V.Kazashvili

MILITARY AVIATION OF RUSSIA

Central air Force Museum

MONINO, 2008

Central air Force Museum

V. Kazashvili

Born on August 13, 1927.
Retired colonel.
Military pilot – instruction 1st class flew the following aircraft types: Po-2, Ut-2, Jak-18, Jak-11, Jak-3, Jak-7, Jak-9, L-29, Uti-MiG-15, MiG-15, MiG-17, Jak-12.
Honoured cultural worker of Russia chief of museum department of the Central Air Force Museum

Air Force Museum at Monino

One of the biggest aviation museums in the world and the only one in Russia is situated 38 km east of Moscow, in the green masses of pine forest. Its unique collection is a real creation of human genius

In Museum visitors discover multifarious world of aviation. There are more than 185 aircraft, 127 air engines in it, 44 of its exhibits are declared as monuments of science and technology.

The Museum displays the history of origin and development of Russian aviation, the milestones on its heroic path. The experienced guides will tell you about achievements of scientists and designers, about the bravery and courage of our winged warriors who glorified their Motherland.

The time you spend in this unique Museum will impress you greatly.

The Museum

Is opened every day except
Sunday and Wendesday from
9.30 till 17.00 (the break from 13.00 till 14.00):
on Saturday till 14.00 without break)

Our address:

AF Museum, Monino, Moscow region,
141170, Russia tel. 8 (495) 747 – 3928
Internet address www.monino.ru ;
E - mail: afmuseum arstel. ru

From Moscow you can get to the Museum:

- by minibus or bus № 362 from Schelkovskay metro station) bus station to Monino;
- by bus № 322 (Moscow – Noginsk rout) from the bus station near "Partizanskaya station to "Academy VVS" stop (38 km);
- by train from Yaroslavsky railway station (Komsomolskaya metro station) to Monino.

WELCOME TO THE AIR FORCE MUSEUM !

AVIATION IN TNE LATE XIX - EARLY XX CENTURES

"Letatlin"

In 1929 - 1933 Vladimir Tatlin, a painter and a pencil artist, the first illustrator of the works by V. Mayakovsky, a talented scene - painter, an a architect and an inventor, all in one man, worked at designing a similar flying machine. He managed to create "Letatlin", the most significant flying craft, from the point of its form. Its moving parts are mounted on the ball - bearings and it possessed a silky skin. The "Letatlin" is characterized by: weight - 32 kg ; wing span - 12 sq. m.; load - 8 kg/ sq.m.

The "Letatlin" was exhibited at the Pushkin Museum of Fine Arts, at the Central House of Literary Men and in the USA. It has been displayed at the Air Force Museum since 1958.

A. Mozhaisky "Flying Vehicle" (Model)

In 1882 a Russian naval officer began constructing the first full-scale aircraft designed for a man's flight. Two 10 h.p. steam - engines were installed in the machine. The first big airscrew was set into motion by the 10 h.p. steam - engine, while the other two small airscrews were brought into a rotary motion by means of the 20.h.p. steam - engine. Both steam - engines were produced by the "Arbaker" firm, England, the special order of by A. Mozhaisky. Its weight was 1077 kg.

Examining the archive documents one can come to a conclusion that in 1883 - 1885 A. Mozhaisky was occupied which the aircraft improvement in ground tests and at the second part of July, 1885, he attempted to conduct its flying tests on the military airfield near Krasnoye Selo.

Creating the first aircraft, monoplane - type, with a steam engine in Russia, A.Mozhaisky, an outstanding scientist and engineer, surpassed in his intentions all the ideas of science and technology of his time. The Air Force Museum has an A. Mozhaisky aircraft model on display.

The Wright Brothers Aeroplane (Model)

The air Force museum exhibits an aircraft model of the Wright brothers, Wilbur and Orville by names, the American inventors and aircraft designers. There is also a full - scall 25 h.p. engine of their design on display at the museum.

The Wright brothers designed gliders, various types, and made over 1,000 flights in them. In their biplane glider they fixed an internal combustion engine, 16 h. p . thrust, and on December 17.1903 Orville Wright performed the world first successful flight which lasted twelve seconds (Kitty Hawk, North Carolina). Three more flights, lasting 13, 15 and 59 seconds, were made by him on the same day.

Bleriot Aircraft (Model)

The Air Force museum exhibits include a model of the aircraft designed by a French pilot and designer Louis Bleriot. The 25 h. p. "Anzani" engine which was installed in the aircraft is demonstrated at the museum, too. The monoplane of Bleriot, an original European design (1909), had a fuselage and a tractor propeller. It differed greatly from the Wright's craft and was typical of piston - engine fighters in design. On July 25, 1909 Louis Bleriot made its flight via La Manche from France to England. It was his eleventh machine. Bleriot took - off from Calais and landed in Dover, England, in 37 minutes. It was considered to be an outstanding flight of that time, the first one in the world performed over a water surface .

A. Ufimtsev Engine

Anatoly Ufimtsev, a designer and an inventor, developed two aircraft of the original "spheroplane" design (with a planned round wing). Neither of his machines, however, took off into the air. Ufimtsev also designed four aircraft engines.

One of the engines created by Ufimtsev for his "spheroplane -2" is exposed at the Air Force Museum, its designation is ADU - 4. The ADU-4 is a 6 - cylinder, radial, birotative, 2- contact air - cooled engine with swinging cylinders, 100 h.p. thrust, weight - 58 kg. Noticeable is the fact that a considerably small specific gravity of the engine justifies to the perfection of the design, at that time especially (1909 - 1911) .

"Grizodubov - 1"Aircraft (Model)

Stephan Grizodubov is one of the first Russian aviators and designers. For the three - year period, 1909 - 1912, he constructed four aircraft and an Engine of, his own design.

In 1909 S. V. Grizodubov started constructing the first aircraft, which was built in 1910. Simultaneously, a 4 - cylinder air-cooled engine, 40 h.p. thrust, was made by him. All the work, except the cylinder widening, was carried out by the designer himself in his own workshop. The engine was installed in three Grizodubov's aircraft. Each plane was constructed by using some components of the previous aircraft model.

The Air Force Museum displays a "Grizodubov - 1 " aircraft model and its full - sized engine.

"Ilya Muromets" Aircraft (Full - Scale Mock - Up)

Constructing the world largest multi - engined aircraft Igor Ivanovich Sicorsky, an outstanding aircraft designer, had already become popular owing to a flight one m - seater made by him. Still, even his first version could fly pretty well. The aircraft got the name of "Grand Baltic", later it was renamed into the "Russian Vityaz" (Span - 70 m, gross weight - over 4 tons).

The "Ilya Muromets ", the "Russian Vityaz " modification, represented a stage in the world aircraft construction. The were four "Argus " engines in the aircraft, 100 h.p. each. Then it had two "Salmeon " engines, 200 h.p. engines - externally.

Its first version was made in October 1913. After the production tests the aircraft was employed for show fights, Sikorsky himself flew it. Its maximum speed gained was up to 130 k.p.h.

The Air Force Museum got the mock - up in 1979. It has been demonstrated here since 1985, after the reconstruction.

"Voisin"

On January 15, 1915 the owner of the aircraft factory in St.Petersburg S. S. Schetinin signed a contract on the production of 50 "Voisin " - type aircraft. Since early 1916 the

"Voisins" were produced by his plant.

In the Air Force Museum exposition there is a "Voisin " aircraft made in 1916. It is a biplane with a pusher propeller. 150 h. p . " Samson" engine is installed in it .

Max. speed - 105-110 km/h; landing speed -70 km/ h; climb to the altitude of 2,000 m - 23 minutes; ceiling - over 3,000 m; fuel endurance - about 5 hours; weight - 1,250 kg; wing span -14.74 m; length - 9.5 m; wing area - 42 sq. m.

The "Voisin" aircraft was employed in shooting the films "The Elusive Avengers " and "There Served Two Friends ".

"Sopwich"

The Air Force museum exposition includes a model of the "Sopwich " aircraft produced on March 28, 1959. It was presented to the museum by the Central Aviation and Cosmonautics Club. "Sopwich" is a triplane one - seater fighter, English design, 130 h.p. engine, rotative type , made in England.

Max. speed – 198 kph.: weight – 642 kg ; span – 8,1 m ; length – 5,9 m; height – 3 m, made at the V. Lebedev aircraft factory in 1917. The plane had a " Clerge " Being used in Russia mainly as a trainer, the aircraft wasn't armed. It was characterized by high manoeuverability , according to pilot's reports.

"Farman IV "

This flying craft represents one of the flying machines designed by a French designer and pilot (such co-professions were rather typical for that time). Anri Farman designed the aircraft together with his brother Morris Farman .

On March 8, 1910 a Russian pilot M. Efimov, one of the first pilots in the country, made the first Russian show flights in it for the spectators of the Odessa racecourse. Max. speed -65 k.p.h, landing speed - 60 k.p.h. It possesses a rotative type " Gnom " engine, 50 h.p. thrust.

The "Farman IV" exhibit, displayed at the museum, was made to a special order of the " Lenfilm" studio, by the DOSAAF aviasports - club in Leningrad.

The aircraft model was delivered to the Air Force Museum on September 26, 1975, dismantled. It needed urgent repairs, which was carried out rather successfully at the museum repairs shop.

AIRCRAFT OF THE 1920 - 1930s

ANT – 2

The ANT-2 is the first all - metal aircraft in our country, designed by A.Tupolev as an attempt of applying metal in the process of aircraft building.

According to its design the ANT - 2 is a cantilever - monoplane with the "Bristol-Lucifer" air - cooled engine, 100 h.p. It has the following characteristics: weght - 836 kg; max. speed - 170 km/h; ceiling 3,000 m; span - 10 m; length - 7.5 m; height - 2.13 m.

The first flight of the ANT-2 was performed by test - pilot N.I. Petrov on May 26, 1924. The Air Force Museum ANT-2 exhibit is an original, the only constructed one. It was delivered to the museum from the Central Aviation and Cosmonautics Club on October 11, 1960.

ANT - 4 (TB-1) (Model)

On November 11, 1924 they started designing and then constructing the TB-1 (ANT-4) which was to be powered by two "Napir - Lion" engines, 450 h.p. thrust. Though the aircraft construction was carried out in quite an unsuitable building , the nine month term of its construction was strictly observed.

On August 11, 1925 the aircraft was delivered to the Central airfield, where it was assembled and on November 26, 1925 text - pilot Tomashevsky made its first flight.

There were over 200 aircraft, brief in different versions. Its take off weight varied from 6,200 to 7,800 kg (in different modifications); span - 28,7 m; length -18,0 m. Its armament included 4-6 guns and from 1,000 to 3,000 kg of bombs. The crew consisted of 6 men. The max. speed was 187 - 205 km/h.

The Air Force Museum exhibits the TB-1 aircraft model (the scale to be 1:20) created by the group of the aircraft model constructors under the guidance of Lieutenant - Colonel G.Pritugin and handed over to the museum on December 2, 1986.

ANT-6 (TB-3) aircraft

The ANT - 6 aircraft, constructed by A. Tupolev Design Office, was the world, first four - engined bomber - a monoplane with a cantilever wing.

The first flight of its experimental version, equipped with four Curtess - "Conqueror " engines, 600 h. p. thrust, took place on December 22, 1930, piloted by test - pilot M. Gromov. Later those engines were replaced by the M -17 (500 -715 h.p. thrust), M-34 (750 - 830 h.p. thrust engines and since 1936 - by AM - 34 RN ones (840 - 970 h.p. thrust).

The TB - 3 (ANT - 6) was the main heavy bomber of the Soviet Air Force. All in all, the aircraft industry produced more than 800 such type aircraft.

The Air Force Museum has a wooden model of the TB-3 aircraft on display, scale to be 1: 25 . The museum got the model from the Central Aviation and Cosmonautics Club on December 28, 1959.

ANT - 25 (RD)

The ANT-25 was specially designed for long-range record flights that is why it is also known under the name of RD, which means record in distance. The aircraft was designed and constructed by the team of designers headed by P.Sukhoi, under A.Tupolev's super vision.

On June 22, 1933 test-pilot M.Gromov made the first flight of the ANT-25. In the summer of 1934 the ANT - 25, piloted by the crew of M. Gromov A. Filin and I. Spirin covered a distance of 12, 411 km. At dawn, on June 18,1937 the crew was permitted to take off and it set its course to the North Pole, theu managed to cross the North Pole and reached America in 63 hours 16 minutes landing on the military airfield, not far from Vancouver, having covered a distance of 9,130 km (Straight - 8,504 km).

Three weeks later another crew of pilots M. Gromow, A. Jumashev and S. Danilin performed the ANT-25 non - stop end to America via the North Pole. At the flight of July 15, 1937 the aircraft landed in the vicinity of Saint-Jasinto. They covered a distanke of 10,148 km in 62 hours 17 min. That was a real world record in distant flights.

The Air Force Museum exhibits the ANT-25 technological copy made of the aircraft model which had performed the Moscow-Saint Jasinto non-stop, flight piloted by M.Gromov crew.

ANT- 40 (SB)

A. Tupolev charged A. Archangelsky ' s team with the task of constructing a new high-speed front-line bomber. The first SB experimental version was powered by two "Wright-Cyclone" air-cooled engines, developing 730 h.p. thrust each. Test-pilot K. Popov made its first flight on October 7.1934. The maximum speed of the SB was 423 km/h Further on it was developed up to 450 km/h at an altitude of 4.000 m due to the replacement of the engines by more powerful M-100A (860 h.p.) and then M-203 (960 h.p.). The two-engined three-seater, accommodating the crew of a pilot, a navigator and a radio operator, was a mid-wing monoplane bomber which possessed the following performance (in mass production): span-20.33 m; Length - 12.27 m; normal take-off weight-5.700 kg; bombload-up to 1.000 kg; armament-3-4 guns.

The aircraft industry produced a total of 6.656 SB aircraft.

The aircraft repairs were carried out and on August 14.1982 General Designer Deputy A. Kondakov presented the SB aircraft to the Air Force Museum in a solemn atmosphere, A. Archangelsky ' s wife taking part in the grand ceremony.

DB - 3 (IL- 4)

The DB-3 Aircraft is "Long-range bomber the third", created by the feam of designers headed by S.Ilyushin, in the Central Design Office (TsKB). That's why the designations of the first experimental models derived from the abbreviation TsKB.

In the summer of 1935 test - pilot V. Kokkinaki first took the those two aircraft differed in the following points: the first aircraft was a composite type construction (metal - wood), while the second one was all - metal. The latter one, designated the DB - 3, entered service.

S.Ilyushin's long - range bombers were engaged in the Great Patriotic war and made up a ajar part of the long - range aviation fleet. The first raid of the Soviet aviation on Berlin was performed by our pilots in the DB - 3, taking - off from Kodul Air base (Saaremaa Isle, Estonia) in the night of August 7 - 8, 1941.

U-2 (PO -2) (Mule)

Designed in N.Polikarpov's creative team in 1927 the U - 2 aircraft (" trainer the second") was renamed into the Po - 2 ("Polikarpov the second ") after the death of the designer, in 1944.

Besides its main function as a primary trainer, the aircraft was produced in a number of modifications, as an ambulance - plane and an agricultural plane (for fields aero pollinating). During the war it was even employed as a night light bomber, which turned out to be rather effective.

On January 7 , 1928 test-pilot M. Gromov made the first U- 2 flight marking the beginning of more that thirty - five year life of this aircraft. The U- 2 is a two - seater biplane, wooden construction (veneer, repcale), equipped with the 100 -110 h.p. M-11 engine, A. Shvetscov's design .

The total number of the manufactured U -2 / Po -2 aircraft exceeds 40,000. The Po -2 aircraft, exhibited at the Air Force Museum, was produced at the aircraft factory on August 2 , 1945 and delivered to the museum on November 21, 1958. The exhibit is in good exposition form. It was shot in the film "Night Witches in the Sky ".

R- 5

The development of the R-5 reconnaissance plane turned out to be a remarkable event in the N.Polikarpov's Design Office, as well as in the history of the Soviet aviation. It was a sesquiplane with the upper wing span of 15,5 m; wing area - 50 sq . m; wood construction with material wing and tail unit skin and veneer fuselage skin; 680 h.p. M-17 engine; weight (normal - 2,600 kg; max - 3,350 kg). The aircraft possessed excellent flying characteristics: max. speed of up to 230 kph; ceiling - 6,400 m; bombload - 300-500 kg; range - 1,000 km .

It was test-pilot M.Gromov who performed the first flight of this machine and its primary production tests at the beginning of 1929.

There were produced about 7,000 R-5s of different modifications. The aircraft display at the Air Force Museum was reconstructed in the city of Dushambe by a public design office and was presented to the museum on February 2, 1993. The R-5 model is in excellent exposition form.

I -16

In 1933 N. Polikarpov 's Design Office developed the I -16, an outstanding fighter of its time. All in all 6,555 planes were manufactured.

The I-16 was also employed in air combats in China, Mongolia (1937-39) and even during the Great Patriotic war up to 1944.

The I-16 mock - up has been exhibited at the museum since February 1983. It was manufactured to order of the Air Force Museum at the Kazan aircraft factory. Aircraft of the Great Patriotic War and Post - War. propeller - driven Aircraft.

AIRCRAFT OF THE 1940-1950 s.

MiG- 3 Fighter (Full - Scale Mock - Up)

The MiG-1 and its small - size modification MiG-3, which was included into the serial production, are monoplanes of composite construction (wood and metal), low wings (span - 10, 3 m, wing area - 17,44 m^2).The AM-35 A engine installed in the aircraft developed thrust of 1,350 h.p. at sea level and 1,200 h.p. at an altitude of over 7 km, which fully satisfied the designers in their intentions to create a high - altitude fighter, as before the war there existed an opinion that the future air combats will take place mostly in the statosphere.

The first I -200 flight was performed by test - pilot A. Ekatov on April 5, 1940. The speed developed in the course of the tests was 651 km/h at an altitude of 7 km, ceiling - 12 km. Its armament - one 12.7 mm machine - gun and two 7.62 ShKAS machine - guns - proved to be not powerful enough.

The museum represents a MiG - 3 copy, designed by A. Mikoyan and M.Gurevich . It was made at the " Zenit " machine building plant and delivered to the Air Force Museum on 25th October 1967.

Jak - 9U Fighter (Frank)

The Jak - 9U belongs to one of the last rotary winged fighters designed by the Jakovlev's Office. The Air Force Museum exhibits a Yak -9U aircraft with the 1,650 h.p. VK - 107A engine.

The Yak -9U is of composite construction; has metal beams, veneer

wing covering; duralumin landing flaps, aileron carcass and tail unit, mass - balance of ailerons; fabric covering of the ailerons and the rudders; water radiator - under the cabin; three - blade VISh - 61P airscrew; RSI -6 transmitting and receiving set. Its fuel tanks were malleable, protected with the neutral gas system. Wing span was - 9.74 m; wing area - 17.15 m2.

The Yak - 9U armament: one NS-37 gun and two UBS-12.7 machine - guns. The Yak-9U aircraft produced in 1944 with the VK-107A engine had the flight mass of 3,150 kg ;speed - 680 -700 km/h; range- 870 km. The Yak -9U Air Force Museum exhibit was constructed at the aircraft factory in Novosibirsk on March 27,1944 .The aircraft was flown in the Great Patriotic war combat operations. Later on it was reconstructed and delivered to the Air Force Museum on January 14, 1980.

La -7 Fidhter (Fin)

The modified La - 5FN (La - 7 prototype) was produced in December 1943, tested by N. Adamovich and went to the production line in April 1944. They started delivering the La-7s to the front in the summer of 1944. At the final stage of the war the La-7s were flown by the famous aces: N. Kozhedub who downed 62 enemy aircraft, N. Skomorokhov who shot down 46 enemy aircraft personally and 8 ones in the group air combats, K. Evstigneev, who downed 53 enemy, and other pilots.

The ASH-82FN 14-cylinder engine fixed in the aircraft develops max. thrust of 1,850 h.p. The La -7 take - off weight is 3,265 kg. The max. speed at ground level - 600 km/h, at the altitude of 6,000 m -680 km/h.

The exhibited La -7 was flown by N.Kozhedub at the front.Operating it he downed his last seventeen enemy aircraft in the Great Patriotic War. The aircraft was delivered to the museum from the Central Aviation and Cosmonautics Club named after M. Frunze in July, 1960.

Il-2 Armoured Attack Aircraft (Bark)

In 1983 S.Ilyushin put forward an idea of designing an aircraft with armour being an essential element of its structure. Such an aircraft was designed and constructed in its two experimental versions, being designated as UKB-55 (factory) or BSh -2 (Air Force). Test - pilot V.Kokkinaki performed the first flights of both versions on October 2 and December 30, 1939, respectively. The aircraft was a two - seat cantilever monoplane of composite structure with semiretractable landing gear, powerful armament and streamlined armour fuselage accommodating the most essential parts of the plane: engine, crew, cabin, petrol and oil tanks. All in all, during the war years there were produced over 36,000 IL-2 attack aircraft and about 5,000 IL -10, its modification.

The IL -2 exhibit exposed at the Air Force Museum was produced in October 1942. After the shooting of the films "Top Important Mission"("Mosfilm" studio) and "You ought to live" (" Lenfilm" studio) the IL-2 aircraft was delivered to the Air Force Museum .

Il -10M Armored Attack Aircraft (Beast)

Taking into consideration the IL-2 high combat effectiveness, in 1944 the Ilyushin Design Office developed another aircraft - the IL-10 advanced plane powered by AM- 42 (1,750 kg . h.p.) engine. It was an all- metal aircraft with improved aerodynamics, the technology allowing more streamlined configuration. Having preserved the survivability of the IL-2 and the same powerful armament, the IL-2 surpassed its predecessor by 150 kph (speed at the altitude of 3,800 m was about 550 kph).

The IL-10 was on production line from the Autumn of 1944 till 1947 and was successfully operated at the final stage of the Great Patriotic War. The first flights and production tests of the IL-10 and IL-10 M like other IL-family aircraft till the early 60s were performed by test - pilot V.Kokkinaki.

The IL-10M exhibited was delivered to the AF Museum on June 17, 1959.

Pe -2 Dive Bomber (Buck)

Under difficult circumstances, in prison, Petlyakov continued to work, and in 1938 he was assigned the task of designing a high-altitude high-speed twin-engined fighter - interceptor with a pressurized cabin. And such an aircraft (index 100) was made. Its maiden flight performed by test - pilot P. Stefanovsky took place on May 7, 1939.

The new aircraft tests were in full swing, but suddenly a government directive was received: in short time the Design Office had to convert the fighter into a dive bomber .

The Pe - 2 was a low - wing vertical twin-finned monoplane. It was of all metal structure with a fabric covering contols and ailerons. The aircraft was powered by two V. Klimov M-105 RA engines, 1,100 hp each. The crew consisted of 3 persons. Max speed was 540 kph, service ceiling - 8,800 m, flight range - 1,300 km, wing span - 17,13 m, wing area - 40,5 sq.m, length overall - 12.66 m, aircraft mass - 7,500 -7,900kg, bomb load - 600 - 1,000 kg .

The Pe-2 exhibited has been assembled from the remains of three planes. It was delivered to the Museum on July 14, 1959.

Tu - 2 Front - Line Bomber (Bat)

The "103" aircraft (the future Tu-2) was designed under difficult conditions of "closed" design Office mainly manned by repressed specialists.

Designing began in March, 1940 and on January 29, 1941 the test - pilot M.Myukhtikov performed the first flight. Powered by two AM-37 1,400 hp engines, the "103" aircraft displayed extremely high performance - the max speed of 635 km/h at the altitude of 8,000 m practically unattainable for all bombers of the time. It was easy to handle and possessed a bomb load of 1,000kg to 3,000 kg (in overloaded version).

The Tu- 2 series production was interrupted because the country was in high need of fighters. However, in the late 1943 the Tu-2 production started again. The Tu -2 exhibited in the AF Museum was delivered from an operational unit on November 21, 1959 in a very poor state.

In 1975 restoration work came to the end, and the aircraft was ready for display. The exhibit is the single Tu - 2 in Russia .

Tu-4 Strategic Bomber (Bull)

After the WW II there was a need to develop a long - range strategic bomber which would meet the requirements of that time. The Tupolev Design Office designed the ANT-64 aircraf. The decision was made , however, not to construct that aircraft , but , instead, make a replica of the American B-29 Superfortress strategic bomber possessing lower performance than of the ANT -64 but accumulating the latest achievements of world aircraft technology, aircraft equipment

(radars , in particular).

The main difference was as follows :

- the Ash -73 Soviet - made engines with TK-19
- turbocompressors (A.Shvetsov Design Office) were used .
- the armament was replaced by Soviet - made one - more powerful and advanced ;
- the marking of dials of all visual instruments was made in metric units.

The exhibited, Tu - 4 powered by ASh- 73TK engines, was produced in March, 1954 and was operated till 1958. The aircraft logged over 1,540 hours, performed 2,004 landings. The last flight was carried out by Altukhov on October 7, 1958. It landed in Monino and entered the aircraft repair shop. After repairing it became one of the Museum first exhibits .

Il-12 Ailiner (Coach)

The first IL-12 prototype , powered by two Charomsky Ach-31 diesel engines , was built in 1945. However, those engines were not reliable enough, so they had to be replaced by two ASh -82FNs, and later by ASh -82Ts.

The landing gear was of hydraulically activated tricycle type. The plane had a dual cable control. The wings, tail, propellers and pilot's forward window were fitted with an anti - icing system. The first flight of the aircraft powered by Ash - 82FN engines took place on January 9,1946, followed by production flight tests.

After that the IL-12 went to the production line. Ground speed of the IL-12 at rated power was 350 - 375 kph , service range at the same altitude - 1,150 km. The aircraft mass was: normal - 16, 800 kg. The exhibited IL -12 was constructed in February, 1948. In 1948 -1959 it was flown by operational units.

On February 17, 1959 the aircraft piloted by Saprikin landed in Monino and became the AF MUSEUM exhibit .

An - 2 Versatile Aircraft (Colt)

The development of the plane began in 1946 when a biplane structure was considered to be obsolete. Yet O. Antonov, Chief Designer, had chosen the biplane with high mechanization: flaps on each wing, slats, and drooped ailerons, because the aircraft initially was to be used as an agricultural plane and be operated from small- size unprepared grounds.

The An -2 is an all- metal aircraft with fabric covered wings and tail .The first flight was made by test - pilot N. Volodin on August 31, 1947.Aircraft take - off weight normal - 5,250 kg, maximum - 5,500 kg; max speed at ground level - 253-255 kph, at 1,500 km - 253-268 kph, landing speed - 69-85 kph. Operation of the AN-2 started in August, 1948. The aircraft exhibited was produced on May 7, 1959. It logged 15,084 hours, made 26,707 landings, had 10 repairs.

On March 4, 1984 Egorov 's crew landed the aircraft on Chicalovsky airfield, and on April 5, 1984 in Monino. So it became an AF Museum exhibit.

AN -14 Multi - Purpose Aircraft (Clod)

In 1958 the Design Office headed by O. Antonov developed the AN-14, a liaison and multipurpose aircraft . "Pchelka" (Little Bee) - is a strut braced high - wing monoplane with twin - fin vertical tail. Wing area - 39.72 sq.m., max speed - 200 km/h, cruising speed - 170 km /h, max take - off weight - 3,750 kg payload - 720 kg. The passenger version houses 7 persons (in compartment - 6 passengers, and one passenger and the pilot side by side).

In the agricultural version inside the fuselage there was a special tank for plant protecting chemicals or fertilizers. The AN-14 "Pchelka" exhibited (powered by two Ivchenko AI-14F engines) was built in November, 1965 at Progress machine - building factory.

On January 21, 1937 pilot Litvinchev made the last flight of this aircraft and landed on Monino aerodrome. From the beginning of operational use the aircraft logged 70s hours; performed 677 landings.

Subsonic and Transonic Jet Aircraft

Bi - 1 Fighter

In the spring of 1941 engineers A. Bereznyak and A. Isayev (Bolkhovitinov Experimental Design Office) began to develop the Bi - 1 fighter- interceptor by L. Dushkin D-1A liquid-propellant engine with 1,100 kg thrus. The plane was to be fitted with two 20 mm ShVAK guns. That was the first USSR jet aircraft capable of performing independent flights from take - off to landing.

The Bi -1 was an all - wood aircraft. Wing span - 6.48 m; wing area - 7 sq m; length overall- 6.9 m; take - off weight - 1,650 kg. Design max speed - over 800 kph, initial test rate of climb - 82 mps .Glider flights were followed by powered ones performed by V. Kudrin. The first with running liquid - propellant engine was performed by test - pilot G. Bakchivandzhy on May 15, 1942. All in all 7 flights were carried out (one by K.Gruzdev). The flight time was over 6 minutes .

On March 27 , 1943 trying to gain speed , the aircraft went into dive and crashed .

MiG - 9 Fighter (Fargo)

The MiG - 9 (initially designated I - 300) of A. Mikoyan and M. Gurevich design together with the Yak- 15 was one of the first Soviet - made turbojets.

The MiG - 9 was a single - seat, all - metal monoplane with a mid - mounted straight thin - section (9%) wing.

Wing span - 10.0 m; wing area - 18.2 sq. m; length overall - 9.75 m. Armament: one N-37 gun with 40 rounds and two Ns - 23 23mm guns with 160 rounds each. Take - off weight - about 5,000 kg; with external fuel tanks - about 5,500 kg. The first flight of the MIG - 9 was performed by test- pilot A. Grinchik on 24 April 1946. The tests were a success, the speed increased , but on June 11 during a demonstration flight the machine crashed. Further tests of the MiG - 9 were made by test - pilots M. Gallai and G. Shiyanov .

From the beginning of operation the aircraft logged 133 hours. It was delivered to the museum on May 12, 1960.

MiG - 15 Fighter (Fagot)

Such aircraft (designated I - 310), powered by the Rolls - Royce Nene licensed engine, was built in Mikoyan and Gurevich Experimental Design Office. The maiden flight was performed by test - pilot V. Yuganov on December 30, 1947.

After being modified by Klimov Design Office the VK - 1 (2,700kg hp thrust) engine appeared which powered not only MIG - 15s but many

other types of aircraft.

The aircraft armament included: one NS - 37 gun (with 40 rounds), two NS - 23 guns (80 rounds each), two bombs or two rocket packs. During the production and state tests speed reached 1,050 km/h. Service ceiling was 15, 000 m. The MIG - 15 was the first Soviet jet fighter to be involved in combat operations of the Korean war (1950 - 1953).

The MIG - 15 exhibited powered by the VK - 1 engine was produced in an attack fighter version with under wing stores for bombs and rocket pods. All in all the plane flew 563 hours. On November 3,1961 it became the Museum exhibit.

MiG - 15 UTI Trainer (Midget)

In 1949 the MiG - 15 UTI two - seat trainer aircraft was created on the basis of the MiG - 15. It had two separate cabins with starboard - hinged canopy of forward cockpit and sliding canopy of rear cockpit. Both cockpits had landing gear and flap controls. The aircraft had ejection seats.

The MiG - 15 UTI exhibited at the Museum was built at a plant in 1945. On 26 July, 1954 a production test - pilot Dotsenko performed the first flight. Under cosmonaut training program pilot - cosmonauts Y. Gagarin , V. Tereshkova , A. Nikolaev , G. Bergovoy , A. Leonov flew the aircraft.

On 5 May, 1973 pilot Vovk performed the last flight. From the beginning of its operational life flying time made up 874 hours. The aircraft was delivered to the AF Museum on 21 May, 1973.

MiG - 17 Fighter (Fresco)

The MiG - 17 is a further development of MiG - 15 bis with the same VK - 1 engine, practically the same shape and structure .

By the end of 1949 three aircraft had been built. No 1 aircraft was tested by I. Ivashchenko. In February, 1950, he reached the speed of 1,161 kph at the altitude of 5,000 m. For the first time in the USSR a combat aircraft developed sonic speed in a level flight. But it March, 1950 I. Ivashchenko perished in an aircraft accident. So further tests were conducted on No 2 and 3 aircraft by G. Sedov and V. Kokkinaki. In mid - 1951 a large - scale production of MiG - 17 was launched.

During the test max speed was 1,114 kph, service ceiling - 15,600 m. The exhibited aircraft was built in 1952. The aircraft made 160 flights with 86 hours flying time. At the end of its operational life it was delivered to the Air Force Academy and employed as a training device. On July 20, 1961 it became the Museum exhibit.

La - 15 Fighter

In 1948 on the basis of the La - 174D prototype, a front - line fighter (La - 15) with RD - 500 engine (1,590 kg hp) was designed. It was a single - seat all - metal swept (370) high - wing monoplane. Horizontal tail is raised up. Tail unit and the wing are of the same sweep. Cabin is - pressurized, the landing gear of tricycle type. Armament: 3xNS - 23 guns (series planes had 2 ones).

In September, 1948 the La -15 piloted by I. Fedorov was successfully tested and recommended to production line. During the test program speed reached 1,026 kph at 3,000m, service ceiling - 14,800m, flight range - 1,170 km. The La - 15 exhibited was built in April, 1949.

From the beginning of its operation use the flight time made up 20 hours, 37 landings were performed. On May 23, 1950 the aircraft was delivered to the Zhukovsky AF Engineering Academy as a trainer, and in September, 1958 became an exhibit of the AF Museum.

Su -25 Attack Aircraft (Frogfoot)

It is a single - seat attack aircraft intended for close air support of ground units. The development of the aircraft began in the Sukhoi Experimental Design Office in the early 70s.

It is a monoplane with high tapered wing low leading - edge sweep. It is powered by two R - 195 turbojets with a total thrust of 9,000 kg hp. Dimensions: wing span - 14.2 m; wing area - 37 .6 sq.m.; length overall - 15.2 m. Maiden flight of the Su - 25 was performed by test - pilot V. Ilyushin in 1975. During the tests the following design data were reached: max ground speed - 970 km/. Max operational G - load - 6,5; Max combat load - 4,400 kg.

The Su - 25 exhibited in the Museum was built in April of 1982. On June 21, 1989 pilot Komarnitsky performed 622 flights and logged 445 hours. On 15 September, 1990 the aircraft was delivered to the Museum from the Sukhoi 's Experimental Design Office.

Yak - 17 Fighter (Foather)

The Yak - 17 is the further development of the Yak - 15 fighter which had performed its first flight on 24 April, 1946 piloted by M. Ivanov (MIG - 9 performed its first flight on the same day). Unlike the Yak - 15 the Yak - 17 had a nose-wheel - type landing gear. Thus wing and fuselage required structural changes to retract landing gear. These increased take - off weight from 2,742 to 3.240 kg and reduced max speed up to 751 km/h.

Service ceiling of the Yak - 17 was 12,750 m. Flight range - 717 km. Flight endurance - 1.6 hours. Armament: two 23 mm guns with 150 rounds. 430 aircraft were produced. The aircraft also had a one - seat jet trainer version - Yak - 17 UTI. The exhibit was delivered to the Museum on June 20, 1961 .

Yak - 23 Fighter (Flora)

The Yak - 23 is the further development of Yak - 15 and - 17 family. However, it is powered by a stronger RD - 500 (Rolls Royse "Dervent" licenced) engine with 1,590 kg thrust. The thin - section wing of the aircraft is straight, the unpresserized cabin with 57 mm armoured window has an ejection seat with 8 mm armoured plate.

Tests were conducted by M. Ivanov and were completed on September 12, 1947. Ground - level speed achieved was 932 kph, at 5,000 m - 913 kph, service ceiling - 15,000; fuel endurance with external tanks - 1,077 kg, take - off mass without external fuel - 2,900 kg. Flight range with external tanks - 1,300 km. Armament: 2x23 mm guns.

The Yak - 23 was in a series production. To the AF Museum it was delivered from Yakovlev Design Office on February 4, 1988 .

Yak - 25 Interceptor (Flashlight)

In the early 50s A. Mikoyan, S. Lavochkin and A. Yakovlev Experimental Designn Offices were assigned the task of developing a night all - weather fighter - interceptor. The I - 320, the La - 200 and the Yak - 25 were built, went through state tests. The flight flighter was performed on 19 June ,1952 by test - pilot V.Smirnov. After evaluation program the Yak - 25 was adopted for service. It was a two - seat all -

weather 350 sweep - wing interceptor. Powered by two Mikulin AM - 5A wing - mounted engines (2,000 kg hp each) the Yak - 25 reached the height of 15,250 m at max speed of 950 km/h (M=0,9). The two RD - 9 engines (2,600 kg hp each) were installed, and the Yak - 25 increased its max speed up to 1,090 km /h and service ceiling of up to 16,500 m. Flight range was 3,000 m.

Flight endurance - 2.5 hours. Take - off weight - 9,220 kg. The crew consisted of pilot and operator. The second crew member guaranteed radar control. The exhibited Yak - 25 was produced in January,1956. Pilot Dobrotullin performed its last flight on 10 July, 1972 and the plane was delivered to the Museum. The exhibit flew 1,592 hours; 2,141 landings were made.

Yak-25RV High-Altitude Reconnaissance Aircraft

In 1958 the Yak - 25RV single - seat all - weather high - altitude reconnaissance aircraft powered by two R11V - 300 turbojet engines (3,900 kg hp each) was designed and built. The first flight was performed on March 1,1959 by test - pilot V. Smirnov.

Unlike the basic prototype that aircraft possessed straight lengthened (about 10 m) wing. All that made it possible to reach service ceiling of 21,000m. Max speed - 870 km/h. Flight range - 3,500 km. Flight endurance - up to 5 hours. Take - off weight - 9,000 kg. Two international women's records were set up by test - pilot M. Popovich. On 11 August, 1965 she gained the speed of 735 km/h over 2,000 km closed circuit; on 18 September, 1967 she set a flight distance record (2,497 km) over closed circuit.

The Yak - 25RV exhibited in the Museum was produced in November, 1965. All in all the aircraft logged 293 hours. The last flight was performed by pilot Volk on 15 June, 1973. The aircraft landed on Monino airfield and became an exhibit.

Yak - 36 VTOL Fighter (Freehand)

The design of the Yak - 36 aircraft began in the 60s. The power plant used provided both vertical take - off and level flight.

Aircraft control during vertical take - off and landing as well as at transient regime is provided by control jets. The Yak - 36 is a high - wing monoplane. On 16 September, 1963 test - pilot Y. Garnaev performed the maiden flight. In August, 1964 V. Mukhin, a test - pilot of the Yakovlev Experimental Design Office, began flying the aircraft.

During the test program flight speed reached 1,000km/h. The Yak - 36 aircraft was displayed at Domodedovo Air Show on 9 July, 1967. It was he who piloted this airplane for the last time on 10 July,1967. All in all 270 flights were carried out and the flying time makes 23 hours.

Yak - 38 Carrier - Based Aircraft (Forger)

The Yak - 38 is designed for destroying sea and ground targets. It is a mid - wing monoplane with a swept wing. To decrease the size, wingtips fold upward at 1020. The first flight was performed by test - pilot V.Mukhin on January 15,1970. For emergency escape K - 36VM ejection seat is used. Power plant comprises one lift / qruise engine and two lift engines. The R27B - 300 lift / cruise engine is in centre fuselage and it has vertical take - off thrust of 5,900 kg hp (max afterburning thrust - 6,600 kg hp).The RD36 - 35FV lift - jets are installed vertically in front fuselage behind the cockpit.

Each lift engine weighs about 200 kg and 2,890 kg hp thrust. Uninterrupted work time is 2 min. Total combat load - 700 kg.

In 1972 the Yak - 38 performed deck landing on "Moskva" cruiser. The Yak - 38 exhibited was built in March, 1975. On 24 April, 1978 it was delivered to the Zhukovsky Air Force Engineering Academy training base and in 1989 it became the Air Force Museum exhibit.

Tu - 16 Bomber (Badger)

The Tu - 16 (Tupolev Design Office designation - "Aircraft 88") is a mid - wing monoplane with 350 wing sweep. It is powered by two AM - 3M engines, 8,750 kg hp each. Armament: seven 23 mm guns; bombload - 3 - 9 tons. Crew - 6 persons. Aircraft mass - 76,000kg; max speed - 1,020 kph; landing speed - 230 kph; service ceiling - 13,000; flight range - 5,800 - 6,400 km / .The first Tu-16 prototype flight was performed by test - pilot N. Rybko on April 27, 1952.

The Tu - 16 exhibited is powered by the RD - 3M engine and was produced in 1954. Production tests were made on December 18, 1954, by test - pilot A. Kazakov. On August 6,1961 the aircraft was delivered to the Zhukovsky AF Engineering Academy training base and it became an exhibit of the AF Museum. The aircraft had logged 562 hours 18 minutes, and made 218 landings. The AF Museum also exhibits the Tu - 16K version , a missile - carrier, which can carry two ASMs. In May, 1967 the aircraft was delivered to the training base of Zhukovsky Air Force Engineering Academy. Later it became the AF Museum exhibit .

Tu - 104 Airliner (Camel)

The Tu - 104 originated from the Tu - 16 bomber which proved its worth in operation. The first Tu - 104 prototype flight was performed by test - pilot Yu. Alasheyev on June 17,1955, and routine flights began on September 15,1956 when the liner flew from Moscow to Irkutsk. That flight paved the way to the world's jet passenger route. The first Tu - 104 accommodated 50 passengers, the Tu - 104A - 70, and Tu - 104B - 100 ones. The last series planes accommodated 115 passengers.

In 1958 at Brussels International Show Tu - 104 gained a Gold Medal. The Tu - 104A exhibited was constructed in 1958. The aircraft had logged 9,851 hours 14 minutes, and made 5,051 handings . After a certain refurbishing the Tu - 104A was employed for cosmonaut training in zero - G conditions of short duration (2,313 flights on weightlessness were carried out).

The aircraft was delivered to the AF Museum on January 16,1979 from a military unit, having finished its operational life.

Tu - 95 Intercontinental Missile - Carrier (Bear)

On November 11, 1952 the Tu - 95 took off into the air piloted by A. Perelyet, who initiated the test program. However, on May 11,1953 one of the two TV - 2F engines, powering the craft (NK - 12 has not been ready yet), caught fire in flight. The crew did its best to prevent an accident, but resultles. So A.Perelyet ordered the crew members to escape. But he himself and the mechanic continued their with fight fire, and so they perished: control rods seemed to have been overburnt.

No 2 aircraft was constructed and fitted with four turboprop NK - 12

engines, 15 , 000 kg hp each. But the maiden flight of the aircraft was made only February 16, 1955. It was M. Nyukhtikov who took the second Tu - 95 aloft , and completed the tests .Speed of the machine is 910 kph ; take - off weight - 182 tons; service ceiling - 12,000 m. In 1960 the aircraft was converted into a flying laboratory, having logged before that over 369 hours and performed 224 landings. The Tu - 95B on display was delivered to the AF Museum on June 17, 1959 .

Tu - 114 Airliner (Cleat)

The Tu - 104 (having) originated from the Tu - 16 bomber, so the Tu - 95 bomber served the basis of the Tu - 114 airliner, which inherited its wing, tail unit, powerplant (four NK - 12 engines with 15, 00 kg hp each), main landing gear , and substantial part of its equipment. The new designed fuselage accommodated a 160 - 220 seat pressurized passenger compartment.

The first flight (November 15,1957) and the basic tests were conducted by test - pilot A. Yakimov's crew. In December, 1959 the aircraft was removed to the Research and Development Institute. The Tu - 114 basic data: speed max - 810 kph; range - up to 8,000 km; take - off mass - 171,000 kg. In 1961 - 62 the aircraft set up 32 world records. It has gained "Grand Prix" at the Brussels International Show, and FAI awarded the Gold Medal to A. Tupolev . The Tu - 114 exhibited was manufactured in October 1957 .

The aircraft was flown till 1972 and had logged 794 hours 46 minutes. On March 16, 1972 pilot I . Sukhomlin landed the aircraft on the Monino airfield.

Il - 28 Front - LineBomber (Beagle)

The Il - 28 was a high - wing monoplane with a tapered straight along the leading edge wing and swept single - fin tail. The wing span was 24.45 m; wing area - 60.8 m; length overall - 17 .65 m.

The crew consisted of three men: pilot, navigator and tail gunner. Both front and rear cabins were pressurized and armour-plated. Landing gear was of tricycle type with a nose wheel. The plane was powered by two VK - 1A engines, 2 ,700 kg hp each, mounted under wing. Bomb-load normal - 1,000 kg; max - up to 3,000 kg in fuselage bomb bay. The normal take - off weight - 18 ,400 kg. The aircraft first flight was performed by test - pilot V. Kokkinaki on July 8, 1948. In its front - line bomber version the aircraft developed the max speed exceeding 900 kph at 4,000 m; service ceiling was 12,500m; range - up to 2,400 km.

The Museum exhibit was manufactured in December, 1953. All in all the aircraft logged 1,296 hours in 1, 184 flights. On January 15, 1965 pilot Slyshchenko landed the aircraft in Monino and the museum acquired a new exhibit.

Il - 18 Liner (Coot)

The Il - 18 is an all - metal classic low - wing monoplane with double - slotted flaps. The capacity of pressurized wing fuel compartments is 23,700 it . The four AI - 20 turbo-prop engines, designed by A. Ivanchenko, are attached to the wings two by two. The power of each engine is equivalent to 4,000 h.p.

The first Il- 18 flight was performed by V. Kokkinaki on July 4,1957, followed by production tests. The last Il - 18 modification was on production line from 1965 till 1969; its take - off mass made up 64 ,000 kg; could accommodate 122 passengers; the cruising speed was 650 km/h; flight range with maximum commercial cargo (13,500 kg) - 3,700 km. It was a 5 men crew aircraft. The Il - 18 aircraft exhibited in the Museum was constructed at the (The Banner of Labour) aircraft factory. It performed 13,718 flights and logged 34,998 hours. On July 12 , 1977 this plane carried out its last take - off from one of the Leningrad airfields, landed in Monino and became an exhibit of the Air Force Museum .

Il - 62 Airliner (Classic)

In 1960 ILyshin Office began to work at Il - 62 passenger wing area was 280 sq. m. And span - 43.2 m. The power plant included four Kuznetsov NK - 8 engines with the maximum thrust of 9 ,500 kg each. The Il - 62M (modified in 1969) was equipped with more economical and powerful (11,000kg) D - 30KU by - pass turbojets designed by P. Solovjev.

The maiden flight of the Il- 62 prototype was performed by V.Kokkinaki, a test - pilot, on January 3, 1963. In the test flights the following data were obtained: the maximum take - off weight with commercial load of about 23,000kg made up from 157,500 kg to 165,000 kg, the practical range at the cruising speed of 850 kph having been from 6,700 to 8,300 km; max range with 10 ,000 kg load - 9,200 km; max speed - 950 kph; 5 - men crew. The aircraft could accommodate 168 - 186 passengers.

The Il -62 exhibited in the Museum was constructed in september, 1967. In 4,288 flights the aircraft logged 14,891 hours. The last flight was flown in May 1981, and on May 16, 1983 it landed on the Museum runway .

3M Strategic Bomber (Bison)

3M strategic intercontinental jet bomber was a further development of Mjassischev M - 4 bomber. The 350 sweep wing was lengthened and high ty flexible. Four A. Mikulin AM - 3M engines, 8,750 kg thrust each, were attached to the wing root two by two close to the fuselage.

Aircraft control was power operated and irreversible. Crew ejection was performed downward. The bomb bay could accomodate any bomb in service. Small arms defence weapons included eight 23 mm two - barrel remotely controlled rotary cannons. The 3M take - off weight was 202 tons. The aircraft was powered by four VD - 7 engines (designer V. Dobrinin), with 11,000 kg thrust each. On March 27, 1956 the 3M made its maiden flight, performed by the crew of test - pilot M.Gallay . The speed achieved during the flight was 900 kph; range - 9,500 km; ceiling - 15 ,600 m; the bomb-load - up to 18,000 kg.

The 3M exhibited in the AF Museum was constructed in 1960. On July, 1986 the aircraft landed in Monino and became an exhibit .

Experimental M - 17 High - Altitude Aircraft

In 1982 the Experimental factory, named after Mjassischev, under the leadership of the Chief Designer V.Novikov developed the M - 17 high - altitude subsonic prototype, the only one in the world. Now atmospheric research of long duration can be performed at the altitude of up to 22 km. High speed and long range permit to carry out missions of observing 1,000kg for examining the ozone cover of the Earth atmosphere. The first M- 17 took off on May 26, 1982 piloted by E.Cheltsov.

The thrust of the RD - 36A engine is 7,000 kg. The aircraft length is 21.085 m; height - 4,874 m; the wing span - 40.3 m; the empty weight -

14,318 kg. The exhibited M - 17 aircraft performed 187 sories. It was flown to the AF Museum by test - pilot Generalov from Zhukovskiy township on January 25, 1990.

Yak - 40 Airliner (Codling)

In the early 60s the Yakovlev Design Office developed a relatively small size airliner, capable of operating from grass strips of local air lines.

On October 21, 1966 the aircraft piloted by A.Kolessov took off. That was Yak - 40, a straight low - wing aircraft powered by three by - pass AI - 25 Ivchenko engines, 1,500 kg hp thrust each. All engines are in the rear part: two on sides of fuselage and the third one inside the fuselage. The compartment could house 24 passengers at first , then 32 of them and is equipped with an in - built stairway.

Dimensions: wing span - 25 m; wing area - 70 sq.m; length - 20.36 m. In 1967 Yak - 40 went through state tests having gained the cruising speed of 550 kph. The take - off mass was 16,100 kg. The crew - 2 pilots.

The Yak - 40 exhibited in the Museum, was constructed in March 1971. All in all aircraft logged 1,428 hours. In its last flight the aircraft piloted by Lyagushkin landed in Monino. It has been in inventory of the Museum since January 26,1981.

Yak - 42 (Clobber)

Yak - 42, swept low - wing aircraft, was designed and constructed in 1975. The power plant includes three D - 36 bypass turbojets (designer P. Solovjev), 6500kg hp each, of rear fuselage arrangement provided comfortable conditions in the passenger compartment. The are 120 seats in the compartment.

Since March 6,1975 test flights had started performed by A. Kolesov, and in 1976 the aircraft went to the production line. Dimensions: length - 36.38 m; wing span - 34.88 m; wing area - 150 sq.m, wing sweep – 250. During the test flights the aircraft gained the cruising speed of 810 kph. Take - off mass - 53,500 kg. Max commercial load - 14,500 kg; range with max commercial load - 1,000 km, with a load of 10,500kg - 1,850 km. The crew of two.

The exhibited aircraft was constructed in May, 1978. The plane logged 178 hours. It landed on the Monino airfield on February 11 ,1981, piloted by Lyagushkin.

An-8 Military Transport Aircraft (Camp)

The An – 8 is a straight high – wing aircraft, broad fuselage with two AI – 20D turboprop engines, 5,180 kg hp each (designer A. Ivchenko). In constructing the AN – 8 a complicated problem has been solved – air landing of bulky hardware. The aircraft has a large cargo compartment (11x2,4x2,5) with a freight hatch in the rear fuselage. Dimensions: length – 30.74 m; wing span – 37 m; height – 10.045 m; empty mass – 24,600 kg; take – off mass – 38,100 kg; max speed up to 580 km/h; landing speed – 175 km/h; service ceiling – 10,500 m; range – with full load – 400 km, with the 5-ton load – up to 2,800 m.

The exhibited AN – 8 had been constructed at the aircraft factory by September 1, 1959.All in all the aircraft had logged 3350 flying hours , having performed 3450 landings. It was delivered to the Museum from a military unit on May 20.1976.

An-10A Airliner (Cat)

The AN – 10A in a modification of AN – 10. Its fuselage is 1.1 m longer. The passenger compartment was re – arranged, more seats were accommodated which allowed to increase the economic efficiency of the plane. The AN – 10A is an all – metal high – wing with broad fuselage , low ten – wheel undercarriage. It is powered by four AI – 20K turboprops, 4,000 kg hp each (Chief Designer A. Ivchenko). The first flight was performed by the test – pilot Y.Vernikov crew. Performance: cruising speed at the altitude of 8,000 m – 630 – 650 kph; service ceiling – 10,200 m; landing speed – 190 – 200 kph. Empty mass 32,000 kg, max mass – 54,000 kg; passenger number – over 100. The exhibited aircraft was constructed at an aircraft factory in 1960. It had logged 16,360 flying hours (after last repairing – 2,271 hours).

To the Museum the plane was delivered from the Siktivkar air detachment on January 14, 1976.

An-12 Military Transport Aircraft Office (Cub)

In 1957 the Office headed by Chief Designer O. Antonov developed AN – 12 transport aircraft designed for airlifting bulky cargo. It could also perform parachute drop and air landing. Accommodation: 6 persons (pilot, co – pilot, navigator, air engineer, air mechanic, radio operator). The aircraft is equipped with a crane – beam, transporter, and hoist which provide loading and unloading of heavy and bulky industrial hardware. Empty mass – 36,000 kg; take – off mass – up to 61,000 kg; cargo mass – up to 20.000 kg; cruising speed – 580 kph; landing speed – 215 kph; service ceiling – 10,000 m; fully loaded range – 500 km, with 10 – ton cargo – over 4,000 km. The maiden flight was performed by test – pilot Y. Vernicov on December 30, 1957.

The exhibited aircraft was constructed in March 1958.On January 10, 1964 the aircraft entered Service with Zhukovskiy Academy training base, and on July 17, 1973 it became an exhibit of the AF Museum.

An – 24 Airliner (Coke)

The development of AN – 24 began in the early 1958.It was to replace the aging AN – 2, Il – 12 and Il – 14 in inter – regional lines. The wing span of the aircraft is 29,2 m; wing area – 75 sg.m; length – 23.8 m; take – off weight – 21,000 kg; number of seats – 50; cruising speed – 450 kph; range – 650 –2,000 km (depending on load).

The maiden flight of AN-24 was carried out by T.Lyssenko crew on October 20, 1959. The aircraft is powered by two AI-24 turboprops, 2,550 kg hp thrust each. The modifications of the aircraft had an additional RU-19 900 kg thrust turbojet, designed by S.Tumanskiy. That turbojet, serving as a power-unit, provided the aircraft with electrical energy during parking and main engines starting. The aircraft can continue the take-off with one working engine and can fly so at an altitude of up to 3,000 m. The flying time of the exhibit is 27,444 hours; 24,962 landings were carried out.

To the museum the aircraft was delivered from Lvov on May 24, 1979.

An – 22 Military Transport (Cock)

The AN - 22 military transport, codenamed Antheus, is the further development of AN - 8 and - 12. The AN – 22 was designed for airlifting bulky loads up to 80,000 kg. The length of its cargo compartment is 33m. The aircraft length – 55.5m; wing span – 64,4 m; height – 12,5 m. Power plant – four NK-12 N. Kyznetsov turboprops, 15,000 h.p,

thrust each. Every engine has two coaxial 4 – blade propellers of head wing rotation. The maiden flight was carried out by test-pilot Yu.Kurlin crew on February 27, 1965. In the course of tests the aircraft gained the cruising speed of 560 kph; range with full load – 5,000 km;

Several world records had been set up. Thus on October 26, 1967 test-pilot I. Davidov established 15 world records in one flight. He took off with the payload of 100,444.6 kg to the altitude of 7,848 m.

The Museum exhibit flew to Monino, piloted by Lieutenant – Colonel Bobrovskiy – Belov crew, on January 29, 1988.

Be-12 Patrol ASW Amphibious Aircraft (Mail)

In 1957 G. Beriyev Design Office developed an all – metal Be – 12 amphibious aircraft. Two AI - 20D turboprop engines, 5,180 kg hp each, attached to high wings provide the speed of up to 600 km/h. The fuel endurance is up to 7,500 km. Service ceiling – 10,500 km; take – off mass – 35,000 kg. The crew of 4 men.

The Be – 12 can take off from and land on ground and sea surface. The aircraft is fitted with powerful radar equipment, sonobuoy kit, and depth charges. The maiden flight was performed on October 18, 1960.

The Be – 12 is in service with the Navy aviation, being used for sea patrol missions. It is organic to the ASW forces of the country.

The production number of the exhibit is. All in all the aircraft has logged 809 flying hours, having performed 170 landings. It was delivered to the Museum on June 5, 1974 from an operational unit.

Be - 32 Airliner

By the late 60 s the Beriyev Design Office developed the Be-30 for local airlines. Later it was modified and designated the Be - 32. The latter was an all – metal monoplane with mechanized high wings. The power plant included two TVD-10 wing-mounted turboprops (V.Glushakov Office), 950 kg hp each.

The passenger version accommodated 15 seats, the ambulance-9 lying and 6 sitting patients. The aircraft was fitted with navigational and radiotechnical equipment, anti – icing system, thus providing round - the - clock flights under any weather conditions.

The aircraft take off weight was 5,700 kg, cruising speed – 480 kph, tanked fuel endurance – up to 1,200 km.

The exhibit was delivered to the Museum in April 1983.

Supersonic Jet Aircraft

MiG – 19 Fighter (Farmer)

In the early 50s the A. Mikoyan Design Office started the development of a single – seat supersonic fighter, designated later as MIG – 19. The MIG – 19 was a mid – wing with 550 sweep. The wing span – 9.0 m , wing area – 25 sq.m, the aircraft length – 12.54 m. The ordinary mass of the aircraft was 7,560 kg , max – 8,630 kg. The first prototypes were powered by two AM – 5 A. Mikulin turbojets, 2,000 kg hp each, attached to the aft fuselage. Later they were replaced by RD – 9B engines with afterburner (3,300 kg thrust with afterburning). Powered by these engines the aircraft gained supersonic speed , up to M1,4. The aircraft was armed with three 30 mm guns.

The exhibited interceptor version was constructed in 1957. It is armed with four surface – to – surface missiles. It was operated by several flying units, having logged 964 hours. The aircraft was delivered to the Museum on June 19, 1973.

MiG – 21 Fighter (Fishbed)

In 1958 the new E – 6 powered by S.Tumanskiy R – 11F – 300 engines (5,600 kg hp thrust) went through a complex of test flights, and in 1959 the aircraft designated MIG – 21 went to the production line. The first versions of the aircraft were powered by R – 11F – 300 turbojet (5,600 kg hp thrust), being replaced by R – 13 – 300 (6,800 kg ph) and R – 25 – 300 (7,300 kg hp) on last production aircraft. The aircraft weapons varied depending on the functions and could include air – to – air missiles, jet projectile pods, 30 mm guns, and bombs. The MIG – 21 of the first modifications was the world lightest jet fighter. Its take off mass initially was 7,570 kg, then 8,950 kg (with external tanks – up to 9,080 kg). Max speed – over 2,200 kph, service ceiling – 19,000 m, range without external tanks – 1,100 km with tanks – up to 1,900 km.

The exhibited MiG – 21 PFS was constructed in June 1964. All in all the aircraft had logged 284 hours. It was delivered to the Museum on June 30, 1971.

MiG –21 1 ("Tu-144 Analogue")

In the 60s A.Tupolev Design Office got down to develop a new supersonic aircraft – Tu - 144, a tailless aircraft with a wing of ogival aerodynamic configuration. Once the work had started, it was decided to create its analogue – a laboratory aircraft – Mig – 21I. Such an aircraft originated from MiG –21. It was also a tailless plane with a wing analogous to that of Tu - 144, and the same arrangement of lateral – longitudinal control. Two prototypes were built.

The test flights of the first prototype began on April 18, 1968 and were performed by test- pilots O. Gudkov and I. Volk.

The second prototype of MiG –21 I, exhibited in the Museum, was built at A.Mikoyan Design Office factory in the early 1970. On January 1970 test flights were begun by I.Volk. He was to test the speed and altitude range (up to 2,500 kph at up to 20,000 m) of the Tu-144. All in all the aircraft had logged 200 hours in 311 flights.

The exhibit was delivered to the Museum in 1980.

MiG – 23 Versatile Front – Line Fighter (Flogger)

In the mid – 60s the A. Mikoyan Design Office got down to develop the MiG-23 single - seat multi - purpose front - line fighter. The maiden flight took place on April 10, 1967. The aircraft was piloted by A. Fedotov.

The MiG – 23 is a variable – geometry high – wing aircraft. The outer wing has three fixed sweep angles: 160 – take – off, landing, and loitering; 450 – manoeuvrable air combat, and aerobics; 720 – high-speed flying. The first production aircraft had R - 29F – 300 engine (10,200 kg hp thrust), later replaced by R – 35F – 300 (12,700 kg hp thrust). Aircraft weapons: 6 short range air – to – air missiles, AAM antijamming missiles, jet projectiles, CSh – 23 gun, bombs up to 2,000 kg.

The MiG – 23 (№ 1) was constructed in 1967. The MiG – 23 (№ 3) constructed on August 8, 1968. All in all the aircraft had logged 225 hours. It was delivered to the Museum on December 12, 1973.

MiG – 25 Multi – Purpose Fighter (Foxbat)

The advent of MiG – 25, developed by A. Mikoyan Design Office was a markable achievement in speed of atmospheric flying vehicles. Wing span is 14.1 m, aircraft length – 19.75 m. The MiG –25 maiden flight was carried out in March 1964.

The aircraft is powered by two R – 15 BD 300 turbojets (designer S.Tumanskiy), each 11,200 kg hp thrust. These engines make it possible to operate at speeds up to 3,000 kph and to perform energetic manoeuvres in 2,500 – 3,000 kph speed range. The take – off mass of the aircraft is 37,000 kg, service ceiling exceeds 22,000 m, the absolute ceiling is over 37,000 m; range – 1,750 km.

The exhibited MiG – 25 was constructed on December 31, 1966. The aircraft had logged 197 flying hours. On August 23, 1973 it was delivered to Zhukovskiy Engineering Academy training base and in September it became an exhibit of the Air Force Museum.

MiG – 29 Front – Line Fighter (Fulcrum)

In 1977 the A. Mikoyan Office, headed by Chief Designer R. Belyakov, developed the MiG – 29 fourth – generation front-line fighter. The wing span is 11.36 m, length – 17.3 m armament: 30 mm GSh - 30 gun, AAM, in guided projectiles and bombs. The aircraft has 8 stores.

The maiden flight was performed by A.Fedotov on October 6, 1977. During test flights the max speed of over 2,450 kph was achieved, while minimum speed was 180 kph. The service ceiling – 18,000 m, range – 2,100 km, ground rate of climb was 330 mps with 15,240 kg take – off mass.

On November 2, 1989 the MiG – 29 piloted by Aubakirov landed on the deck of the aircraft – carrier cruiser "Admiral Kuznetsov".

The exhibit was delivered to the Museum on November 11, 1986.

Su–9 Interceptor Aircraft (Fishpot)

The development of the new supersonic interceptor, Su – 9, began in 1953. The Su –9 armament included 4 AAMs and Almaz radar. On May 26, 1956 the first test flight was performed by V. Makhalin. In the course of the test the aircraft reached the speed of 2,100 kph, ceiling – 20,100 m, range – 1,100 km. The all – weather Su-9 interceptor went to the production line and entered service with the Air Defence air arm.

On June 24, 1956 an air show took place in Tushino. Six aircraft of new type were demonstrated there, Su –7 and Su – 9 among them.

The exhibited Su – 9 was constructed in August 1959. On September 24, 1959 the aircraft became operational. All in all the aircraft had logged 30 hours 25 minutes in 52 sorties. The last flight of the aircraft was performed by pilot Garov and it landed on Monino airfield on September 15, 1960. The plane was delivered to the Zhukovskiy Engineering Academy training base. On September 1, 1969 the aircraft became the exhibit of the AF Museum.

Su – 7B Fighter – Bomber (Fitter)

In the late 50s it became necessary to develop a new aircraft with the features of a bomber, an attack aircraft and fighter. The Su-7B, developed by P. Sukhoy Office, became such a machine. The armament included two 30 mm guns, two 16 unguided projectile pods, bomb load up to 1,000 kg, and air – to – surface unguided missiles. The aircraft was powered by one AI – 7F –1 engine with 7,800 kg hp thrust.

In April 1959 the production tests were begun by E. Solovyev. In the course of the tests the machine reached max speed of 2,250 kph, Service ceiling – 20,100 m, range – 1,100 km.

The Museum has two versions of Su – 7B with ski and wheel-ski landing gears. The production Su-7 was constructed in 1961, went through all type tests, was fitted with ski landing gear and designated the Su – 7L. The first flight with ski landing gear was carried out by I. Ryabchikov. The exhibited Su –7Bkl was built in October 1965. In December 1975 the aircraft was delivered to the Zhukovskiy Engineering Academy training base and the same month it became an exhibit.

Su–11 Fighter – Interceptor (Fishpot)

The first flight was performed by G.Shiyanov on May 28, 1947. The aircraft went through test flying, participated in Tushino Air Parade (1947), but did not go to the production line.

The "new" Su – 11 was a supersonic interceptor armed with two powerful AAMs and powered by the Al – 7F – 2 – 200 engine with 9,600 kg hp thrust. Crew - one pilot. Take – off mass – 14,200 kg. Wing span – 8.54 m; wing sweep – 600, aircraft length – 17.55 m. The first flight was performed by V.Ilyushin on February 21,1958. Max speed – 2,200 kph, service ceiling – 20,100 m.

The Su – 11, exhibited in the Museum, was constructed in 1962. All in all the aircraft had logged 199 flying hours in 283 sorties. On July 13, 1973 the plane was delivered to the Zhukovskiy Engineering Academy training base, and on July 17 it became the Museum exhibit.

Su – 15 Fighter – Interceptor (Flagon)

The Su –9 and Su – 11 interceptors were fitted with a radar in the air inlet cons. To increase the interceptor versatility, the radar was larger and could not be of previous accommodation. The avionics was accommodated in the nose fuselage, and the inlets on the sides of the fuselage. So Su –15 one – seater had side intakes and delta wings with varying sweep of leading edge.

The machine is powered by two R – 11 FAS – 300 engines, 6,200 kg hp thrust each. The take – off mass – 17,900 kg. The first flight was performed by V. Ilyushin on May 30, 1962. In the course of the test flights the aircraft reached the max speed of 2,100 kph, service ceiling – 18,000 m. The plane was equipped With four AAM quided missiles, the bomb load was up to 1,000 kg.

The exhibited Su –15 was manufactured in 1963. During the test flights the aircraft had logged 209 flying hours. On January 22, 1974 the aircraft was delivered to the Museum by ground transport.

Su – 17M Fighter – Bomber (Fitter)

In 1965 the P. Sukhoy Design Office developed the Su-17M, a variable sweep wing aircraft. The wing mounted outer wing turn unit and the sweep control mechanism led to the take – off mass increase up to 19,800 kg and to the reduction of wing fuel. That could have resulted in worsening of performance. But the first flight performed by V. Ilyshin on August 2, 1966 and the further tests proved the Su – 17 M to be a high – per-

formance aircraft. The range extended: with two external tanks it made 2,800 km. The take – off and landing and take – off runs decreased, so a shorter runway was required.

The aircraft is fitted with an Al –21F –3 turbojet, with 11,200 kg hp afterburning thrust. The Su-17M has versatile firepower. The bomb load is 4,000 kg. The aircraft is armed with guided and unguided ASMs and AAMs, and two 30 mm guns.

The exhibited Su –17M – 3 was constructed in November 1976. It was delivered to the Museum from the Zhukovsky Engineering Academy training base in October 1989.

Su – 100 Frototype Bomber

In the early 60s Chief Designer P. Sukhoy and N. Chernyakov with their colleagues began the competitive development of a new prototype supersonic carrier – bomber – Su – 100 (factory designation – T –4). It was necessary to reach the max speed of 3,200 kph and cruising speed of 3,000 kph and to provide a long- duration flight at these speeds. The Su –100 range was to be 6,000 km with 114,000 kg take – off mass.

The crew cabin is not projected but the nose of the 45 m fuselage is of down deflected arrangement. These provide the downward view. The aircraft is powered by four RD – 36 – 41 turbojets (P. Kolessov Design Office) with 16,000 kg hp afterburning thrust and 10,000 kg hp nominal thrust each. They are of under fuselage arrangement, two in one duct.

On August 22, 1972 V. Ilyushin took the aircraft into the air. Ten test flights were performed and the speed gained was M 1.7. But in 1975 the tests and the further development of the aircraft were ceased most probably because of technological difficulties of Su –100 production.

The exhibited aircraft was delivered to the AF Museum in 1982.

Su – 24 Front Bomber (Fencer)

The Su–24 two – seat front bomber is a high – wing monocogue fuselage. Accommodation : pilot and navigator side – by – side in a pressurized cabin with K – 36D ejection seats. The aircraft in powered by two AL – 21F – 3A turbojets with 22,400 kg hp thrust. The aircraft armament is mounted on 8 stores and comprises: 100 – 1500 kg of bombs and clusters; IR air – to – air missiles; laser and television guided missiles; 57 – 370 mm rocket; built – in 23 mm gun; three removable revolver guns (ammunition store of 400 rounds each in special pods).

The Su – 24 was first flown by test – pilot V. Ilyushin on June 17 ,1970. During the test program the aircraft revealed the following characteristics; speed at a ground level – 1,400 km/h; radius of action with combat load at ground level – 560 km.

The Su – 24 exhibited in the Museum was produced in March 1974.The aircraft flight time totals 98 hours 43 min. It performed 166 landings.

Su – 27 Fighter – Interceptor (Flanker)

The development of Su – 27 one – seat interceptor meeting the requirements was performed by the Sukhoi Design Office in 1969. Power plant: two Al – 31F turbojet engines with 25,000 kg thrust. Armament: three 30 – mm guns and 10 air – to – air missiles.

The Su – 27 was first flown by test – pilot V. Ilyushin on May 20, 1977. During the test program the aircraft developed the speed of M 2.35 at over 11,000 m. The maximum take off weight is 30,000 kg, normal take off weight is 22,000 kg , take – off thrust – to – weight ratio with normal take off weight is 1.1The maximum operational g – load is 9. In November 1989 test – pilot V. Pugachyov landed the Su – 27 on "Admiral Kuznetsov" aircraft carrier and took of from it for the first time in our country.

The Su – 27 was demonstrated at the international aviation shows in Paris, Singapore and others. Flying the aircraft V.Pugachov performed the "Cobra" flight manoeuvre.

The aircraft, exhibited in the Museum, was delivered there from the Sukhoi Design Office on January 23, 1986.

La – 250 Fighter – Interceptor

In 1956 the Lavochkin Design Office developed the La – 250 two – seat all – weather fighter – interceptor. It was one of the first delta – wing variable – incidence tail plane aircraft. It was of all – metal structure. The aircraft control system comprised irreversible two – chamber hydraulic actuators powered by two hydraulic systems.

Two AL – 7F turbojet engines 6,500 kg thrust each are installed on sides of the extremely long fuselage. The air intakes are separated from the fuselage. Internal fuel tank capacity is 8,000 kg, one external tank fuel capacity is 1,100 kg. The armament included a radar sight installed in the aircraft nose and two powerful air – to – air missiles. There were built four such machines, three of which were tested in 1956-1958.

The La – 250 exhibited in the Museum was produced in November 1958. In 1967 it was transferred to the Museum.

Yak – 27R Reconnaissance Aircraft

The Yak – 27R supersonic all – weather two – seat reconnaissance aircraft was developed by the Yakovlev Design Office in 1958.

The aircraft is powered by two RD – 9F turbojet engines, 3,660 kg thrust each, installed on the wing. Take – off weight is 10,700 kg. After the evaluation and test program it was adopted for service. During the flight tests the aircraft revealed the following characteristics: maximum speed at 11,000 m – 1285 km/hr, service ceiling – 16,500 m; range of flight – 2,210 km. Armament: one NR – 23 gun, AFA – C and AKAFU – 3 photo cameras.

The Yak – 27 exhibited in the Museum was produced in November 1959. On January 26, 1960 it was delivered to an air unit. The aircraft was flown for the last time by pilot Lysenko on May 24, 1963. The aircraft flight time is 420 hours. It performed 497 landings. It was delivered to the Museum on July 30, 1972.

Yak – 28 L Front Bomber

The development of the Yak – 28 supersonic front bomber began in the Yakovlev Design Office in the late 1958. It is a mid – wing monoplane with a swept wing and bicycle undercarriage.

The aircraft is powered by two turbojet engines, 5,900 kg thrust each, installed on the wing. Dimensions: wing span 11.64 m, wing area 35.25 sq. m. Fuselage length – 20.34 m. Armament: one two – barrel 23 – mm gun; 1,000 – 3,000 kg bomb load carried internality; "Initiative" and "Lotos" sighting systems. As a result the aircraft was designated

Yak – 28 I and Yak – 28 L respectively. Accommodation: a pilot and a navigator. While being tested the aircraft revealed the following characteristics: maximum speed – 2,060 km/hr, service ceiling – 16,700 m; range of flight with 2x1000 kg external fuel tanks 3,740 km.

The Yak – 28 L was produced in July, 1962. In July 1966 it was delivered to the Zhukovsky Air Force Engineering Academy training base. It was passed over to the Museum in November 1975.

Tu – 22 Bomber (Blinder)

The Tu – 22 is a low – wing monoplane. It is powered by two VD – 7M double – flow turbojet engines, 16,000 kg thrust each with afterburning. Dimensions: wing span – 23,6 m; sweepback at leading – edge –560; fuselage length – 41,6 m, take – off weight –92 tons. Accommodation: three – man crew. Performance: maximum speed – 1,640 km/h, landing speed – 290 km/h, take – off run – 2,800 m, landing run – 1,850 m, service ceiling – 13,500 m, range of flight – 5,600 km.. Armament: 9 tons bomb load; one 23-mm gun.

The aircraft was first flown by test-pilot Yu. Alasheyev on June 22, 1958. The further flights were performed by the same pilot.

The Tu-22 exhibited in the Museum was produced in 1960. On February 18, 1977 it was exhibited in the Air Force Museum. The aircraft total flight time is 350 hours.

Tu 22M Missile Carrier (Backfire)

The Tu – 22M is a lowest variable – sweep wing missile carrier. Wing sweep is 200- 600, wingspan is 24-24 m, fuselage length is 400m, weight is 122,000 kg. The aircraft possesses two NK – 20 engines 25,000 kg thrust each. It has a four – man crew. Performance: maximum speed is over 2,000 km/h. Combat radius is 2,200 km. Service ceiling is 18,000 m. It can be refuelled in flight. Armament: three X-22 air – to – surface missiles and 24,000 kg bombs. The aircraft was first flown by test – pilot V. Borisov on August 10, 1969.

The Tu – 22M exhibited in the museum was produced in 1970. On February 25, 1975 pilot Borisov flew the aircraft for the last time. It landed on the Monino airfield and was delivered to the Zhukovsky Air Force Engineering Academy training base. The aircraft became an exhibit of the Museum in October 1989.

Tu – 128 Interceptor

The Tu – 128 all – weather supersonic interceptor was produced in 1960. The aircraft is powered by two AL – 7F – 2 (A. Lyulka design) engines 10,100 kg thrust each with afterburning . The crew is two pilots. Weight: 43,600 kg. Armament: four R –4 air – to – air missiles.

On March 18, 1961 pilot M. Kozlov began testing the aircraft, which lasted till May 6, 1972. The aircraft demonstrated the following characteristics: maximum speed at 12,000 m – 1,600 km/h, maximum speed at ground level – 850 km/h, service ceiling – 15,600 m. Range of flight with four missiles – 2,000 km.

The Tu – 128 exhibited in the Museum is a prototype version. The aircraft flight time is 398 hours 35 min. On February 2, 1973 the aircraft was delivered to the Museum as its flying life had come to an end.

Tu – 144 Airliner (Charger)

Tupolev's Design Office constructed the Tu – 144 plane. The aircraft is a low – wing monoplane. Ogival delta wing; span 28,8 m with a variable sweep angle. There are elevens used as ailerons and elevator on the back side of the wing. Aircraft length is 65,5 m. Crew of 3 men. While taking off and landing the nose of the fuselage deviated 200 downwards. The aircraft was powered by four turbojet engines. Two compartments accommodated 120 passengers. Maximum speed was expected to reach 2,500 km/h; range of flight – 6,500 km.

On December 31, 1968 pilots A. Yelyan and M. Kozlov took to the air the Tu – 144 world first supersonic passenger airliner. In June 1969 the Tu – 144 exceeded M1 for the first time. On July 15 the same year, the airliner developed the speed of 2,443 km/h. The Tu – 144 was produced at the Moscow (Experiment) machine – building factory in 1975.

The last flight was performed by test – pilot G.Voronchenko on February 29, 1980. The aircraft landed on Monino airfield and thus was delivered to the Air Force Museum.

M-50 Startegic Missille Carrier (Bounder)

The M – 50 was designed by the Myasischev Design Office in 1959. In October, 1959 test – pilots N.Goryainov and A.Lipko performed the first flight which was the beginning of the evaluation test program. The maximum speed with the Zubets engines was expected M 1.8 , i. e. about 2,000 km/hr with the range of flight over 6,000 km.

However, in the late 50s the Strategic Rocket Forces were believed to be capable of providing the country's defence potential themselves without the other Fighting Services' participation. Such views could not exist long but it was guide enough for Myasishchev Design Office to be disbanded and the M-50 advanced strategic bomber test program to be ceased.

The M-50 exhibited in the Museum was delivered from the V. Myasishchev experimental machine – building factory on October 30, 1968. There are neither systems and equipment nor engines on it.

HELICOPTERS

Mi –1 Helicopter (Hare)

Designing of the GM – 1 single – rotor screw three – seat helicopter (later designated Mi–1) began at the end of 1947.The helicopter was provided with a three – bladed main rotor 14.3 m in diameter. Power plan: seven – cylinder piston AI – 26V air-cooled engine, 575 hp. The helicopter cockpit accommodated a pilot and two passengers. There were built three prototype versions successively. The first one was taken off by test – pilot M. Baikalov on September 29, 1948.The second and third prototype were tested by test – pilots M. Gallai and V. Vinitsky respectively. During the tests the helicopter revealed the following performance : speed – up to 190 km/h , hovering ceiling – 3,450 m; dynamic ceiling – 6,800 m; range of flight – 495 km; take – off weight – 2,250 kg.

The Mi–1 exhibited in the Museum was produced in December 1951.The helicopter flight time is 63 hours. It made 246 landings. On September 29,1953 the helicopter was delivered to the Gagarin Air Force Academy aviation materiel department and was used there as a training aid. On July 8, 1961 it was adopted by the Museum.

Mi – 4 Assault Transport Helicopter (Hound)

The Mi – 4 single – rotor assault helicopter with a four-blade rotor 21 m in diameter and the Shvetsov's ASh-82 v air cooled 1700 hp piston engine was designed at the end of 1951.

The first prototype version tests began on June 3, 1952. Test-pilot V. Vinitsky was the first to fly the helicopter. During the tests the helicopter revealed the following characteristics; maximum speed with 7,200-7,800 kg flying weight-170 km/h; hovering ceiling-2,000 m. The Mi-4 was employed for rescue missions in natural disasters, such as floods, forest fire, ets. The military transport version was equipped with a 12.7–mm machine gun, while the cargo compartment could accommodate either 16 soldiers or 6 lying wounded and nurses.

The Mi-4 helicopter exhibited in the Museum was manufactured in April 1953. The helicopter was operational in air units. It flew 1,386 hours. It was delivered to the Museum on January 12, 1965.

Mi – 6 Helicopter (Hook)

The development of the Mi – 6 heavy assault helicopter began in the Mill Design Office in June 1954. In June 1957 it made the first flight. The helicopter was powered by two D-28V P. Solovyov design half turbine engines, 11,000 hp general take-off power. To discharge the rotor at high speeds the helicopter was provided with a 35 sq.m controllable wing carrying 25 per cent flight mass of the helicopter. The fuselage accommodated the cockpit and the cargo compartment 11,7 m long, 2.8 m vide, 2,6 m high enabling the planes to airlift 12,000 kg load internally and 8,000 kg externally.

On June 5, 1957 the helicopter was first taken to the air by test-pilot R.Kaprelyan.

The helicopter exhibited in the Museum was built in the late 1960.Total flight time is 96 hours 14 minutes. The helicopter was delivered to the Zhukovsky Air Force Engineering Academy training base on May 26, 1965. It became an exhibit in 1978.

Mi -10 Helicopter

In the late 1950 s the Mil Design Office developed the Mi-10 Helicopter designed for airlifting large-size cargoes. Power plant comprises two D-25V gas turbine 5,500 hp engines. The helicopter is provided with a special platform.

The extended undercarriage legs enable the helicopter taxiing over a cargo up to 3.5 m high. Special hydraulic lifts enable picking up loads from the ground. The first helicopter flight was performed by test-pilot R. Kaprelyan on October 15, 1960. The Mi –10 take off weight (in vertical take off) is 43,450 kg. Cruising speed with a cargo on the platform-180 km/hr.

The Mi -10 helicopter exhibited in the Museum was produced in November 1968. The helicopter was in service from 1968 till 1974. Its flight time is hours. It was flown for the last time by pilot Pelevin and landed on the Monino airfield on December 25, 1974.

Mi - 8 Helicopter (Hip)

In May 1960 the Mill Experimental Design Office began developing the Mi-8 Helicopter powered by two S. Izotov TV2-117 gas turbine engines, 1,700 hp each. Five blade rotor is 21.3 min diameter. Maximum and normal take – off weight - 12,000 kg and 11,000 kg respectively. The cargo compartment ensures airlifting 20 soldiers (max 24 soldiers) with individual weapons and equipment to a distance of 450 km. The ambulance version cargo compartment accommodates 12 lying wounded or sick and nurses.

The passenger version compartment accommodates 28 passengers. The Mi – 8 first flight was made by test pilot N. Leshin on September 17, 1962. Maximum speed – 250 km/hr; maximum altitude – 4,500 m; range of flight with full fuel tanks and maximum load – 400-450 km; three – man crew: two pilots and a mechanic.

The Mi – 8 exhibited in the Museum was produced in July, 1966. On August 16, 1978 it was delivered to the Museum. The total flight time is 983 hours, after the last repair it is 232 hours.

Mi - 2 Helicopter (Hoplite)

For that reason the Mi – 1 was replaced by the three-blade rotor (14,5 min diameter) light Mi-2 powered by two GTD-350 Izotov 400 hp turbo shaft engines installed in the upper fuselage. These engines enabled to enlarge the cabin accommodating 8 passengers or up to 800 kg load. The helicopters take – off weight with such a load is normally 3,700 kg.

The Mi – 2 was first flown by test-pilot Alfyorov on September 22, 1961. During the tests the helicopter revealed the following performance: maximum speed – 210 km/hr, static ceiling – 1,450 m, dynamic ceiling – 4,000 m range of flight- 580 km. Crew: one man.

The Mi – 2 exhibited in the Museum is an ambulance helicopter. It was produced in March 1967. The total flight time is 220 hours 16 min. It vas delivered to the Museum on November 20, 1975.

Mi-12 Helicopter (Homer)

In 1965 the Mil Design Office was assigned the mission of developing a helicopter for airlifting not less than 30,000 kg load. That , s why the Mi-12 became the first and the only two – rotor transverse scheme helicopter in the Mil Design Office. Both rotors, 35 min diameter each, were installed on the wing tips. There are also installed two D-25 VF Solovyov gas turbine engines, 6,500 hp each.

The ground – based tests begun in June 1967 revealed the helicopter resonant vibrations which were soon eliminated. The flying tests were performed by test – pilot V.Koloshenko. The helicopter demonstrated the following performance: maximum speed – 250 km/hr; service ceiling – 3,500m; maximum take – off weight – 105,000 kg. In February 1969 during the flight tests the Mi-12 lifted a record load of 31,030 kg to 2,951 m altitude. The Mi –12 didn't enter serial production. There were built only three of such machines.

In 1975 one of them was flown to the museum.

Mi – 24 A Combat Helicopter

In 1972 the Mil Experimental Design Office created the Mi-24A antitank armour support helicopter. This was the further development of the Mi – 24 combat helicopter's family.

The helicopter is powered by two Tb – 3 – 11 7A gas – turbine engines 2,200 hp. each. The main rotor is 17,3 min diameter. Normal take-off weight 10,500 kg. During the tests the helicopter demonstrated the following characteristics: maximum speed – 340 km/hr, dynamical ceiling – 5,100m.The 1,710 kg fuel endurance ensures 745 km range of flight and one hour twenty minutes flight time. The very first Mi – 24 flight was performed by G. Alfyorov

on September 19, 1969.

The Mi – 24A (№ 2201201) exhibited in the Museum was produced in August 1972. Since February 16, 1973 the helicopter had been in service with air units. On June 27, 1984 pilot Pozdnyakov landed the helicopter on the Monino airfield and delivered it to the Museum.

Ka – 15 and Ka –18 Helicopters (Heh)

The Ka – 15 helicopter was developed in 1954. It was a coaxial rotor type helicopter, the main rotors being 9.95 min diameter. The cockpit accommodated a pilot and two passengers.

The Ka – 15 first flight was performed by test – pilot D. Yefremov on April 13, 1953. The helicopter underwent production and official flight test successfully. It flew at 150 km/hr speed at 3,000 m altitude. Take – off weight – 1,480 kg. The Ka – 15 set a record: it developed a speed of 170 km/hr in closed circuit route of 500 km.

The Ka – 15 helicopter exhibited in the Museum was built in March 1953. It was delivered to the Museum from the helicopter factory on July 7, 1977.

In 1956 the Design Office developed the Ka – 18 helicopter provided with the same engine and rotors as those of the Ka – 15.

In 1958 the helicopter was demonstrated at an air show in Brussels and was awarded with "The Gold Medal". It was dismantled and delivered to the Museum on September 2, 1975.

Ka – 25 Antisubmarine Helicopter (Hormone)

The Ka – 25 carrier – based antisubmarine coaxial twin – rotor type helicopter was developed by the Kamov Design Office in 1967. The rotor diameter is 15,7 m. The rotor blades can fold when on the ground. The power plant includes two GTD – 3 S. Izotov engines, 800 hp each.

The helicopter displayed the following characteristics: speed-220 km/hr, ceiling – 3,500 m, range of flight – 650 km, take – off weight – 7,300 kg. The helicopter is provided with electronic and radar equipment enabling to cooperate with ships in combat operations as well as to perform search and rescue.

The Ka – 25 helicopter exhibited in the Museum was built in December 1966. The total flight time of the helicopter is 314 hours. The helicopter was delivered to the Museum from the Kamov's Design Office on January 5, 1981.

Ka – 26 Helicopter (Hoodlum)

In 1965 the Kamov Experimental Design Office developed and built the Ka – 26 coaxial rotor type helicopter. The rotor diameter is 13m. The propulsion system comprises two M –14V – 24 air-cooled piston engines, 325 hp thrust each. Structurally the helicopter may be regarded as a "flying undercarriage" on which one can install either a six-passenger cabin or a large capacity bin for fertilizers and other friable substances, or a 900 kg cargo platform.

The Ka –26 prototype was first flown by test – pilot V. Gromov on August 18, 1965. It underwent tests successfully and displayed the following characteristics: speed – 170 km/hr, static ceiling – 640 m.

It was demonstrated at international shows in 22 world countries. It was awarded with two Gold Medals in Moscow and Plovdiv and with the Grand – Prix Silver Cup in Budapest as well as with a great number of diplomas. The Ka – 26 helicopter is widely used in Japan, Sweden, Germany and other countries.

The helicopter exhibited was delivered to the Air Force Museum from the Kamov factory on June 4, 1986.

Yak – 24 Assault Helicopter (Horse)

In the late 1951 the Yakovlev Experimental Design Office (P.D. Samsonov, K. Skrzhinky, I.A. Erlikn and some others) began developing a heavy troop-carrying transport helicopter designated the Yak –24. The Yak – 24 is provided with two four – bladed tandem rotors 21 m in diameter each. The helicopter is equipped with the Ash – 82V Shvetsov piston engines, 1,430 hp normal rated power and 1,700 hp take – off power Each.

On July 3, 1952 the helicopter crew comprising test-pilots S. Brovtsev and E. Milyutichev flew the Yak – 24 for the first time. During the tests the helicopter displayed the following characteristics: maximum speed – 175 km/hr, static ceiling – 2 m, zoom altitude- 4,200 m, range of flight – 265 km, take – off weight – 14,270 kg. The tandem system, namely the low sensitivity to the centring change, proved to be advantageous.

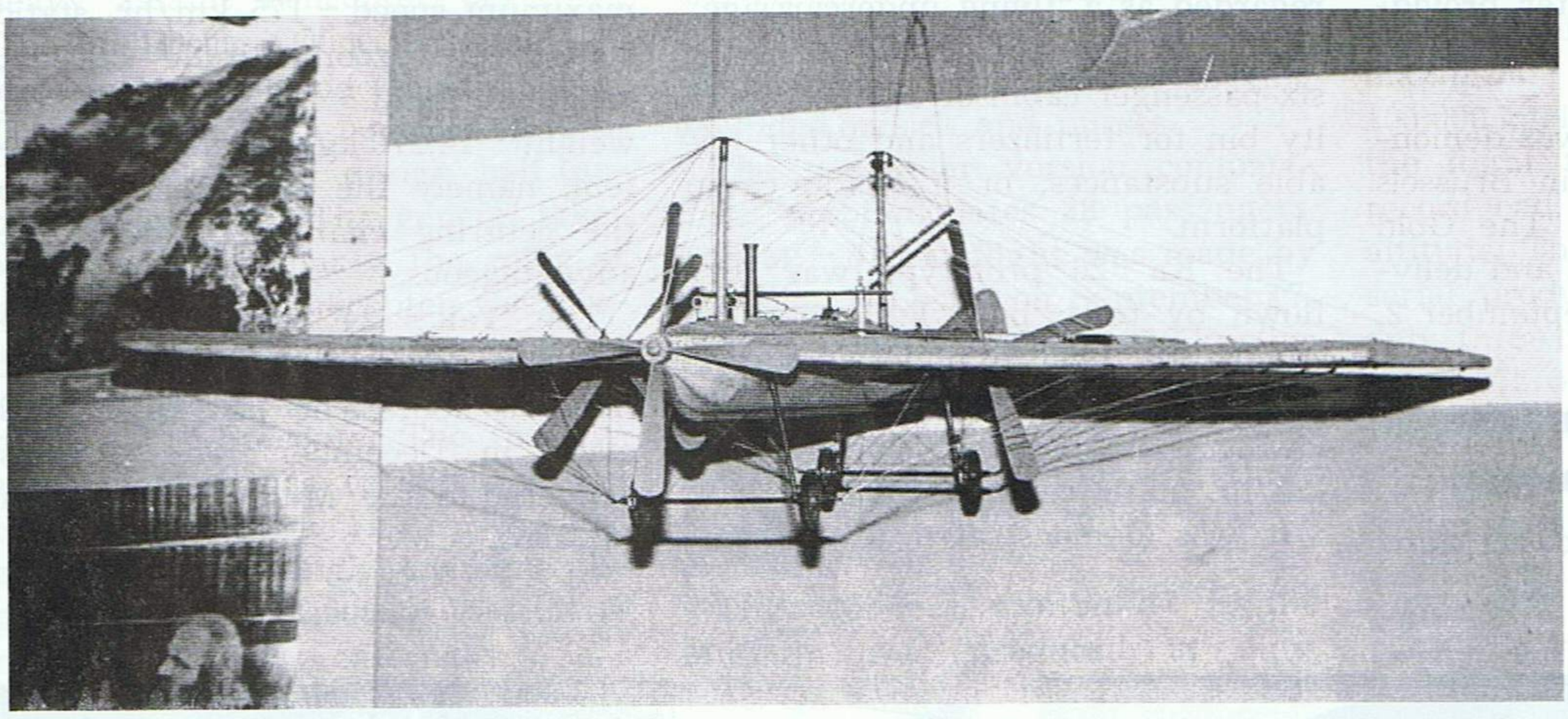
The Yak – 24 exhibited in the Museum was produced in 1956. It flew 78 hours. The last flight was made in December 1958. It was delivered to the Museum on March 14, 1962.

Ka – 25

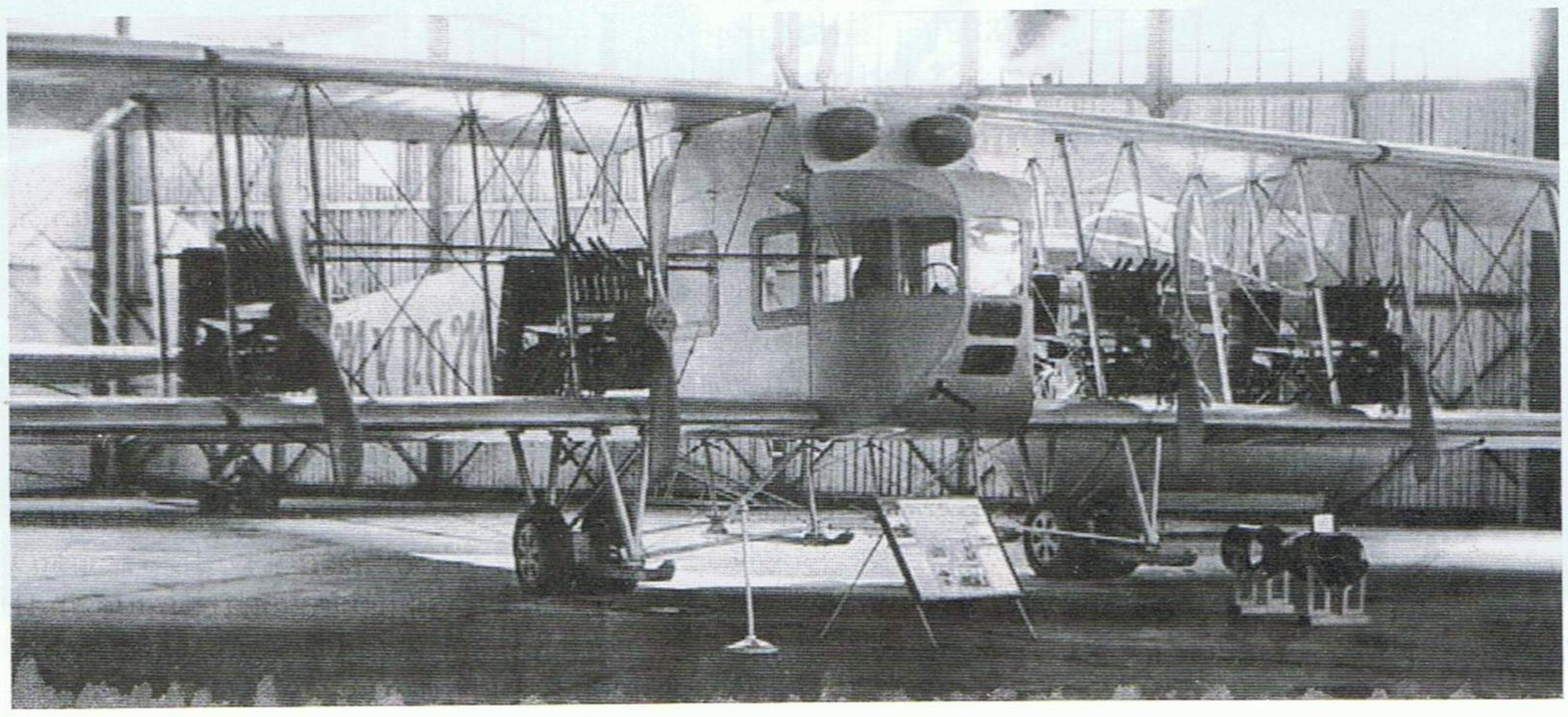
Ka – 26

AVIATION
IN TNE LATE XIX – EARLY XX CENTURES

"Letatlin"



A. Mozhaisky "Flying Vehicle" (Model)



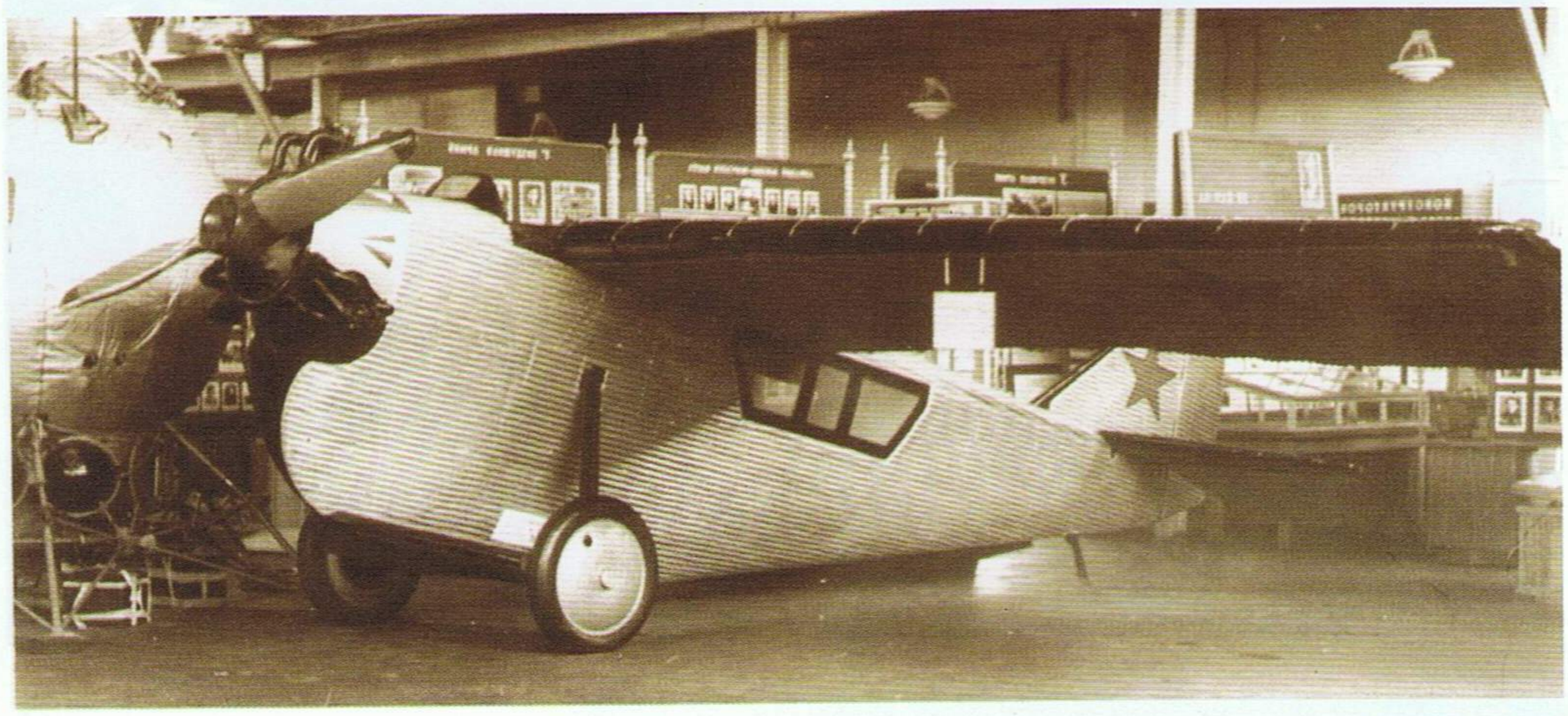
"Ilya Muromets" Aircraft (Full - Scale Mock - Up)

"Voisin"

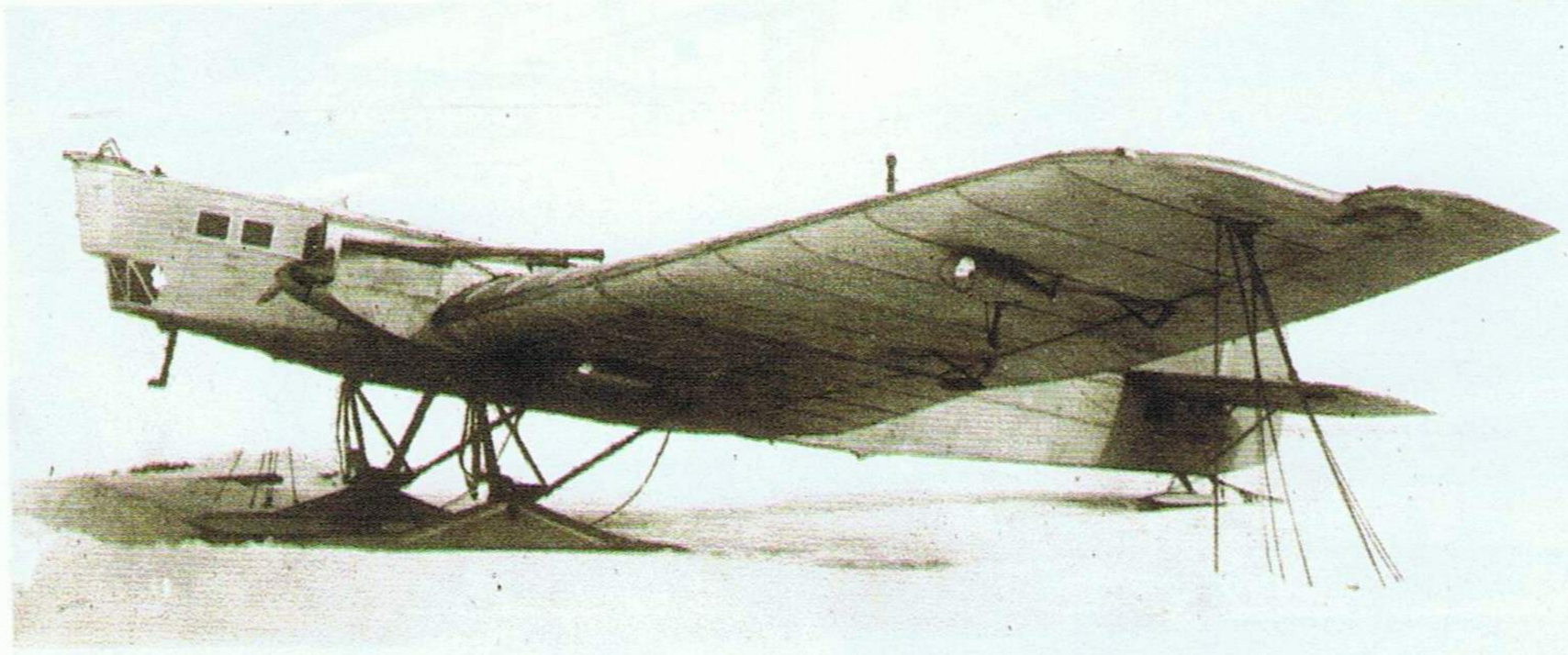
"Sopwich"

"Farman IV "

AIRCRAFT OF THE 1920 - 1930s



ANT - 2



ANT - 4 (TB-1)

ANT-6 (TB-3)

ANT-25 (RD)

ANT- 40 (SB)

DB - 3 (Il- 4)

U-2 (Po-2) (Mule)

R- 5

AIRCRAFT OF THE 1940-1950 s.

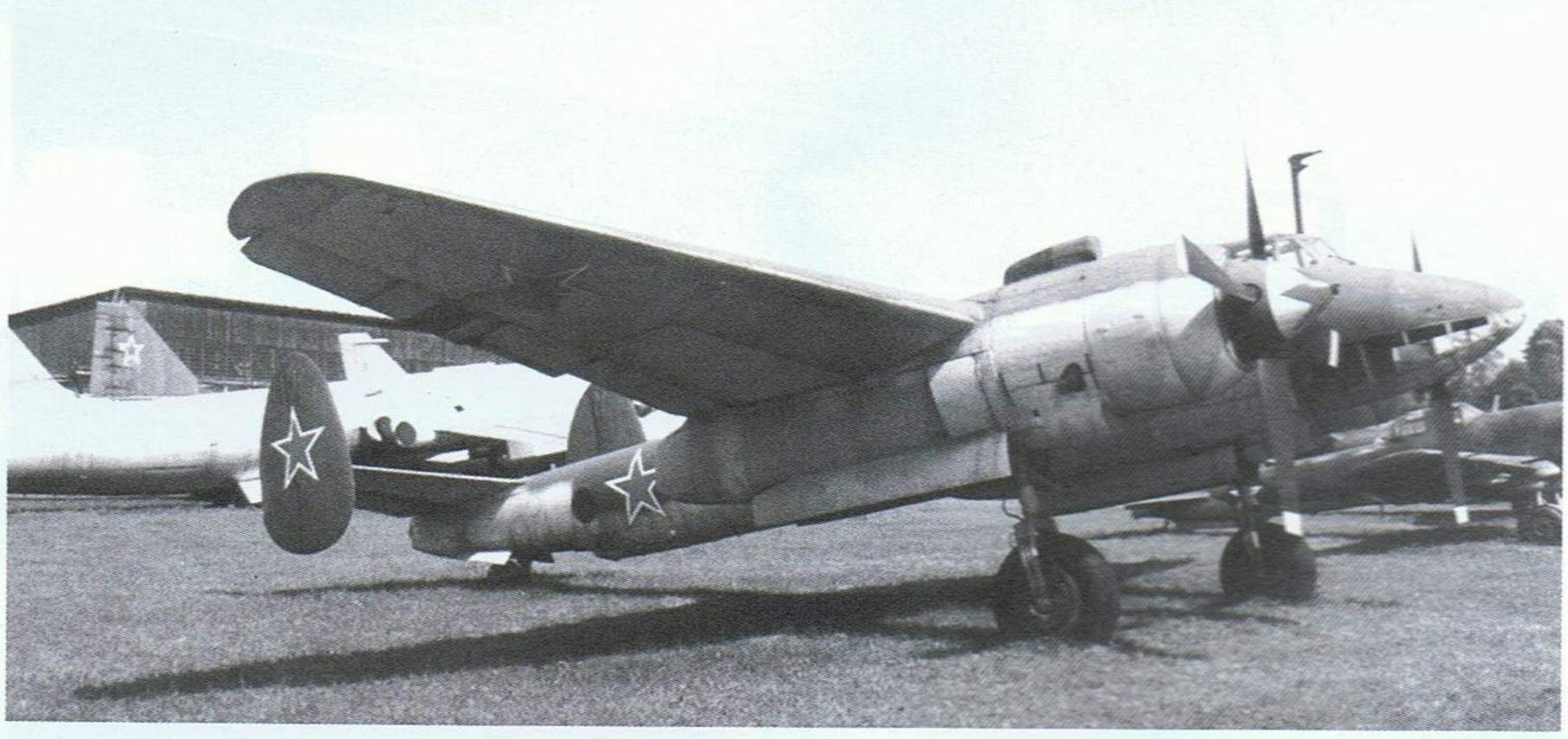
MiG- 3 Fighter (Full - Scale Mock - Up)

La -7 Fidhter (Fin)

Il-2 Armoured Attack Aircraft (Bark)

Il -10M Armored Attack Aircraft (Beast)

Pe-2 Dive Bomber (Buck)



Tu-2 Front - Line Bomber (Bat)

Tu-4 Strategic Bomber (Bull)

Il-12 Ailiner (Coach)

An - 2 Versatile Aircraft (Colt)

An -14 Multi - Purpose Aircraft (Clod)

Jak - 9U Fighter (Frank)

Subsonic and Transonic Jet Aircraft

Bi - 1 Fighter

MiG - 9 Fighter (Fargo)

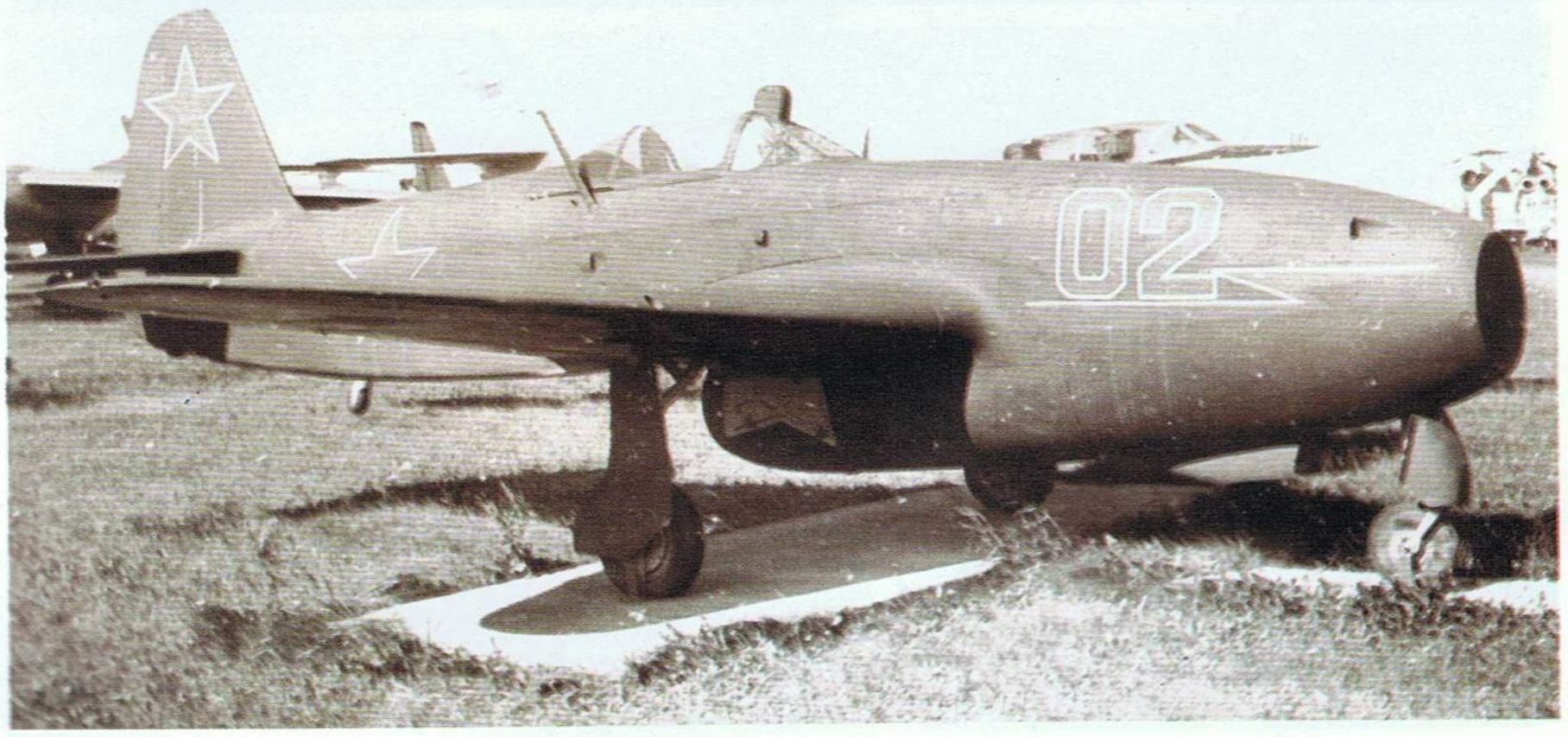
MiG - 15 Fighter (Fagot)

MiG - 15 UTI Trainer (Midget)

MiG - 17 Fighter (Fresco)

La - 15 Fighter

Su -25 Attack Aircraft (Frogfoot)



Yak - 17 Fighter (Foather)

Yak - 23 Fighter (Flora)

Yak-25RV High-Altitude Reconnaissance Aircraft

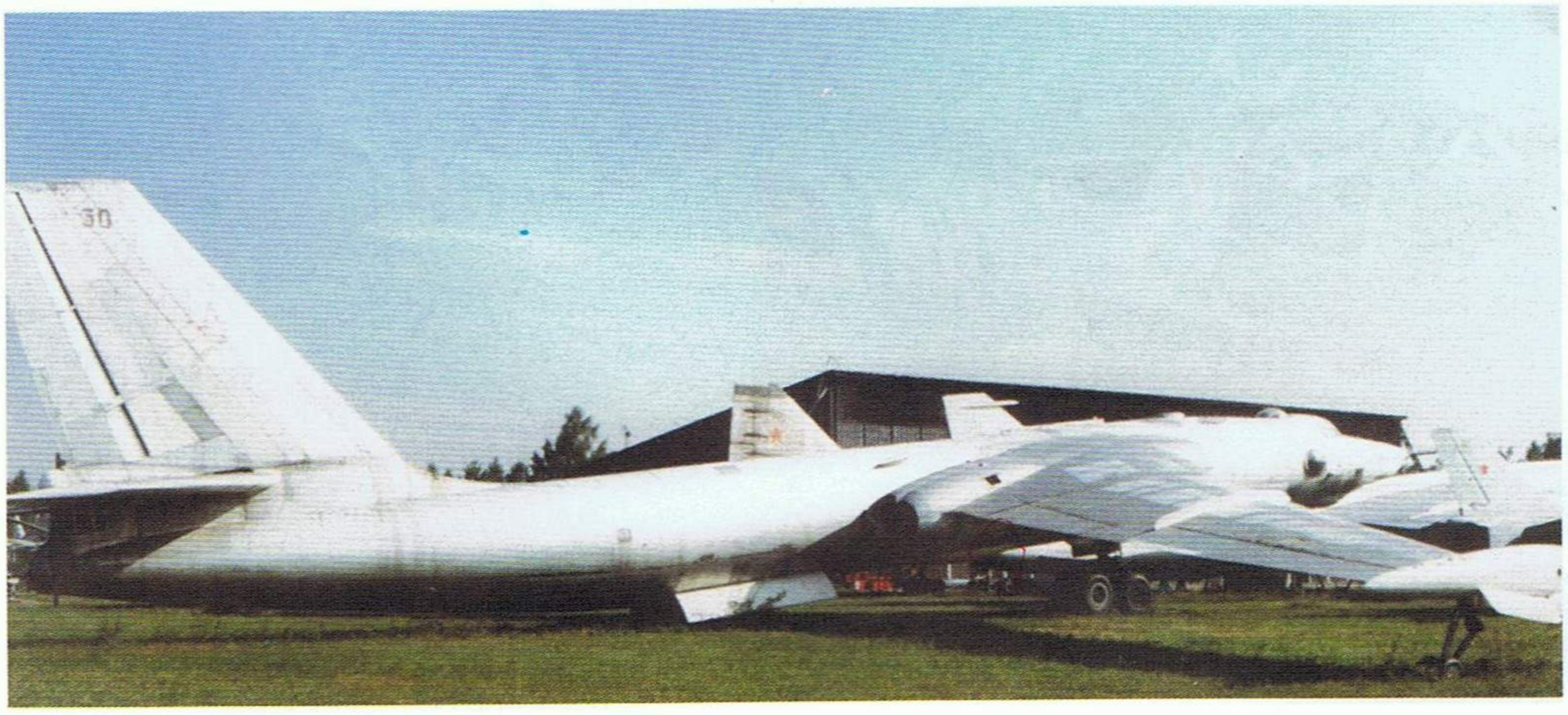
Yak - 36 VTOL Fighter (Freehand)

Yak - 38 Carrier - Based Aircraft (Forger)

Tu - 16 Bomber (Badger)

Tu - 104 Airliner (Camel)

Tu - 95 Intercontinental Missile - Carrier (Bear)



3M Strategic Bomber (Bison)

Tu - 114 Airliner
(Cleat)

Il - 18 Liner
(Coot)

Il - 28 Front -
LineBomber
(Beagle)

Il - 62 Airliner
(Classic)

Experimental M-17 High - Altitude Aircraft

Yak - 40 Airliner (Codling)

Yak - 42 (Clobber)

An-8 Military Transport Aircraft (Camp)

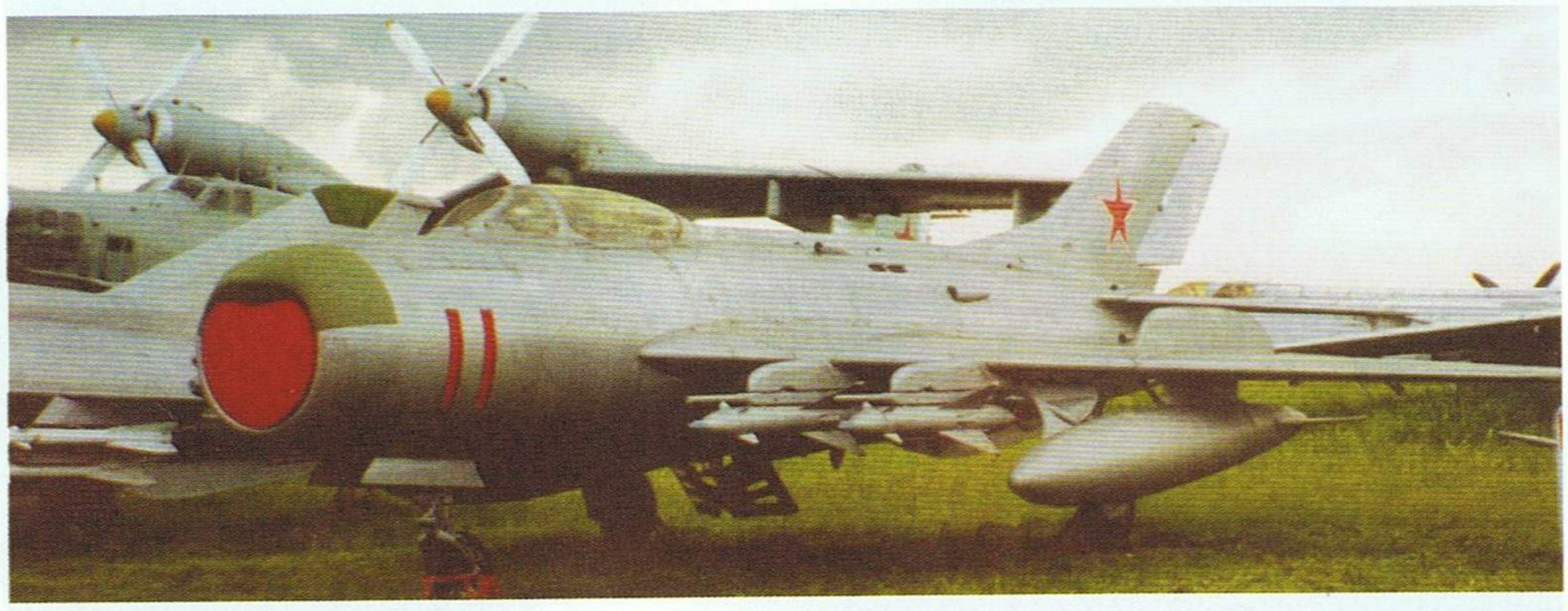
Be-12 Patrol ASW Amphibious Aircraft (Mail)

An-12 Military Transport Aircraft Office (Cub)

An–24 Airliner (Coke)

An–22 Military Transport (Cock)

Supersonic Jet Aircraft



MiG – 19 Fighter (Farmer)

MiG – 21 Fighter (Fishbed)

MiG – 25 Multi – Purpose Fighter (Foxbat)

MiG – 23 Versatile Front – Line Fighter (Flogger)

MiG – 29 Front – Line Fighter (Fulcrum)

Su–9 Interceptor Aircraft (Fishpot)

Su – 7B Fighter – Bomber (Fitter)

Su–11 Fighter – Interceptor (Fishpot)

Su–15 Fighter – Interceptor (Flagon)

Su–17M Fighter – Bomber (Fitter)

MiG –21 1 ("Tu-144 Analogue")

Su–24 Front Bomber (Fencer)

Su–27 Fighter – Interceptor (Flanker)

La–250 Fighter – Interceptor

Yak–28 L Front Bomber

Yak–27R Reconnaissance Aircraft

Tu–22 Bomber (Blinder)

Tu 22M Missile Carrier (Backfire)

Aircraft 105

Tu–128 Interceptor

Su – 100 Frototype Bomber

Tu – 144 Airliner (Charger)

M-50 Startegic Missille Carrier (Bounder)

HELICOPTERS

Mi –1 Helicopter (Hare)

Mi – 4 Assault Transport Helicopter (Hound)

Mi – 6 Helicopter (Hook)

Mi - 2 Helicopter (Hoplite)

Mi - 8 Helicopter

Mi - 10 Helicopter (Hïp)

Mi - 24a Helicopter (Homer)

Ka-52 «Alligator»

Mi - 12