



English captions for **Volume II** of the book

“Hans Jacobs –
Pionierleben im Flugzeugbau”

by Peter Ocker

Dear Reader,
this is a free pdf-download-document.

It describes the captions of my German-language book “Hans Jacobs – Pionierleben im Flugzeugbau” in English language. They are sometimes a little longer than the German original version, as they now contain more information that German readers can find in the text.

A similar pdf-document is available for Volume I.

Both documents can be downloaded from my homepage www.peterocker.de

Part 3: Hans Jacobs – own aircraft design

Page	Caption
Rhönadler	
271 top	Letters were transported in the prototype “Rhönadler”, when Peter Riedel tried to cross the Alps. This letter was transported on his flight from Munich to Innsbruck, 110km distance, gaining a maximum altitude of 2700m
271 bottom	Prototype “Rhönadler” with Peter Riedel at Innsbruck. This glider stayed in Austria and received later the name “Mauls”
272	Early “Rhönadler” showing a canopy in “Fafnir”-style. At Bad Frankenhausen, a group built this glider in 1600 manhours
273	First assembly of a “Rhönadler” at Schwabach – again a group bought the plans and built the glider themselves
274 top	Atmospheric fly-by at the Hesselberg in Bavaria
274 bottom	Photo taken at Brno, the glider of Steinhoff, in the background the DB10 of Braeutigam. Together with 2 other companions, they managed to achieve the first 500 km flight in gliding history. Compare page 87 and caption description in the other pdf for more information – and 286 shows the “Rhönsperber” which was also in this successful group.
275 top	Colorful “Rhönadler 35” (35 is for 1935, when small evolutions were done on the initial model) with pilot Reukauf on the 1935 Rhön gliding contest – see also page 88
275 bottom	The later markings appear boring compared to the colorful glider on the top – but this was NSFK standard paint scheme
276	“Rhönadler 32” (see the different tailplane) in Switzerland – this glider got lost in a crash at Samedan on June 8 th , 1959
Rhönbussard	
277	Pilot Wiegmeier with the “Rhönbussard” prototype
278 left	These rhomb-type competition identification markings were only used short-time
278 right	Colorful blue-white “Rhönbussard” on the Hesselberg – this specific example had reinforced wings to allow aerobatics
279	A group at Aalen built this “Rhönbussard” themselves
280 top	Still wearing two-color scheme, this example already has the later markings on the Hornberg. Behind: a “Rheinland” and a “Minimoa”
280 bottom	Unusual big markings on the left picture, right at gliding school Schwangau (near Neuschwanstein castle)
Rhönsperber	
283	“Rhönsperber” shows his close relationship to “Rhönbussard” at Salzburg ISTUS meeting 1937
284	First presentation of the prototype at Mannheim
285 top	Prototype in typical two-color scheme on the first competition on the Wasserkuppe
285 bottom	Only the prototype had an all-moving elevator
286	Again taken at Brno (as page 274 and 87), this “Rhönsperber” received its airbrakes just two days before (see page 510)

Page	Caption
287 top	Ernst Udet in his second "Rhönsperber" marked D-Udlinger – Udlinger was a nickname mainly used in Bavaria for Udet
287 bottom	Advertisement of Schweyer company, counting the successes of the type: crossing the Alps by pilot Dittmar, European altitude record of pilot Blech (total 4480m, 3530m above launch point), target-flight by Krafft 330km and world distance record (glider of page 286) by Heinemann. Interestingly, they offered gliders as well as drawings for amateur-built!
288 top	Again advertisement of Schweyer, this time highlighting the technical features (airbrakes, closed canopy, adjustable seat and pedals, rigging in only 10 minutes). Interestingly, the sale of drawings was highlighted more than the sales of complete gliders. Also, Schneider company of Grunau is mentioned as license builder!
288 bottom	No big remarks, just a nice color picture of this "Rhönsperber"
289 top	Later, some "Rhönsperber" received a significantly larger rudder and stabilizer, but no horn any more.
289 bottom	Swiss pilot Spahni mounted this AVA-4-cylinder engine on top of his "Rhönsperber" HB-159
290	Export to Camphill 1937 – this "Rhönsperber" is still flying today as the last airworthy original!
291 top	"Rhönsperber", initially exported as to a civil customer in the US, was confiscated by USAAF and painted silver. It received the code "TG 19" (training glider no. 19)
291 middle	Unconventional transportation in Turkey
291 bottom	Rudder markings clearly identify this "Rhönsperber" in Turkey, note trailer in the background
292 top	A Chinese newspaper gave this "Rhönsperber" its name. Note the high tailplane. 2 gliders were imported from Germany, but approx. 30 more were built in China.
292 bottom	In national-chinese military markings
Sperber Junior	
294	Cockpit shot of "Sperber Junior", "H" indicates the handle for the airbrakes.
295	Early markings and long Hans Jacobs observes Hanna Reitsch (with goggles) getting ready for take-off. Note the early version of the elevator with horns, short time later changed (as in 3-view-drawing).
296	Already modified elevator and new style registration, on the Wasserkuppe 1936 (top) and Salzburg 1937 (bottom)
Sperber Senior	
297	Rare early picture of "Sperber Senior" at Darmstadt
299	At Elmira 1937, Peter Riedel won the national championship, but as foreigner was not allowed to take the national champion's title
300	Not much flown after returning back from the US, the "Sperber Senior" served as a background actor in a German propaganda movie on the Hornberg

Page	Caption
Seeadler	
305	Hanna Reitsch with "Seeadler" on the Chiemsee lake. Above in the background a Klemm on floats. Motorboat-tow was unsuccessful on this first try in September 1935, as the glider didn't leave the water at all
306	Hans Jacobs took this picture from a Dornier Do 12 amphibium, towing Hanna Reitsch over the Lake Constance in November 1935
307	In October 1936, the motorboat-tow succeeded on the Chiemsee
308	The "Seeadler" doing meteorological research at Rossitten, having additional measuring equipment fitted.
309	The end at Darmstadt 1944. Allied bombs hit Jacobs-Schweyer Flugzeugbau buildings, where the "Seeadler" served as a decoration on the ceiling of a hangar.
Kranich	
311 middle	Designer's notes on the drawing of the elevator fittings. Checked by Lück and finally by Jacobs
311 bottom	Hanna Reitsch (front) in the first "Kranich" – note the beam in the nose
312 top	Prototype "Kranich" over the highway near Darmstadt
312 bottom	Early "Kranich" on an expedition at Iceland
313	Early "Kranich" on the Hornberg gliding school named "Pollux". This was the commercial name of a glue, therefore it seems to have been sponsored by the manufacturer – a common thing at that time. A lot of local companies bought gliders for regional flying groups
314 top	On 19 th Rhön gliding competition, these 2 "Kranich" had competition numbers III and IV
314 bottom	Launch preparations with this early "Kranich"
315	Early elevator and trim on the aileron, as well as window on the wing root is visible on this example
317 / 318	Series production at Böhmische Flugzeugfabrik (bohemian aircraft factory, formerly known as Mraz) company at Nitra
318 left	Böhmische Flugzeugfabrik serial number 100 was finished in Chotzen, before the production was moved to Nitra
319 bottom	Typeplate of serial number 1000 is preserved as well as the glider around, now flying in Denmark as OY-XWL
320	Möller company was specialized in canopies and a "Kranich" fuselage is there – no further information is available yet
321	The "Kranich" of German Embassy Washington, flown by Peter Riedel
323	Once sponsored by Osram company as 5 th glider, "Osram 5" became later D-4-556
324	Czech-produced "Kranich II" on the Hornberg in 1943
327	High altitude version "Wolkenkranich" (= cloud Kranich) shows a bigger gull angle
328 top	Launch preparations of this special research glider
328/329	Before and after high altitude flights: Erich Klöckner achieved a total altitude of 11460 meters. To prevent the oxygen from getting liquid, Klöckner built this isolation around the mask. Pilots (tug pilots and Erich Klöckner) wearing most warm clothing

Page	Caption
331	Training on the Hornberg in a camouflaged "Kranich" in 1941
332 top	Training also in winter, Luftwaffe markings, Gelnhausen 1943
332/333/334	Huge installation to test the idea of landing on wires. This landing method was planned to be installed on ships for getting back the carried aircraft, but idea was abandoned. Pilot Hanna Reitsch had a Luftwaffe "Kranich", steel tubes were installed to prevent the steel-cables to cut the wooden glider. On the cables, special brake devices were installed. Test were carried out at Darmstadt on June 25, 1943.
334 bottom	Measuring devices on a "Kranich II" to get more information on required winch performance. Tests carried out at DFS by Hans Zacher
335	"Liegekranich" (= Prone-pilot "Kranich") to train future jet pilots in this unusual position (for Henschel Hs 132 or DFS 228).
336	Two examples survived the war, being built at Schneider company at Grunau (Polish territory) and flown after the war. Note the enlarged tailplane.
337	While the advertisement says that the Swedish "Kranich" was a license built from JSF, the typeplate says that it was a license from DFS. The Swedish "Kranich" were early design models (not "Kranich II") and built by AB Flyplan company.
338 top	Bad landing of a Swedish Air Force "Kranich" in 1948. 30 examples were built for the Air Force, plus 6 for civil clubs.
338 bottom	The "Jastrab I" was only built in 2 or 3 examples at Nitra after the war, in the same company mass-built the "Kranich II" during the war.
339 top	Unique modification of a "Kranich II" for the commander of a military mechanic school at Liberec. This glider was equipped for wave flying and named "Kranich IIS" (S for solo).
339 bottom	The "Kranich II" in Spain received national colors on the rudder and on the wings, all 60 examples built by A.I.S.A. company.
341	Two "Kranich II" were built after the war in Austria by a national sport community and flown at the gliding school at Aigen
342 top	The RG-2 in Rumania was a "Kranich II" without gull-wing, 17 examples built
342 bottom	The RG-5 (15 built) was a single-seater version of the RG-2, while the RG-9 (6 built) was an advanced version of the RG-2
Habicht	
347	D-Herakles must have been among the first 3 "Habicht" – note the elevator is sitting on the rear fuselage, not usual to any other "Habicht". Also the elevator of many early "Habicht" had horns !
348/349	Famous D-Turul, flown during the Olympics 1936 in Berlin. Picture 349 showing Hanna Reitsch ready for an aerotow
350	Aerotow from Berlin-Staaken airfield on August 4, 1936
351	Telegram of Lajos Rotter, leader of the Hungarian team, who succeeded a cross-country flight from Berlin (main Olympic Games) to Kiel (where the sailing competitions took place). He wrote to the Organization Committee: <i>"As a sportive demonstration that gliding really belongs to the Olympic competition, I made a target distance flight from Berlin Olympic Games to Kiel Olympic sailing competition. The flight was finalized by a good landing at Kiel-Holtenua airport. The extraordinary honor that I received by your telegraphic congratulations were much appreciated and I may assume that this..."</i>

Page	Caption
	<i>...is an indication that this demonstration reached its ambition. Be assured on my deepest respect. Diploma-Engineer Ludwig Rotter, team leader, the Olympic gliding group of the Hungarian Aeroclub.</i> Interestingly, he named himself German surname "Ludwig", although his Hungarian name was "Lajos" (= Ludwig).
353 top	Prototype of "Habicht" built at the Schweyer company (mainly a saw mill) at Ludwigshafen. Note the trailer in the background.
353 bottom	First export success – to Austria.
354	Dedication from Marcel Doret – French aerobatic champion – to Karl Schweyer as the manufacturer of his "Habicht": <i>"To Mr. Karl Schweyer, with all my compliments for the magnificent glider "Habicht II" in which I have most pleasure to fly. Marcel Doret, Saint Germain, april 24, 1938".</i> Doret won the Aerobatic Competition at Saint Germain in 1939, which is regarded as the first World Championship in Glider Aerobatics.
355 top	Schweyer serial number 61, a "Habicht II", went to Turkey
355 bottom	This "Habicht" is thought to have been built at Schempp-Hirth. They had built five or six "Habicht" in 1939.
356	Schweyer serial number 56 was still a "Habicht I"
357	Wind tunnel testing of a model at AVA Göttingen, November 1938
358	Hanna Reitsch in front of a "Habicht", who had received an enlarged tailplane as later serial production examples. This D-11-82 is probably the former D-Turul.
359	Hanna Reitsch flew at Cleveland / USA in September 1938 during the National Air Races
360 top	Closed canopy on the special "Habicht" built for aerological research, seen at Darmstadt together with the "Brett-Zögling"
360 middle	High altitude flying with measuring equipment. The registration is covered by a band holding a sensor on the other side of the fuselage. The swastika was removed from this picture after the war.
360 bottom	Stamer, Georgii, Lippisch and Jacobs (from left to right)
361/362	"Habicht" used to simulate a non-flying aircraft to be transported to other airfields or to be aerotowed to altitude, although the speed of the towplane wouldn't allow the towed aircraft to fly. This was important for later proposed Me 328 aircraft, which was hardly able to get off the ground due to high wing loading necessary. The "Habicht" pilot was "simulating" this by pushing the stick most forward and use the airbrakes. As the early airbrakes didn't turn out to be sufficient, this special "Habicht" received DFS airbrakes – note picture 362 top. This launch method was called "Tragschlepp" (= carried tow).
363	The same "Habicht" at Ainring, home of DFS from late 1940 on.
364/365	To pick up a glider from the ground by a flying tug, these tests were made. While 365 shows the towplane Ju 87 flying by at 130 km/h, a rope with an anchor can be seen coming from the Ju 87 tail, trying to catch the towrope on the floor/on 2 poles with "Habicht" attached. As acceleration would have destroyed everything (either towrope or endangering the flight of the towplane), a device was found to "slowly" accelerate the glider from standstill. This wooden box contained a towrope slung around wooden spars of different sizes – these broke up slowly with increasing speed of the glider. The designer of ...

Page	Caption
	... this wooden box was ordered to be pilot of the “Habicht” to show full confidence in his design – and it worked. This launch method was called “Fangschlepp” (= caught tow).
366	Serial production “Habicht E” by Wolf Hirth company, in Luftwaffe markings. The “E”-version was produced in only 50 examples, although order numbers were changed from 152 to 320 and then down to 105 and finally as less as 50. The first one flew on February 28, 1942, the 42 nd birthday of company boss Wolf Hirth.
367/368	Strange trials in November 1942: underwing-attached a “bomb”, filled with flour and a rifle. Mainly this served to get additional fuel for the towplanes. In April 1944 they installed a small machinegun MP40 on a “Habicht” and carried out test shootings on Nabern airfield.
368 bottom	Winter training at Gelnhausen (near Frankfurt) with a Wolf-Hirth-built “Habicht E” in 1943
369 top	Luftwaffe Markings at Erding airfield 1943, and from June 25 1943 on, markings were changed as in the right picture
369	Cover of a “Habicht” handbook
370	The “Stummelhacht” (= stump Habicht) - “Habicht F” had the fuselage of “Habicht E” with 8 meter wings
371	“Habicht G” had the fuselage of “Habicht E” with 6 meter wings, test pilot Hubert Clompe writing some notes
372	“Habicht F” and “Habicht G” on a training course for future fighter pilots. The picture on the bottom shows a “Habicht G” parked under a “Meise” wing. In the text on the left, airfield names and registrations are listed, collected together from numerous pilot’s logbooks.
373	“Liegehacht” (= prone-pilot Hacht) was only built in one example and flown at the gliding school Trebbin near Berlin. It appeared to be a similar installation as on the “Liegekraneich”.
374	In Turkey, 6 “Habicht” were built under their local name “THK-3”. The last example, later registered TC-PAZ, flew until 1968. This picture was taken in 1964.
DFS 230	
377	Prototype of DFS 230, the DFS 230 V1 (V= Versuchsmuster = prototype / number 1) during later trials in the Alps
379	Early DFS 230 training glider with one-piece canopy, with additional cut-out for the instructor. Note four pitots for 2 instrument panels, only for flight training gliders.
380 top	Another early training glider, this time without additional cut-out for the instructor
380 bottom	Pilot’s logbook of Heinz Scheidhauer (famous Horten test pilot), showing his first flights in DFS 230. Then, they were called “Obs” as “observing aircraft” and advanced version of the real “Obs” due to keep the real mission of this glider secret. So, Scheidhauer flew different “Obs”, marked with numbers II to V, solo, with 500kg and 1100kg load and also 9 passengers. Scheidhauer was one of the pilots later landing on the Fort Eben-Emael in Belgium.
381/382	Early DFS 230 had civil markings, then changed to Luftwaffe training markings “S1+...”
383/384	DFS research glider “I-LS”. Different profiles and surface quality was measured on the wings, with massive measuring and instrument arrangement housed in the fuselage.

Page	Caption
385	Lower wing position to find out more on effects at the tailplane
386 top	Trials with TV picture transmission system on this DFS 230 at Ainring
387	Ground adjustments of sensitive measuring equipment on this meteorological research glider regarding air electricity effects
388 top	Kurzschlepp (= short tow) to have the glider closer to the tug in terms of bad visibility and better in-flight stability
388 bottom	After the war, this combination of a "Praga Baby" towplane and "Meise" was seen in Czech Republic using a former car tow bar – trials were stopped soon
389	Starrschlepp (= rigid tow) was the final version of the Kurzschlepp. By this method, towing was possible in the night and in clouds - perfect for assault glider operations. Here seen on a standard-production DFS 230 and a Heinkel He 111
390	Trials on the operability of high mountain landings and launches – 26 troops on a bungee was sufficient to get the glider back in the air. These trials were carried out on the Großvenediger Glacier by using the DFS 230 V1.
391 top	Again on a snowfield, this DFS 230 got started by 2 rockets (each producing 500kg thrust) fixed under the wings
391 bottom	Rockets to brake a DFS 230 in a short-field landing – Fritz Stamer (once carrying out the first manned rocket flight in the "Ente" on the Wasserkuppe in 1928) is in the back seat.
392 top	Mistel (= mistletoe) was the name of a control aircraft fixed on the back of a carried aircraft below. In further trials on the Me 328, it was the other way round.
392 bottom	Still done like that nowadays, this probe was used for in-flight performance measurement: DFS 230 had a glide angle of 1:19 at 117,4 km/h and rate of sink of 1,71m/s. Minimum sink was 1,6 m/s – remarkable values for such a huge glider.
393	Change of war party: this DFS 230 was operated by the "other" Romanian Air Force fighting for the Allies!
395 top	Old companions in the workshop rebuilding a DFS 230. This group of people were lead by late Hans Jacobs in the 1980ies.
395 bottom	Erich Gramig, member of the group and former DFS 230 pilot, was tough enough to drive this fuselage on an old ASK13-trailer through Germany to get the wings fixed on the glider.
Reiher	
398	Stress tests on the "Reiher" (= heron)
399	Front view of the first canopy layout of the "Reiher"
400	Cockpit of the "Reiher", still having the early rear-cockpit window. A small painting of sad herons on the instrument panel gives a motivation: "We will do it at least". Note there is no altimeter on the panel!
401	Wolfgang Späte participates in the Rhön gliding competition 1938 and finally won the competition. Note the modified canopy with advanced visibility to the front and the top.
402	"Reiher" was modified, as the rear-cockpit window disappeared. Note the DFS airbrakes – upper-wing spoiler is smaller than the lower-wing one. Usually, they had the same length to equilibrate the air flow force.
403	Again modified, the "Reiher" appeared identical to a "Reiher III"

Page	Caption
404	“Reiher II”, top picture taken on a NSFK-goalflight competition 1938 flown by Hanna Reitsch, bottom during Rhön gliding competition 1938 flown by Erwin Kraft.
405	“Reiher II” showing a much improved canopy layout
407	Table showing the different “Reiher”-versions, their registrations and their participations. Note the “Reiher” (one example) was D-11-95 and later changed to D-7-261. The D-12-391 was only seen on one photo, so it is supposed that it received another registration. There were 1 “Reiher”, 1 “Reiher II” and 5 “Reiher III” built. As the unique “Reiher” was most likely later modified to “Reiher III” standard, it appeared that more than 5 “Reiher III” had been built.
408	Production of “Reiher III” at DFS workshop at Griesheim airfield under the watchful eyes of the “Seeadler”, then only a decoration. Then – at least - one “Reiher III” seen getting measured elaborately.
409	All five “Reiher III” on a picture at Darmstadt-Griesheim airfield
410	Same picture as 409, this is the only picture showing D-12-391 mentioned above on caption 407. Rear fuselage data table indicating type “Reiher V3” and manufacturer “DFS Darmstadt airport”.
411 top	Hanna Reitsch and Wolfgang Späte during the 1939 Rhön gliding competition. To allow better determination by the jury, some “Reiher III”-fuselages were painted in different ways (see caption 412 top). Note the huge Darmstadt D-30 in the background.
411 bottom	Heinemann flies “Reiher III” D-4-800, while pilot Fick is prepared to get launched on the “Reiher”.
412 top	Although Späte was in many lists registered with “Reiher II” D-11-167, this picture shows him with his competition number 30 getting launched in “Reiher III” D-11-4015. Also this “Reiher III” received fuselage color for better determination.
412 bottom	Heinemann getting prepared for a launch near the Berggasthof (hill restaurant) on the Wasserkuppe in 1939.
413	Two different concepts of a motorized “Reiher”, above as a “top” and below as a fully retractable engine. Jacobs showed these concepts during a conference for small aircraft engines.
Weihe	
417	The prototype “Weihe” of pilot Braeutigam (registered D-11-184, competition number 11) in front of the Wasserkuppe’s Berggasthof during Rhön gliding competition 1938
418	The second prototype “Weihe” (registered D-11-185, competition number 7) was flown by Hofmann in the same event
419 top	Braeutigam flying the prototype “Weihe” at Karlsruhe during the 3 rd NSFK-goalflight-competition
419 bottom	Hofmann’s “Weihe” from 1939 competition during trials at Darmstadt
420 top	Rudi Opitz getting launched during the 1939 Rhön gliding competition
420 bottom	Luftwaffe-markings on this early “Weihe”
421 to 424	Brochure of Schweyer company on the early “Weihe” – including text in English and French.
426	A JSF-produced “Weihe” on the Hornberg in 1943

Page	Caption
427	<p>“Weihe” in Sweden was advertised using a German photo, and getting honored being used for a stamp in 2001. With this “Weihe” SE-SCN, Per Axel Persson won the 1950 World Championship and got 2 times 6th and finally 12th on following World Championships.</p> <p>25 “Weihe” were built in Sweden, of which 19 saw military service as “Se 104”. They were put off-duty in 1953 and sold to civil aeroclubs.</p>
428	<p>“Weihe” SE-SHU was built by Malmö Aeroclub and rented to Paul McCready for the 1950 World Championship in Sweden, which he finished second. This “Weihe” then was flown by Malmö Aeroclub and is now in the UK at Lasham in careful hands of most friendly Vintage Glider Club members.</p>
429	<p>The 4th “Weihe” captured in Germany received the French marking “Weihe No. 4” (see on the rudder) and later F-CADE. 19 “Weihe” were rescued from defeated Germany, and 30 new gliders were built by VMA under the name VMA 200 “Milan” – being 55kg heavier due to “reinforcements”.</p>
430 top	<p>Phillip Wills was invited to participate Yugoslavian national championship, in which the “Vaja” (yugoslavian translation of “Weihe”) was the standard glider. There were 50 “Vaja” built by Letov (with DFS airbrakes) and further 50 by UTVA (with Schempp-Hirth airbrakes).</p>
430 middle	<p>A Letov-built “Vaja” showing its typical canopy style.</p>
430 bottom	<p>One “Vaja” was aerotowed to Turkey – seen here participating in the 1956 World Championship.</p>
431	<p>Still in its original colors, this “Vaja” later found its way to Greece, received registration SX-109 and is today stored in the Greek Air Force Museum awaiting restoration.</p>
432/433	<p>Information paper on the “Weihe 50” to be produced by Focke-Wulf – using an old datasheet</p>
434 top	<p>Maiden flight of “Weihe 50” by Hanna Reitsch on March 9, 1952 at Bremen airport. Only 9 “Weihe 50” were built by Focke-Wulf as complete aircraft.</p>
434 bottom	<p>The blown canopy changed the look of the “Weihe 50” quite significantly</p>
437 top	<p>Duration record machine of pilot Vergens in front of Spitzerberg gliding school – buildings still exist today.</p>
437 bottom	<p>Duration record machine of pilot Jachtmann, him still in the cockpit, after his 55 hours flight at Rossitten. Note the beam in the “Weihe”'s nose.</p>
438 top	<p>Jachtmann’s “Weihe” with two “Kranich” escort gliders, with painted messages (“Congratulations”)</p>
438 bottom	<p>Also the old Schweyer “Weihe” EC-RZZ, once a gift from Hitler to Spain, received a beam for duration record flights. Seen here at the first post-war World Championship at Samedan in 1948</p>
439	<p>World Championship at Samedan in 1948, the winning Swedish “Weihe” in the front (compare stamp on page 427).</p>
440	<p>Three “Weihe” (of eight in all) built by A.I.S.A. and two “Kranich” of the same manufacturer, offered for foreign pilots to compete in the 1952 World Championship at Quatro Vientos / Spain.</p>
441	<p>Colorful British “Weihe”, a war prize from Germany, was a Jacobs-Schweyer built example and seen here at World Championship in Örebro / Sweden in 1950.</p>

Page	Caption
442	A little familiar: Italian design CVV 6 “Canguro” was a double-seater, this example on display at Italian Air Force Museum.
444	Post-war flying in Czech Republic: still in German camouflage and remains of old registration D-7-335 visible, this “Weihe” soars above a sistership already painted. This is one of the most impressive pictures of “Weihe”, showing the real majesty of this glider.
Meise	
447	Olympic rings perfectly fits to a glider – seen here on the “Sperber Senior” with Peter Riedel on the US nationals of 1937
449	Maiden flight of “DFS Olympia” – later “Meise” – still without proper registration
450	First “Meise” D-11-239 at Darmstadt, still with measuring equipment attached
451	Another German design, the FVA 13 from Aachen, seen here competing in the 1939 Rhön gliding competition
452 top	Second example of Berlin B8, the third design to match the requirement for an Olympic standard glider type.
452 bottom	The Mü 17 from Munich refers clearly to its roots (Mü 13). A German-internal jury had tested all four German designs, but found only the “DFS Olympia” and “Mü 17” good enough to be sent out for the international comparison tests in Italy.
454 top	The second prototype of the “Meise” D-11-240 at the international comparison tests in Sezze/Italy. Hanna Reitsch was the display pilot, before the international pilot’s jury carried out own flights.
454 bottom	Not only German presented 2 designs, also the Italians showed 2 gliders. Here the A.L.3, finished in clear color to show it’s simple construction
455	The Polish design “Orlik” was remarkable, not only having a canopy opening to the “other” side, but also interesting airbrakes.
456 top	The CVV 4 “Pelicano” was the second Italian design and reminded a little on the “Minimoa” layout
456 bottom	Fantastic discovery during the research to this book: the assessment table of the gliders by the jury. The criteria were: comfort / visibility / rescue possibilities / arrangement of instruments / arrangement of controls etc. / control mobility / control play and stiffness / responsivity of elevator / responsivity of rudder / responsivity of ailerons / responsivity balance / characteristic and size of elevator force / characteristic and size of rudder force / characteristic and size of aileron force / characteristic balance => total points
457	Early “Meise” D-11-4008, probably former prototype
458	“Meise” with Luftwaffe markings, behind already a camouflaged “Gö 4”
459	One “Meise” built by Schleicher was sent to Japan, seen here flying near the Mount Fuji. 5 additional “Meise” were built by 5 different companies, the A-1522 was built by Mizunou company.
460	Unconventional transportation of a “Meise” as no trailer was available in Hungary, 1942
461 top	The first “Meise” built in Switzerland getting a check
461 bottom	Remains of German Luftwaffe Markings reveal the roots of this British “Meise”
463	Advertisement in English, taken from “The Sailplane & Glider” of March 1947

Page	Caption
464	An Elliot of Newbury-produced "Olympia"
465	Although initially 200 ordered, only 100 "N 2000" were built by Nord aircraft company in France. Serial number 13 on the picture
466	French N 2000 next to Schweyer "Weihe" EC-RZZ at Samedan 1948 World Gliding Championship
469 top	German Democratic Republic's (GDR) first "Meise" as built by a group at Grossrückerswalde
469 bottom	First series production of "Meise" at the Lommatzsch factory from 1956 on. In GDR, 148 "Meise" were built until 1958.
470	An early Lommatzsch-production "Meise", still without main wheel built-in
471 top	Double-seater based on the "Meise" layout was the "Lehrmeister" – the second prototype still had DDR-registration on the fuselage. Three different versions of the "Lehrmeister" were built, adding up 228 examples altogether
471 bottom	From end of 1957 on, the DDR-registration was changed to DM. This "Lehrmeister", or FES-530, already had DM-registration.
472	Sisters: the single-seater evolution-"Meise" called "Lo-Meise" and the double-seater "Lehrmeister", both beautifully restored
473 top	Two of only four "Lo-Meise" on an airfield in former GDR. Note that the "Lo-Meise" had a front fuselage built of GRP, which can be seen on the "Lo-Meise" in front.
473 bottom	The "Lo-Meise" was built end 1961/beginning 1962 and was an evolution of the "Meise". The canopy was fixed on the wings. Due to re-organization of aviation industry in the Eastern-Bloc-countries, all aircraft production in GDR was stopped.
DFS 331	
477 top	Prototype of DFS 331 glider, designed for carrying 20 troops or freight of 2.5 tons, still without markings.
477 bottom	Same prototype at flight trials, sandbags in front for weight simulation
481	Different registration CB+?? is not an indication for a second prototype, but for another unit using the DFS 331 after first flight tests were finished at the manufacturer. Although 3 prototypes planned, it is assumed that only one was finished and flown.
Grunau Baby	
482	(not a caption): some 332 Grunau Baby gliders were license-built at Jacobs-Schweyer Flugzeugbau. No development was made by Hans Jacobs on this famous glider.
Geier	
485	No details or pictures of the Jacobs-design "Geier" as the planned "Kranich"-successor are known. The only glider built according to the requirement specification of the Air Ministry was the Hirth Hi 21. This side-by-side double-seater had a retractable undercarriage and many other features. Only this example was built at Wolf Hirth factory.
486	Instead of developing a complicated successor on massive requirement specification, an idea was to use double-seater gliders from occupied countries. Therefore, this French G.R. 105 (one of two built) was captured and flight tested at an Airforce flying school at Gelnhausen.

Page	Caption
Kranich III	
487	The initial rudder layout was an all-moving type, seen here in the workshop on the prototype. After the first flight, this was changed as forces were too high and a higher stabilizer was fitted – nevertheless a big horn on the rudder was maintained.
489	Hanna Reitsch in the cockpit on first flight trials – note the 3-part canopy and poor instrumentation
490	No registration, but ready for it's very first take-off. Note the wingtips still round (as on the "Weihe") and 3-part canopy.
491 top	Later, this configuration was declared standard and this picture was in all official files of Pfl (Prüfstelle für Luftfahrzeuge = approval institution for aircraft = forerunner of German Aviation authority LBA) for the "Kranich III" – note different wingtips and one-piece canopy
491 bottom	Production of the wings at Focke-Wulf workshop
492	Delivery standard: one-part canopy, small registration on the stabilizer and Focke-Wulf logo on the rudder. This "Kranich III" was delivered to Wetzlar.
493/494	The two first "Kranich III" during the World Championship 1952 at Spain. Serial no 51, D-3002, was flown by the lady-crew Reitsch/Häfner and Serial no 52, D-0009, by Dr. Frowein/Kuhn. Both gliders had a long main skid and retractable trolley. While the men ended up at 2 nd place overall, the ladies ended up at 3 rd . The lady's glider stayed in Spain, flying in Spanish colors on World Championships 1954 and 1956 and can be seen today in the Museum at Quatro Vientos.
495	Modified for the single-seater duration record attempt, this "Kranich III" (serial no 75) was registered F-CATZ. After succeeding a new double-seater duration record with companion Henri Couston with 57h10min in April 1954, the Frenchman Bernard Dauvin tried a single-seater record in late December 1954. He crashed fatally in the night of 25 th December 1954 – from then on, no duration record flights were recognized by FAI any more.
497	Serial no 71 on duty at the Akaflieg Braunschweig. With the device mounted on the Kranich's nose, profile measurements were carried out from 1960 to 1978. The results were important for the development of SB-glidern up to the successful SB 11.
498	Enthusiastic German pilot Eduard Schappert installed this engine into his "Kranich III", serial no 61. From December 1972 to mid of 1979, this glider had 230 launches and was able to lift off under own power. The 35hp engine was able to bring the glider in the air after only 300m of runway. Afterwards, it was sold as pure glider.
Basic work	
501	(R)Evolution: back rest, round seat (to prevent sliding on the stick) and real pedals (instead of simple sticks to prevent feet injuries) on a "Zögling"
506	BFW U12b "Flamingo" as a towplane of RRG
507 top	Attachment point of the rope at the rear, the main beam is stabilized by a device fixed to the rear fuselage, allowing some movement
507 bottom	Attached to the upper wing spars, the towing device had a lever to release the towrope by the pilot in case of emergency
508 top	Several U12 were equipped with this towing equipment, at the Hesselberg this D-1320 "Flamingo" was flown

Page	Caption
508 bottom	Tug Messerschmitt Me 23b used in the South America expedition by RRG
509	Same principle on a Klemm KI 26
510	“Field workshop” during the 1935 Rhön gliding competition. Early airbrakes (only on the upper wing) were installed on one day, under the watchful eyes of Oskar Ursinus (with the tie). Only 2 days later, pilot Heinemann flew this glider to Brno (see captions for pages 87 and 286)
511 top	The scheme of DFS airbrakes balancing the airflow force on the upper and the lower wing
511 bottom	All tests were flown with this “Rhönsperber” registered D-URUBU. The unique D28 “Windspiel” in the background.
512/513	DFS airbrakes installed on a “Rhönbussard” – exceptional, as usually only upper-wing airbrakes were retrofitted to some “Rhönbussard”.
515	DFS airbrakes installed on a Focke-Wulf Fw 58 “Stösser” aircraft, base for all further development of airbrakes on Junkers Ju 87 and 88 dive bombers.
516/517/518	Dornier Do 17 showing a balloon-protection device. Main intention was to prevent the aircraft getting damaged or even downed by balloon-barriers. Further ideas of cutting devices on the wingtips were developed and tested.
519	Hanna Reitsch’s logbook on flights with the Do 17 shown before. Note that Hans Jacobs was passenger on one flight.

Part 4: Hans Jacobs – Wood in Fighter Aircraft Production

Page	Caption
Bf 109 – wooden tailplane / wing	
526	US Corporal Albright poses next to a wooden Bf 109 tailplane near Deggendorf / Bavaria
527 top	Rare Bf 109 G-10 model allows a deeper look into its wooden tailplane structure
527 bottom	Still preserved, this plywood for wooden Bf 109 stabilizer received a thin metal layer as protection
528	Bf 109 K-4 showing late-style camouflage pattern, Munich area
529	Built by Wolf Hirth company in second half of 1943, this Bf 109-wing was made of wood using steel reinforcements
Bf 110 – wooden tailplane	
531	Although not a wooden tailplane on this specific Bf 110 G nightfighter model, it shows the rudders and flaps were all covered with fabric
Me 328 – from universal aircraft to suicide flying bomb	
534/539 top	Early wind tunnel model of Me 328
539	Me 328 A V1 on its trolley and on its landing skid. Note the elevator came from a Bf 109 G-model. The development on the Argus-Schmidt tubes (pulse-jet engine, similar to the one used on the V1 flying bomb) were still ongoing with unsatisfying results on behalf of thrust, so therefore this aircraft was preliminary tested without propulsion in aerotow.
543	Installation of a Argus-Schmidt propulsion tube on a DFS 230
544	After aerotow, the ignition was done in flight, resulting in a limited thrust beyond expectations. Also a second DFS 230 was equipped with the tubes, resulting in some damage on the fuselage. All those trials took place at DFS Airing.
545	Problem was to get this aircraft into its element, as the propulsion was most insufficient and fuel-consuming at low speeds and high wing load required high speeds to lift off. So it was clear that the launch had to be assisted by any foreign power. One idea was a rocket-powered railway car. At sufficient car speed, the pilot should have given ignition to his propulsion to lift off. As pre-study, this drawing (of a scale model) and a scale wind-tunnel model was developed.
546/547	Me 328 A V1 flying, getting an aerotow by a Heinkel He 111 at Linz-Hörsching airfield, as Airing airfield turned out to be too small. Because of the high minimum flight speed of the Me 328, the tug had to gain enough speed still being hold at the ground. Landing on the skid.
548	Wind tunnel model with attached 500kg bomb
550	Original 3-view-drawing of Me 328 B, taken from a Messerschmitt-presentation to the German Air Ministry
551/552	Components of fuselage and wings

Page	Caption
555 top	Plan of Jacobs-Schweyer aircraft factory at Darmstadt. According to this Messerschmitt-production-proposal, at least the first 300 aircraft should have been built there. This and the following plans were preserved in an original colorized document.
555 bottom	At hall A, all metal works were planned in different departments (preparation of material, cut, welding, tempering, rig construction, control)
556 top	Fuselage components on the right (nose and fin) and bottom (centerpart) plus wing construction at hall B
556 bottom	Fuselage assembly and outfitting in hall 1
557 top	Final assembly in hall 2
557 bottom	Ready aircraft waiting for start-up and storage in hall 4
559	Wind tunnel model of a Me 328 with swept-back wings
560	Me 328 A V1 fitted with tubes – it was reported in one sub-sentence of an original document that the aircraft was lost in that configuration, but no accident report or pictures are known.
562 top	3-view-drawing of a Me 328 on a twin-engined Dornier Do 217. This was the test combination of DFS.
562 bottom/ 563	The Me 328 A V02 had an all-steel fuselage, while Me 328 A V1 had a steel tube fuselage covered with plywood.
571	It is supposed to be the Me 328 B V1
572/574	The supposed Me 328 B V1 was put on the Do 217's back for flight test
576	Wind tunnel model of Me 328 was confiscated by US Forces
Me 262 – a wooden fighter ?	
578	One of many papers written as “Design Guidelines for the changeover of Me 262 to wood”. These guidelines were written at Messerschmitt Darmstadt, which was an office of Messerschmitt-engineers inside subcontractor Jacobs-Schweyer Flugzeugbau. This specific paper gives information on the wooden wing for Me 262.
580/581	Wooden wing of Me 262, not built and in any connection to Hans Jacobs. These pictures were included to cover the whole story of wood as construction material for Me 262.
582/583	Static load test of wooden Me 262 wing at Messerschmitt facility Augsburg. While the first picture shows the maximum load on the wing, the very next moment it broke up. Detail pictures allow us to see the wooden structure with steel reinforcement plates on the main spar.
584	Wooden rudder and stabilizer of the Me 262-fin, designed and built at Jacobs-Schweyer Flugzeugbau.
585	Wooden stabilizer for the Me 262 elevator, also designed and built at Jacobs-Schweyer Flugzeugbau. The elevator itself was built at Schempp-Hirth.
587	This specific Me 262 “white 9” had a wooden tailplane and was scrapped at Holzkirchen, south of Munich. It was flown at EJJ 2 at Lechfeld and at beginning of April 1945, it had 50 flight hours with the wooden tailplane on its clock.

Page	Caption
588 top	“White 7” was found at Neubiberg and thanks to anybody having removed the swastika, it allows a closer look into the structure of the wooden tailplane. If the tailplane planking would have been of aluminium, the swastika removal damage would have looked much different.
588 bottom / 589 top	“White 1” was found near Innsbruck, also here the swastika was tried to be torn off and allows us to see the structure.
589 bottom	An unknown Me 262 on the scrapyard of Munich-Riem airfield. Note the wooden structure showing typical damage signs of wood.
590 / 592 top	Rear wooden fuselage of Me 262 in front of Jacobs-Schweyer hangar at Darmstadt
591	Rear wooden fuselage in the jig – compare photo of hangar interior on page 125
592 bottom	Planking of the wooden Me 262 fuselage.
593/594	Monthly inspection reports of Ministry inspectors from December 1944 and January 1945 report from a 3 rd test fuselage being built at Hartwig company. Hartwig at Sonneberg was subcontracted by JSF for that and had also built the first DFS 230 pre-series models in the mid 1930ies. It is also noted in those reports that wooden rudders were already in flight and stress tests.

Attachment:

Page	Caption
599	Young Hans Jacobs doing the drawings for a model. This model was described in a booklet published by Otto Mayr publishing house as booklet number 127 (see also page 601)
600	Hans Jacobs showing a glider model from booklet number 115
601 top	Hans Jacobs showing a rubber-band model from booklet 127
601 bottom	Him on the title, this booklet number 134 describes glider and rocket-powered models.
602 top	Booklet 138 was a bigger publication, as it described how to build a “Hols der Teufel”-type real glider. An article in the “Flugsport” magazine described the book as a perfect description, written with a lot of care and love, how to build a glider.
602 bottom	The famous “Werkstattpraxis” (=workshop practice) was edited several times, from 1932 (1 st edition, 133 pages) via 1940 (5 th edition, 352 pages) until 1955 in a 7 th edition. Also Herbert Lück served as a co-author from 1940 on. The 7 th edition saw a re-print in 1989. It is still the main guideline for practical work on wooden aircraft.
604	The evolution of RRG to DFS seen at the letterheads