

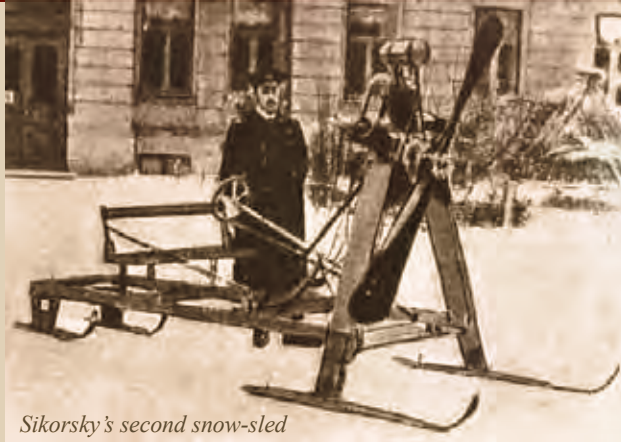


Sikorsky Archives News

January 2012

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Igor Sikorsky's Russian Years in Aviation –



Helicopters, Aero Sleds, Single, Multi-Engine and the First Four Engine Aircraft in the World



During Igor Sikorsky's ten years in Russian Aviation, he designed over 30 models, and produced more than 150 aircraft. During the month of May, 2009, Russia and Ukraine celebrated the 120th anniversary of the birth of Igor

Sikorsky. An updated Sikorsky Exhibition was opened at the Kiev Polytechnic Institute (Igor Sikorsky's Alma Mater). In 1919 the United States of America was blessed to have Igor Sikorsky select our country as his new home. ☺

The historical data in this issue was obtained from "The Sikorsky Legacy" authored by Sergei I. Sikorsky, "The Igor I. Sikorsky Aircraft Legacy" written and illustrated by Joseph Keogan, and drawings prepared by Alan Durkota.



Visit us at Sikorskyarchives.com Contact us at iisha@snet.net 203.386.4356 | 203.386.4218



Dear Members:

It is with great pleasure that I again have the opportunity to wish all our members a Very Happy and Healthy 2012! As I enter my eighth year as president of the Archives, I proudly look back on the progress we have made and the increased public awareness of our organization while spreading the Legacy of Igor Sikorsky.

Our redesigned website continues to draw visitors from around the world. Over the past one year period our average daily visitors was 260 while the pages viewed by those visiting was a creditable 599 pages per day. The readership analysis over this period is a verification of the worldwide interest in Igor Sikorsky's legacy. During this period we had visitors from 100 countries around the world with the U.S.A. at 55% and the remaining 45 % spread over 99 countries and China second at 8%. In addition to our Newsletter with the new look, requests for presentations on the life and legacy of Igor Sikorsky continue at an annual average of nine a year.

In the past year the archives participated in four events, further reaching out to an even wider audience: a February event in Bridgeport titled "City in Flight," a May event "Wings and Wheels Air Show" at the Sikorsky Memorial Airport, an August event at the Bridgeport Discovery Museum celebrating "Bridgeport First in Flight," and the Archives representation at the Oshkosh Air show led by Sergei Sikorsky as part of the overall Sikorsky Aircraft activities.

Hidden behind the outside visible signs of the Archives existence is that small group of dedicated volunteers that works endlessly to catalogue our huge memorabilia inventory that allows us to facilitate research. We continue to make outstanding progress with this project. Obviously, all this progress and activities cannot happen without our membership support and our small volunteer group. Over the past year, we have added a few members to our group but we can always use a few more. Please give it some thought.

Again, thank you all for your continued interest and support of this truly national and global treasure "The Life and Legacy of Igor Sikorsky."

Sincerely,
Dan Libertino, President

...Archives existence is that small group of dedicated volunteers...

Igor Sikorsky is Remembered in St. Petersburg, Russia and Kiev, Ukraine

The Kiev City Council gave the name of Igor Sikorsky to the former Tankova Street on October 27, 2011. The U.S. Embassy Compound will be relocated to this street.

A monument erected in St. Petersburg was named "Igor I. Sikorsky Memorial Square."

Igor Sikorsky Lives On



Igor I. Sikorsky Memorial Square is very close to where the R.B.V.Z. factory was located where the "Grand" was built, as well as the "Ilya Muromets" series

Igor Sikorsky's Aero-Sleds

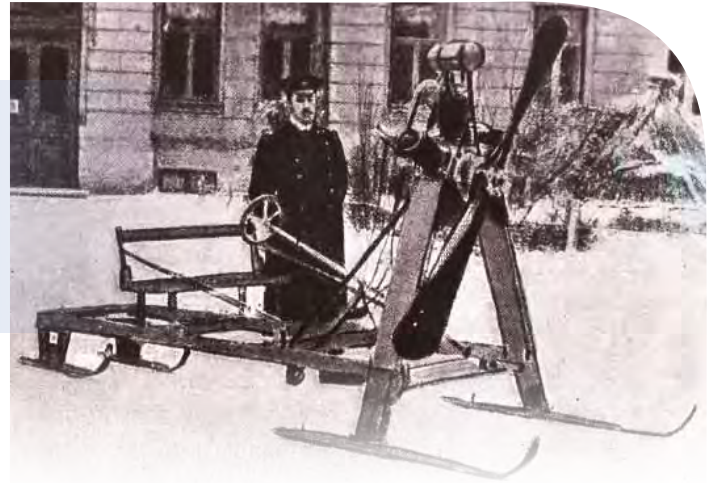
During the winter of 1909-1910 Igor suggested to his aviation enthusiast friend Fyodor Belinkin, that they use the winter season to perfect their knowledge of propellers by each building an aero-sled. Igor's sled was powered by his 15hp Anzani. Belinkin's sled was a bit bigger and was powered by a 25hp Anzani. Both were two passenger designs.

During Igor's visit to Paris in early 1909, he had acquired some data on propellers being made by the Chauvier Company, which was one of the leading propeller manufacturers in Europe. Igor designed a propeller and gave the plans to a local carpenter to build. Both sleds were running by early January, 1910. Igor tested a six foot diameter, four bladed helicopter rotor first, with inconclusive results. Belinkin tested Igor's first propeller which showed some promise. Improved propellers were rapidly built and tested. Early tests (15hp Anzani at 1300 rpm produced 98 pounds thrust. Improved propellers (with same hp and rpm) showed 120 pounds of thrust.

On January 25, 1910 Belinkin's sled was demonstrated to Kiev authorities at the Kiev Hippodrome. It produced speeds of 32 mph with one person, and 20 mph with two onboard. A modified sled built by Igor Sikorsky was tested in mid February, 1910. It was powered by Igor's 25hp Anzani and carried 4 people at 35 mph. The improved Sikorsky propellers were tested against the Chauvier propellers and performance proved to be within 1 to 2 % of the French product. However, the cost of locally built Sikorsky propellers was approximately 20% of the imported product.

Igor Sikorsky's growing fame as an aero-sled designer resulted in many invitations and job offers. However, he stubbornly stuck to his program, building and testing his second helicopter in 1910, and then moving into fixed-wing flight. By 1912, he was chief engineer and test pilot of the Russo-Baltic Railcar Company in St. Petersburg, busily overseeing the construction of the "Grand" and production of some smaller aircraft. However, his successful aero-sleds had not been forgotten.

Sergei Sikorsky provided the historical data and prepared this little known history of Igor Sikorsky's contribution to aero-sled development.



In late 1912, the company management received an order from the Russian Army for a large experimental aero-sled, seating up to five people. Igor Sikorsky designed a large aero-sled powered by a 60 hp in line Aster automobile engine, mounted in the rear of the hull, in a pusher propeller configuration. The design featured a streamlined plywood body, automobile-type steering wheel and seating for driver and four passengers. It had a convertible folding cloth top and cloth side panels. Primitive isinglass windows provided visibility.

Igor Sikorsky's growing fame as an aero-sled designer resulted in many invitations and job offers.

It was first shown on January 20, 1913 driving on the frozen Neva River in downtown St. Petersburg during the Imperial Russian Automobile Association winter rally. Later

that same month, the Chairman of the factory invited the elite of St. Petersburg to a winter hunt on the snow covered fields of the Tsarskoye Selo military training grounds. Many of the autos, in which the guests arrived, stalled in the snow drifts while Igor Sikorsky drove the grinning Chairman Shidlovsky across the grounds. The ploy evidently worked, and a year later, the company put the aero-sled into production for the Russian Army. ☺





“Prof” Igor Alexis Sikorsky

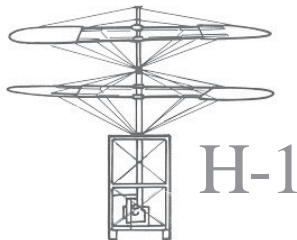
An era in the history of Sikorsky Aircraft ended with the death of Prof Sikorsky in 1970. He was the Chief Aerodynamicist at Sikorsky and a cousin of Igor I. Sikorsky, the company founder. He was nicknamed “Prof” by Dimitry (Jimmy) Viner, Chief Test Pilot at Sikorsky Aircraft. Prof Sikorsky was known as a “walking encyclopedia”, with a kind and friendly personality

to his colleagues. Prof was the author of, *The Technical History of Sikorsky Aircraft and Its Predecessors*”, and collaborated with Alexander Klemin in the “*Handbook on the Aerodynamics of Rotary Wing Aircraft*”, which was published and distributed in 1954 by the U.S. Department of Commerce. Prof’s history book forms the technical basis for the data presented herein. ☺

Igor Ivanovich Sikorsky’s Aviation Career Started in 1909

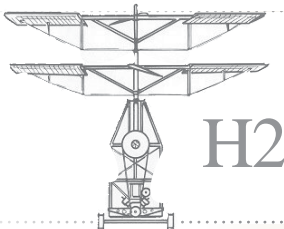
Though Igor Sikorsky is best known as the designer of the modern helicopter and the founder of the helicopter industry of today, the length and versatility of his career is often overlooked.

During early May 1909, when Igor Sikorsky had not yet reached his 19th birthday he started construction of his first helicopter H-1 in Kiev, Russia. The craft was tested producing noise, dust and vibration, but could not fly. The highest lift produced was 357 pounds compared to the aircraft weight empty of 457 pounds. The engine was a 25 hp Anzani. The rotor configuration was a counter rotating coaxial system with two 3-bladed rotors. The upper rotor was 15 foot diameter, and the lower was 16-1/2 foot diameter.



H-1

The second improved helicopter H-2 was built in 1910, and incorporated a coaxial rotor configuration with two 3 bladed rotors of equal diameters of 19 feet. The 25 hp Anzani engine provided the power. It barely lifted its weight, but could not take off with a pilot. Igor Sikorsky discontinued work on the helicopter, and concentrated his efforts on the airplane.



H2

Sikorsky completed his design and fabrication of the S-1 in 1910. The S-1 was a pusher biplane powered with a 15 hp Anzani engine. Although the plane could not fly, it taxied along the ground in April 1910 and gave the designer valuable experience. The aircraft was disassembled to start work on the S-2.



S-1

On June 3, 1910, powered by a 25hp Anzani engine, the S-2 had its first flight to a height of 4 feet, and flew about 12 seconds, covering 600 feet before landing. After a series of straight line training flights to a maximum of 1900 foot distance, Sikorsky attempted a circle of the field. Due to a downdraft, the aircraft stalled and crashed. Pilot was uninjured, but the aircraft was a total loss.



S-2

During the construction of the S-2, Sikorsky had acquired a staff consisting of a plumber, 2 carpenters, and 3 engineering student friends. All the aircraft from the S-1 to the S-6 were built in a shack in the back of his father’s house. The hangar was built on a field a few miles from home.

S-3



The S-3 was completed in late November 1910, and was powered by a 40 hp Anzani engine. The wingspan was 26 feet and had a gross weight of 685 pounds. The aircraft first flight flew for 59 seconds. After a week of 13 flights for a total flight time of 7 minutes, while circling a field, the aircraft lost power and experienced a forced landing on a frozen pond. The pilot was wet but unhurt.

S-4



The S-4 was built in 1911 from parts salvaged from the S-3, including the 40 hp Anzani engine and outer wing panels. The wing span grew to 29 feet and gross weight grew to 795 pounds. The aircraft was shown at an aeronautical exhibition in Kharkow in the spring of 1911. By then, Igor Sikorsky had moved from the two-stick control scheme to a wheel-and-yoke system. The S-4 was scrapped as the superior performance of the S-5 became evident.

S-5



The S-5 was Igor Sikorsky's first practical airplane and had its first flight in April 1911. Sikorsky called the S-5 his first real airplane. It was powered by a 50hp Argus engine and had a wing span of 39 feet and a gross weight of 970 pounds. In September 1911, Igor made a 35 mile cross country flight from Kiev to Fasova, Russia, where he met Czar Nicholas II for the first time.

S-5A Seaplane



S-6



Igor Sikorsky is pictured in the S-5 on his Pilot License No. 64 issued by the Federation Aeronautique Internationale Russian office, dated August 18, 1911. The photo on the right shows Igor Sikorsky in front of the S-5 on the cover of sheet music entitled "The Aviator March" in Russian composed in honor of his fame as a Russian aviation pioneer.

S-7



The S-6 powered by a 100 hp Argus engine flew in November 1911 with a wingspan of 38 feet, and a maximum gross weight of 2180 pounds. The S-6A incorporated an improved aerodynamic fuselage. The S-5A Seaplane embodied the improved aerodynamic body lines of the newer aircraft and was powered by a 60 hp engine. It was fitted with twin floats as well a tail float. The S-7 was built in July 1912 as a two seat monoplane powered by a 70hp Gnome-Rhone engine. Wing span was 32 feet. Gross weight was 1710 pounds.

S-8



The S-8 was a side-by-side training biplane powered by a 50 hp Gnome engine. Wingspan was 39 feet with a gross weight of 1150 pounds. The control wheel was on a yoke and could be shifted from pilot to copilot's position. Igor Sikorsky made his first night flight on September 17, 1912 landing with the help of bonfires lit by his ground crew.

S-9



The S-9 was a monoplane with monocoque circular fuselage construction. The airplane could carry two passengers and pilot. The aircraft was built in the spring of 1913, with a 100 hp Gnome Monosoupape engine. It had a wingspan of 39 feet, an empty weight of 1520 pounds and a gross weight of 2200 pounds.

S-10



The S-10 was built for military competition in mid 1913. It was a very efficient observation biplane. It took first prize in Military Competition and established Russian records for distance and duration. It was initially powered by an 80 hp Gnome engine and 2 bay extended wings. An S-10A was fitted with short wings and powered by 100 hp Anzani engine. An S-10B had extended 4 bay wings and extended range fuel tanks. The last version may have been the aircraft which established a Russian distance record of 310 miles flown, in a flight lasting 4 hours and 56 minutes.

S-10 Seaplane



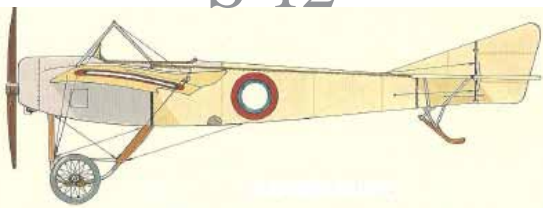
The S-10 Seaplane was a variant of the S-10 and fitted with main and tail floats for use with the Russian Baltic fleet. It was powered with a 100 hp Argus engine. Fifteen were built.

S-11



The S-11 monoplane powered with an 100 hp Gnome engine was built in 1913 for competition purposes, and remained as a prototype. It received second prize in military competition.

S-12



The S-12 was built in 1914 as a light military observation monoplane, powered with a Rhone 80 hp engine. The wingspan was 33 feet, and the gross weight was 1500 pounds. Built at the suggestion of RBVZ test pilot George Yankovsky, it was an immediate success. It was the first Russian aircraft to be looped with Yankovsky at the controls. The aircraft established the Russian record for altitude. At least one dozen were built.



S-15

The S-13 and S-14 aircraft were started, but they were not completed, because of difficulties in receiving the engines during the early period of the war years. The light bombing aircraft S-15 powered with 125 hp Argus engines was a highly modified variant of the S-10 series. The wingspan was 55 feet, and the maximum speed was about 60 miles per hour. In mid summer 1914, it was converted from land gear to a float plane configuration and assigned to the Russian Navy's Baltic Fleet.



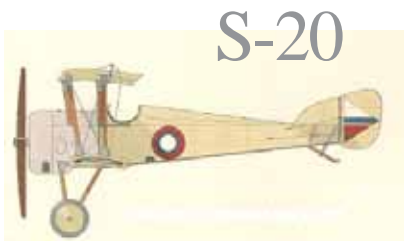
S-16

Three prototypes of the S-16 two-seat scout and single-seat escort fighter were built in February 1915, followed by 24 production machines in 1916 and early 1917. Most were powered by 80 hp Gnome engines or the Russian 60 hp Kalep. The wingspan was 26 feet, and the gross weight was 1500 pounds. The aircraft was equipped with a synchronizing machine gun shooting through the propeller path. About six of the machines survived the war and served with the Red Air Force into the early 1920s.



S-19

The S-17 and S-18 aircraft were experimental military aircraft which were discontinued in construction, because of urgent necessity for heavy four-engine bombers. The S-19 was a twin engine ground attack airplane. It had twin booms, and in-line pusher and tractor engines in the middle of the booms. The crew was located inside the two fuselages, giving excellent forward visibility, and unobstructed gun sighting.



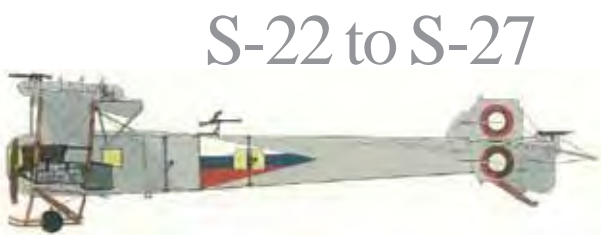
S-20

The S-20 was Igor Sikorsky's last and probably best fighter aircraft. It was fitted with a 120 Gnome engine, and was test flown by Sikorsky in September 1916. The wingspan was 27 feet, and had a gross weight of 1250 pounds, and the top speed was 118 miles per hour. After a successful front line evaluation, five additional S-20s were delivered in early 1917.



S-21

The S-21 Grand was the first four engine aircraft in the world. On August 2, 1913, it flew for two hours with eight passengers on board. It was the first aircraft with an enclosed cockpit and cabin. It had a balcony forward of the cabin for outdoor adventurers. With a wingspan of 91 feet 10 inches, a length of 69 feet, and a take off weight of roughly 9250 pounds, the Grand was by far the biggest and heaviest airplane in the world.



S-22 to S-27

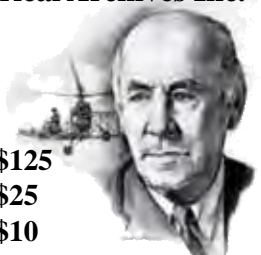
In the winter of 1913, the S-22 prototype Ilya Muromets was completed. The first official flight was made on January 26, 1914. The S-22 through the S-27 were derivatives of the basic aircraft, and included features such as amphibious gear for water take-off and landing, tail gunners, wing mounted machine guns. The Russian Air Force used the aircraft for long range bombing and reconnaissance. Seventy four aircraft were built in this series.

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Igor Sikorsky's Russian Aviation Career from 1909 to 1918 created over 30 different aircraft models, and produced over 150 single to four engine aircraft.

from 1909 to 1918



Newsletter designed and edited by Lee Jacobson and Sikorsky Archive Members.



We the designers and builders of airplanes, would be building something useless and worthless if it wouldn't be for the skill and courage of our airmen. There was also the comforting realization that nearly all discoveries were preceded by numerous failures.

– Igor I. Sikorsky

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