

# Assen Jordanoff - the man who contributed to America's airpower



Brief biography of a great Bulgarian

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This study follows the life of Assen Jordanoff from his birth and childhood, through his striking career in Bulgaria and America, to the end of his life, trying to keep close to the facts and avoid exaggerations and typical overworks and myths. It is mostly based on the book by Jordanoff's sister Milka Markowa-Totevy, written in tribute to her brother, on Jordanoff's own books, and on some other sources as well.

Assen Jordanoff's career, after its brilliant beginning in Bulgaria, belongs to the development of aviation in America. Jordanoff occupied a distinct place among distinguished airmen at a given time - the golden age of aviation.

"Jordanoff's contribution was essential to the advancement of U.S. aviation, thanks to his instructional/analytical books in the field of aeronautics and its processes, as well as thanks to the direct application of his engineering and practical skills in the building of aircraft.



Assen Jordanoff.

Jordanoff directly participated in the creation of important flying craft during WWII. One of them was P-40, which was present on all the combat sites and played a major part in air-to-air or air-to-ground confrontations. Another plane that greatly owes to him was the P-38, a 2-motor fighter having a large degree of mobility and range. It had a predominant role in the Pacific War, although it could be useful for many other purposes as well. The third plane whose construction was due to Jordanoff was the B-17 bomber, which became an indispensable unit in our strategic bombing forces, and was present on all the battlefields in Europe."

General Ronald R. Fogleman  
Chief of Staff of the U.S. Air Force (1996)

**W**orldwide known aviation pioneer and constructor was born on September 2nd, 1896, on *Denkoglu St.* in Sofia, Bulgaria. That was the beginning of a remarkable life and later a striking career.

## Assen's family

Young Assen rose in *Dr. Christo Jordanoff's* family. Dr. Jordanoff (1861 - 1928) was a well educated man. He graduated from the University of Stuttgart, Germany, where he studied economics and chemistry and later obtained a doctorate from the University in Aachen, Germany, where he specialized in the analysis and production of wool. In Padua, Italy he practiced silk manufacturing. Dr. Jordanoff spoke four languages: German, Russian, French and Italian, enabling him to pursue research. He published articles on a number of subjects. In Bulgaria he was a Chief Inspector of silkworm production in The Ministry of Economics and Agriculture, Director of The School of Commerce in *Svistov*, Administrator of the Bank of

Agriculture in Sofia. In addition he had a copper mine - *Gladna*, two coal mines - *Vutchidren* and *Rakita* and a family farm. The life of Assen's father wasn't unclouded, but despite his many misfortunes, he believed in his luck and embarked on new ventures with great enthusiasm and joy. He was something of a dreamer and always shared this with his son.

There was a great understanding between Assen's father and his mother *Dolia (Dotchka) Tzoneva - Jordanoff* (1876 - 1954). She was a daughter of a rich tobacco producer from *Razgrad*. As a girl she attended a commercial school, then studied singing and the piano in Turin, Italy. Married barely nineteen, she remained utterly devoted to her children and the household, not keen on public events and worldly gatherings. In despite of that she was a well-read and progressive woman in time when there was no planned



The Jordanoffs. From left: Vera, Viola, Dotchka Tzoneva, Assen, Dr. Christo Jordanoff, Milka, Nadya.

schooling for young girls. Dotchka Jordanoff was interested in fine cuisine to such an extent that she published a cookbook. She wrote also poems and a number of plays, not meant to be published. Assen's mother nourished a real admiration for her son, she believed in his happiness. Assen remained very attached to her, wrote affectionate letters to her, and, after a separation of twenty-four years, he asked her in 1946 to come to join him in New York.

Assen had a brother - *Alexander*, who died at 6, and four sisters - *Milka, Vera, Nadya* and *Viola*. One of them, *Milka Markowa-Totevy*, was a violin teacher and made a successful career in Bulgaria and France. In her memory a foundation was established in Princeton, NJ by her son George Markow-Totevy. It also awards scholarships to young Bulgarian violinists wishing to study in France and in the USA.

### Early childhood and youth

Before Assen's birth, his mother had a strange dream in which she saw him flying in the sky; for many years she would wonder what it meant, supposing only that some day her son would become a well-known figure.

From a very early stage Assen developed as a lively and enterprising boy who had no end of ways for amusing himself. He used to play and run all the day on the family farm, near the village of *Starigrad*, among the buildings and workers, keeping himself busy with tools, odds and ends, or whatever he could lay his hands on. Already at the time he was fascinated by the magic of flight. There one of his specialties was to open the wings of the farm birds, because he was curious to find out what made them fly. He was even imitating them by jumping from the nearby tree while flapping his arms. Later Assen was interested in everything mechanical that can demonstrate the hidden laws of nature. When his father was a Director of The School of Commerce in *Svistov*, he allowed him to attend chemistry and physics classes and gave him access to the school's labs. All these factors greatly speeded up his education. When an older boy, one of his favorites was making kites, called at these days by their Turkish name of *Djorkina*, and seeing them take off to the air. Probably at that time he made a wish someday to conquer the skies.

In 1911 the family moved to Sofia into a duplex apartment of a house on the corner of *Tzar Boris* and *Karnigradska* streets. There one of those large apartments provided Assen with a spacious atelier for his undertakings. One of his first inventions there was how to develop film with his hands buried in a box instead of using a whole dark room. In the same year his father took him on a long trip to Italy, Switzerland and France. For the boy this was a first opportunity to see many of the latest models of biplanes, motorcars and motorcycles and

other machines - he would spend hours on the exhibit grounds. In order to learn some French his father settled Assen in a boarding school in Geneva. Later he will say that he got fed up with the Swiss sense of discipline, so that one morning he slipped away unnoticed and managed to make his way alone to Grenoble, France, reaching his aunt. When he met up his father, who had come to fetch him, he easily convinced him to buy a motorcycle, for he knew Father shared his weakness for engines and machines: and so they did bring something of a novelty to Sofia in the early years of the century.

### Assen's glider. The Blériot school

Assen's first ever flight was in 1912. The *Utro* (Dawn) newspaper dated February 16th, 1912, published an article entitled 'First Bulgarian glider', which reads: "In the last few days, on the field between the infantry camp and the pioneer barracks, a very young Bulgarian aviator drills with his glider built by himself. He is a high school schoolboy, Assen Jordanoff, the son of the Administrator of the Bank of Agriculture. He is fifteen, passionately keen on aviation and as a child fashioned toys that could fly. Last year, when visiting France and Italy, he saw the biplane of *Maslenikov* and *Tchermak*, and from then on thought seriously to conquer the air himself. His glider is a very simple, light affair, based on the constructions of the Wright brothers and of Farman. It is 7 meters long, 1.20 m wide, with a surface area of 14 m<sup>2</sup> and weights 23 kg. Yesterday he flew for over 12 minutes and reached an altitude of 10 - 12 m. This young man's glider deserves praise, especially from aviation specialists."

Assen Jordanoff later related: "In fact, I was soon able to construct a real glider despite my meagre resources, making it out of bamboo poles, strong metal wires, parts of a dismantled piano and the two tires of my own bicycle. The whole thing came to resemble something like a huge kite. I convinced one of the army commanders of the nearest barracks to allow me two privates to give me a hand testing the glider in a flight on the training field. The two men ran alongside me for a while until, gaining some speed, I could gradually rise in the air and reach a height of about twelve meters. As I had steering device too, I could manoeuvre and land safely back to where I had started from. I survived! But my famous "kite" wasn't so lucky and didn't come out of the adventure in one piece." The exact date of the first flight is unclear, but after it, on February 5th, the young flier made a second test flight in the presence of an official commission.



In this house on Tzar Boris St. in Sofia Assen Jordanoff built his glider.

Soon afterwards Assen's father bought a Ford car, creating a great excitement for all the family. In 1912 it was among the first vehicles of this kind to be seen in Sofia. Barely 16, and without having a licence, Assen used to drive the car, and in order to make some pocket money for himself, he decided to be a "taxi." One day he picked up a rich couple from *Rousse*, who wished to be driven to *Bankia* near Sofia and then back. It turned out that Dr. Jordanoff had helped the gentleman in a difficult moment. Having no children and impressed by Assen's performance and maturity, the couple invited him to go with them on summer holiday to Paris. Permission was granted shortly afterwards and the boy had a second chance of visiting France after only one year. In the same year 1912 took place at the Paris' *Le Bourget* airfield the first *Salon de l'Aviation* of the very latest aeronautic achievements and the latest planes, demonstrated by the top pilots of the day. "...It would be much more interesting this time, because I was older and better motivated to learn new things about

aviation: above all, I planned to find a means of admission to the well-known *Blériot school*. ...But naturally, I didn't muster the courage to go in, and wondered whether a sixteen-year-old, coming from the little-known Bulgaria, would ever be admitted past its gates. After all, who could take my ambition to be a pilot seriously? And no-one here knew I had already built a glider, which actually flew. So day after day, I would stand around on the school airfield, watching planes taking off and landing." Spending his time in Étampes, near Paris, where the famous aviation school of *Louis Blériot* was, gave the eager youngster the chance to see from close-up such fliers, whose names will never be forgotten, as *Pegoud*, *Verdin*, *Paulhan*, *Graham-Wright*, the *Wright brothers* and *Curtiss*. Then one day Assen felt a tap on his shoulder and heard someone saying in pure Bulgarian: "I know perfectly well why you are so taken by all these planes coming and going. Back home I have heard about your glider and you being crazy about aviation." This was the well-known Bulgarian aviator *Lieutenant Simeon Petrov*. Luck was on Assen's side and without any further ado he was introduced to *Louis Blériot* himself. Very soon Bulgarian officer-pilots, who were in Étampes for training, were accompanied by their younger countryman. He wasn't officially enrolled and there was no diploma for him, but attending the famous flying school in the company of great aviators played a huge role for the enthusiasm of a future ambitious pilot. The last evening in Paris all the Bulgarians gathered to celebrate the successful graduation. Their spirits rose higher when Commander Petrov stood up and announced: "Gentlemen, I have news for you: the time has come for you to apply your flying skills and show your courage. Get ready! I have just been informed that Turkey is massing its forces along the southern border of our country."

In 1912 French press wrote about an incident: during his training *Lt. Simeon Petrov* flew a Bleriot plane when suddenly its engine stopped. The brave aviator made a successful emergency landing and became thus the first in the world to land a plane with stopped engine. "...This is the only one emergency in aviation, when a sudden engine stop wasn't followed by a disaster." (L'Aero magazine, June 1912) Simeon Petrov's experience was analyzed and later included in the Louis Bleriot's flying school training methods.

### War experiences - The Balkan wars

A tough period for Bulgaria had begun - it led three consecutive wars which ended finally with a national catastrophe. The First Balkan War, led by Bulgaria, Serbia and Montenegro, and Greece against Turkey, will be followed by the Second Balkan War, led against Bulgaria by its former allies, and the Great War. Barely 16 Assen Jordanoff volunteered to the army and joined the *Aeroplanno Otdelenie* (Air Squadron) as a flight observer. He wouldn't be accepted in the army because of his age, but after countless talks and refusals his father finally gave in and put his signature on his son's application. The classes at the Blériot school will soon pay back.

The *Aeroplanno Otdelenie* was based at one of the first military airfields in the world - *Mustapha Pasha*, not far from *Svilengrad*, in 20 km from the front line. Initially it consisted of no more than ten planes, as many technicians besides the pilots, two dogs and Assen Jordanoff himself, called by the others *Maltchika* (The Kid). His first touch to the military aviation wasn't encouraging. When he saw all the airplanes lined up on the field, he was unable to resist and climbed into the first one. Being exhausted he fell asleep in the pilot's



Assen Jordanoff, seventh from left to right, during repair works on Abatross' wing. Mustapha Pasha airfield.

seat and was awakened by an animated conversation. Startled he jumped out of the plane and damaged one of the wings. "You damn fool!" the commander shouted at him... And put him immediately on fatigue duty. A few days later there was a great excitement for all the staff when two balloons and more than twenty new aircraft - Blériots, Voisins, Somers and Bristols were delivered from France, Russia, Germany, Romania and Italy. The camp started to look like a proper military set-up.

In 1912 r. Bulgarian army has about 21 airplanes as follows: 3 Albatros, 4 Farman, 1 Voisin, 1 Somer, 1 Sikorsky, 1 Bristol, 2 Nieuport and about 10 Blériot, thus making its air-force equal to that of countries like Great Britain and leaving behind Italy, The United States and Japan.

The year was still 1912 and no one knew very much or was certain of the airplane's usefulness in warfare, but very soon one of the first military flights, not only for Bulgaria, but for the world, was undertaken. *Lieutenant Simeon Petrov*, who was the first licensed Bulgarian pilot and first Bulgarian to fly Bulgarian engine propelled plane over Bulgaria on August 13<sup>th</sup>, 1912, won the chance to show his bravery and the honor to be among first battle



Assen Jordanoff as an observer in center of Albatross during Balkan Wars.

pilots in the world by tossing a coin. He and *Lt. Christo Topraktchiev* as his observer were among the first to use airplane for military purpose under actual conditions of war. Their mission was strictly reconnaissance as machine guns were too heavy for the planes in those days - they will appear on military planes as late as 1915, when Germans fitted a Fokker E1 with one. But already in 1912 the military air bombardment had become a reality. It was performed by *Lts. Radoul Milkov and Prodan Taraktchiev*, who were among the first military pilots in the world to directly attack the enemy. During a reconnaissance flight they dropped a bomb they have manufactured themselves and another one

brought from Russia over the rail station of *Dedeagatch* near the strong *Odrin* (Adrianople, Edirne) fortress. Their flight lasted an hour and a half. After it four bullet holes were found in the wings. The brave aviators were congratulated by the Division Commander *General Yankov* and awarded medals for outstanding bravery. The date was October 16<sup>th</sup>, 1912. According to military archives first planned aerial bombardment in that war was performed by the Italian volunteer *Lt. Giovanni Sabelli* and *Maj. Vassil Zlatarov* on November 17<sup>th</sup>, 1912.

World's first military flights took place a few years earlier in The United States. First military plane "*Signal Corps 'Aeroplane' No. 1*" flew at Fort Sam Houston on March 2<sup>nd</sup>, 1910 piloted by U.S. Army *Lt. Benjamin Foulois*. What is known as "birth of military flight" was undertaken under conditions of peace and was just circling the field at the speed of 30 mph for seven and a half minutes. In June 1910 were the first aerial bombardment experiments taken by *Glenn Curtiss*. The first shot from an airplane was made from a rifle on August 20<sup>th</sup>, 1910 by *Lt. James Fickel* with Glenn Curtiss piloting. First takeoff from a warship was made by *Eugene Ely* on November 14<sup>th</sup>, 1910 and first carrier landing was on January 18<sup>th</sup>, 1911.

The Turko-Italian War in 1911 marked the first real use of airplanes for military purpose under conditions of war. Italian *Capt. Carlo Piazza* on October 23<sup>rd</sup>, 1911 made history's first reconnaissance flight near Benghazi, Libya. First aerial bombardment was performed by *Lt. Giulio Gavotti* on November 1<sup>st</sup>, 1911. First photo-reconnaissance flight was carried out by *Capt. Piazza* in March 1912.

Bulgarian triumph was followed soon by a first victim - on October 19<sup>th</sup>, 1912, when returning from a combat mission the aircraft of *Lt. Topraktchiev* went down from an altitude of 70 m and burst into flames killing the pilot. So Bulgaria has the sad pride of having the first aviator to die in a war situation. There are two theories regarding the reasons for the crash which led to *Topraktchiev's* death: that he was wounded to death by enemy fire during his third and last flight over Turkish positions or that the incident was caused by a malfunction in the elevator, which was repaired the day before, and a test flight was performed after that. "...As soon as he climbed to an altitude of 70 m, we saw the craft suddenly head nose-downwards, crash and burst into flames. On all sides we heard what sounded like gunshots: no doubt *Topraktchiev* had stuffed his pockets with grenades for his scheduled aerial attack. None of

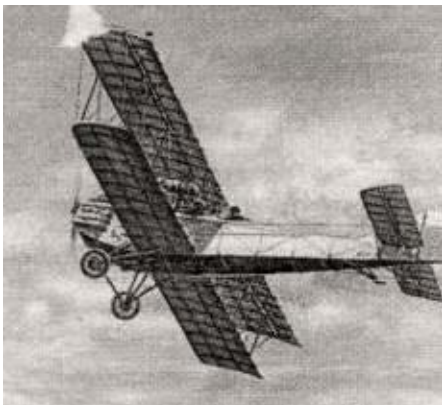
us could do anything at all to help the dying pilot trapped in his burning plane. He was the first Bulgarian aviator - and no doubt the first in the world - to die in a war situation".

During those historical events the very young Jordanoff wasn't inactive. As flight observer he flew with the pilots on reconnaissance missions and practiced flying. "During all of this Balkan War, I -- The Kid -- as a volunteer tried to prove my worth by going on the flights and helping the pilots to the best of my ability, while simultaneously trying to learn for myself as much as I could about the mechanics of the planes and about the skills of flying... Eventually I managed to persuade headquarters to let me take practice flying lessons, and the teacher appointed was the Swiss pilot Burrie. I was very keen to master the art of piloting in as short time as possible, so as to be ready to participate in the real flying." Colonel Radul Milkov would later recall: "...Assentcho (Assen) was very interested in airplanes. He was well versed in the subject - he had built a glider. I would often see Assentcho, drawing paper in hand, measuring, taking notes and copying the design of the parts from dismantled machines. He was getting into different planes and flying with almost every pilot as his observer, dropping bombs over *Odrin* (Edirne)."



This document, signed by Maj. Zlatarov, commander of the air squad, certifies that corporal Assen Jordanoff volunteered for the First Balkan War 1912 - 1913.

### The first Bulgarian airplane

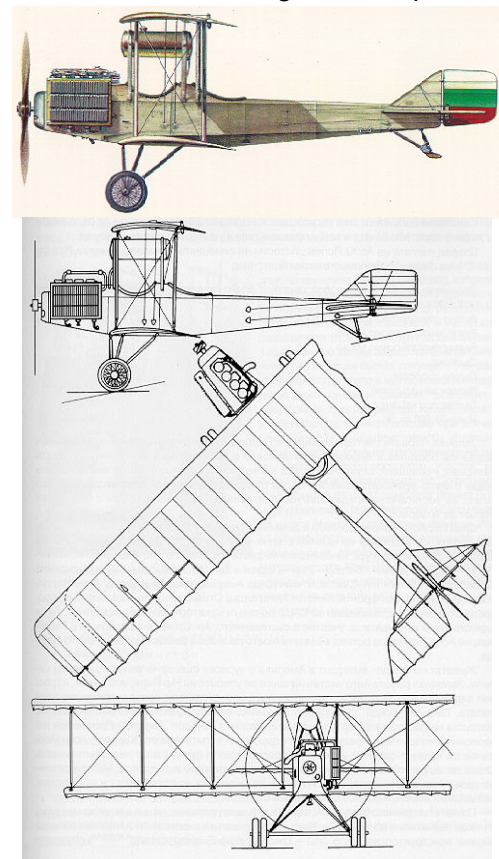


'Jordanoff-1', the first airplane build in Bulgaria, during test flight at *Bozhuriste* airfield. Author Ivan Borislavov, drawing by Georgi Todorov.

In the *Aeroplanno Otdelenie* Assen gained expertise and was ready to embark by himself on the construction of an airplane - the first Bulgarian airplane, which was finished in less than a year in the summer of 1915. "1915 was a very trying and significant year for me," he said.

"There were two sides to it: on the one, I was struggling along with my high school studies, while on the other, I was going to be rewarded with the best success I could ever hope for." At school he got poorest possible grades in three subjects: choir-singing, French (despite his good oral) and drawing - "I didn't care about drawing flowers and vases." He was perfectly happy toiling away on his own with his ideas of constructing a real airplane.

"My plane was of the Albatross type, 14 m wide, 8.5 m long and burned up 30 liters of oil and 120 liters of

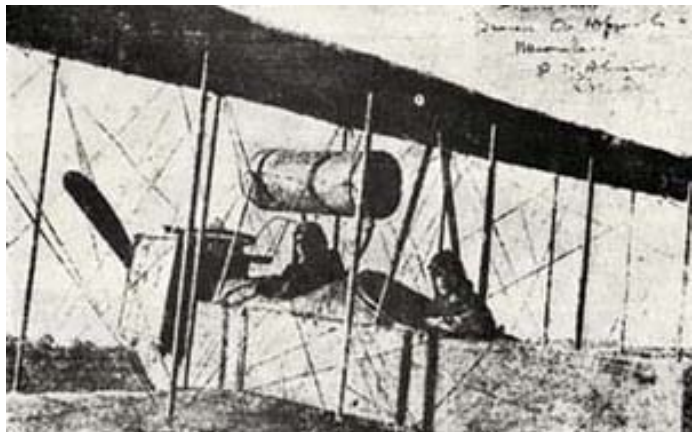


Drawings of 'Jordanoff-1'. Author Ivan Borislavov, drawing by Georgi Todorov.

gas per hour. It had a feature of its own - my very first real invention - which enabled the craft to regain stability when running into air pockets." Tests didn't run smoothly. First test flight was performed by *Gavril Stoyanov* on August 8<sup>th</sup>, 1915 at *Bozhuriste* airfield near Sofia. He wasn't fascinated by the plane's behavior during the flight which barely ended with a crash. The second pilot who took the risk for testing the new machine was *Radul Milkov*. On August 10<sup>th</sup>, 1915 he rose the craft in the air. Initially the flight went normally, but yet at the first turn the plane irresistibly headed nose-down. Only the pilot's skills and nerve prevented tragedy and he stabilized the plane at the lowest possible altitude and landed safely. The machine was checked again and some couplings were retightened. The third test flight was already normal. Assen's emotion was extraordinary seeing his own creation airborne. Soon after he was taken into the air in the rear seat by Radul Milkov. The airplane was called 'Jordanoff-1'.



Capt. Radoul Milkov and Assen Jordanoff at the time of the third test flight of the new plane.  
*Bozhuriste* airfield, August 10<sup>th</sup>, 1915.



At the end of the successful test capt. Radoul Milkov took Assen Jordanoff for a flight with the plane he developed.  
*Bozhuriste* airfield, August 10<sup>th</sup>, 1915.

A special commission set by the Ministry of War and including the most competent airmen at that time made its conclusion: "The plane is safe. There are no mistakes in calculations. The invention is to be recognized and Assen Jordanoof to be recorded as its inventor. August 10<sup>th</sup>, 1915 is to be considered as starting date of Bulgarian aircraft building."

An article in *Sofia* daily from October 21<sup>st</sup>, 1915, reads: "For several days now, in the Indoor Riding Academy of Tzar Ferdinand, the public has been able to view a full-size model of an aircraft put together by the high-school pupil Assen Jordanoff, the son of Dr. Christo Jordanoff, former Administrator of the Bank of Agriculture. This first Bulgarian aeroplane is a successful combination of several existing biplane types. The constructor, who is still in his teens (and already an excellent mathematician), has also introduced a valuable new device, namely a feature which prevents the plane from loosing altitude. Should this innovation prove



Model of 'Jordanoff - 1'.  
Bulgarian Museum of Aviation.

its value in actual flying conditions, then we will be able to say that the fledging aircraft industry has benefited from a Bulgarian's innovation - something to tickle our sense of national pride."

Assen Jordanoff's airplane was at a first look similar to the planes of that time. It was a biplane with relatively short wings, to decrease the body

weight and with increased spacing between them to improve the aerodynamic effect of the lower wing. The wing section was similar to that of *Albatross*. The cabin and the fuselage were conceived with great care to diminish drag - a good step ahead in comparison with other constructions. The motor was an *Argus* brand of 100hp, with front pulling propeller. The landing gear was re-enforced with double tires for stability and safety when landing. The tail, vertical and horizontal stabilizers and the ailerons were similar to those built by Louis Blériot. The innovation that helped at landing and at recovery from stalls was something like contemporary flaps, added between the wings. Wings had a wingspan of 14 m and 13 m and a 41 m<sup>2</sup> area, plane's length was 8.5 m. The plane, for its time, showed good characteristics: take-off distance - 65 m, landing distance - 50 m, airspeed - 85 km/h, altitude of 500 m reached in 8 minutes.

After being on exhibit for several months, the plane was bought by the Ministry of Defense for 16,000 leva and his constructor was awarded a scholarship to study engineering abroad. Jordanoff saw his plane as a light liaison, training and cargo plane so this rose his hopes for starting a serial production. His next and even more ambitious project was a heavier multi-engine plane. Unfortunately the World War I cancelled his plans.

Besides Jordanoff's fully successful projects from 1912 and 1915 there were earlier attempts in Bulgarian aviation history: The unsuccessful *'Tchutchuliga'* (Lark) by *Ivan Gevrenov* in 1910 was an attempt to build a flying machine driven by electric motors. The *'Bozhinov-1'* was patented by *Georgui Bozhinov* in Paris in 1912, but first built in 1926 - it is still unclear whether this plane has actually flown. In 1915 Lt. *Stephan Kalinov* and mechanic *Iliya Mladenov* built a replica of Voisin airplane under the name of *'Dogan'* (Hawk). The plane had 7 successful flights.

## War again - military pilot during the First World War

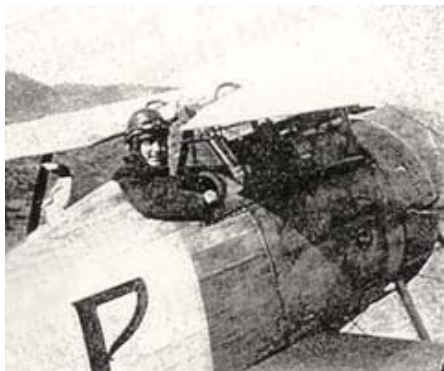


L-t Jordanoff. 1917-1918.

After the successful finishing of his high-school education in Sofia and being already drafted, Assen Jordanoff was incorporated in the reserve officers' training program, wherefrom he entered the flying school of *Bozhuriste*, near Sofia. The man who insisted on that was one of the first Bulgarian (and one of the first world's combat pilots) Capt. Radoul Milkov.

On graduation the young flier was promoted to *pod-porutchik* (second lieutenant) and was assigned to report to the Air Force base of *Udovo*, on the Western front in Macedonia. With the *Vozdushno Otdelenie* (Air Squadron) he made 84 sorties and was decorated with an officer's cross *'Za Hrabrost'* (Courage Medal) for his

exceptional courage. *Constantine Popatanassov* expressed his admiration for Assen Jordanoff: "Assen Jordanoff was a brave pilot who knew his job very well. We were free of



In a captured Nieuport pursuit plane, model 24, WWI.

any anxiety taking-off with him on combat missions as we knew that the plane is in good hands and Assen will always be able to handle even the toughest situation. Second lieutenant Assen Jordanoff, military pilot, for his excellent combat performance was decorated with officer's cross *'Za Hrabrost'* IV grade, II class."



Taking off on a bombing mission in WWI.

In his book *Your Wings* Assen Jordanoff would later recall: "The hostile British fleet had crossed our lines. In a few minutes I was in the air with my pursuit plane ready to meet the enemy. At an altitude of about 10,000 ft. I could see them coming in and encountered ten observation and bombing planes coming right at me. Strangely enough, they did not turn back, even after they saw me. Now, I thought, I may just as well be the aggressive one and start to bring them down one by one, beginning with their leader... I opened fire with my two machine guns right into the leading plane, hoping that he would come down, but for some reason or other he just stayed there. By this time we were so close that I could see the gunner of that plane pouring lead out of his machine gun right at me. To my surprise nothing really happened that I could see, except that my left machine gun ran out of bullets and the right one jammed. At that very instant I felt whizzing bullets pass my ears, singing above the roar of my engine. I took one quick look and noticed three of their pursuit planes throwing their 'ropes', as we called the tracer bullets, around my neck... I pointed the nose of my plane straight earthward and either I was going too fast for them to catch up with me or else they were poor shots..."



This document, issued by the H.M. Air Corps headquarters, certifies that Lt. Assen Jordanoff served during the WWI 1917-1918.



L-t Jordanoff with his sisters Vera and Milka. 1917-1918.

Colonel Christo Tchenkov recalls one special occasion when they were greatly enjoyed themselves making fun of the chaplain (called 'pope' in Bulgarian), who was going around all the time complaining that his salary was no more than half of a pilot's. "You know, Father," Assen said, "flying and so gambling with one's life is no easy matter. You have never flown, have you? Why don't you give it a try, see what it's like?" So he took the 'pope' for a spin in the air while comrades watched eagerly and laughingly from beneath at the plane's hopping around, looping the loop once or twice. When they came down,

the chaplain, white in his face and trembling with fear, was crossing himself. "God bless you boys!" he exclaimed. "Your pay is well deserved, it really is. Have it all!"

Unfortunately the First World War ended with a national catastrophe for Bulgaria, which during the conflict had sided with Germany and Austria. The malicious Neuilly treaty of 1919 imposed heavy war reprisals, not to speak of the inevitable consequences of war - inflation, penury and joblessness. The Air Force was curtailed to almost nothing - most planes destroyed and fliers dismissed. Assen's wings were cut, but he saw his new chance across the Atlantic.

### Going away to America

In May 1921 Assen and his pilot-comrade *Alexander (Sasho) Stoyanov* read in a German sports magazine *Flugsport* an announcement: "The *Fédération Aéronautique Internationale*, in cooperation with the Aero Clubs of America, Germany and France, has organized a world-

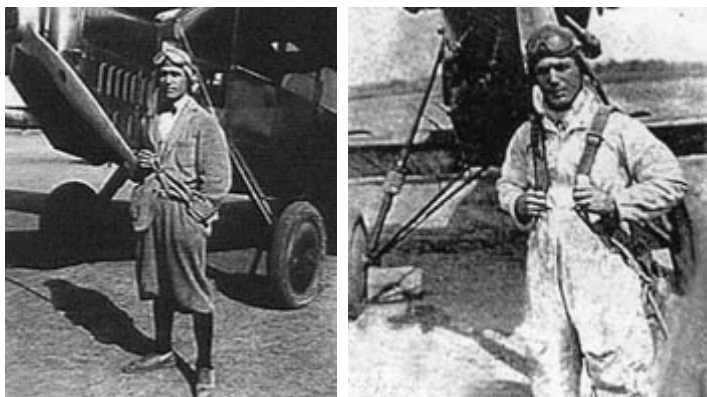
circling flight... The contest is to start from New York. Control points have been established at Seattle, Yokohama, Saloniki and Paris... A Grand Prize of One Million Dollars is to be awarded to the flier who first finishes the round trip within 100 days..."

Jordanoff wrote a letter to the Bulgarian Prime Minister at that time *Alexander Stamboliysky*: "Given the essence and magnitude of this epoch-making project - the first in the history of aviation and most likely the only one of its kind which will occur in the next decade - it will offer a chance to the envoys of all civilized nations to meet in the air for a chivalrous tournament to be able to measure their respective strength and endurance... We wish to persuade the ministers that we do not seek any particular personal advantages, but only to be given a chance to demonstrate the Bulgarian spirit at its best... our boldness in asking for such support stems from the conviction that we shall, unquestionably, gain victory for Bulgaria, or else we shall meet our fate - courageously - by dying in the line of duty..." Indeed, the government granted Assen Jordanoff and his partner 6,000 dollars to take a part in the great undertaking. By the way, Prime Minister Stamboliysky, who had to sign the Treaty of Neuilly, was one of those who were concerned about Bulgarian aviation and made his best to save at least a part of the airplanes which were meant to be destroyed.

So, the two aviators arrived in America to defend the honour of Bulgaria, but unfortunately the competition was postponed. The New York Times wrote on September 4<sup>th</sup>, 1921: "Traveled 6000 miles, spent \$2,500 doing it and found that the \$1,000,000 aviation prize they journeyed to compete for, would not be hung up for a year, may be two years. That was the experience of two young Bulgarian aviators, who told their story yesterday at the Hotel Earle, Waverley Place, near Washington Square." Things became even worse when they read announcements shortly afterwards that "according to the Aero Club of America and the Fédération Aéronautique Internationale the world competition was purely and simply cancelled for good." This brought a total change of their plans, and after thinking it over Jordanoff decided to remain in The United States, later to become his new home.

### Striking aviation career

Despite the meager opportunities he could count upon, and despite being unfamiliar with local habits and ways, Assen Jordanoff was impatient to learn as quickly as possible all he could about the latest in the aviation field. His greatest handicap was his non-existing English, so he was unable to display all the abilities in the domains he knew all about. Initially, for lack of anything better, Assen and Sasho ended up shoveling the snow off the city streets. "Thank God, the winter of



Assen Jordanoff during the 30s.

1922 was a severe one: snow fell time and again, and there were tons of it all over. Our pay was 50 cents an hour, good enough to buy at the end of the day whatever we needed for our survival." After the snow melted Jordanoff was able to find a construction work on a skyscraper that was being built. Thus having again a job he spent all his free time, evenings and Sundays, at the Public Library, studying English by himself or reading books and manuals on subjects close to his heart: aeronautics, machinery, mechanics.

After that came his draftsman position at Curtiss-Wright Corporation. Despite the salary that was sufficient for his needs, allowing him to continue with his education, Jordanoff made his best to increase his income, speculating on the many possible opportunities. This gave him good lessons to remember how to survive in the world of business. The years that followed were years of gradual integration in a foreign environment, but also sometimes of



Being air instructor and also piloting air taxis and doing stunt flights

deprivations and disappointments. Having mastered the English language to an adequate degree, Assen Jordanoff went on to take university courses in engineering, aeronautics, radio electronics, physics and chemistry. At the same time he graduated from a flying school, his instructor being William Winston, who had also been Lindbergh's instructor. Jordanoff moved soon from the drafting department of Curtiss-Wright to the engineering-planning one and therefrom he would emerge as a test pilot and in parallel, he would be an occasional sales manager, a pilot of air taxis, a stunt pilot and above all a flying instructor. He specialized as well in flying under complex weather conditions, made night and high-altitude flights. Still a young man in his late 20-ties, he already had ten years of flying behind him, his war experience and his applied aeronautical knowledge as constructor. All this would give him the best chances to advance in the growing competitive field of aviation. At that time he became known among his friends and colleagues as *Jerry*, rather than Assen,

a familiar name that would stick to him for the rest of his life.

An interesting happening among Jordanoff's diversified commitments was his conference with Thomas Edison (1847 - 1931). The latter invited Jordanoff to visit him at Menlo Park, NJ as he was at the stage of developing a proto-radar and was also interested in helicopters, a research project in which Assen Jordanoff was involved at the same time. The New York Times from October 2<sup>nd</sup>, 1930, wrote: "Mr. Edison showed keen interest in the design of the Curtiss Bleacker Helicopter, which is undergoing final ground test here (Curtiss-Wright airport). He compared the design given by Jordanoff with the details of a helicopter machine which he patented in 1910, saying that the helicopter, with its ability to land and take off from small enclosures will answer the airport problem. When told that airports and their sizes were not as serious problem as blind flying through fog, the scientist inquired as to the use of instruments. "That landing problem is terrible. Can't determine your height? Why not drop depth bombs as at sea?" Jordanoff added that present methods were not practical aloft, and voiced the opinion that a fog-penetrating 'artificial eye' was the only solution. To which Mr. Edison replied: "Thus far we converted light into sound. There is no reason for not being able to solve the artificial eye."



The pilot and flight instructor Assen Jordanoff.

### Jordanoff's companies - a successful business

After 1940 began a major period in Assen Jordanoff's career. During the next ten years he will establish and preside over his own business enterprises: *The Jordanoff Aviation Corporation*, to become soon *The Jordanoff Corporation*, then *The Jordanoff Company*, before the creation in 1946 of *Jordanoff Electronics*. Their offices and workrooms were located in the well-known Fuller Building, on the corner of Madison Avenue and E.57<sup>th</sup> Street in New York, accommodating more than 400 employees. Jordanoff's wide range of technical and scientific knowledge was more than effective and soon he reached and got ahead of his juvenile dreams registering a significant success. As companies' names themselves indicate, their range of activities was progressively enlarging beyond the field of aviation.

As far as aeronautics were concerned, the Jordanoff companies collaborated with such companies as Douglas, Chance-Vought, Lockheed, Curtiss-Wright, McDonnell, Boeing,



Jordanoff's business card and company form, 1943.

North American, Consolidated, Piper. At the request of most of them, Jordanoff himself, as a designer or as a planner within his own engineering staff, contributed to a large degree to the construction of some very well-known planes.

Among them are: the Lockheed P-38 Lightning - a very versatile aircraft used during WWII mainly as high-speed, high-altitude fighter, long-range escort fighter and photo reconnaissance plane: about 10,000 were built; the Curtiss P-40 Warhawk - America's foremost fighter in service when WWII began. P-40s first engaged Japanese aircraft during the attack on Pearl Harbor; the Boeing B-17 Flying Fortress and the B-29 Super Fortress -

the best long-range bombers in WWII that made a significant contribution to defeating Germany and Japan, more than 12,000 B-17s and about 4000 B-29s were built; the Consolidated B-24 Liberator (total of 19,256 were built) and the North American B-25 Mitchell (about 10,000 built): bombers which also had a significant role in WWII; the Douglas DC-3/C-47 Dakota - one of the first airliners and multi-purpose planes, main military air-transport for the Allied Forces during WWII, more than 13,000 were built.

Unfortunately working on two of those planes, the B-17 and the B-24, their constructor didn't know that they will soon bring death and destruction over his own birth place - Sofia. During WWII it was bombed several times by the United States Air Force. The B-29 will also mark the first use of a nuclear weapon over the Japanese cities of Hiroshima and Nagasaki.

An important external circumstance that contributed to the successful growth of the Jordanoff firms is the war effort and especially the Victory program launched in 1942 in The United States - from that year on until 1944 121,257 airplanes were built. Jordanoff participated to his own degree in the national build-up, coming to be closely associated with the Armed Forces industries, in the promotion of ground, sea or air material, for both attack and defense.

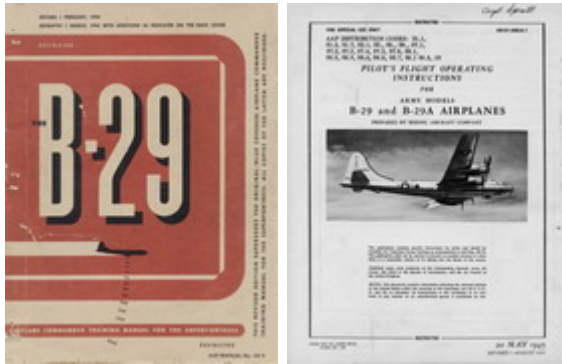
Also, a very important activity was the preparation and the distribution of thousands



Jordanoff made a significant contribution to the success of DC-3.

of copies of descriptive books and practical manuals, which gave invaluable help to servicemen handling highly complicated equipment. Most of the company projects were top secret.

There is a wide spread belief among military experts that Jordanoff has a direct contribution to shortening the WWII. As his nephew Peter Athanassov says "...he shortened the WWII by delivery in a simple form the knowledge of flying for the huge fleet of the Allied Air Force. The industry delivered the machines, he delivered the people to run them." At that time a humorous anecdote went around: "The war was won 3 months earlier thanks to Jordanoff."



B-29 manuals.

During the years of WWII Jordanoff's reputation was at its height as this letter by the vice-president of Boeing witnesses: "Dear Mr. Jordanoff, The type of presentation of handbooks and manuals you have published covering the operation and maintenance, inspection and repair to aircraft have proven to be highly successful. For this reason, we chose your company to participate with us in the development of the manuals for the Boeing Superfortress, the B-29. These Superfortress manuals are now off the press and you are to

be highly commended for the part you played in preparing them. It has been a pleasure to work with your company and we send you every wish for your continual success." Until the end of his life Jordanoff will remain connected to and respected by the Boeing company.

Becoming the largest American manufacturer of specialized military literature had been preceded by Assen Jordanoff's long writing experience. Before emerging as an author of books on flying he was already known as a commentator on aviation events and matters - his articles appeared in dailies and periodicals such as *The New York Times*, *Air News Air Tech*, *Sportsman Pilot*, *Popular Science Monthly*. He was considered as a prominent authority on all the areas of aviation. His first book was published in 1932 - *Flying and How to Do It* and was followed by eight other. His books were mostly technical, covering different aspects of aviation, from meteorology to mechanics. The only exclusion is *Men and Wings* - a history of aviation, subtitled 'Man's Conquest of the Skies'. Some of Jordanoff's books were rapidly reprinted, considered to reach 750,000 to 1,000,000 copies in America and were widely distributed in Great Britain and the USSR (200,000 copies of *Your Wings*, called there '*Ваши Крылья*'). There were also translations in French, Spanish, Italian and even Chinese, but unfortunately not in Bulgarian.

Jordanoff created his own visual education style, his text were rich in illustrations and easy to understand. Immutably was the author's sense of humor. On the last page of *Your Wings* we read: "If you don't fly now, it isn't my fault." Some books became official hand- or textbooks in some states due to their big practical and scientific value. Thousands of American pilots from several generations owe their knowledge to those books and to their author. Here is what the U.S. plenipotentiary minister in Sofia (1940) George Howard Earl III said when interviewed by the widely read local daily *Zora* (Dawn): "Almost every one of the 100,000 or so flyers in America, I'm sure, owns his books, and they all read them as if they were a bible to them - a set of precepts... I want to stress here that my son, George, and myself, owe at least ninety per cent of our knowledge on flying to the books of Jordanoff. He is the most famous Bulgarian in America."



Assen Jordanoff.

Jordanoff was also an author of a training film for the United States Air Force called 'Elmer Takes The Air.' It was a re-working of a version originally made for Paramount Pictures in

**Frozen Gas Tested in Flights As Fireproof Fuel for Planes**



Assen Jordanoff's inventions were widely covered in the press.

Hollywood. The main role of Elmer was performed by Harold S. Kruger, a highly considered Hollywood stunt actor and a frequent companion of Johnny Weissmuller - Tarzan. The film contained 40 flying lessons, introduced by Jordanoff himself in the role of an instructor. Being part of the method for more

effectively and rapidly teaching the pilots, many humorous contradictions and incidents took place in the film, resembling the funny stories and comics in Jordanoff's books. During the war this film was shown in all the American Air Force training bases.

Assen Jordanoff's inventions and innovations seemed to be unlimited. His first notable implemented device was the extra flap-like wing on his 1915-built plane. Another invention was the *Frozen Gasoline System* for airplanes, which idea was to super-cool the fuel in aircraft's tanks with dry ice and alcohol, thus making it unflammable - a big advantage to military planes. This system was never finally implemented, but its principles were later adopted in different forms. The *Reverse Thrust* device was intended to decrease the specific fuel consumption and to increase the trust of jet engines. Assen Jordanoff gave all his attention to the invention and marketing of the *Jordaphone*, launching for this purpose in 1946 *Jordanoff Electronics* and investing a considerable capital in the venture. It was officially patented as a 'Cabinet for sound receiving and transmitting apparatus', to which was added 'Telephone system for automatically answering,



A magazine ad for the Jordaphone.

recording messages and recording normal conversations.' All this came 5 years before the tape recorder and 30 years before the answering machine were put in use. Today's telephones owe a considerable debt to the Jordaphone. Another significant invention were the *Airbags* (1957) meant to ensure the safety of pilots and automobile drivers. They were in form of protective jackets, and after research has been continued, they are quite common in cars nowadays.



Assen Jordanoff in 1957 and his sisters Milka and Viola and his nephew George: they also live in the United States.



Assen Jordanoff in 1967 together with his sisters Viola, Milka and Nadya.

The *Stratoport* resumed Jordanoff's interest in aviation. A special company was established - The *Stratoport Corporation of America* (1956). It owned a patent issued for a field of two unidirectional non-crossing runways, set end-to-end pyramid-like elevated structure, to slow planes that are landing and to speed those taking off. The runways were screened by high perforated fences intended to reduce crosswinds. The high screens were also expected to reduce the noise as well as the elevated ends were meant to reduce the length of the runways. Such an approach is recently used for some aircraft carriers. Nonetheless, as was the case with the Jordaphone, the new concept was too ambitious and modernistic - it would have required a total reviewing of airfield procedures, for which an agreement with many companies was also necessary, so in the 50s no

acceptance and realization of the plan could be hoped for.

When in 1962 Jordanoff retired, he settled with his third wife Lucille in a cottage on 7 Emerson Place in Harrison, NY. Strangely enough, this choice of a new residence unexpectedly brought back to him memories of some earlier flying contacts, for this was the town where had lived *Amelia Earhart* whom he knew personally. She was the first world aviatrix, doomed to disappear mysteriously over the Pacific. Walking almost daily to her monument Assen Jordanoff was amazed to notice that the propeller she was represented with was given as turning in the wrong direction: "Were this so, the plane would fly backwards," declared he to the journalist of *The Harrison Independent*. This is how Harrison residents learned that there was another name in aviation, besides Amelia Earhart, to be talked about among them: Assen Jordanoff.

### An aviation legend in America

On top of his popularity Assen Jordanoff became a real legend in America, mostly known under the name of *Jerry*. His sister Milka recalled: "He was a self-made man, as is frequently the case in America with people who have made a name for themselves thanks to a faith in their abilities and a steady persistence in their work. He had to start building a life almost out of nothing, guided only by his cleverness, circumstances as they happened, if not by sheer luck. Twenty five years later he would become "Jordanoff" - a highly considered authority in all the areas of aeronautics and a leading writer of books on aviation. His professional success was naturally accompanied by the acquisition of considerable wealth; this permitted him to live with ease, and also satisfy his natural taste for luxury, lavishness if not waste."



Assen Jordanoff at party Jordanoff Aviation Corporation threw in 1942 with his second wife Diana and Kenneth (Ken) Behr - manager of Floyd Bennett Field, later LaGuardia Airport.



Assen Jordanoff with the Mayor of New York City LaGuardia. 1940 most likely.

"He was a typical New Yorker, who all his life never left Manhattan's East Side, residing respectively at 45 E.60<sup>th</sup> Street, 44 E.67<sup>th</sup> Street and 2 Sutton Place South. For many years he rented an estate in Brookline, Long Island, so he could get away from the city to relax and rest, but also to be free to practice his favorite sports, riding and hunting. Friendly and communicative, he enjoyed a large circle of intimates and acquaintances, professional associates and industrials, Air Force officials or simply rich socialites. He was also a welcome guest at cocktails and gatherings and he liked going out, spending the evening in a fashionable restaurant or club, such as the celebrated Club 21, whose faithful customer he was for many years (tipping the doorman with a \$100 bill each time he left!). He had always been essentially an optimist, looking forward to life and adventure: outgoing, daring, glad to meet in earnest any appeal or any duty. Always in a very boyish manner

he would be ready to tease, turning everything into joking and affability. He easily became the center of attention at any social occasion, making people laughing heartily. This magic quality also explained his notorious success with women... At one point, everyone in a particular world of New York seemed to know who Jerry was: a man full of surprises, almost illusory, almost a legend..."

Jordanoff was made a honorary citizen of the city of New York, his name appeared in *Who's Who*, his portrait was placed in LaGuardia airport's Hall of Fame, along with those of other celebrated men of aviation. The Smithsonian National Air and Space Museum holds his

papers and mementoes. Unfortunately, the man who started the aircraft building in Bulgaria, the WWI hero and Aviation pioneer, the distinguished aviation specialist was and today still is almost unknown in his native country - Bulgaria, where he never returned. In spite of that until his last days he insisted that the name-plate of his home should read: "**Assen Jordanoff - Bulgarian aviator.**"

"Actually, now that I think of it, all my life has been full of unpredictable changes and precipitations. Real misfortunes I only avoided on account of my courage... I would always answer with the old Turkish saying: "A good gold coin never gets lost..." But above all stands in my mind the memory of our farm, the games there, the brook, the nearby village... Why, why so vividly, I wonder? I always believed I would be victorious in all my doings, capable of withstanding any hardship. However now, lying in this bed for so many days, it suddenly comes over me the sad thought that maybe I shall have to give up everything I love, and this while the ceaseless thinking process goes on and on, bringing me back to what I yet have to do, to all my desires and my unfinished commitments."



Assen Jordanoff.

Assen Jordanoff died at age of 71 on October 19th, 1967, in the St. Agnes Hospital in White Plains, New York. His ashes were dispersed by a plane in the sky of America - a worthy end for a man who dedicated his entire life to traversing the wide-open space.

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I thank everybody who helped me in writing this article supplying me with materials and information: Mr. Georges Markow-Totevy and Mr. Peter Athanassov, nephews of Assen Jordanoff, Mr. Paul Lee, Mr. Ralph Cooper, Mr. Tim Linder, Mr. Greg Powers and Mr. Phill Wieser. I also thank Mr. Ivan Borislavov for his observations.

To my surprise I found a couple of references to Jordanoff's books in present-day internet sites and forums in Russia, recommending them as a good elementary reading - what a good recognition for well done work more than 60 years after its creation, in the XXI-st century. Today Russian translation of Your Wings from 1937 (Ваши крылья) is still in circulation in .pdf format. The 1940 translation of Through the Overcast (Полеты в облаках) is also available on the net.

Plamen Antonov

April 2004 - April 2008

## Books by Assen Jordanoff:



### FLYING AND HOW TO DO IT

Grosset & Dunlap, New York, 1932, 1936, 1940  
Illustrations by Larry Whittington

Assen Jordanoff's first book is dedicated to the progress of aviation and, in the words of the author, is "a presentation of a complete flying course in a nutshell," to "impart and demonstrate to the layman what procedures should be followed in order to be a proficient flyer."



### YOUR WINGS

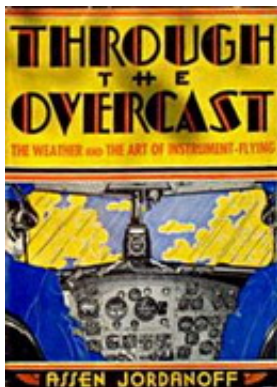
Funk and Wagnalls, 1936, 1939-40, 1942  
Illustrations by Fred Meagher, Frank Carlson and Eric Sloane

Translated as:

ÊTRE PILOTE - OUVRAGE D'AVIATION, Dunod Paris, 1948, 1964;

ВАШИ КРЫЛЯ, Воениздат, Москва, 1937  
and in Italy and Poland as well.

This book appears more formal and theoretical than the first one, as well as more complete and ambitious in its approach. It comprises everything one should know about flying. Providing 424 illustrations the author means to "build a clearer picture in the reader's mind relieving him of the strain and pain of converting reading matter into mental pictures."



### THROUGH THE OVERCAST; The weather and the art of instrument flying

Funk and Wagnalls, New York - London, 1938-39, 1940-41, 1943  
Illustrations by Frank Carlson and Fred Meagher

Translated as:

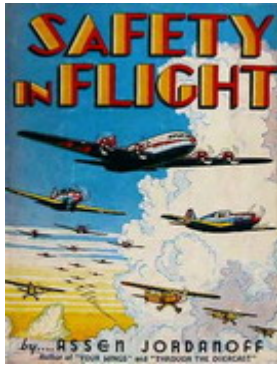
ПОЛЕТЫ В ОБЛАКАХ, Воениздат, Москва, 1940

VUELO CON MAL TIEMPO, Montevideo, 1942

and in Italy and Japan as well.

Jordanoff attributes the progress of aviation to better engineering methods, but no less to the invention of precision instruments which are a necessity when flying "under poor visibility and and through the overcast." Besides learning how to use gadgets on the dashboard, a good pilot should also possess some knowledge about the physical laws accounting for the adverse atmospheric conditions. A primary concern is "the understanding of the weather" or, in other words, how "to fly the weather."

C. R. Smith, President of American Airlines, says: "This book has taken the subject of meteorology out of the mathematical equations and has made it simple to understand. It explains instruments, radio and all allied subjects so thoroughly that it will help not only the professional airmen but the fledglings."



### SAFETY IN FLIGHT

Funk & Wagnalls, New York - London, 1941, 1942  
Illustrations by Frank Carlson and Fred Meagher

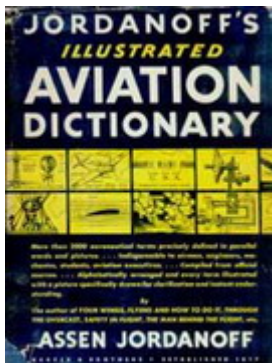
Considered as a sequel to the preceding *Your Wings* and *Through the Overcast*, this book deals with the pilot's preliminary tasks, automatic proficiency and safety. The author tells the reader: "Whether you practice contact or instrument flying, you'll find this book indispensable." The book is intended to contain a maximum amount of information at a postgraduate level, geared both to air defense and civilian flying.



MEN AND WINGS; The Story of Man's Conquest of the Skies, Highspotting Its Milestones of Progress From the Eighteenth Century Experiments of the Montgolfier Brothers to the Builders of Military Aircraft in World War II

Curtiss-Wright Corporation - Airplane Div., Buffalo, 1941, 1942

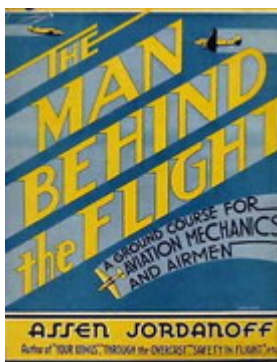
The book was written on the request of Curtiss-Wright, with which the author was closely associated for many years. It presents the history of aviation, honoring the founders of the American aviation, the Wright brothers and Glen Curtiss, but also reflecting the author's own experience in the first use of the plane as a weapon during the Balkan Wars (1912). The aviation history ends with a brief presentation of all major models of aircraft, manufactured during the First and Second World Wars.



### JORDANOFF'S ILLUSTRATED AVIATION DICTIONARY

Harper & Brothers, New York - London, 1942

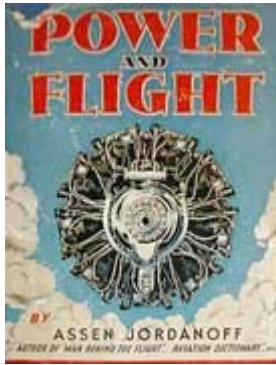
The book was published at a time when thousands of young Americans would be joining the Air Force to participate in the war and would thus be very useful to them. It met an immense success. It is an ambitious and exhaustive book, implying considerable research and a hard effort in compiling it. "The task was far greater than I had anticipated," said the author. The book contains 2,057 items, trying to cover aeronautics and every related field.



THE MAN BEHIND THE FLIGHT; A ground course for aviation mechanics and airmen

Harper & Brothers, New York - London, 1942

Like the other published during the war, this book is geared to "the thousands of youngsters who intend to enter this vastly important field (aviation)," but primarily to the craftsmen and mechanics, that is "to the ten men on the ground for every one in the air." It is written as "a ground course," only "highlighting the most essential."



Harper & Brothers, New York - London, 1944

Illustrations by Elizabeth Paige

Translated in China.

The book begins with: "If Leonardo da Vinci had had an engine, man might have flown four hundred years ago instead of only forty." Realizing that "the greatest single factor in the growth of aviation" is the development of better and larger engines, the author proposes to examine "how the modern aircraft power plant is built." He dedicates the book to "the young men of today on whom future progress must depend." This very technical book about machinery contains all that a flyer should know about the engine and its upkeep and contains 427 illustrations.



Harper & Brothers, New York - London, 1947

Like the preceding book, this one is very specialized, devoid of any informal and amusing aspect. Like all other Jordanoff's books it is abundantly illustrated and reverts to topics and issues the author had previously treated, more specifically to the flying instruments, because they constitute "one of the greatest factors in the growth of aviation."

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WILL AUTOGIRO BANISH PRESENT PLANE, Popular Science Monthly, March 1931;

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STUNT FLYING, Popular Science Monthly, May 1932;

ELMER TAKES THE AIR, Paramount Pictures 1942-43. An educational film, containing 40 lessons, made by Jordanoff for the United States Airforce, used for years in AF bases.

### **Some articles and films about Assen Jordanoff:**

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EDISON FORECASTS 'EYE' FOR FOG FLYING: Taking First Ground Lesson, He Hints Device Might Convert Light Into Sound. TURNS TABLES ON TEACHER Expounds Theories to Jordanoff, Plane Designer--Sees Future for Helicopter Machines., Special to The New York Times, New York Times, Oct 3, 1930, pg. 29;

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PATENT GIVES TILT TO LANDING STRIP: Slant Would Reduce Length, Fences Cut Noise--Other New Inventions Listed Weight For Washline Three-Way Photography VARIETY OF IDEAS IN NEW PATENTS Porous Cooking Griddle Antibiotic Ice For Underwater Plowing Three-Functional Stadia, By STACY V. JONES Special to The New York Times, New York Times, Oct 13, 1956, pg. 25;

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