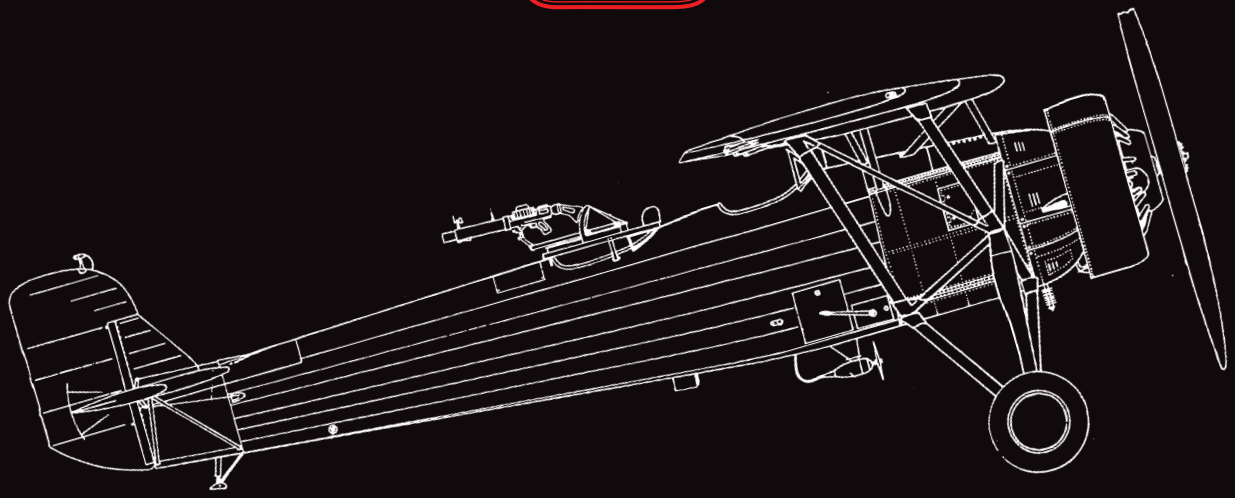

Engineer Brigadier General Antanas Gustaitis

Designer of the Lithuanian aircraft ANBO

ANTANAS GUSTAITIS

Lithuanian Armed Forces volunteer, war pilot, aircraft designer, organizer and leader of the Lithuanian Air Force and aviation industry Antanas Gustaitis like most Lithuanian intellectuals of those times became a victim of soviet terror:

Our Air Force due to very limited material resources can not possess large quantity of weapons, therefore it is essential that weapons have to be operated by men whose determination and capabilities overweight the shortage of weapons we may have to face. The more young people will be inspired with aviation enthusiasm, the better aviation personnel we will be able to choose, the higher will be the quality of our aviation.

The importance of own aircraft building occurs mainly when international atmosphere becomes tense. When political relations are tense, everybody starts armament, and aircraft builders become overloaded with orders. If we order an aircraft in a foreign country and it will enter into a conflict with other country, our aircraft could be taken for its needs. Whereas in our country we are always free to produce. On the other hand, it is necessary to take into account economic considerations, since own construction is always cheaper. Aircraft are changing rapidly, therefore in all countries manual labour in aircraft building plays a major role; as manual labour is quite cheap in our country, it is reasonable to build the aircraft here, moreover building the aircraft in our country we prepare the required number of workers.

Such ideas expressed by Antanas Gustaitis on different occasions could be considered as a fundamental goal, as he dedicated his short but meaningful life for the implementation of this goal.


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Antanas Gustaitis was born on March 26, 1898 in Suvalkai Province, Javaravas district (now Marijampolė municipality) Obelinė village. **In 1916** in Yaroslavl (Russia) he finished Marijampolė men's school (evacuated because of the World War I). **In 1916-1917** studied at the Emperor Alexander I Communication Engineering Institute and Konstantin Artillery War School.

After returning back to Lithuania **on March 15, 1919** he joined the reestablishing Lithuanian Armed Forces, and was appointed as a student to the Military Aviation School. **On 16 December** the same year A. Gustaitis graduated this school with the rank of Engineering Lieutenant and was assigned to the aviation section. **In 1920-1923** A.Gustaitis served as military pilot in the 1st Squadron, participated in battles with the Polish Armed Forces. **In 1922** he became the first chess champion in Lithuania. **In 1923-1925** Antanas Gustaitis became Training Squadron commander. **On July 14, 1925** Antanas Gustaitis made first flight with the aircraft of his own construction ANBO. **In 1925-1928** in the Higher Aerospace and Mechanical Construction School in Paris he studied aircraft building.

In 1928-1934 Antanas Gustaitis served as the Assistant Chief of Aviation, Chief of Aviation Staff, Chief of Aviation Park, Chief of Military Aviation Technical Department. **In 1929** in the Military Aviation workshop in Kaunas Antanas Gustaitis organized serial production of original construction military aircraft. **In 1930** he was elected as Vice-President of the Lithuanian Aero Club and became one of the gliding sports organizers, he also gave lectures at the Faculty of Technics in Vytautas the Great University, and Advanced Officer Course in the Military Aviation School.

In 1934-1940 A. Gustaitis served as Chief of the Lithuanian Military Aviation. **In 1934** organized and implemented flight of three ANBO-IV aircraft around Europe. **In 1937** Antanas Gustaitis was promoted to the rank of Brigadier General. **In 1939** developed a project of reorganization of engineer training system in Lithuania by establishing an independent higher technical school. **In 1925-1939** he constructed and tested nine types

One of the most successful projects of A. Gustaitis – ANBO-IV aircraft

of reconnaissance and training aircraft ANBO for the Lithuanian Armed Forces, 66 aircraft were built. Antanas Gustaitis also tested the prototype of light bomber ANBO-VIII and was prepared to start its serial production.

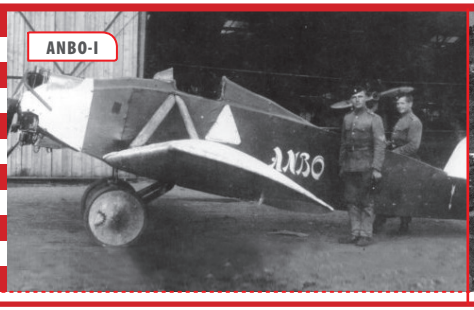
At the beginning of 1940 A. Gustaitis twice visited Moscow with the aim to find out the possibility of weapons and equipment acquisition for the Lithuanian Armed Forces. The same year the Soviets occupied Lithuania and this was the most tragic phase of life for Antanas Gustaitis. Already from the first few days he urged the government and Armed Forces command to organize resistance. Afterwards he made unsuccessful efforts to escape legally to the United States. Antanas Gustaitis was appointed as Chairman of the Military Aviation Liquidation Committee and was forced to destroy everything he had created himself during two the most productive decades of his life. Lithuanian Military Aviation at that time consisted of eight fighter, bomber and reconnaissance squadrons; pilots, scouts and mechanics were trained in the Military Aviation School; aircraft were built and repaired in aviation workshop including constructors bureau. 117 military aircraft were deployed in three air bases, several seasonal airfields existed in various places in Lithuania. Lithuanian Air Force consisted of 123 officers, 246 enlisted personnel, 924 soldiers, 183 civilian employees, including 221 military pilots.

On January 1, 1941 Antanas Gustaitis was discharged and started delivering lectures at Kaunas State University Construction Faculty. He could not accept the fact of occupation of Lithuania and organized resistance group, participated in issuing of underground press. He felt the increasing risk and **on March 4, 1941** made an attempt to cross the Soviet-German border, but was arrested, taken to Moscow, where **on 7 July** was "convicted" by the Soviet Supreme Military Court and **on 16 October** was killed.

Aircraft ANBO

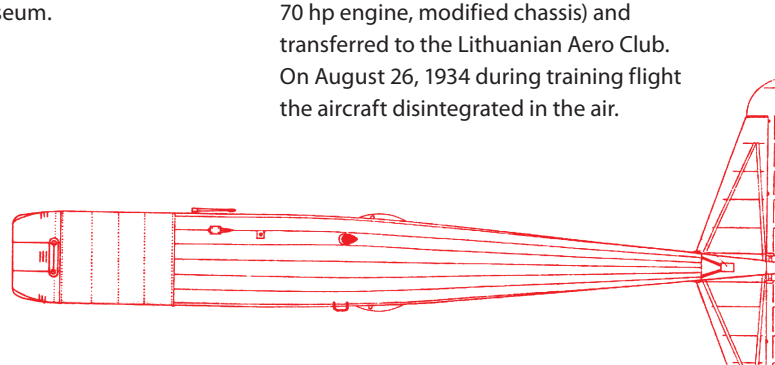
Lithuanian aircraft ANBO became a symbol of the Republic of Lithuania in the period of 1918-1940, it was reliable and easy to operate. Already the first flight of prototype was successful, and without significant changes was approved for serial production. Parts of serial aircraft could be easily replaced.

It was a mixed construction monoplane designed for reconnaissance, initial pilot training and drills. Lithuanian Armed Forces could not afford to buy the most advanced armament of that time, nevertheless, thanks to talented constructor it received own production aircraft meeting the Armed Forces needs.In summer 1940 the Lithuanian Air Force had 117 aircraft, 53 of them were ANBO.

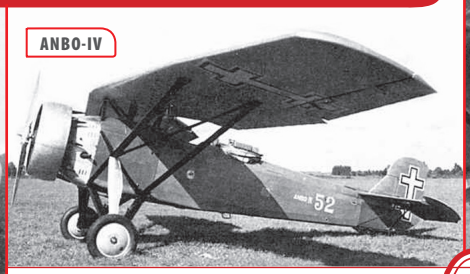


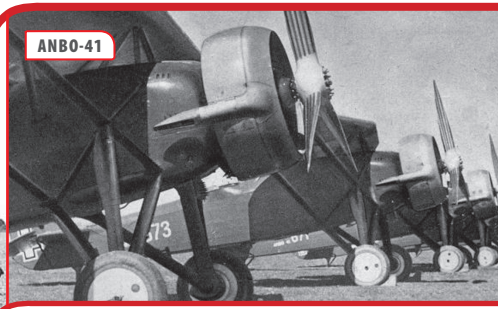
ANBO-I. The first work of a self-taught designer - a low-wing mixed construction one-seat monoplane. The body was welded from steel tubes, coated with cloth and aluminium sheets, wooden wings coated with cloth, empowered by French company 35 hp Anzani engine. A. Gustaitis himself on July 14, 1925 tested the aircraft. Wingspan – 10 m, wing area – 11.4 m^2, length of plane – 5.75 m, empty weight – 190 kg, gross weight – 300 kg, maximum speed – 142 km/h, minimum speed – 50 km/h, rate of climb – 4 200 m, range of flight – 450 km, 1000 m height reached within 6 min. This is the only aircraft of Lithuanian Air Force of 1919-1940 displayed in Vytautas the Great War Museum.

ANBO-II. Seeing that pilots for training purposes in Lithuania employed outdated and very uneconomical aircraft powered by 120 hp Albatros B.II engines, while studying in Paris A. Gustaitis designed a two-seater high-wing mixed construction monoplane for initial pilot training. (60 hp Walter NZ engine). The first flight took place on 10 November, 1927. Wingspan – 10.72 m, wing area – 18.4 m^2, length of plane – 6.75 m, empty weight - 390 kg, gross weight – 610 kg, maximum speed – 160 km/h, minimum speed – 45 km/h, rate of climb – 3 500 m, 1000 m height reached within 8 min. Capable of making aerobatic figures, in 1931 the aircraft was reconstructed (installed 70 hp engine, modified chassis) and transferred to the Lithuanian Aero Club. On August 26, 1934 during training flight the aircraft disintegrated in the air.



Fragments of ANBO IV drawings

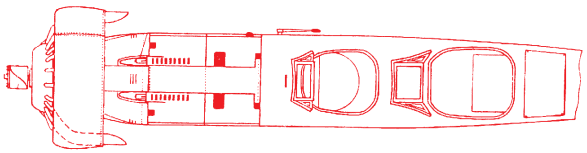


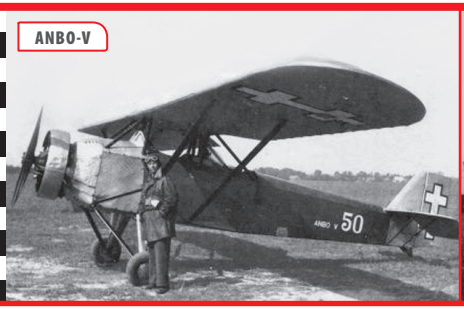


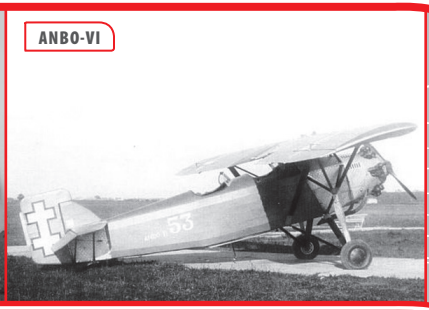
ANBO-III. While studying in Paris A. Gustaitis also designed a two-seater high-wing mixed construction monoplane for pilot training. The first flight took place on October 5, 1929, the prototype was powered by 130 hp Walter NZ engine. This was the first Lithuanian aircraft produced in series. In 1930-1931 two series (four aircraft each) of ANBO-III aircraft empowered by 145 hp Walter Mars engines were produced (geometry and flight parameters slightly varied). Wingspan – 10.55 m, wing area – 18.2 m^2, length of plane – 7 (7.5) m, empty weight – 556 (580) kg. Maximum speed – 185 km/h, minimum speed – 80 (100) km/h, rate of climb – 4 800 m. In 1934 ANBO-III was used for reconnaissance and target pulling, in 1931 under mediation of retired General Juozas Kraucevičius Estonia was interested in ANBO-III acquisition possibilities for its Armed Forces.

ANBO-IV. Two-seated high wing monoplane employed for reconnaissance purposes (also used as light bomber). The body was made of riveted duralumin tubes, wooden wings. The first flight took place on July 14, 1932, the prototype was empowered by 450 hp Wasp engine. In 1933-1935 two series of aircraft including 7 units each with 585 hp Bristol Pegasus II M2 and L2 modification engines were produced. Wingspan – 13.2 m, wing area – 29 m^2, length of plane – 8.8 m, empty weight – 1360 kg, gross weight – 2 200 kg. Maximum speed – 290 km/h, minimum speed – 90 km/h, rate of climb – 7 500 m, flight distance – 800 m, 5000 m height reached within 15 min. Armed with four machine guns Browning, could carry 144 kg bombs. The aircraft technical data were similar to those of Letov S.228 produced in Czechoslovakia, but Lithuanian aircraft was 1/5 times cheaper.

ANBO-41. While improving ANBO-IV the designer empowered the aircraft by more powerful 930 hp engine Bristol Pegasus XI and a wooden three blade propeller, modified wings and their mounting structures. After these modifications were made, production of new modification reconnaissance aircraft was started. In 1937 and 1939 two series including 10 units each empowered by engines Bristol Pegasus XI and 1010 hp Pegasus XXIII were produced. The first flight took place on January 21, 1937. Wingspan – 13.25 m, wing area – 30 m^2, length of plane – 8.85 m, empty weight – 1666 (1737) kg, gross weight – 2 294 (2 340) kg. Maximum speed – 360 km/h, minimum speed – 95 km/h, rate of climb – 9000 m, flight distance – 800 m, 2 km reached in 2 min. Armed with four machine guns Browning, could carry 16x12,5 bombs. Comparing with the similar purpose Henchel Hs. 126B aircraft used in German Armed Forces the weight of Lithuanian aircraft was 1/5 times less; it reached the required height quicker and required much shorter runway.





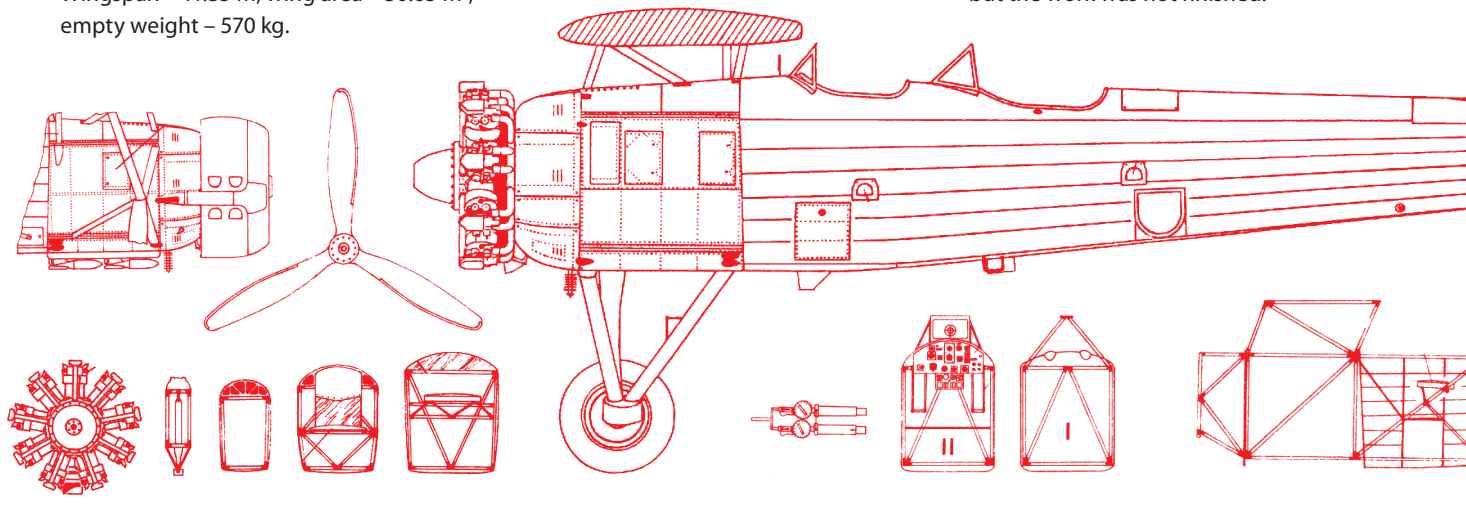


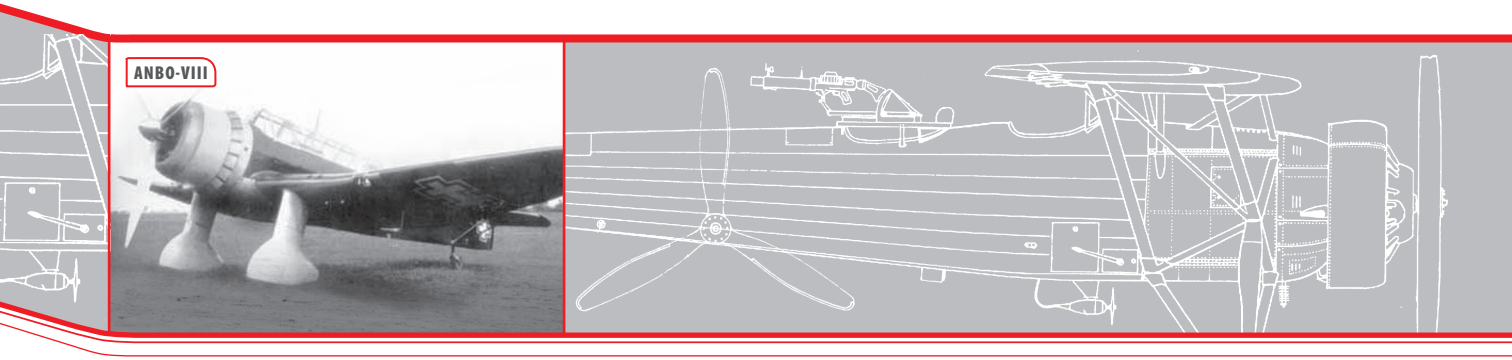
ANBO-V. Double parasol wing mixed construction monoplane used for the initial pilot training with improved ANBO-II constructions. The first aircraft was tested on May 19, 1931. By the middle of 1932 four such aircraft empowered by 85 hp Walter Vega and 110 hp Walter Venus engines were built. Later these engines were changed by Armstrong Siddeley company's seven-cylinder air-cooled 140 hp engines Genet Major. Wingspan – 11.35 m, wing area – 30.65 m^2, empty weight – 570 kg.

ANBO-51. Later modification of ANBO-V was empowered by 160 hp Genet Major IV engine and a stronger wing structure. In 1936-1938 10 aircraft were built. The first flight took place on August 11, 1936. Gross weight – 1000 kg, maximum speed – 200 km/h.

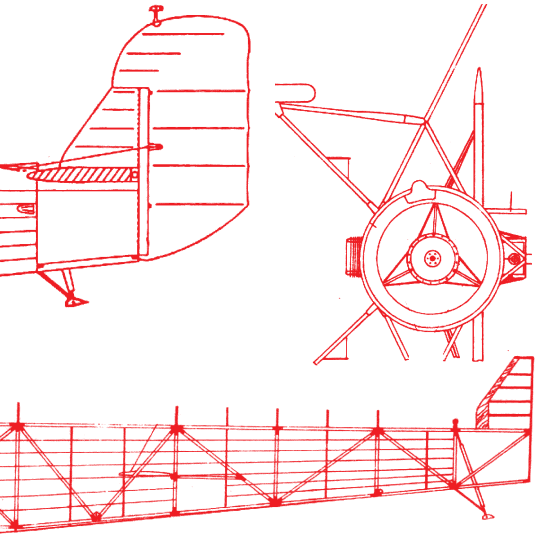
ANBO-VI. In 1933-1934 four aircraft for training purposes with 185 hp Curtis Challenger engines were built. The first flight took place on July 6, 1933. Like ANBO-III this aircraft was also employed for communications and target pulling.

ANBO-VII. Two-seated sports monoplane designed for pilot training. In 1933 Lithuanian Aero Club started building this aircraft, but the work was not finished.



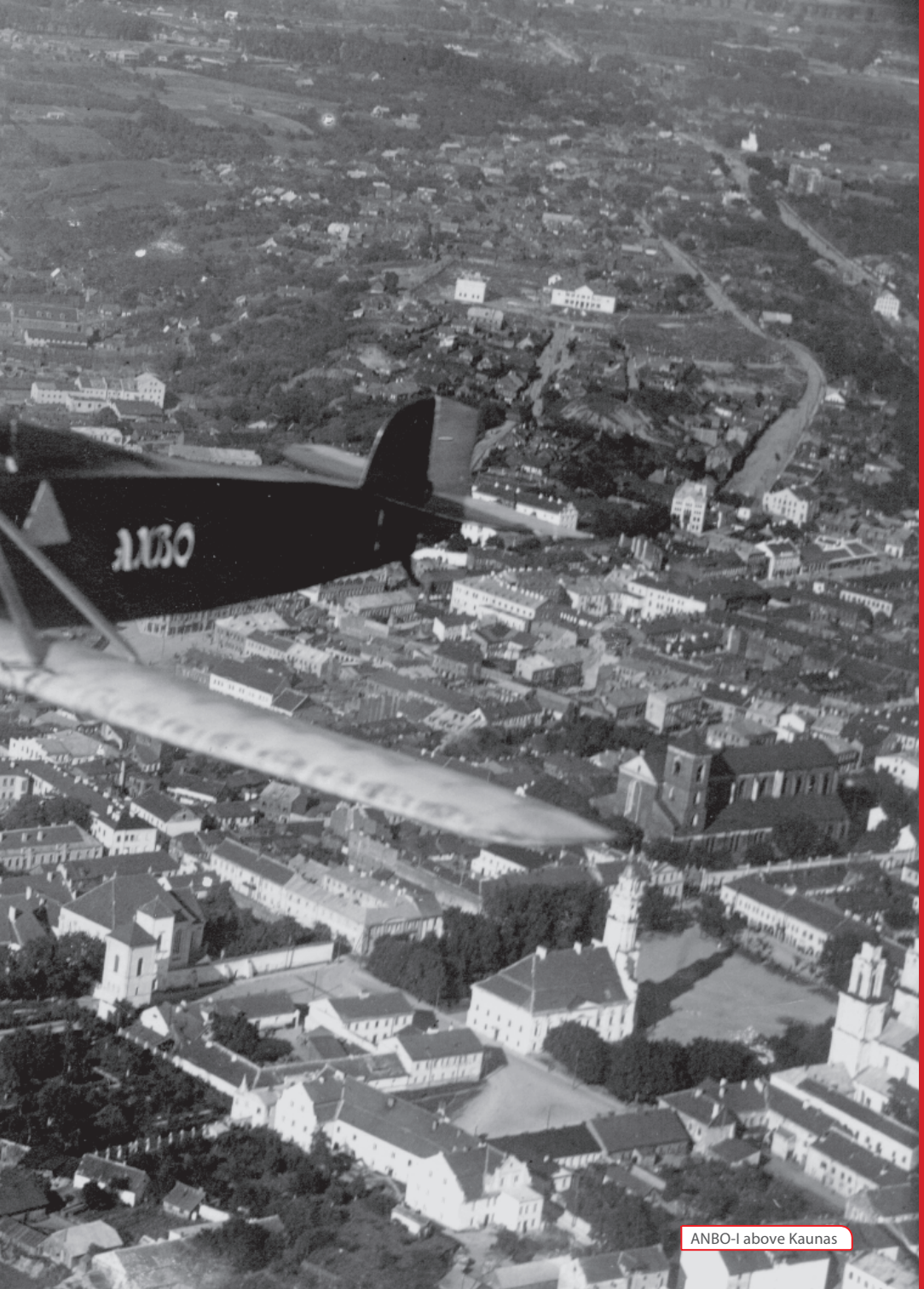


ANBO-VIII. At the fourth decade a new type of combat aircraft – a dive bomber was started to exploit. In 1927 one of the first samples of K47 was designed by Junkers company branch in Sweden. This aircraft in the summer of 1928 was demonstrated to Lithuanian military pilots in Kaunas. In 1935 Herman Polmanas introduced Ju 87 Stuka which became a symbol of German "blickrieg". First serial specimen proved well in the Spanish war. On September 1, 1939 the World War II was started with hundreds aircraft of this type. It was a two-seater low-wing monoplane coated with metal duralumin sheets. Length – 11.1 m, wingspan – 13.8 m, height – 4 m, gross weight – 4340 kg. Modified Ju 87B produced at that time was empowered by 1200 hp engine Jumo 211 Da, maximum speed in 4100 height reached 380 km/h, climbed to 1000 height in 2 min. Maximum takeoff height – 8000 m, flight distance – 590 km. The aircraft was armed with three 7.92 mm machine guns, carried 500 kg of high-calibre bombs. Seeing benefits of such multi-purpose aircraft A. Gustaitis offered his light bomber (attack aircraft). It was a twoseater mixed construction low-wing monoplane. His project was presented to the command of the Lithuanian Armed Forces by secret report on March 9, 1938.



Construction of the aircraft was started on May 5, 1938; the first flight took place on September 5, 1939. The body was welded from steel tubes, the front-coated with tin sheets, the back - with cloth, wooden wings - coated with oilskin. The aircraft was empowered by 930 hp Bristol Pegasus XVIII radial engine and a metal three-blade propeller. Wingspan – 13.5 m, wing area – 30 m^2, length of aircraft – 9.5 m, empty weight – 2300 kg, gross weight – 3 700 kg, climbed to 5000 height in 15 min. It was armed with four machine guns in the wings and one observer machine gun in the cabin, could carry 600 kg bombs. In 1940 there were plans to start production of 60 aircraft ANBO-VIII, but soviet occupation interrupted this work as well as designer's life.

Col A. Gustaitis in Kaunas airfield is welcoming graduates of the Military Aviation School



ANBO-I above Kaunas

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www.kam.lt.

Dive bombers
(Light bombers)

In the fourth decade of the 20th century new type of military aircraft were started to use.
They were extremely accurate in attacking targets on the ground.

ANBO VIII (Lithuania)		JU 87 STUKA (GERMANY)
9.5 m	length	11.1 m
13.5 m	wingspan	13.8 m
3 700 kg	gross weight	4 340 kg
930 hp Bristol Pegasus XVIII	engine	1200 hp Jumo 211Da
411 km/h	maximum speed in 5000 height	380 km/h
2 min	climb to 1000 m height	2 min
9 000 m	maximum take off height	8 000 m
4 (7.92 mm) machine guns In the wings and one in the observer cabin	armament	2 (7.92 mm) machine guns in the wings and one in the observer cabin
600 kg bombs in the bomb bay or 4x100 kg in the outer wing holders	bombs	500 kg large calibre bombs under the body