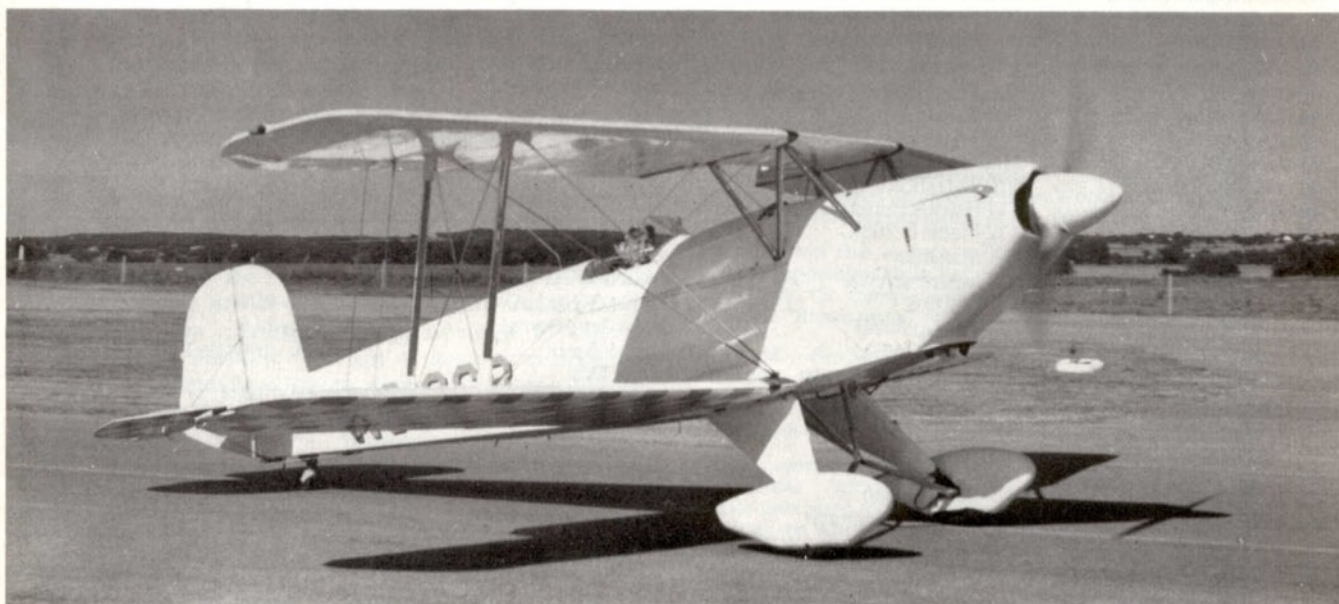


PROFILE

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THE BÜCKER BÜ 131 JUNGSMANN





First of the many—the newly-completed prototype Jungmann D-3150, in 1934, at Berlin-Johannisthal, before application of the markings to fuselage and tail surfaces. It was the only Jungmann to carry a numerical registration; all subsequent civil examples were allotted the four letter-type registrations. (Photo: H. C. Stöckel)

Bücker Bü 131 Jungmann

By L. F. Sarjeant

WITHOUT trainers and instructors, where are the aircrews for the front-line fighters and bombers? This is a history of one such trainer on which, without doubt, many of the subsequently famous pilots of the *Luftwaffe* made their first clumsily nervous “circuits and bumps”. A remarkable two-seater, the *Bücker Bü 131 Jungmann* (*Young Man or Freshman*) of the 1930s and 1940s has—nearly 40 years on—the enviable reputation of being one of the world’s finest aerobatic trainers. This is the firm opinion of leading exponents of advanced, competition-class aerobatic pilots in the U.S.A., the U.K. and continental Europe.

1933 THE BEGINNING

Monday, January 30, 1933 is an important date in German history. Acquiescing to the urgings of his political advisers, the aged President Paul von Hindenburg finally approved the appointment of the *Führer* (Leader) of the N.S.D.A.P.¹, Adolf Hitler to the all-important post of Chancellor. The *Führer* had his 1922 S.A.² ally, Hermann Göring, alongside as Minister Without Portfolio—the first of many titles under the *Nazi* regime which were to culminate in overall control of both the R.L.M.³ (the Air Ministry in Berlin) and the *Luftwaffe* (Air Force).

As Commissioner for Air, Göring lost no time in installing officers he had been associated with in World War I—men like Karl Bodenschatz, Bruno Lörzer, and Erhard Milch—to consolidate German air power. Bodenschatz became Göring’s personal assistant and

chief adjutant at the R.L.M. Lörzer was to control the important sports-flying movement D.L.V.⁴ which could openly undertake the training of future military pilots. And, Milch, an especial confidant of Göring, was to be the organising genius at R.L.M., his deputy with the title of Secretary of State for Air.

Because Göring was much involved in matters of State—he was at his most energetically ambitious peak—he left much of the planning of the future *Luftwaffe*⁵ to his chief lieutenants. Milch, in particular, soon established a set of priorities. He recognised the pressing need for a large number of trainers and new training bases.

¹ N.S.D.A.P.—*National-Sozialistische Deutsche Arbeiter Partei*, the National Socialist German Workers’ Party; better known in its abbreviated form of the *Nazi Partei*.

² In his own rise to high office, Göring accepted several dubious appointments including that of the 1923 commander of the S.A., the *Sturm Abteilungen* or Storm Detachments; the dreaded “Brownshirts” or Storm Troopers”. EDITOR.

³ R.L.M.—*Reichsluftfahrtministerium*, the German Air Ministry.

⁴ D.L.V.—*Deutscher Luftsport-Verband e.V.*, Berlin W 35. The German Air-Sports Union or Association.

⁵ Some sources credit Göring with designating the reborn air arm as the “*Luftwaffe*” in March 1935. He appeared at his much-publicised second wedding—to Emmy Sonnemann, an actress—on April 10 of that year in the dress uniform of his newly-acquired rank of *General der Flieger* or General of Airmen.



A line-up of Bü 131 As belonging to the Deutscher Luftsport-Verband (D.L.V.) It was in D.L.V. Jungmanns that most of the first pilots of the Luftwaffe received their initial training. (Photo: R.L.M.)

Thus, nearly half of the initial orders for new aircraft were allocated to trainers.

From 1933 onwards, contracts were available for trainers in various power categories: 240 h.p. (the Argus As 10 C, an 8-cylinder inverted-Vee inline) for the Arado Ar 66 landplanes and seaplanes and the Gotha Go 145; 150 h.p. (Siemens Sh 14 A, a 7-cylinder radial) for the Arado Ar 69, Focke-Wulf FW 44 *Stieglitz* or Goldfinch, and the Heinkel He 72 *Kadett*. All were biplanes. Finally, in the 80 h.p. category (Hirth HM 60 R) was selected a two-seat trainer as yet untried and produced by a company that was founded only in October 1933. The decision was shrewd—the subsequent trainer was the Bücker Bü 131 Jungmann.

1933–1939 PERIOD OF EXPANSION

Having served as a pilot in the air service of the Imperial German Navy during World War I, Carl Clemens Bücker departed for Sweden. In Stockholm, he was managing director of *Svenska Aero AB*. for a period of more than ten years before returning to Germany in

1932. The Swedish company not only produced various types under licence for the Royal Swedish Air Force but also was responsible for original designs including the *Jaktfalken* single-seat biplane fighter and the two-seat trainer equivalent, the *Skolfalken*. Their *Flygvagnen* (Air Force) designations were, respectively, the J 5 (1929) and J 6 (1930), and the SK 8 (1929).

Once back in Germany, Carl Cl. Bücker founded his own manufacturing company—*Bücker-Flugzeugbau G.m.b.H.*—at Berlin-Johannisthal in October 1933. Together with an engineering designer from his former company, Anders J. Andersson, Bücker worked hard and in under six months the new enterprise had the first prototype Bü 131 Jungmann ready and airborne on April 27, 1934. The biplane was an immediate triumph with inherently good flying qualities. The Jungmann was quickly put into quantity production for the expanding flying training schools of D.L.V.

In appearance and basic design techniques, the Jungmann was apparently conventional enough. The prime consideration was that R.L.M. required of its low

Three of the first Jungmanns to be seen in England were those that attended the International Flying Meeting at Lympne, Kent, in August 1935. Two are pictured here, both Bü 131 As, the nearer in aerobatic trim with faired-over front cockpit and forward windscreen removed. Both carry the national black, white and red bands on fin and rudder; with the swastika in white circle on red background—the Hakenkreuzflagge—on the port side. (Photo: "The Aeroplane")





Three German state-owned Bü 131 A Jungmanns circa 1935–6. Few Jungmanns were sold to private individuals in Germany, for the average overtaxed German enthusiast was hardly encouraged to run an aircraft for himself when, through The Party's organisations, he could obtain hangarage, C. of A. renewals, fuel and repairs for nothing! Note national black, white and red bands on the fin and rudder. (Photo: Author's collection)

horsepower two-seater specification that the finally selected biplane should be endowed with good economics—cheap enough both in initial outlay and subsequent operating costs. The design was also required to be equally suitable for primary training and aerobatics initiation. So it had to be robust and have a better-than-average manoeuvrability. In all these respects, the Bü 131 provided the right answers.

Essentially, the Jungmann's basic airframe components were a welded steel-tube fuselage and tail assembly structure, all-wood wings, and the whole being fabric-covered except for the motor cowling and metal sheeting surrounding the tandem cockpits. A noteworthy feature was that the upper and lower mainplanes were to be interchangeable. Thus, the Bü 131 possesses aileron controls on all four wing surfaces; for aerobatics, a useful design bonus. From Stuttgart-Zuffenhausen was supplied the 80 h.p. HM 60 R, an air-cooled 4-cylinder inverted inline produced by *Hirth-Motoren G.m.b.H.*

Even before the close of 1934, the production version Bü 131 A for D.L.V. was in such demand that Bücker made plans to move to a larger manufacturing plant. In

1935 Bücker had removed to Rangsdorf near Berlin and it was from this new home that all subsequent Bü 131s were produced.

Although outside the scope of this *Profile*, it was at Rangsdorf that engineer Andersson evolved the equally superb Bü 133 *Jungmeister* (*Young Champion*), the single-seat version of the Jungmann and powered, initially, by a bigger Hirth inverted inline, the HM 6 of 135 h.p. With a deeper fuselage and stubbier wings, the Jungmeister possessed incredible agility. When the production version—powered by the 150 h.p. Siemens Sh 14 A radial—appeared, it was soon a firm favourite for international aerobatic championship events.

The arrival of the Jungmeister meant, of course, that the Jungmann was never used to any great extent for serious aerobatic competition before the war. But its fast-growing reputation as a trainer, coupled with a vigorous sales campaign, soon brought it to the attention of flying schools in a number of other countries.

During 1935 and 1936 the Bücker company began to export small quantities of Jungmanns to, for example Switzerland, Czechoslovakia, Hungary and South

Bü 131 A, HB-EKA, flying over Switzerland, was the 27th production Jungmann and one of the first to be exported. It was registered on May 29, 1935 to the Zürich section of the Swiss Aero Club.

(Photo: Swiss Transport Museum (Lucerne) archives)

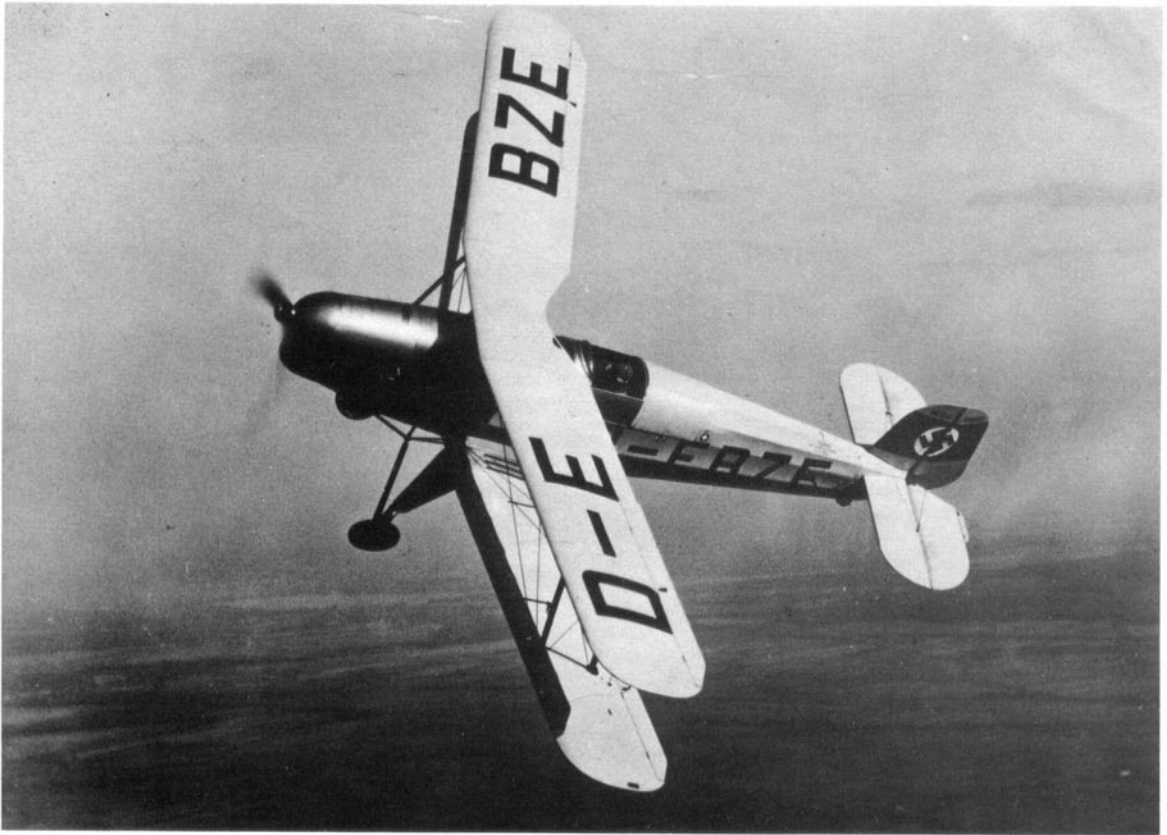
OK-TAA was the first Jungmann in Czechoslovakia. Despite the Tatra badge just forward of the front cockpit, it was a German-built Bü 131 B. However, it did serve as the pattern aircraft for subsequent Tatra production of the Jungmann.

(Photo: via Zdenek Titz)

One of only two Jungmanns supplied to Uruguay before the war, this Bü 131 A, CX-AAJ, was painted in the "factory finish" of silver overall and grey trim.

(Photo: Nery Mendiburu via Gary Kuhn)





A fine study of the Bücker-Flugzeugbau's Bü 131 B demonstrator D-EBZE. The marked 11° sweepback of the wings is well illustrated.

(Photo: R.L.M. ref. 2005)

Africa. Also in 1936, the *Luftwaffe* had openly, and officially, adopted the Jungmann as one of its primary trainers. Its effectiveness in this role did not go unnoticed by countries considering replacements for their existing military training equipment. Another factor to influence would-be purchasers of the Jungmann was the fact that, in 1936, the 80 h.p. A-series was supplemented on the production-line by the Bü 131 B-series—with the more powerful 105 h.p. Hirth HM 504 inline engine. This extra 25 h.p. (take-off rating) brought about a general all-round improvement in performance. Although it meant a marginal increase in operating cost, the Jungmann still remained a sound economical proposition.

Switzerland was the first country outside Germany to

order the Jungmann in quantity. Both the Swiss Aero Club and the Swiss Air Force decided to buy following their evaluation of a Bü 131 B. The order was not, however, given to the Bücker-Flugzeugbau. Instead it was placed with the Swiss *Dornier-Werke A.G.* They had applied for, and been granted, rights to manufacture the Jungmann at their Altenrhein works. Before 1936 was out, 10 Dornier/Bücker Bü 131 Bs had been completed; the first seven going to the Swiss Aero Club. The decision of the Swiss to standardise on the Jungmann was an important factor in the subsequent steady growth of the hitherto little-known German firm, particularly where exports were concerned.

Spain, too, was early in ordering Bü 131 Bs. Well over a 100 German-built Jungmanns were delivered to the Nationalist forces before the *Construcciones Aeronauticas, S.A.* also began licence production of the Bü 131 B at Cadiz in 1938—under the designation C.A.S.A. 1.131.





A superb formation shot of Swiss Aero Club Jungmanns flying near Bern in Switzerland. The nearer Jungmann, HB-UFI, is Bucker-built (the 31st production aircraft) and was first registered in Switzerland in June 1935. (Photo: Swiss Transport Museum (Lucerne) archives)

SE-AGT and 'AGU were two of four Jungmanns sold to Sweden before the war. They are seen here at Stockholm soon after delivery to Svensk Flygförbundet AB, in 1938. SE-AGU still exists and is presently stored at Arlanda awaiting museum space. A tri-motor Junkers Ju 52/3m is in the background. (Photo: Svensk Flygförbundet AB.)





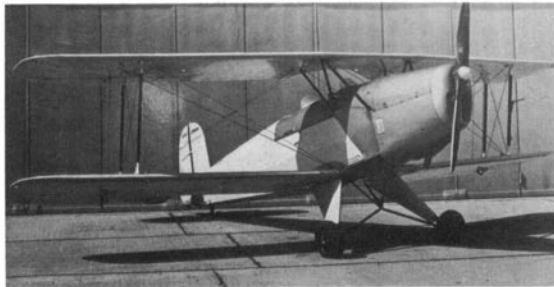
Bü 131 B, HA-LCA, of the Hungarian National Aviation Fund (H.M.N.R.A.) photographed when on a visit to England before the war. Colour scheme was pale grey overall with black registration letters, interplane and undercarriage struts, and red, white and green national markings on the rudder. (Photo: Richard Riding)



The first Czechoslovakian licence-built Tatra T-131 (licence Bü 131 B) OK-TAB. Colour scheme was light grey overall with black struts and registration letters. The nose flash was red. Forward of front cockpit is the Tatra badge. (Photo: via Vaclav Nemecek)



At least 19 Jungmanns were sold before the war to Brazil. This Bü 131 D, PP-TEY, was still airworthy in the early 1950s, but has since been cancelled. Note non-standard low pressure "ultra" balloon tyres. (Photo: via Gary Kuhn)



The one and only Bü 131 C Jungmann, a basic Bü 131 B fitted with a British 90 h.p. Cirrus Minor engine. (Photo: Author's collection)

decide to adopt the type as its basic trainer. The company's plans went awry; the hoped-for contract did not materialise, and the 10 Tatra T-131s were finally taken over by the Ministry of Public Works in 1938 for use with the State aero clubs.

In the last years before the outbreak of World War II, the Rangsdorf factory was stretched to capacity in its attempts to meet ever-increasing demands for the Jungmann. The Yugoslav Government placed a massive order, possibly for as many as 400 Bü 131s. Other eastern European customers were Bulgaria and Rumania (about 15 and 40 respectively), and Hungary. Of the 119 delivered, 75 went to the *Horthy Miklos Nemzetirepülőalap* (H.M.N.R.A.⁶ or National Aviation Fund) and 42 went to the Hungarian Aviation Bureau; the cover name for the country's clandestine air arm. Only two "genuine civil" Jungmanns were delivered to Hungary, one for the Aero Club of Bszkrt (Bü 131 B, registered HA-LBM) and the other to the Count of Festetich (Bü 131 A, HA-RAP).

In South Africa, further deliveries were made to private owners bringing the total finally to 16 aircraft. Across the South Atlantic, and following a successful 1938 demonstration tour of South America—with a Jungmann and Jungmeister—the Bücker company sold at least 19 of the former in Brazil, two in Uruguay, and two in Chile. Back in Europe, four Jungmanns were delivered, this time to Sweden, then two each to Finland, France, the Netherlands, Poland and Portugal, and a single example to Austria.

On the other side of the world, the *Nederlandsch-Indisch Luchtvaartfonds* (Netherlands Indies Aero Fund) purchased six Jungmanns as trainers for the Netherlands Indies flying clubs, and these were shipped to the East Indies in June 1939.

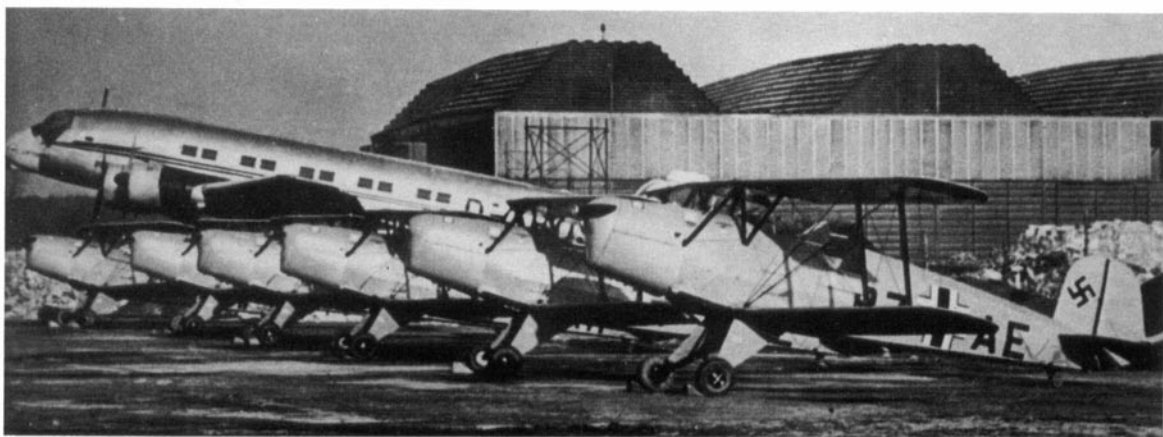
A few Jungmanns also saw service with the Netherlands Indies Army Air Corps—but it is not known if there were separate aircraft from the civilian Bü 131s, or merely the civilian Jungmanns impressed. The Imperial Japanese Navy, too, purchased a single Bü 131 B in 1938 and, after rigorous flight trials, ordered a further 20 in 1939.

Throughout this pre-war period, Jungmanns were being continually delivered to the *Luftwaffe's Flugzeugführer Schulen* (F.F.S.) as well as to the various State flying organisations, total production topping the thousand mark by the autumn of 1939.

A trio of Jungmanns pictured over Hungary in 1941. The nearest aircraft, HA-LDI, is an National Aviation Fund (H.M.N.R.A.) Jungmann while the other two (1.261 and 1.269) are Royal Hungarian Air Force Bü 131s; 1.261 is mottled brown and green, the others are pale grey. (Photo: via Ferenc Kovacs)



⁶ H.M.N.R.A.—a pre-military flying training organisation not unlike Germany's D.L.V.



Six Bü 131 B Jungmanns awaiting delivery to one of the Luftwaffe's training schools in 1939. Towering in the background is a Deutsche Luftthansa Junkers Ju 90. (Photo: Swiss Transport Museum (Lucerne) archives)

A new variant, the Bü 131 D, had been introduced in 1938, though this differed little from the Bü 131 B, incorporating only minor improvements and changes. It was, in fact, the last German variant of the Jungmann. The Bü 131 C—which did not see production—was a single Jungmann powered by a British 90 h.p. Cirrus Minor inverted inline engine.

1939–1945 WAR PERIOD

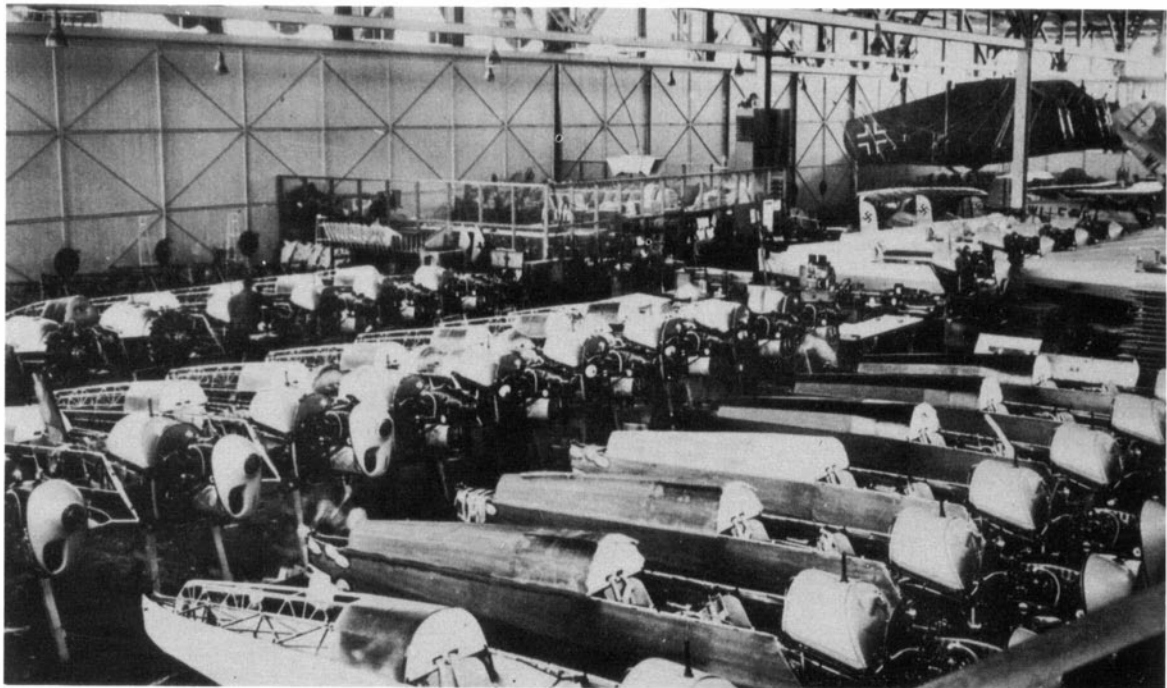
In March 1939, Germany occupied Bohemia and Moravia, and on September 1 of the same year launched its armed forces across the frontier into Poland. At this point of time, the *Luftwaffe* possessed over 3,500 combat aircraft and 2,500 training aircraft, the Jungmann by now flying in considerable numbers with the German Air Force's F.F.S. establishments and the *Luftkriegs-*

schulen (L.K.S.) or Officer Candidate Schools. One of the largest collections of Jungmanns in Germany, both before and during the war years, could be found at Berlin-Gatow, which not only housed the German *Luftkriegsakademie* (L.K.A.)⁷, but an L.K.S. as well.

By 1940, most of the Jungmanns that flew under civil marks with the German State organisations had lost their civilian identities, and been transferred to the *Luftwaffe*. Not all however, for there were instances of Bü 131s being seen still with their civil registrations until well into the war years. For example, D-ELPO, a Bü 131 B, was logged into Berlin-Gatow as late as May 1942.

⁷ More or less the German equivalent of the Royal Air Force College at Cranwell.

Fuselages of Bü 131 D Jungmanns and Bü 133 C Jungmeisters (at rear) under construction in 1939 at Rangsdorf, near Berlin. (Photo: Swiss Transport Museum (Lucerne) archives)





A Bü 131 D of the Luftdienst (Air Service) in the standard overall "R.L.M. Grey" finish. It was a Luftdienst Jungman that was flown to England in 1941 by two French Air Force Officers. Note blue and yellow Luftdienst badge on fuselage under the front cockpit.

(Photo: Bundesarchiv ref. 609-1926-17A)

Key to colour illustrations

- 1 Bücker Bü 131 A (D-EFEI) of 1935; allocated to *Deutscher Luftsport-Verband e.V.*, the government-sponsored "flying-sports" organisation that gave many future *Luftwaffe* aspirants their first air experience. D.L.V. was ultimately (April 1937 onwards) absorbed by the more para-military N.S.F.K. (*Nazi Fliegerkorps*). The 80 h.p. Bü 131 A is depicted in standard Jungmann all-silver and grey trim; occasionally, the grey was replaced by dark blue finish. Tail markings: by order (July 6, 1933) of *Reichsminister der Luftfahrt* Göring, all civil-registered aircraft had to display the *Nazi swastika Hakenkreuzflagge* (port side only). The conventional national black-white-red "*schwarzweissrote Flagge*" was retained by courtesy to President von Hindenburg (see starboard detail) but following his death, this too, was replaced by the new *Reichsflagge* of the Nazis.
- 2 Bü 131 B with the 105 h.p. Hirth; compare cowling outline with Bü 131 A above. The owners of SB +BD (see enlarged detail assembly) were the *Luftwaffe's* famous "*Horst Wessel*" I./Z.G.26 heavy destroyer wing—*Zerstörergeschwader 26's I.* (First *Gruppe*). Although employed as a general "hack", this is probably the closest the Bü 131 normally got to front-line service. The colouring is standard R.L.M. trainer grey. Observe the luggage locker and first-aid compartment aft of rear cockpit; also the Bücker triangular trademark above the I. *Gruppe* insigne.
- 3 Bü 131 B (1.243) of the Royal Hungarian Air Force, attached to the Second Tactical Reconnaissance ("Lucifer") Squadron—see detail—for liaison duties in 1941. This Jungmann was impressed and its former H.M.N.R.A. civil registration has been over-painted but, curiously, part of its original yellow lightning-flash trim has been retained. Visible, forward of the tail assembly, is the characteristic Vee-zip for quick access during maintenance.
- 4 Allied code name: "Cypress". Both the Imperial Japanese Army (Ki-86a) and Navy (K9W1) had licence-built versions of the Bü 131 B with 110 h.p. Hitachi 11 engines. No. 4, illustrated, was seen at Tokyo's Tachikawa air base in 1944, and is properly designated as Army Type 4 Primary Trainer built by the *Nippon Kokusai Koku K.K.* As a general rule, the trainer was finished in orange-yellow overall.
- 5 A revived Bü 131 (HA-BKK) which the ingenious Hungarians created from parts of Bü 131 Bs and Bü 131 Ds in 1947–8. Called the "*Csíz*", these rebuilt Bü 131s were salvaged from wrecks abandoned by the retreating Germans in 1944. No fewer than 42 "*Csíz*" were assembled. The last was grounded in 1953.

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Groundcrew prepare to tie down and camouflage a Luftwaffe Bü 131 D on the Eastern Front in March 1942. Few Jungmanns flew from forward airfields, but this one bears the markings of 8./J.G.54 "Grünherz" (Green Heart) fighter unit, and served in a communications capacity. The Chicken emblem on the engine cowling, partly hidden by one of the groundcrew's head, is red and white, while the Heart is green with a white outline.

(Photo: Bundesarchiv ref. 396-1622-4)

The Jungmann did not see much front-line service during the war years, its presence at forward airfields being restricted to a handful of aircraft serving with combat units in a communications or liaison capacity. For the most part, the Jungmann remained purely in the training rôle for the duration of the war, although some were used with *Luftdienst* (Air Service) units for various duties including target-towing. No exotic conversions are in evidence and there were few reports of encounters with Allied aircraft. However, a British Air Ministry communique of late 1943 describes an engagement over Paris, when an unspecified number of Jungmanns was chased round the Eiffel Tower by marauding Hawker Typhoons which succeeded in shooting down one of the hapless Bü 131s.

One *Luftdienst* Jungmann was actually flown to England during the war! It was started up in a hangar at Caen, in northern France, by two *Armée de l'Air* (French

Final instructions for a young Luftwaffe pilot as he prepares to take off in Bü 131 B, SB+BD, serving as a general "hack" with the first Gruppe of the famous "Horst Wessel" heavy destroyer wing—1./Z.G.26.

(Photo: via R. Smith)



Air Force) pilots and flown to Christchurch, in Hampshire, on April 30, 1941. There it was dismantled and despatched for subsequent display in London, returning to Christchurch in August. By this time, however, it had been so looted by souvenir hunters that it could not be reassembled. Its ultimate fate is unknown.

Naturally enough, the war effectively stopped further exports of Jungmanns to other countries, except to Hungary where, from 1939 to the summer of 1944, 151 Bü 131 Ds were delivered to the Royal Hungarian Air Force. Most of these remained in Hungary as trainers but some were used as liaison aircraft with air force units operating inside Russia. An amusing incident is related concerning a pupil flying solo in an H.M.N.R.A. Jungmann. While flying "circuits and bumps" he brushed the top of a haystack and damaged one leg of the main undercarriage, turning the wheel through 90°. However, the student managed to climb away safely and began circling the aerodrome to take stock of the situation. His instructor, who had witnessed the incident from the ground, rushed over to another Jungmann and with a piece of chalk, hastily chalked in large letters on the fuselage: "cut your ignition when I signal, and level-off gently on landing". He then "scrambled" as fast as he could in order to reach the circling pupil before he tried to land. This he succeeded in doing and the resultant landing, although wiping-off the undercarriage, was at least accomplished on an even keel without injury to the pupil!

The only known cabin-conversion Jungmann was Hungarian, evidently the personal "hack" of the commanding officer of a training school in Szombathely in 1943. It was an air force Bü 131 D converted to a single-seater with a canopy fitted as well. In this configuration it was dubbed the "Kam Bucker" (Male Bucker).



A Japanese-built Kokusai Ki-86a (Allied code: "Cypress") in British markings when used by the Allied Technical Air Intelligence Unit just after the war. (Photo: Imperial War Museum ref. CF.895)

At one stage during the war there was quite a two-way traffic in Jungmanns, for while Bücker was delivering Jungmanns to Hungary on the one hand, on the other, the *Luftwaffe* was taking delivery of Jungmanns built by the Aero factory at Prague. Three hundred Jungmanns were built by the Aero works during the war. In addition to these, some Yugoslav Jungmanns were "repatriated" and further captured Yugoslavian examples served with the *Regia Aeronautica* (Royal Italian Air Force) for a few months in 1941 before being transferred to the newly created Royal Croatia Air Force.

In Japan, strenuous efforts were made to produce a primary trainer comparable in performance to the Bü 131 B already in service with the Imperial Japanese Navy. But none of the three types submitted could match the German biplane's performance and, in 1942, after acquisition of the manufacturing rights, the Jungmann was put into production by the Watanabe Ironworks Co. Ltd.,⁸ for service with the Japanese Navy. In all, 339 were built under the designation K9W1 Navy Type 2 Primary Trainer Model 11, and named *Momiji* (Maple).

These were not the only Jungmanns to be manufactured in Japan. In 1943, the *Nippon Kokusai Kogyo K.K.* produced a copy of the Bü 131 B as a replacement for the ageing Ki-17 primary trainer in service with the Imperial Army. As the Ki-86a Army Type 4 Primary Trainer, 1,037 were built for the army from 1944 onwards. Both the K9W1 and the Ki-86a were powered by the 110 h.p. Hitachi 4-cylinder inverted inline engine; and both Navy and Army types were known under the Allied code name "Cypress".

In 1944, in an attempt to conserve strategic metal supplies, an all-wood Ki-86, known as the Ki-86b, was

⁸ *K.K. Watanabe Tekkoshu*, later—in 1943—renamed *Kyushu Hikoki K.K.*

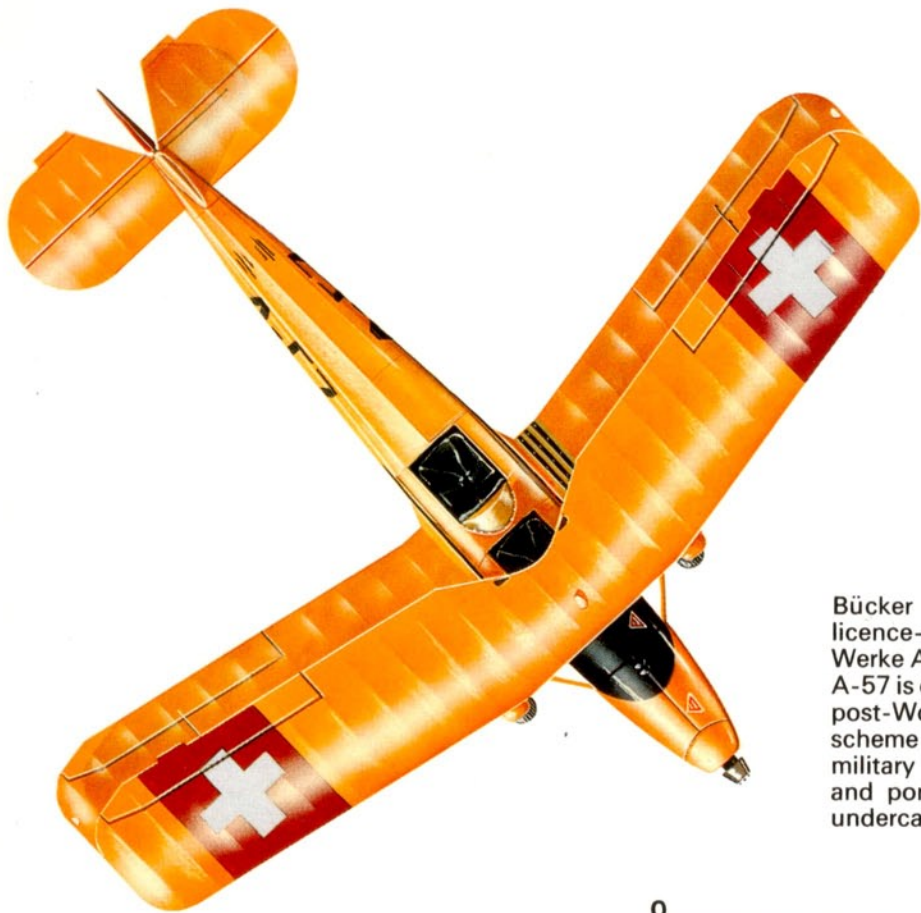
designed; the sole example being completed in February 1945.

The total number of Jungmanns built by the Bücker factory at Rangsdorf is not known though probably between 3,000 and 4,000 had been constructed before it was phased-out in 1940 and 1941 in favour of the Bücker Bü 181 Bestmann. This was a low-wing two-seat cabin monoplane designed to replace the Jungmann in the primary training rôle. The Bestmann had an excellent all-round performance from the same engine as the Jungmann. As well as being easier to maintain, the Bestmann was better suited than the Jungmann to undertake a variety of military duties other than purely training ones. It never achieved the popularity of the Jungmann though, particularly in the aerobatic field. Although on the arrival in service of the Bestmann, large numbers of Jungmanns were transferred to Rumania and the Balkans, the Bü 131 continued to serve alongside the

A pre-1941 photograph of a Yugoslav Air Force Bü 131 B, "457" on its nose, after suffering port undercarriage leg collapse in an emergency landing. Tail wheel is larger than standard.

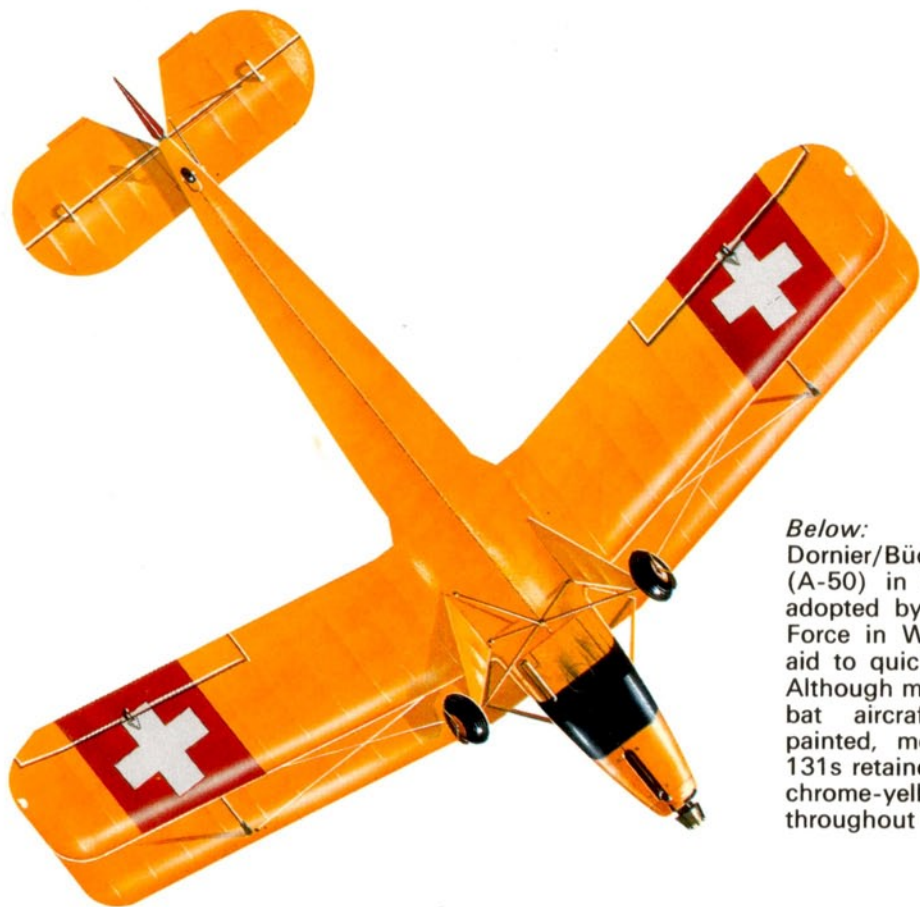
(Photo: Sime Ostric via John Wegg)





Bücker Bü 131 B (A-57), licence-built by Dornier-Werke A.-G. in Switzerland. A-57 is depicted in standard post-World War 2 colour scheme applied to all Swiss military Bü 131s. Head-on and port side views show undercarriage under load.





Below:

Dornier/Bücker Bü 131 B (A-50) in colour scheme adopted by the Swiss Air Force in World War 2 as aid to quick identification. Although most Swiss combat aircraft were thus painted, most of the Bü 131s retained their original chrome-yellow colouring throughout the war.





Epitomizing the defeat of the Third Reich, a derelict Luftwaffe Jungmann lies on an aircraft dump in Germany in 1945 minus starboard wings and stripped of its swastikas and crosses by souvenir hunters. (Photo: G. J. R. Skillen, Air-Britain)

Bü 181 Bestmann in Germany until the end of the war.

By the early summer of 1944, the fuel shortage, brought about by the concentrated Allied attacks on Germany's oil installations, had become serious. One-by-one, operations by all except fighter units became increasingly limited. As the summer wore on, progressively units were shut down for lack of fuel; including most of the training schools. With this downward trend, effective pilot training in Germany came to an end.

1945-1971 JUNGMANN LIVES ON

The vast majority of the Jungmanns that remained in

The only known photograph of a Jungmann in Royal Air Force markings. One or more was flying from Berlin-Gatow in 1945 and, as late as 1947, a Jungmann with R.A.F. markings could be seen at Gatow on a dump of old German aircraft (including four or five Luftwaffe Jungmanns). Underneath the R.A.F. paint scheme, however, could clearly be seen Yugoslav Air Force markings! (Photo: via "J.M.E.")



Germany at the end of hostilities in May 1945 were either not airworthy or were immediately broken-up by the Allied occupying forces. No examples were officially taken-on-charge by the British Royal Air Force although one or two Jungmanns were flown in R.A.F. markings, but without serial numbers, at Berlin-Gatow for a short while in 1945. None was transferred to Britain or, with one rare exception, to the U.S.A. This concerned a Bü 131 B that was found on an aircraft dump near Berlin by an U.S.A.A.F. Air Transport Command pilot. He restored the Jungmann, flew it to Paris, and then had it crated and shipped home. In the U.S.A. it was carefully rebuilt and eventually flown again with the restricted registration NX372. Unhappily its New World career was short-lived, for it crashed in 1947 and was never rebuilt.

So in Germany post-war, the Jungmann ceased to exist. But what of the Jungmanns that had been exported abroad before the war such as the Hungarian, Czechoslovakian and Yugoslavian examples? What, too, of the Swiss-, Spanish- and Japanese-built Jungmanns?

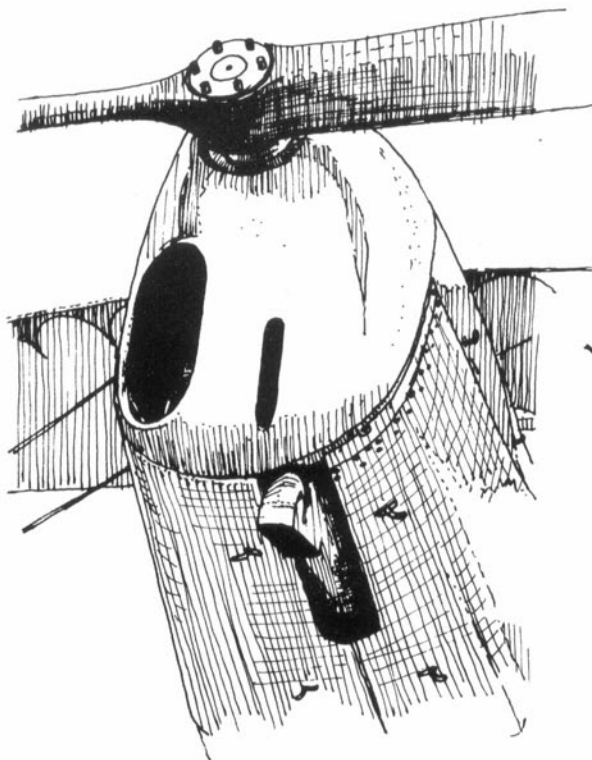
Many of the pre-war exports had perished. One of the Dutch Jungmanns was captured by the Germans on the island of Texel in May 1940. Those that went to the Netherlands East Indies were destroyed, probably during the Japanese attacks on Java. The South African Bü 131s—all impressed into the South African Air Force at the beginning of the war—either crashed or were ultimately grounded through lack of spares. Nothing is known concerning the fate of the Bulgarian examples,

but the half-dozen or so Jungmanns which flew with Polish aero clubs from 1945 to 1948 are thought to have been ex-Rumanian. The single Austrian Jungmann (OE-SSE) was reregistered in Germany at the time of the "Anschluss"—the 1938 "union" with the Reich. In Brazil, six of the Jungmanns exported there in 1939 were still active, likewise three of the four Swedish ones, and, incredibly, one of the two Finnish examples.

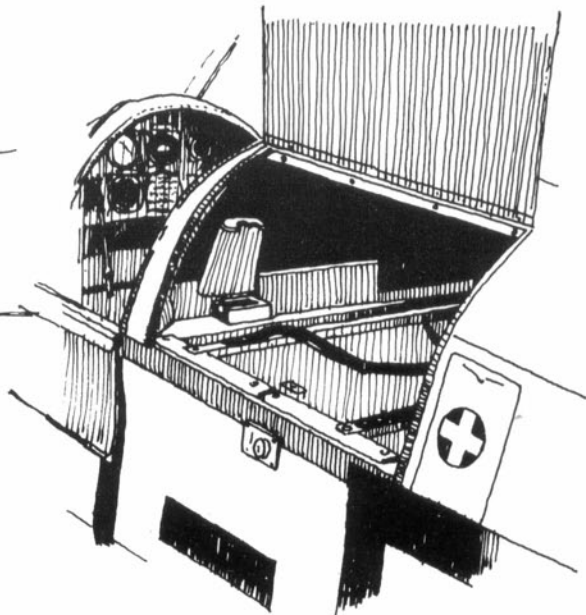
It was in Switzerland and Spain, however, that the greatest quantities of surviving Jungmanns were still to

be found post-war. The Swiss Air Force had received the last of its 84 aircraft from the Dornier works in 1943, and most were still active. In addition, there were civilian Jungmanns (including three Bücker-built examples) that had been returned to their pre-war Swiss owners, after military impressment for the war's duration. In Spain, the C.A.S.A. factory was still building Jungmanns for the Spanish Air Force and, in fact, did so until 1960, by which time, an ultimate total of 500 had been built.

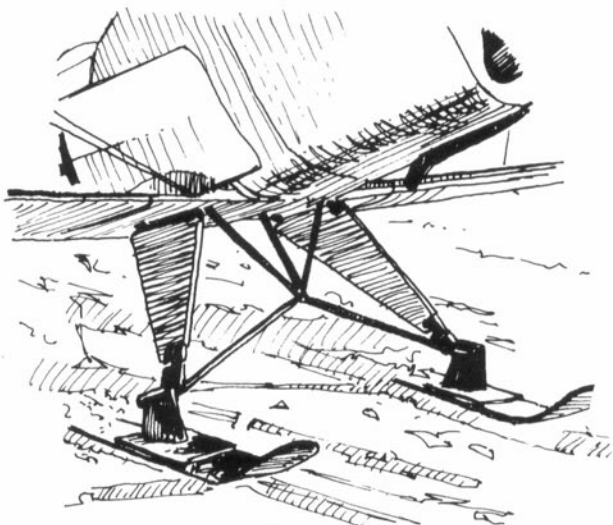
None of the Japanese Ki-86as or K9Ws survived for



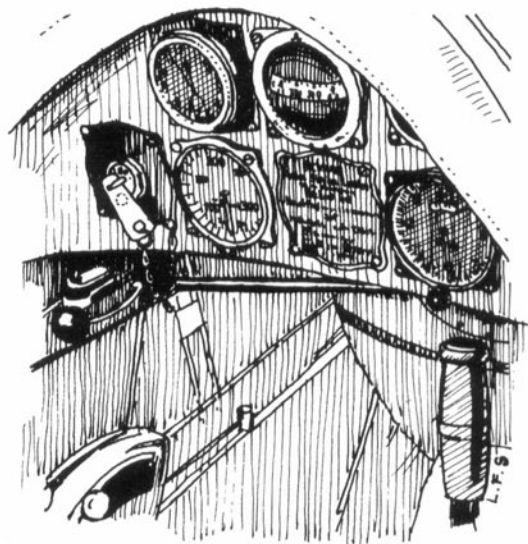
Nose detail of Dornier-built Do/Bü 131 B.



Detail of luggage locker and first-aid compartment.



Ski undercarriage arrangement.



51
Bü 131 B rear cockpit detail. (top, left to right) Clock, compass and fuel pressure gauge; (bottom, l. to r.) ignition switch, airspeed indicator, constructor's nameplate including instructions to pilot, and altimeter. Knob under the ignition switch is tailwheel lock. Throttle lever is at bottom left.

(All pen drawings copyright L. F. Sarjeant)

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Key to colour illustrations

- 6 A Spanish C.A.S.A. 1.131 (791-28) at the San Javier-based *Academia General del Aire* in 1968. Basically a Bü 131 B licence-built with the Spanish 125 h.p. E.N.M.A. (formerly *Elizalde S.A.*) Tigre G-IV-A engine, the C.A.S.A. 1.131 bears on the top of the fin the Spanish air force designation E.3B and the serial 370.
- 7 Czechoslovakian Aero C 104 (OK-BOG) in the colours of the Olomouc Aero Club's aerobatic team, 1959. Individual colour schemes such as this were occasionally applied—particularly for display aircraft—but most civil-registered C 104s retained their original air force grey-green paint finish.
- 8 Bücker "Lerche" (Lark), a Swiss Dornier-built Bü 131 B which was modified by the *Pilatus Flugzeugwerke* at Stans, Switzerland, in 1963. The changed cowling outline of HB-URN encloses a 180 h.p. Avco Lycoming IO-360-B1B horizontally-opposed "flat-four" engines. Herr Arnold Wagner, a Swiss pilot, flew HB-URN to 8th place in the Bilbao 1963 World Aerobatic Championships.
- 9 Another Dornier-built Bü 131 B (G-ATJX), currently owned by Mr Ron Fautley, and based at Jenkins Farm in Essex, England. The post-war German national tricolour on the fin has now been replaced by a different motif (see photograph in text) and the registration letters have been made bigger.
- 10 A Czechoslovak-built Aero C 104 (N1948H) as it was in 1970 when owned by Bob Haack at San Antonio, Texas. The owner's name, Mr Bob Haack, is recorded on the luggage compartment. Formerly it was registered in the German Federal Republic as D-ENIX.

long. A few were flown, briefly, in British marks by the Allied Technical Air Intelligence Unit⁹, which, among other duties, was responsible for the evaluation of Japanese aircraft. One "Cypress" was crated and brought to Britain after evaluation in Japan.

This sole surviving Ki-86a was rather stupidly reduced to ashes in a fire-fighting exercise at R.A.F. Station Wroughton, in Wiltshire, some time in the mid-1950s.

Some Jungmanns survived in Yugoslavia and 12 Aero-built Jungmanns finally came to light in Czechoslovakia. The retreating German troops destroyed practically all the Hungarian Jungmanns. Nevertheless, by salvaging engines, and other spares from the wrecks, and manufacturing new wings, the ingenious Hungarians managed to rebuild 42 aircraft (designated the "Csiz"), the first of these flying at the end of 1947. But lack of spares soon made it difficult to keep the Bü 131s air-worthy and the last "Csiz" was grounded by 1953.

⁹ A.T.A.I.U. was also responsible for code-naming Japanese aircraft—from "Alf" to "Zeke". "Cypress" was one of the few exceptions to naming with boys' and girls' names.



YU-CET, a Bü 131 B flying in Yugoslavia, post-war period, with the Vrsac Flying Club. (Photo: Sime Ostric via John Wegg)



A rare photograph of a South African Air Force Bü 131 D ("1431", ex-ZS-AOP). The name "Waltzing Matilda" on the nose would seem, however, to be more appropriate to the Royal Australian Air Force. Local modifications include a spatted tail wheel.

(Photo: via Ken Smy, Air-Britain)

A total of 500 Jungmanns was built from 1938 by the Construcciones Aeronauticas S.A. (C.A.S.A.) in Spain and designated the C.A.S.A. 1.131. The first 200 had German Hirth HM 504 engines but the remainder were powered by 125 h.p. Spanish E.N.M.A. Tigre G-IV-A or 150 h.p. G-IVB engines. The 125 h.p. version is shown here.

(Photo: Juan Arraz Cerda)



The Czechoslovak Air Force, after putting back into service 12 Bü 131s found at the end of the war—under the designation Aero C4—decided, in 1946, to do what the Tatra factory had hoped it would do before the war—adopt the Jungmann as its standard primary trainer! Accordingly, the Aero factory, which had built the Bü 131 B for the *Luftwaffe* during the war years, was instructed to build the Jungmann again; this time using the Czechoslovak 105 h.p. Walter Minor 4-III inverted inline engine instead of the Hirth HM 504. Some 260 Aero C 104s, as the new version was known, were built from 1946 to 1949, most of these going to the Czechoslovak Air Force. Subsequently, many of them were released to the State aero clubs.

In 1959 and 1960, a number of C 104s was sold through *Omnipol*—the State export department—to private owners in Switzerland, Austria and Germany.

In 1960, an Aero C 104 took the international speed record over a 3 km. course (F.A.I. C-1A category), this being raised to 216 km./m. in September 1961 by a C 104 modified to take the more powerful 140 h.p. Walter M 332 engine.



Fine photograph of Czechoslovak-built Aero C 104, OK-BID, on route from Olomouc to Ostrava in July 1957. Overall colour scheme was "R.L.M. Grey" with black registration letters.
(Photo: Zdenek Titz)

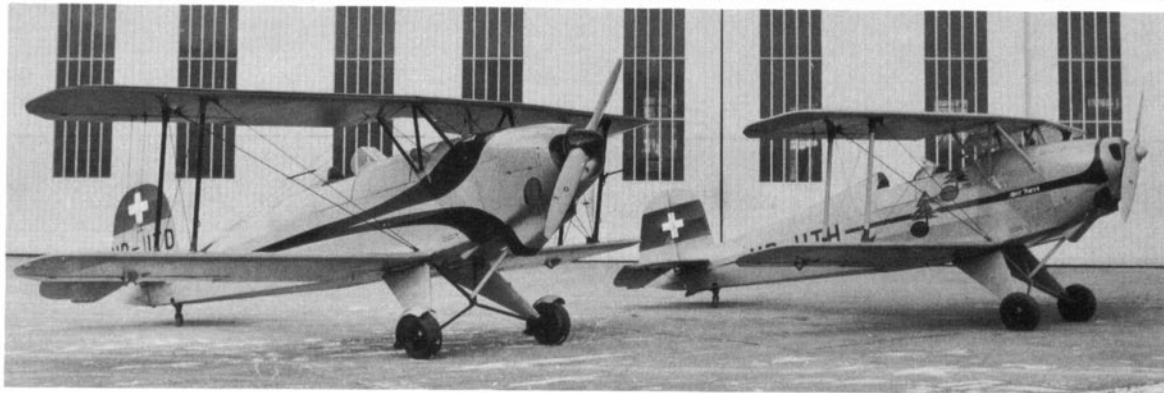
The Swiss Air Force finally relinquished its remaining Jungmanns in the late 1950s and early 1960s, though it was to retain its Bü 133 Jungmeisters until the end of the 1960s. Most of these Jungmanns were snapped-up by the various sections of the Swiss Aero Club, but it was not long before examples were also finding their way to other countries, notably Germany, Austria, and Italy.

It was inevitable that sooner or later an attempt would be made to improve the Jungmann's aerobatic performance by replacing the old 105 h.p. engine with ones of more modern design and greater power. Logically the highly successful aircooled horizontally-opposed units developed in the U.S.A. demanded attention. One of the first such conversions was undertaken in 1962 by the *Flug-und Fahrzeugwerke A.G.* (the successor to the *Dornier-Werke A.G.*), who installed a 170 h.p. Lycoming

in the Swiss Jungmann registered HB-UTH. This brought the Jungmann's aerobatic potential to the point where the Swiss aerobatic pilot Albert Reusch decided it was competitive enough to stand a good chance of winning a major international trophy. He entered for the British 1962 Lockheed Aerobatic trophy at Baginton (Coventry Airport) where he succeeded in taking 2nd place. His son, Hansreudi Ruesch, then won the 1963 Swiss Aerobatic Championships with the same HB-UTH.

This conversion was followed by a number of others, all using Lycoming horizontally-opposed engines. For example, *Flug-und Fahrzeugwerke* modified HB-UTD to take a 180 h.p. Lycoming. Then the Pilatus aircraft works at Stans (under the direction of the engineer Fritz Dubs) similarly converted HB-URN for the

Two of the first Jungmanns to exchange their 105 h.p. Hirth engines for Avco Lycomings were HB-UTD and 'UTH which were both converted by the Flug-und Fahrzeugwerk A.G. at Altenrhein, Switzerland. Both were finished in black and yellow paint schemes.
(Photo: F.F.A.)





The Luftfahrerschule Nordrhein-Westfalen e.V.'s magnificent red and white single-seat Bucker "Lerche" (Lark), D-EDEF, photographed here at Bonn, German Federal Republic.

(Photo: M. J. Hooks, Air-Britain Digest editor)

Motorfluggruppe Zürich club, also 180 h.p. Lycoming powered. The Jungmann, as modified by Pilatus, was redesignated the Bucker "Lerche" (Lark). With the "Lerche", a young Swiss pilot, Arnold Wagner took on the formidable Russian Yak-18s and Czechoslovak Zlin Treners at Bilbao, Spain, in the 1964 World Aerobatic Championships. With only 14½ hours practice behind him on the "Lerche", he succeeded in taking 8th place overall. Once back in Switzerland, Wagner complained that the inverted climb rate was far from adequate, and the Swiss Fritz Dubs accordingly designed a new wing of improved-performance section. The new wings were fitted in the winter of 1965-6 by the small firm of Max Dätwyler and Company at Bleinbach. Unhappily, in 1966, a member of the Motorfluggruppe Zurich club attempted an inverted loop from 200 metres in HB-URN and hit the ground upside down. He was killed instantly and the "Lerche" was a total wreck.

A further "Lerche" was then produced, the conversion being carried out by Max Dätwyler but this time for the Luftfahrerschule Nordrhein-Westfalen e.V. at Bonn. In addition to the new engine and improved wings however, this "Lerche" was fitted with a variable-pitch propeller and the rear fuselage was also built up slightly to give better lift when sideways on. The result was a really fine aerobatic biplane, but the cost of the conversion was such that few similar conversions have been undertaken since, although a variety of different engine modifications have been carried out in recent years in the U.S.A.

The Americans first "discovered" the Jungmann in the early 1960s. Since then there has been a slow but steady emigration westward, of Dornier- and Aero-manufactured examples; and this despite the imposition of a 30% import duty. One of the first Jungmanns to arrive in the U.S.A. was Mira Slovak's N121U, an Aero C 104 which he had purchased in Switzerland in 1962. It was no

Aero C 104, N154S, in a brilliant red, white and grey colour scheme when owned by the American, Sammy Mason. Now it has an Avco Lycoming engine and has been registered N191X.

(Photo: Aviation Photo News)



A competitor at Hullavington, England—scene of the 1970 World Aerobatic Championships—was HB-URB, another Dornier-built Jungmann, redesignated Do/Bü R.180.

(Photo: G. J. R. Skillen, Air-Britain)

accident that he chose to buy a Jungmann however, for he had dreamt of doing so since the days in 1948 when he used to fly C 104s in the Czechoslovak Air Force. Mira Slovak, as well as being a Boeing 707 captain, is also an outstanding aerobatic pilot. He has nothing but praise for the flying qualities of the Jungmann. "I have flown quite a few airplanes", he says, "but there is not a better flying machine than the Jungmann". This view is shared by most Jungmann owners.

Those American owners who wanted to improve the aerobatic capabilities of their Jungmanns installed more powerful engines. Mira Slovak replaced N121U's Walter Minor with a 225 h.p. fuel-injection Lycoming, and Sammy Mason put a 150 h.p. Lycoming in N154S. Charles Brown of Monroe, Louisiana, also installed a 180 h.p. Lycoming in N913CB, but then replaced this with a 200 h.p. Lycoming. Of course, lack of spares for the Hirth and Walter Minor engines will soon force most owners to consider alternative powerplants anyway. But it does not appear as if many of the U.S.A. owners will be deterred by this. No-one, it seems, is about to scrap a Jungmann.

It is not easy to assess the grand total of Jungmanns flying in the world today. For example, the exact number still serving with the Spanish Air Force (the pilots apparently refuse to give them up!) is not known for certain; likewise the number extant in Czechoslovakia is in doubt. The remaining Spanish C.A.S.A. 1.131s probably number 80 to 100, and the surviving Czechoslovak civil C 104s not more than two dozen. This means then that approximately 150 Jungmanns of all types are left, of which no more than seven or eight are Bucker-built. No Japanese examples have survived; no Bü 131s are now left in Yugoslavia, Hungary or Rumania. It is certain, however, that those Jungmann which remain in

Another superbly finished American-owned Jungmann. This Swiss Dornier-built Jungmann, N1936G, now has several modifications including a built-up rear fuselage, faired-over front cockpit, a fillet at the foot of the fin, smart mainwheel covers and a "wiggly" propeller! Evidence of its previous German Federal Republic ownership (as D-ECIT) is the retention of the national tricolour on the fin.

(Photo: J. M. G. Gradidge, Air-Britain)





Line-up of C.A.S.A. I.131Es of the Academia General del Aire at San Javier in Spain. (Photo: Juan Arraez Cerda)

Still at the Spanish factory and displaying no unit markings, a Spanish Air Force C.A.S.A. I.131E trainer. (Photo: C.A.S.A.)



private hands will be carefully looked after, for this 36 year old veteran is recognised as one of the classics in the field of aerobatics training. It has rightly acquired a rarity value that will ensure its presence for many years to come.

HANDLING AND CONSTRUCTION

Unlike, for instance, the British de Havilland D.H.82 Tiger Moth, the Jungmann did not “evolve”. It was built from scratch as a primary and aerobatic trainer, and was properly equipped for the job—with ailerons on upper and lower mainplanes and an inverted fuel system. It was strong but light, had little dihedral, and both elevators, and ailerons were balanced. From the moment of its first flight, it flew beautifully and remains today one of the most responsive and viceless aircraft ever built.

In terms of advanced aerobatic capability, the Jungmann is underpowered, but it was, of course, never intended for this role. With only 105 h.p. to play with, there are bound to be limitations, and the amazing thing is that the Jungmann will do what it does with this limited power. Most of its contemporaries have more power at their disposal, yet few approach its performance.

The Jungmann is a light aeroplane and responds quickly to the controls, far quicker than a Tiger Moth. Aileron control is particularly crisp and to put it in the words of Ron Fautley, owner of the British-registered Jungmann G-ATJX: “You’ve virtually only got to sneeze in a Jungmann and it will flick roll”. The fact that the Jungmann is equipped with four ailerons makes rolling a relatively simple manoeuvre. By contrast, the roll in a Tiger Moth (with ailerons only on the lower planes, a larger wing span and greater weight) is a bit “barn-doorish”; and a hesitation roll is well nigh impossible—“Unless you have the strength of Goliath to hold the stick over”, says Ron Fautley. The Tiger Moth will, on the other hand, go round a loop better than the

Jungmann, for the Bü 131 is hampered by its low power and higher wing loading, and full throttle is generally required on the climb up to the top. From 125 m.p.h., the Tiger Moth will go right round without the necessity to open the throttle.

The stall in a Jungmann is very gentle. With the controls kept central, the nose drops straight forward without the slightest tendency for either wing to dip, and when the pressure is relaxed on the stick, the Bü 131 recovers easily. The spin is not easy to induce, but the recovery from it on opposite rudder is instantaneous, and quite shattering when first experienced.

With its inverted fuel system, the Jungmann will fly well upsidedown; another factor that makes rolling the Bü 131 such a simple operation. There is perhaps no other biplane of its class and age that will roll as well, not even the Belgian designed Stampe S.V.4¹⁰. Though, with its greater power, four ailerons and inverted system, the Stampe probably has a slightly better aerobatic performance generally than the Jungmann. It has the disadvantage of being of all-wood construction, whereas the Jungmann is of mixed construction with a basic fuselage structure of chrome-molybdenum, an expensive but highly tensile metal, which gives the Jungmann considerable strength. Another advantage in construction possessed by the Jungmann over most other biplanes, is the fact that the upper and lower wing panels are interchangeable, which means that, should a lower wing be damaged and only a spare top wing available, one simply changes the linkage over for the interplane struts, and puts it on the bottom. It also has a steerable tail wheel, a strong undercarriage and can be rigged in half-an-hour. The cockpit is warmer than many other biplanes with the rudder wires located inside instead of outside, thus obviating the need for draughty slots in the fuselage for the rudder pedals.

The Hirth engine will stand a 50% “overrev.” for two minutes, due to the crankshaft being built up with roller ends rather like a motorcycle engine. Thus it will stand 3,300 revolutions per minute for two minutes in a dive with the throttle fully open; something that would knock the ends out of most engines.

All these points serve to illustrate the care and skill with which Anders Andersson and his team designed the Jungmann nearly forty years ago. They produced an aerobatic biplane that makes most of its contemporaries feel unresponsive and leaden. Perhaps Ron Fautley can be quoted again—and as one who had previously owned a Tiger Moth—“The Bücker Jungmann is a sophisticated biplane, there’s no doubt about it. When I first flew one, I thought, this is something, a real aeroplane, this is how an aeroplane should be built!”.

THE JUNGMANNS SHOWS ITS PACES

The pilot climbed the yellow and blue trim Jungmann up to 1,500 ft. and turned into the wind towards the airfield, cruising easily at 80 knots. He lined-up the biplane along the runway, and looked down briefly at the watching crowd. Ahead of him, the horizon was clear and he noted

¹⁰ Of similar configuration to the Bü 131, the pre-war S.V.4 was produced in Belgium by Stampe-et-Vertongen at Deurne-Sud, Antwerp. After World War II it was once again built in Belgium, this time by Stampe-et-Rénard as the S.V.4B. In France, also post-war, S.N.C.A. du Nord manufactured hundreds more as the S.V.4C.

a distant water tower that would serve as a reference point in the aerobatic formations he was about to fly. "Aerobatic display by a Bücker Jungmann", it had announced in the programme.

A brief moment to adjust his goggles, and then he eased the "stick" gently forward to put the Jungmann into a shallow dive, building his speed up to about 105 knots before pulling the "stick" back to send the nose of the Jungmann climbing up towards the sky. He opened the throttle wide, and applied a little right rudder to counteract the swing to the left, then closed the throttle again as the biplane curved over onto its back at the top of the loop.

Far below, the heads in the crowd came up at the sudden urgent noise of the full-throttle climb. Interest quickened. The Jungmann came over and down from the loop, levelling off at 11,000 feet. All eyes were on the yellow glinting speck now as the pilot opened the throttle again, and put the tailplane trim well forward. He brought the stick over to the right to start a slow roll, applying a bit of left rudder to keep the nose up, and keeping the stick a little forward at the same time. The biplane rolled smoothly onto its back, and then on through to the horizontal again with the sun flashing briefly on its yellow wings.

A slight pause, and the watching throng saw the little biplane dive once again to pull up sharply as before, only this time to climb on almost vertically into the sky. The pilot waited until the speed had dropped off to 45 knots, kicked full right rudder, and sent the Jungmann into a right-hand stall turn. He stopped the tendency to roll on the rudder with a little "left stick", and then chopped the throttle when the nose hit the horizon. The biplane fell away and down, picking up speed, and pulling out to head back towards the airfield. The pilot rolled the Bü 131 onto its back, and held it there nose high, wheels clawing at the sky.

The audience, by now thoroughly absorbed, craned necks to follow as the pilot flew the Jungmann smoothly from one sequence to the next—a roll off the inverted run, down and up into a half loop with a roll off the top followed by a "Cuban 8", and onto its back once more for a 360° inverted circle. The pilot searched for the water tower, top wing level with the horizon, "stick" to the right and forward, left rudder, keep it going . . . "where's that water tower got to? Ah . . . there it is" . . . Roll straight off and down again to pick up speed for another stall turn, left-hand this time. Up, over, down, and coming back quickly again with the wind for a loop and 360° aileron turn, going straight down with right

rudder, and "stick" hard to the right then out at 500 feet, and climbing hard on full throttle.

One more manoeuvre to go, and two-thirds of the runway in which to do it. The pilot opens the throttle fully and, bringing the nose above the horizon, puts the "stick" to the right and, with left rudder, rolls the Jungmann through the first quadrant of a hesitation roll. When the Bü 131 is knife-edge on, he centres the "stick", keeping it well forward, and counts off four seconds before putting the Jungmann on its back for a further four. Right stick again, and right rudder round to the third quadrant, and finally out through the last quarter, and level again. The pilot smiles to himself as he remembers the time he tried to do a hesitation roll in a biplane with only two ailerons. What a fiasco that had been!

Time to come down. The Jungmann is pulled up into a swift wing-over, the pilot chopping the throttle at the top, and "swish-tailing" it down to rub off the excess speed. He sits the Jungmann down on the runway for a whisper-light "three-pointer". "Now you really know what the Jungmann can do!" he grinned contentedly.

Series Editor: CHARLES W. CAIN

ACKNOWLEDGEMENTS

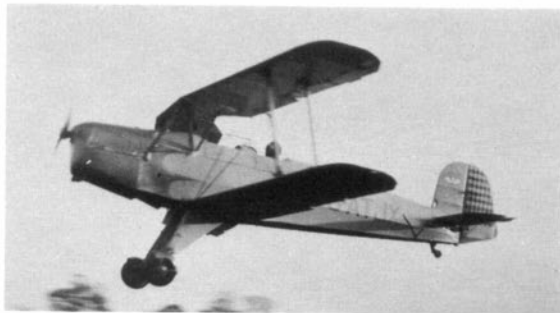
For some illogical reason, training aircraft are invariably badly treated by aircraft historians. The Jungmann is no exception. To the author's knowledge, no comprehensive Bü 131 history has ever been written and all the Bücker-Flugzeugwerke's records vanished with the factory into Russian hands after the war. Consequently, it has been necessary to seek the help of a large number of people in the compilation of this *Profile*, and the author would like to record his gratitude to the following for their generous assistance: Ferenc Kovacs, Vaclav Nemecek, Zdenek Titz and "J.M.E." for much valuable information on the Jungmann's service in Hungary, Czechoslovakia and Germany. Also to Ron Fautley for his considerable help on the question of the Jungmann's flying qualities; and to Marion Cole, J. B. Cynk, Ing. F. Dubs, Dr. Ulrich Haller, G. H. Kamphuis, Heinz Nowarra, Karl Ries Jnr., and Mira Slovak for providing many of the pieces that help to make up the complete picture. Likewise, and alphabetically, *Air-Britain* Specialists and members Phil H. Butler, John M. Davis, Julius Gaal, H. J. Hazewinkel, M. J. Hooks, Lou Isern, Stewart James, C. W. Kaesmann, W. B. Klepacki, Gary Kuhn, Lars Lundin, Ole Nordbø, Dave Partington, Mike C. Richards, Jim Richardson, R. Carson Seeley, Rod Simpson, Richard Smith, Ken Smy and John Wegg. Not forgetting either, company contributions from AERONEX, C.A.S.A., Max Datwyler & Co. Ltd., Flug-und Fahrzeugwerke A.G. and Pilatus Flugzeugwerke A.G. Lastly my thanks, for his help and interest, to the man who started it all, Herr Carl Clemens Bücker.

Possibly still flying today is this veteran Brazilian Bü 131 D, PP-TFK, which was photographed at Sao Paulo. (Photo: via Gary Kuhn)



At Jenkins Farm, in Essex, England, pilot-owner Ron Fautley lands his Swiss-built Jungmann, G-ATJX; this is its home base.

(Photo: L. F. Sarjeant)





SPECIFICATION

Construction

Fuselage: Welded chrome-molybdenum steel tube structure, fabric covered except for light metal sheeting behind engine cowling and metal sheet top decking around cockpits. **Wings:** Single bay with fully interchangeable upper and lower mainplanes; ailerons on all four panels. Wooden spars and ribs with fabric covering. Conventional drag bracing with steel interplane struts. No flaps. Dihedral 1.5° (upper), 3.5° (lower). Incidence —1° (upper), 0° (lower). Sweepback 11°. Aspect ratio 1:8.1. **Tail assembly:** Wire-braced, welded chrome-molybdenum structure; fabric covered with divided elevators and trimming flaps. Rudder unbalanced. **Undercarriage:** Divided with oleo shock-absorbers, balloon tyres, and brakes. Steerable, sprung tail wheel.

Powerplant—Bü 131 A & B

Hirth HM 60 R air-cooled, 4-cylinder, inline engine delivering 80 h.p. at 2400 r.p.m. (Bü 131 A); or 105 h.p. Hirth HM 504 air-cooled, 4-cylinder inline engine (Bü 131 B) on welded steel mounting. Fuel and oil tanks in fuselage.

Dimensions—Bü 131 A

Span, 24 ft. 3 in. (7.4 m.); length, 21 ft. 10 in. (6.66 m.); height, 7 ft. 5 in. (2.25 m.); wing area, 145 sq. ft. (13.5 sq. m.); aileron area, 8.18 sq. ft. (0.76 sq. m.); wing chord, 3 ft. 3 in. (1 m.); tailplane area, 26.9 sq. ft. (2.5 sq. m.); undercarriage track, 5 ft. 4 in. (1.62 m.)

Weights—Bü 131 A

Empty, 738 lb. (335 kg.); disposable load, 584 lb. (265 kg.); take-off weight, 1323 lb. (600 kg.); wing loading, 9.11 lb./sq. in. (44.5 kg./sq. m.); power loading, 16.53 lb./h.p. (7.5 kg./h.p.)

Performance—Bü 131 A

Max. speed, 106 m.p.h. (170 km./h.); cruising speed, 93 m.p.h. (150 km./h.); landing speed, 43.5 m.p.h. (70 km./h.); climb to 3,281 ft. (1,000 m.), 7 min.; climb to 6,562 ft. (2,000 m.), 16.4 min.; climb to 9,843 ft. (3,000 m.), 28.8 min.; service ceiling, 13,123 ft. (4,000 m.); range, 404 miles (650 km.)

Dimensions—Bü 131 B

As Bü 131 A, except for length 21 ft. 9 in. (6.62 m.)

Weights—Bü 131 B

Empty, 838 lb. (380 kg.); disposable load, 639 lb. (290 kg.); take-off weight, 1,477 lb. (670 kg.); wing loading, 9.43 lb./sq. ft. (46.4 kg./sq. m.); power loading, 13.78 lb./h.p. (6.25 kg./h.p.)

Performance—Bü 131 B

Max. speed, 114 m.p.h. (183 km./h.); cruising speed, 106 m.p.h. (170 km./h.); landing speed, 51 m.p.h. (82 km./h.); climb to 3,281 ft. (1,000 m.), 5.2 min.; climb to 6,562 ft. (2,000 m.), 12 min.; climb to 9,843 ft. (3,000 m.), 23 min.; climb to 13,123 ft. (4,000 m.), 45 min.; ceiling, 14,108 ft. (4,300 m.); range, as Bü 131 A.

COMPARATIVE PERFORMANCE CHARACTERISTICS

	AERO C 104 WALTER MINOR 4-III	Ki-86A HITACHI (Ha-47) 11	C.A.S.A. 1-131E E.N.M.A. TIGRE G-IV-A	BÜCKER "LERCHE" AVCO LYCOMING IO-360-B1B
Engine				
Max. power	105 h.p.	110 h.p.	125 h.p.	180 h.p.
Span	24 ft. 3 in. (7.4 m.)	24 ft. 1 in. (7.35 m.)	24 ft. 3 in. (7.4 m.)	24 ft. 3 in. (7.4 m.)
Length	22 ft. 2 in. (6.76 m.)	21 ft. 9 in. (6.62 m.)	22 ft. 1 in. (6.72 m.)	21 ft. 8 in. (6.6 m.)
Height	7 ft. 5 in. (2.25 m.)	7 ft. 5 in. (2.25 m.)	7 ft. 5 in. (2.25 m.)	7 ft. 5 in. (2.25 m.)
Wing Area	145 sq. ft. (13.5 sq. m.)	153 sq. ft. (14.2 sq. m.)	145 sq. ft. (13.5 sq. m.)	145 sq. ft. (13.5 sq. m.)
Wt. Empty	860 lb. (390 kg.)	902 lb. (409 kg.)	992 lb. (450 kg.)	970 lb. (440 kg.)
Wt. Loaded	1499 lb. (680 kg.)	1409 lb. (639 kg.)	1587 lb. (720 kg.)	1257 lb. (570 kg.)
Max. Speed	115 m.p.h. (185 km./h.)	123 m.p.h. (198.5 km./h.)	124 m.p.h. (200 km./h.)	140 m.p.h. (225 km./h.)
Cr. Speed	106 m.p.h. (170 km./h.)	102 m.p.h. (165 km./h.)	97 m.p.h. (157 km./h.)	127 m.p.h. (205 km./h.)
Ceiling	14108 ft. (4300 m.)	12730 ft. (3880 m.)	17716 ft. (5400 m.)	23787 ft. (7250 m.)
Range	404 miles (650 km.)	373 miles (600 km.)	311 miles (500 km.)	not known

WORLD REGISTER OF SURVIVING JUNGMANNS

Reg'n.	Variant	C/N.	Year Reg'd.	Last known owner/base	Previous identities and remarks (Sw. A/F = Swiss Air Force)
AUSTRIA	OE-ACN	222	1958	G. Artz/Vienna	OK-BJK
	OE-AKW	Do/Bü 131 B	28	1969	Kunstflug-Club Austria/Schwechat

BRAZIL

Owing to a tendency of the Brazilian registration authorities to continue listing aircraft on their current register that have long since been cancelled, it is difficult to assess how many Jungmanns still exist, if any. The possibility is, though, that one or more of the following may still be airworthy.

PP-TEZ	Bü 131 D	900	1939	Aeroclube de Rio Claro/Rio Claro
PP-TFK	Bü 131 D	906	1939	Aeroclube de Sao Paulo/Sao Paulo
PP-TFM	Bü 131 D	908	1939	Aeroclube de Sao Paulo/Sao Paulo

CZECHOSLOVAKIA

The number of Aero C 104s still flying with the aero clubs in Czechoslovakia is not known but it probably amounts now to less than two dozen examples. One Czechoslovak Air Force C 104 "A-27" is on display in Prague.

FRANCE

F-BCSY BÜ 131 D 1 — Lucien Canu/St. Valéry C/N. 1 indicates rebuild
 The previous identity of this Jungmann is unknown but it is almost certainly Bücker-built.

GERMANY

D-ECNF Do/Bü 131 B 74 1970 Sigmund Flugtechnik/Lohrbach Sw. A/F "A-61", HB-USB
 D-EDEF BÜ "LERCHE" 63 1957 Luftfahrerschule Nordrhein- HB-E5A, Sw. A/F "A-87"
 Westfalen e.V./Bonn 180 h.p. Avco Lycoming

ITALY

I-BRAK AERO C 104 128 1964 Aero Club Cremona/Cremona OK-AGH, HB-USV
 I-BRIK Do/Bü 131 B 1961 Aero Club Firenze/Peretola HB-UTY. Poss. Bücker-built
 I-BUCK Do/Bü 131 B 46 1963 Aero Club Milano/Bresso Sw. A/F "A-35", HB-UTM
 I-CABI Do/Bü 131 B 21 1962 Aero Club Firenze/Peretola Sw. A/F "A-12", HB-UTZ
 I-CERM Do/Bü 131 B 57 1963 Aero Club Milano/Bresso Sw. A/F "A-45", HB-UTW
 I-GEVA Do/Bü 131 B 7 1961 A.C. Casale Monferrato/Casale HB-OSE, Sw. A/F "A-94"
 Monferrato

NORWAY

LN-BWT AERO C 104 189 1961 Bjørn Ronjom/Orland OK-BFJ

POLAND

SP-AFO awaits museum space at Krakow. Previous identity is unknown, but possibly ex Rumanian. Not airworthy.

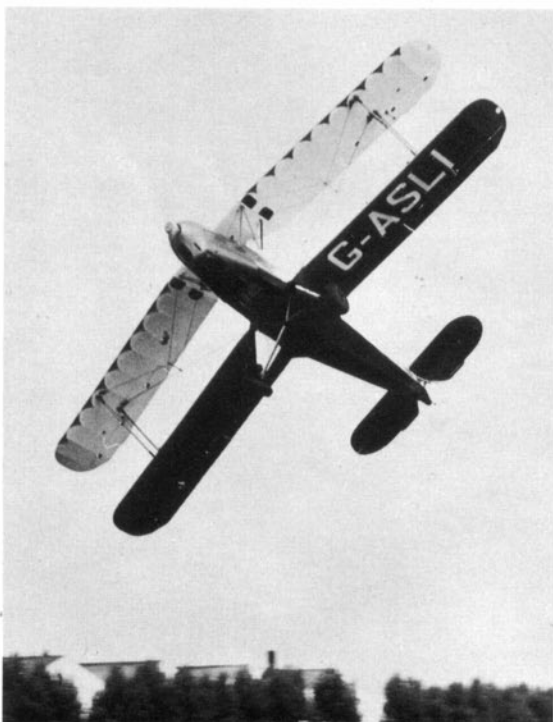
SPAIN

Apart from the 80-100 remaining military C.A.S.A. 1-131s, the following civil examples survive.

EC-AHL C.A.S.A. 1-131L 205 1952 Real Aero Club de Leon/Leon Sp. A/F "EE-3-205"
 EC-BKA C.A.S.A. 1-131H 370 1969 Real Aero Club de Barcelona/ Sp. A/F "E-3B-370"
 Sabadell

SWEDEN

SE-AGU BÜ 131 B 846 1938 Royal Board of Civil Aviation/ Unairworthy. In store
 Arlanda



World's oldest Jungmann is currently Dennis Reay's blue and white G-ASLI, seen here in the hands of Neville Browning at Stapleford, Essex, England, September 1964. Although starting life as a Bü 131 A (W.Nr.20) in 1935, it was advanced to Bü 131 B standard before World War 2. (Photo: G. J. R. Skillen, Air-Britain)

The late aerobatic champion Léon Biancotto's famous orange and black Jungmann, F-BCSY, seen here flying at Hucknall, England, in May 1959. The history of F-BCSY is unknown but the engine exhaust arrangement suggests that it was almost certainly a German Bücker factory Bü 131. (Photo: R. L. Ward)



Aero C 104 OK-BFW before sale to the U.S.A. as N817S. Colour scheme is light blue with red struts and trim; registration letters are dark blue, now being converted to Avco Lycoming powerplant.

(Photo: P. A. Schreffler)



N111A is the Aero C 104 owned by E. Keeler in the U.S.A. Here it is shown still with the Swiss colour scheme and also the registration HB-USH on top of the wing. Plans are afoot to replace the Czechoslovak Walter Minor engine with a 200 h.p. Avco Lycoming.

(Photo: E. Keeler)

Norway's only surviving Jungmann, LN-BWT is a Czechoslovak-built Aero C 104. (Photo: Ole Nordbø)





Two Swiss-built Jungmanns make a fine photographic study as they fly near Bern with a backcloth of the Eiger, Mönch and Jungfrau mountains.
(Photo: Swiss Transport Museum (Lucerne) archives)

SWITZERLAND

HB-URB	Do/Bü R.180	85	1960	Swiss A.C. (Porrentruy sect'n)/ Porrentruy	Sw. A/F "A-72" 180 h.p. Lyc.
HB-URD	Do/Bü 131 B	33	1960	Fluggruppe Oberer-Zürichsee/Lachen	Sw. A/F "A-24"
HB-URF	Do/Bü 131 B	47	1961	Motorfluggruppe Surental/Triengen	Sw. A/F "A-36"
HB-URH	Do/Bü 131 B	61	1961	Motorfluggruppe Luzern/ Beromünster	Sw. A/F "A-49"
HB-URM	Do/Bü 131 B	60	1961	Swissair/Zürich	Sw. A/F "A-48"
HB-URP	Do/Bü 131 B	86	1961	Club d'Aviation Biemme/Grenchen	Sw. A/F "A-73"
HB-URR	Do/Bü 131 B	40	1961	Groupement d'Acrobatie du Club Fribourgeois d'Aviation/Écuvillens	Sw. A/F "A-29"
HB-URT	Do/Bü R.180	96	1961	Swiss A.C. (Porrentruy sect'n.)/ Porrentruy	Sw. A/F "A-83" 180 h.p. Avco Lycoming
HB-URV	Do/Bü 131 B	78	1961	Segelfluggruppe Grenchen/ Grenchen	Sw. A/F "A-65"
HB-USC	Do/Bü 131 B	82	1960	Swiss A.C. (Montagnes Neuchâtelois Section)/La Chaux-de-Fonds	Sw. A/F "A-69"
HB-USD	Do/Bü 131 B	65	1960	Aero-Club de la Côte S.A./La Côte	Sw. A/F "A-52"
HB-USM	Do/Bü 131 B	95	1960	Swiss A.C. (Vaudoise section)/ Blecherette	Sw. A/F "A-82"
HB-USR	Do/Bü 131 B	25	1960	F. Ulmer/Göppingen (German Republic)	Sw. A/F "A-16"
HB-USW	AERO C 104	181	1960	J. P. Chappuis/Monthey	OK-BFB
HB-USY	AERO C 104	213	1960	P. Taramarcz/Sion	OK-BII
HB-UTK	Do/Bü 131 B	52	1954	F. Bertschmann/Basel	Sw. A/F "A-41"
HB-UTN	Do/Bü 131 B	87	1954	Fliegerschule Birrfeld/Birrfeld	Sw. A/F "A-74"
HB-UTR	Do/Bü 131 B	49	1954	Motorfluggruppe Langenthal/ Bleinbach	Sw. A/F "A-38"
HB-UTS	Do/Bü 131 B	83	1954	P. Goetschmann/Boudry	Sw. A/F "A-70"

In addition to these one Jungmann, at least, has been retained by the Swiss Air Force.

UNITED KINGDOM

G-ASLI	Bü 131 B	20	1963	D. J. Reay/Jenkins Farm and Stapleford	HB-EVA, Sw. A/F "A-92". Oldest Jungmann. Prev. a Bü 131 A
G-ATJX	Do/Bü 131 B	36	1965	R. H. Fautley/Jenkins Farm	HB-AFE, Sw. A/F "A-88", D-EDMI

UNITED STATES OF AMERICA

N102M	AERO C 104	146	1968	S. Rogers/Laurel, Mi.	OK-AOZ, HB-USZ, D-ELFY
N104A	AERO C 104	212	1970	J. W. Caler/Sun Valley, Calif.	HB-USH
N104M	AERO C 104	157	—	B. Kemper/Los Angeles, Calif.	OK-BOL, OE-AFS
N111A	AERO C 104	214	1969	E. Keeler/Southbury, Conn.	HB-USH
N121U	AERO C 104	215	1962	E. K. Gann/Friday Harbor, Wash.	HB-USK, 225 h.p. Avco Lycoming
N191X	AERO C 104	129	—	W. A. Barber/Plymouth, Mich.	OK-AXB, N154S, Avco Lycoming
N817S	AERO C 104	203	1970	P. A. Schreffler/Santa Paula, Calif.	OK-AQE, D-EFZU
N853N	AERO C 104	91	—	C. Graves/ Santa Paula, Calif.	OK-BFW, D-EJEG
N1947G	AERO C 104	218	—	Henry Haigh Corp./Howell, Mi.	D-EGYW, Avco Lycoming
N1947H	AERO C 104	185	—	J. E. Hickman/Phoenix, Ariz.	OK-BFF, D-EDYZ
N1948H	AERO C 104	238	—	W. M. Meyer/Manhattan Beach, Calif.	D-ENIX
N2348	AERO C 104	247	—	J. T. Crouse/Annandale, Va.	OK-AXV, LN-BNG

The above information was correct as at September 1970. However, as at June 1970, the following Jungmanns were also registered in the U.S.A. and may well still be in existence

N913CB	AERO C 104	80	—	C.J.S. Investment Co./Lakeland, Fla.	D-ELFU 200 h.p. Avco Lycoming
N1936G	Do/Bü 131 B	6	—	J. P. Williamson Jr./Atlanta, Ga.	HB-EVE, Sw. A/F "A-89", D-ECIT
N4659P	AERO C 104	85	—	C. B. Pease/Atlanta, Ga.	OK-BAP, D-EBUT

The Bücker-built Bu 131 B D-ELAK (C/N 20 Ex HB-EKA, D-ELAN) is also known to have gone to the U.S.A.