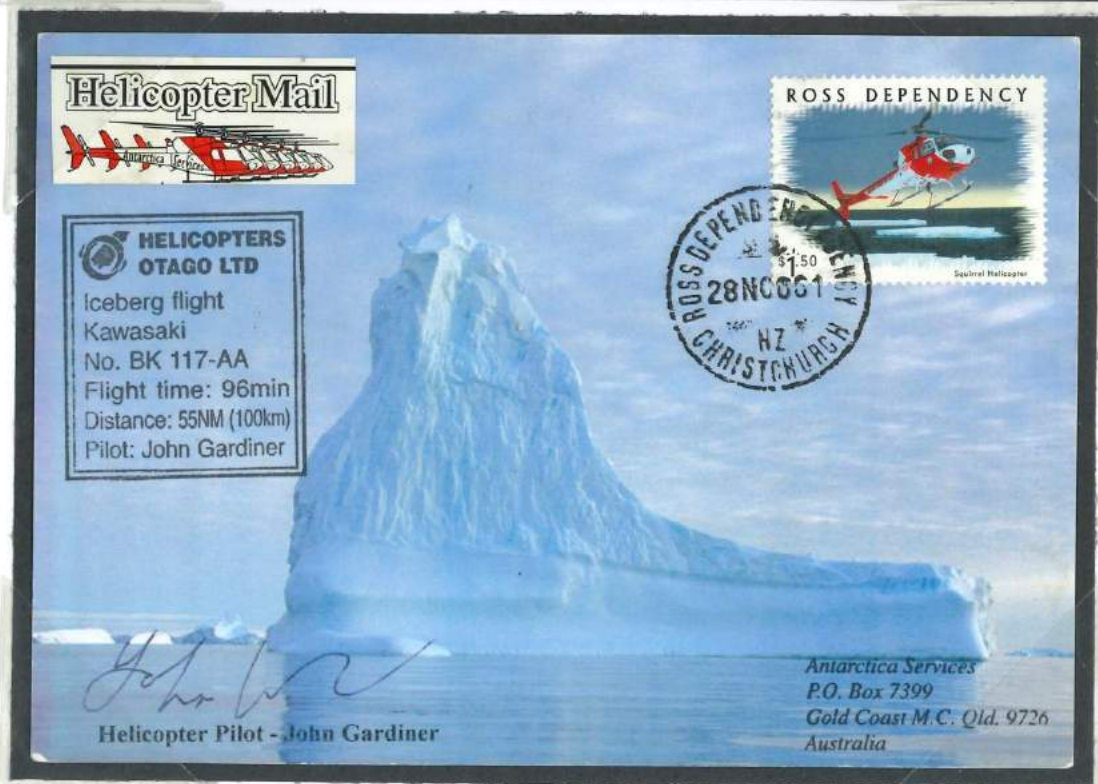
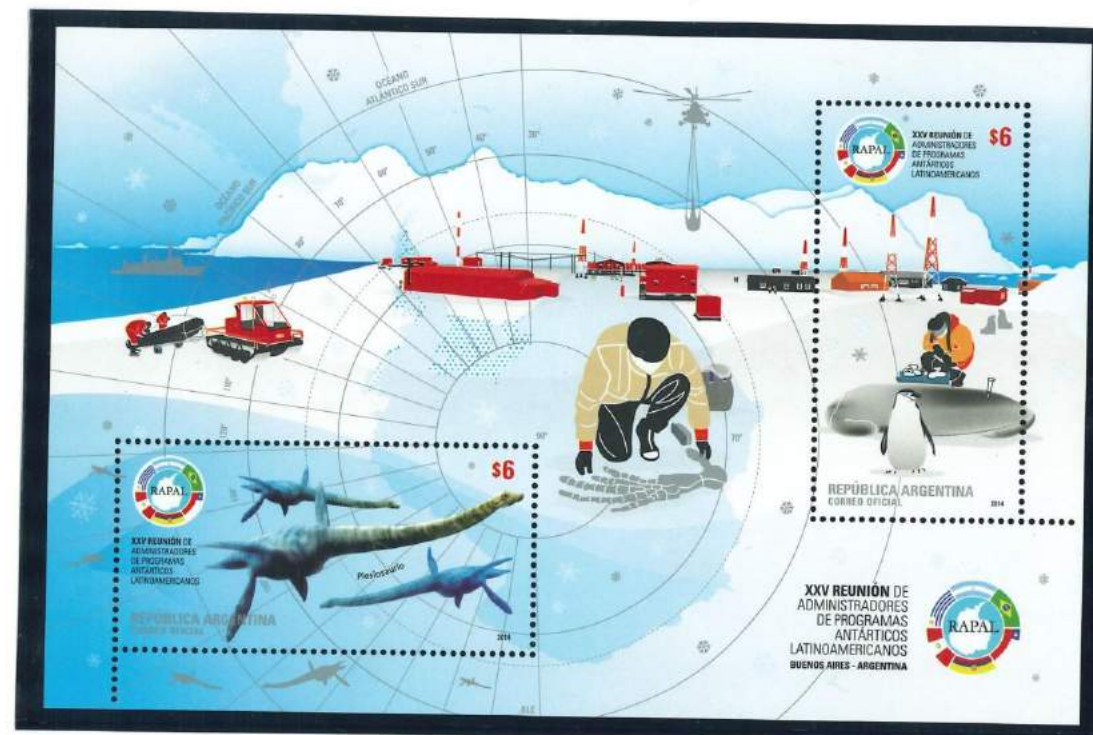


# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

ACTIVITIES WITH HELICOPTERS: Transport of People, Supplies and Mail to Antarctica



The Antarctic continent is formed in its entirety by ice and has unique characteristics. This region holds about 10% of the planet's land. This region corresponds to a polar cap area. Occupying a territory similar in size to Brazil, it is considered the largest of the deserts, because it presents the most adverse conditions for maintenance and proliferation of life. Many countries maintain research bases in Antarctica, there are currently 29 countries with scientific bases in Antarctica. About a thousand scientists do various experiments in the region. There are no large ports in Antarctica. Most coast stations have only anchorages and supplies are transported from ships to the beach in small boats and helicopters. There are already tours with luxury cruises and helicopter flights flying over Antarctica being held, the main attractions being the penguins seen from above.



Helicopter flights through Antarctica for reconnaissance and mapping of fauna and flora. Helicopters are used in the transportation of mail, personal and research material, landing on the mainland and even on large icebergs. They are also used to rescue and transport material and equipment.





# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

## ACTIVITIES WITH HELICOPTERS: Transport of Charge and Mail



POST.KZ сайтында хаттардың өтуін жиі қадағалаңыз - бұл мемлекеттік органдарға өтініштерді жеңелткен жағдайда маңызды. Отследите частное прохождение письма на сайте POST.KZ - важно при отправке обращения в государственные органы.

Кімнен / От кого \_\_\_\_\_

Қайдан / Откуда \_\_\_\_\_

Индекс: [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Төленген / Оплаченный

ҚАЗАҚСТАН



PL001545905KZ KAZAKHSTAN

Кімге / Кому \_\_\_\_\_

Қайда / Куда \_\_\_\_\_

Индекс: [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]



EMS қызметі "Күнбе-күн жеткізу"  
Услуга EMS "Доставка день в день"

1499 POST.KZ

жөнелтілмеген табысталмаған жағдайда жөнелтушінің ұйғарымын  
распоряжение отправителя в случае невручения

алғашқы жеткізуден кейін қайтару  
возврат после первой доставки

сақтау мерзімі өткен кейін қайтару  
возврат по истечении срока хранения

қайтармау  
не возвращать



# А В И А



Куда \_\_\_\_\_

Кому \_\_\_\_\_

Индекс предприятия связи и адрес отправителя

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Индекс предприятия связи места назначения

[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]



The USPS use gyrocopters were indeed used to deliver mail. Due to their agility, gyrocopters were sometimes the fastest way to get mail from one urban center to another. In the 1930s, the postal service regularly used gyrocopters for several such routes in the Northeast as well as in Los Angeles. The mail being ferried between the rooftop of a Philadelphia post office and Camden, New Jersey, a flight that could be made in six minutes thanks to this new transportation technology. The aircraft used in 1946 for the L.A. helicopter tests were six Sikorsky R-5Ds. Like the original Curtiss JN-4D aircraft of 1918, these helicopters were originally U.S. Army aircraft. The helicopters were used on tests along four routes in the L.A. area, all of which led to the L.A. airport. The routes' round-trip mileage ranged from 194 to 300 miles. The craft selected for the 1947 official trips were the Sikorsky S-51 helicopters. By early 1947, additional helicopter tests were being made both in Chicago and New York areas. On January 6, 1947, the first experimental helicopter flights were made in the New York City area.



# А В И А



Куда \_\_\_\_\_

Кому \_\_\_\_\_

Индекс предприятия связи и адрес отправителя

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Индекс предприятия связи места назначения

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About 70 years ago the General Post Office was at the cutting edge of helicopter development. At the start of 1948, British European Airways (BEA) started dummy mail-run services in Dorset and Somerset. The Sikorsky S-51s travelled a 115-mile route in just under two hours including stops. The success of the dummy mail-runs led to BEA inaugurating the first helicopter-operated public mail service in the UK.



The use of helicopters for transportation and lifting of cargo in areas difficult to access has already been considered by large construction companies in some projects, motivating some companies to develop this type of business. There are helicopters capable of transporting war tanks, military vehicles, very large metal structures, even airplanes.



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

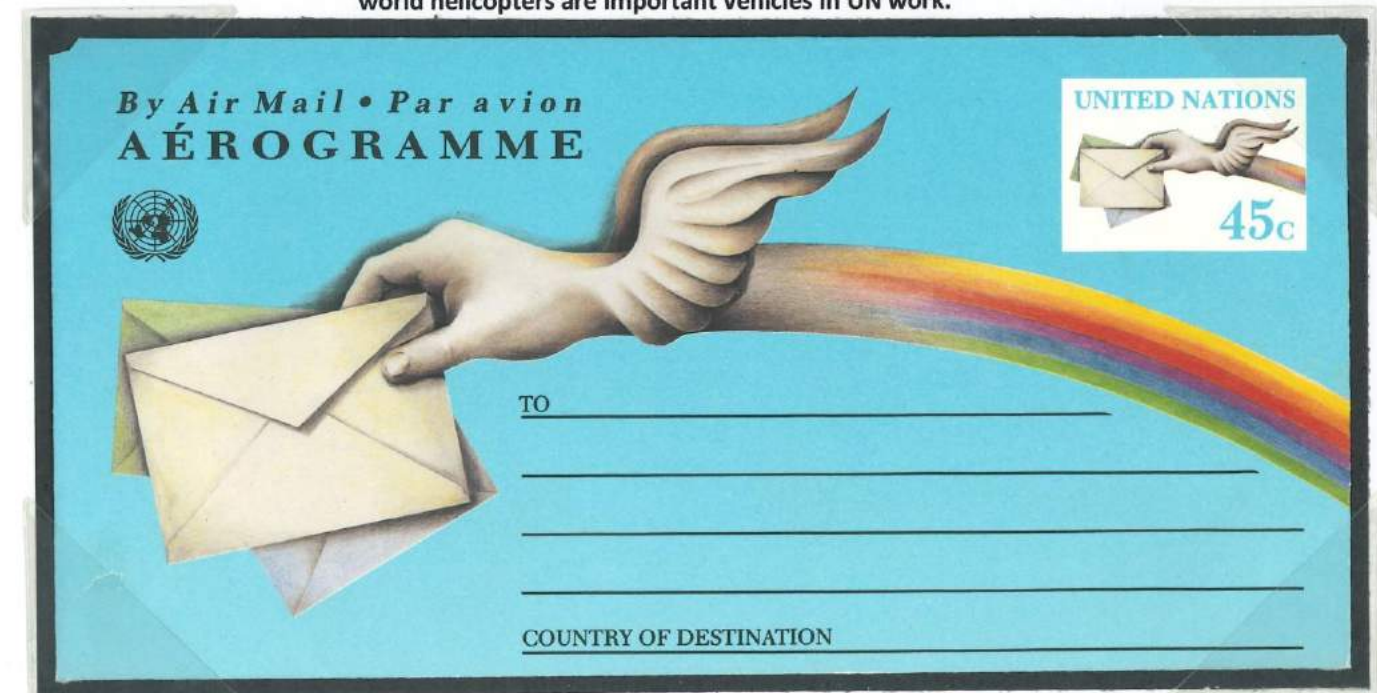
ACTIVITIES WITH HELICOPTERS: ONU and Red Cross



The Red Cross is an international humanitarian, neutral and impartial movement, unrelated to any State, present in 97 million volunteers worldwide. Its purpose is to protect human life and health, and to prevent and alleviate suffering without discrimination based on nationality, sex, religion, social class or political opinions. For its interventions in the field, the International Committee of the Red Cross (ICRC) uses helicopters to respond to emergency situations.



The United Nations, also known by the acronym UN, is an international organization formed by countries that have voluntarily gathered to work for world peace and development. With the entry of South Sudan on July 14, 2011, there are 193 member states in the United Nations, including all sovereign states that are not under dispute. In their activities around the world helicopters are important vehicles in UN work.

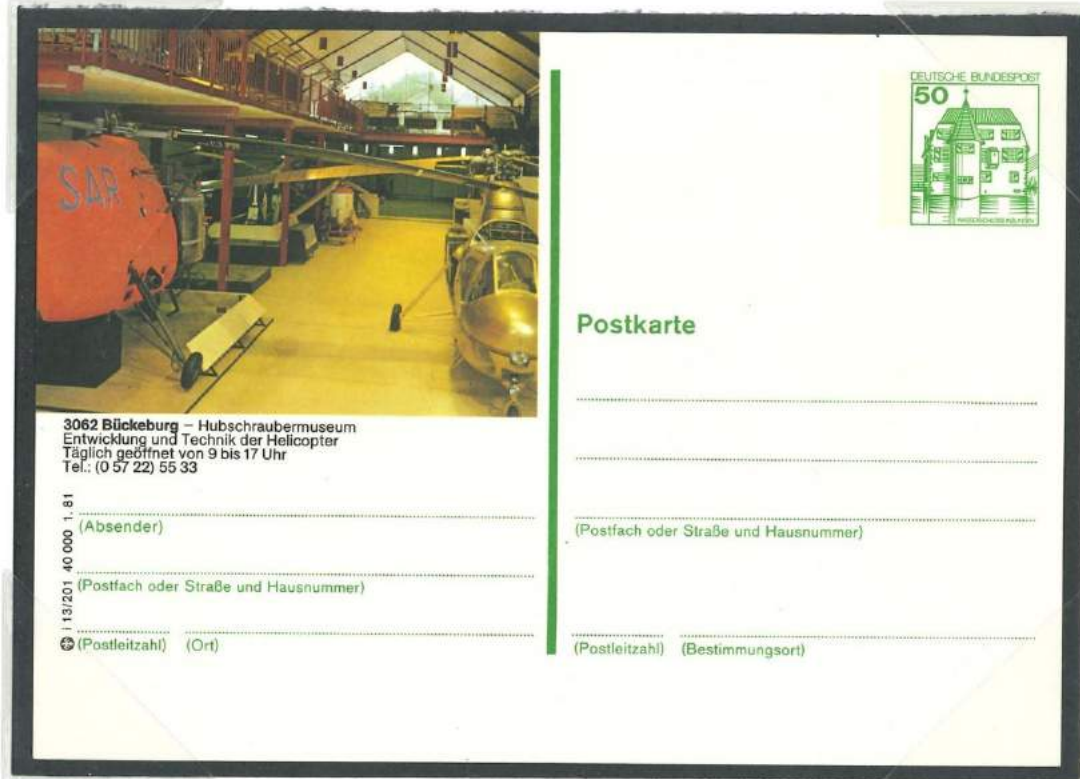


Aeromedical transport consists of the rescue or removal of serious patients by helicopter or aircraft, in places where traditional ambulances can not easily or quickly reach (primary transport), or even in situations where the patient needs inter- that is most appropriate by air (secondary transport).



# HELICOPTER: THE MACHINE THAT STOPS IN THE AIR

COMMEMORATIVE DATES AND EVENTS WITH HELICOPTERS: German Museum, Aeromodelling, commemorative dates on Italy, Romania and Hungary



Buckeburg is a small city in Lower Saxony, Germany. It was once the capital of the tiny Principality of Schaumburg-Lippe and is now part of the district of Schaumburg on the northern slopes of the Weserbergland mountains. Buckeburg houses a helicopter museum (Hubschraubermuseum Bückeburg), which displays early drawings of flying objects made by Leonardo da Vinci, as well as 40 actual helicopters. The German Army Aviation School (Heeresfliegerwaffenschule) is located at Buckeburg Air Force Base.



Cluj, name still used today, is the third largest city in Romania, capital of the Jewish district of Cluj in northwestern Transylvania. Commemorative cancel of Aviation Day in Romania.



Commemoration of the 100th anniversary of the first helicopter flight. The first impractical idea of a helicopter was designed by Leonardo da Vinci in the 15th century, but the first successful and recorded flight of a helicopter took place in 1907 by Paul Cornu in France.



Envelope with stamp commemorating the first helicopter mail flight in Hungary. Budapest is the capital, most populous city and main financial, corporate, commercial and cultural center of Hungary. Szeged is a city and an urban county, is the capital of Csongrád County and the third largest city in the



Commemorating the 350000 hour flight mark at the Helicopter Flight School. To train Air Force pilots for the purpose of obtaining the "Helicopter Runway" Military Pilot License, Military Helicopter Patrol for Italian Army personnel, Carabinieri and Guardia di Finanza, and the Helicopter Pilot License for visitors the Corps of State and other foreign countries. The 72nd Stormo participates in the operational activity of the Air Force and, upon request, is able to offer the tender for Civil Protection and SAR (Search and Rescue) operations. The Frosinone base also provides training for future instructors, specialists and on-board operators.



Aeromodelling is the set of activities that involve the construction and flight of small-scale models of aircraft.



The Blue Eagles are the helicopter aerobatic team of the British Army Air Corps. Comemorative of their sixth anniversary.