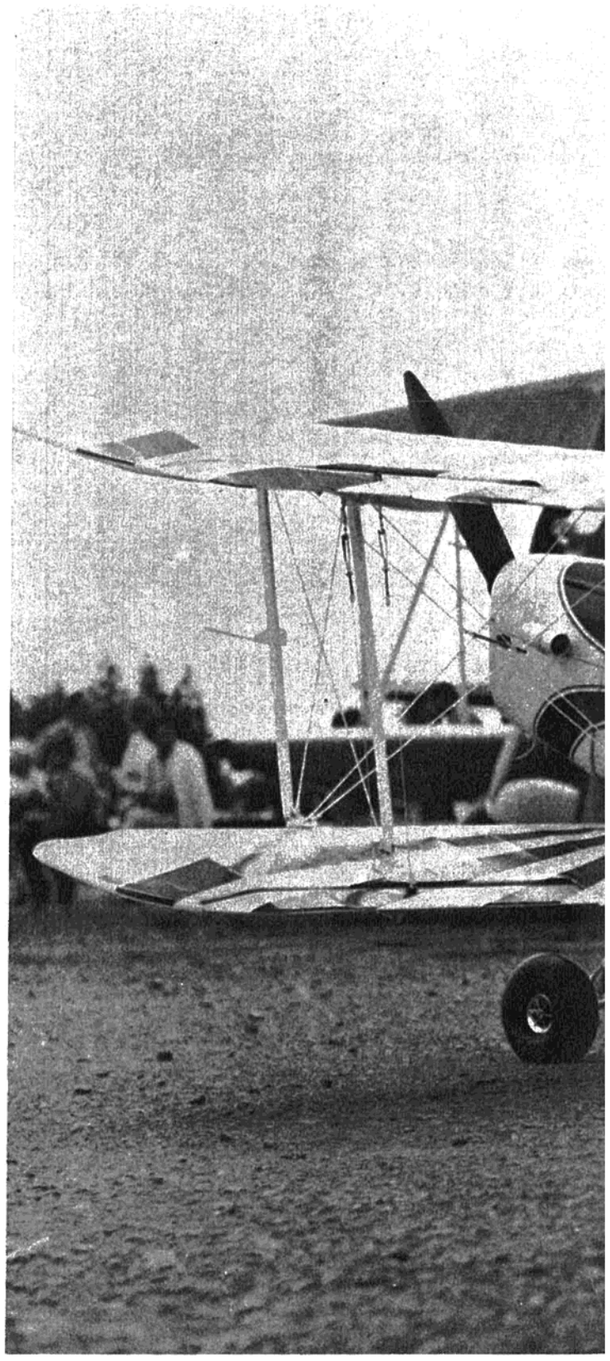
MIRA SLOVAK'S BÜCKER JUNGMANN

Story and Photos By
GERALD C. LEAKE

A SMALL white swept-wing biplane with black and gold trim rolls down the runway. The plane gathers speed and gently lifts from the runway. Flying a few feet above the macadam, it skims along, gathering speed for almost 2000 feet, then lifts gracefully into the clear blue sky until it is going straight up. Suddenly the plane rolls onto one side, snaps inverted and tumbles end over end backwards! The crowd stands, gaping, and holding their breath. The plane levels out inverted, rolls upright, and climbs again into the sky.

The Lumcevak is unbelievable until seen with your own eyes — a series of snap rolls, loops with snaps on the top or bottom follow, along with maneuvers which my memory still fails to piece together in a satisfactory sequence. N121 then makes a long swooping dive toward the end of the runway and rolls inverted just 50 feet above the ground. Mira Slovak with a big smile on his face, waves to the crowd with both hands hanging over his head out of the cockpit. He skims the ground the full length of the runway — inverted! As the end of the runway approaches, the hands disappear back into the cockpit; the plane rolls upright, the nose is pulled up, and a tight 180 degree turn is executed. With smoothness and precision N121 is set down on the runway. It rolls for a short distance and then taxies over to the tie-down area. Mira Slovak then climbs out of the cockpit of

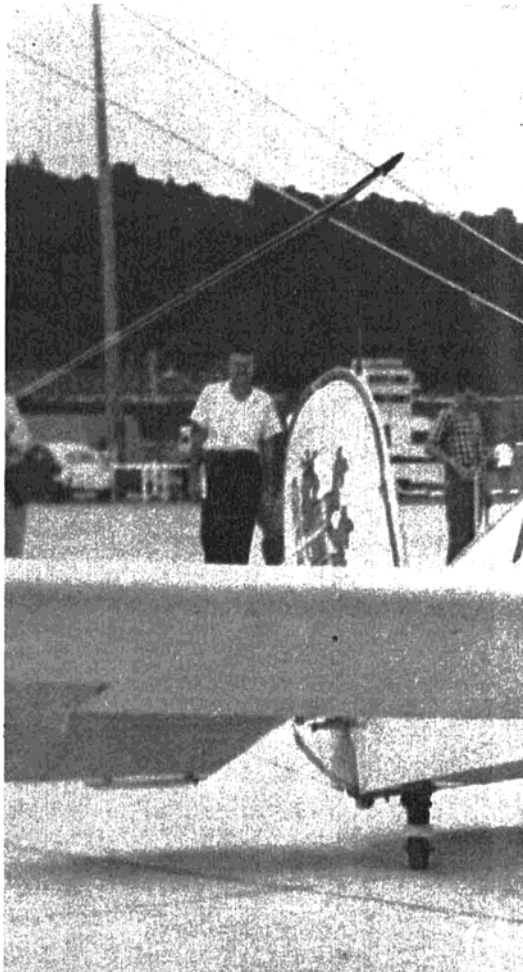


Gerry Leak's R/C version of world famous Mira Slovak's Aerobatic Bucker Jungmann. The model, presented here is one of the finest models ever presented, and a true challenge to the expert R/C scale enthusiast.

his Bucker Jungmann to accept the handshakes of the admiring crowd.

This is a typical performance of a man who in the past 13 years has been unassumingly carving a niche for himself in aviation and hydroplane history. His exploits started in 1953 when, as Czechoslavakia's youngest airline pilot at 23, he flew an airliner routed from Prague to Brno to a U. S. base in West Germany — complete with a full load of fighting security men and unwilling passengers. Nothing like doing it the hard way! Shortly after, he came to the United States. A few short stints at odd flying jobs, including crop dusting in Mexico in 1955, and then to work for Bill Boeing Jr.'s Aero Copter Inc. organization in Seattle. With Bill Boeing's encouragement, he got his first taste of unlimited hydroplane racing in Bill's "Miss Wahoo." In 1956 Congress passed a special bill on Mira's behalf which enabled him to obtain a radio license and go to work for Continental Airlines as a pilot. While with Continental Airlines, he continued his interest in unlimited hydroplanes and became interested in unlimited racing planes. The next thing you knew he was racing the big ones under the sponsorship of the late Bill Stead of Reno, Nevada (Miss Smirnoff entries) at some of the major unlimited boat and racing plane races throughout the country and making a name for himself as a go-getter. About 1963 a Bucker Jungmann (pronounced, young man) JU131 Aero C-104 in Spain was carefully crated and shipped to Mira Slovak.

The Bucker Jungmann JU131 is the predecessor of the airplane which has delighted the hearts and teased the aerobatic fingers of every aerobatic flyer and enthusiast the world over, the Bucker Jungmeister (pronounced, young master) JU133. The two airplanes look very much alike. The Bucker Jungmann was designed and built in Germany about 1934 by Herr Karl Bucker as a primary aerobatic trainer. Its small size and good aerobatic performance on somewhat limited power soon indicated a desire for an advanced model built along



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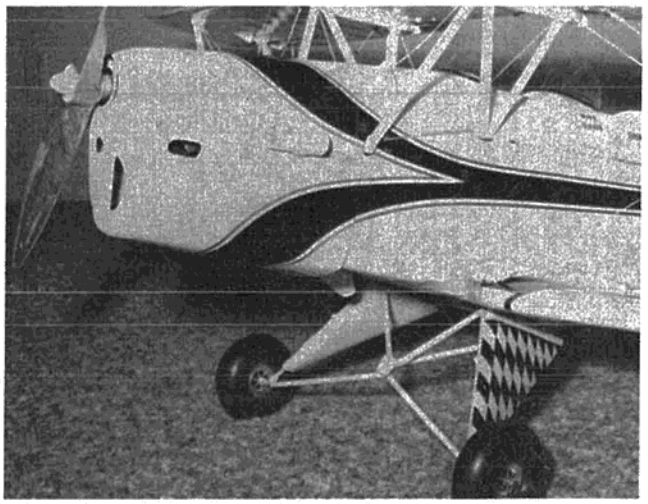
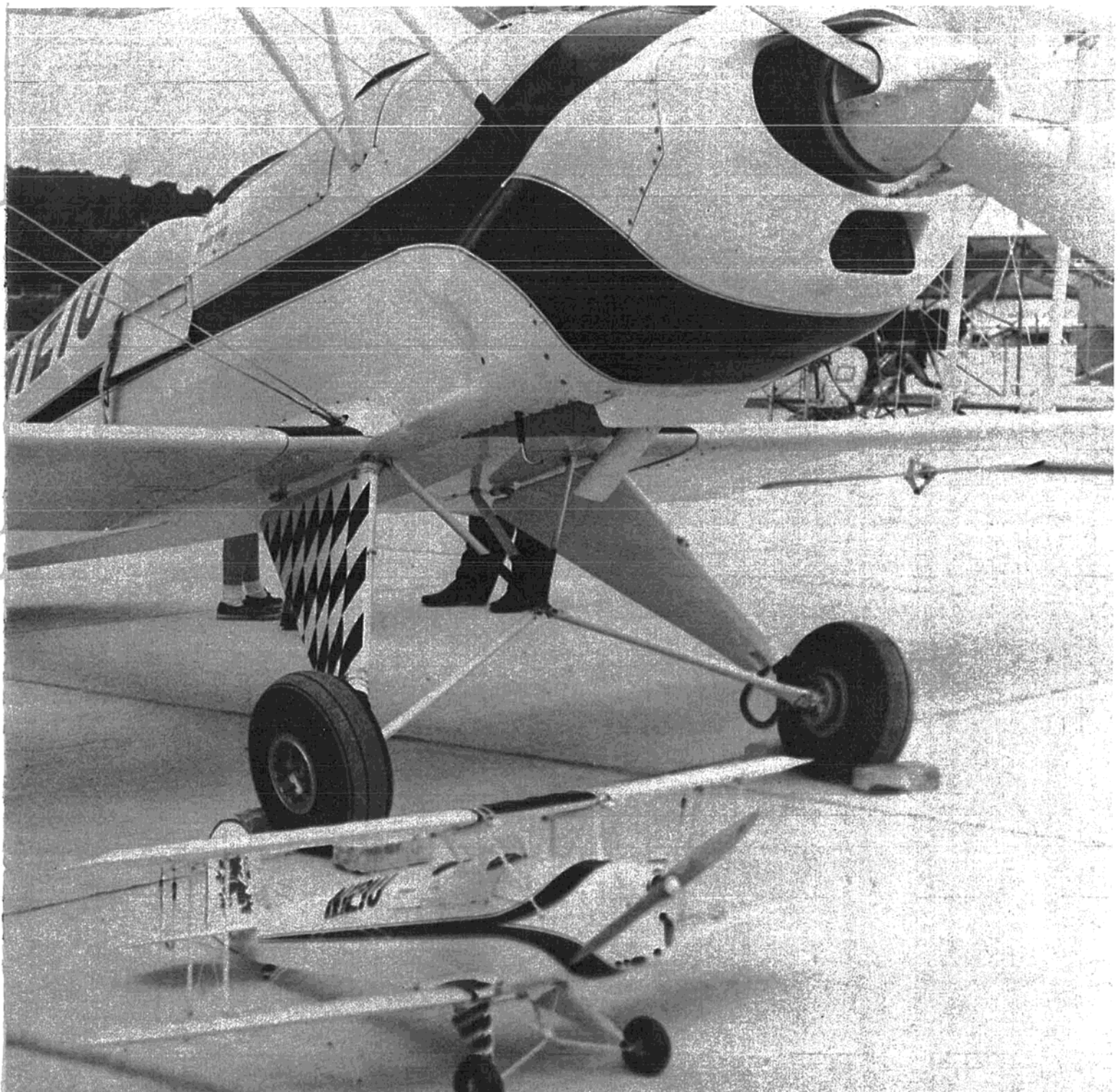
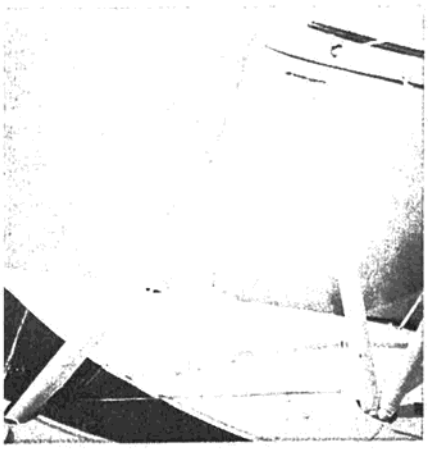
Right: Closeup of nose section of Gerry Leake's version of Mira Slovak's Bucker Jungmann (pre 1964). Below: The 1964 version model versus the 1966 conversion at Boeing-Renton Field in Renton, Washington. Insert: Mira Slovak holds Gerry's Bucker in front of the modified Jungmann.





ınding gear detail (1964).

rut fittings (1964).



ıbane strut & gas tank.

ra's Jungmann (1964).

the same lines but with more power and a single seat. The Bucker Jungmeister then came into the world, sired by a man with a genius for designing good aircraft. Incorporated into the design of these two aircraft was all the knowledge and skill that the state of the art would allow at that time. Even the steel tubing in the fuselage is of unequal diameter as it moves back along the fuselage to the tail structure — an all-out effort to provide adequate strength without overbuilding and associated overweight. The empennage is of steel tubing and the wings of tubing with wood main spars. The covering has access zippers in it for quick maintenance and dismantling. The covering on the bottom of the fuselage is laced together at the center, thus enabling any portion of the fuselage to be quickly inspected.

The Jungmann and the Jungmeister have been coveted prizes ever since they first proved their aerobatic capabilities. Of the two, the Bucker Jungmeister is the most well known in the United States. Mike Murphy, in 1938 to 1941, and Bevo Howard, after 1948, flew to fame in a Bucker Jungmeister all over the country in hundreds of airshows and aerobatic contests. Mike Murphy's (later Bevo Howard's) Jungmeister was a rebuild of the same airplane which Captain Alex Papana brought over from Germany in the Zeppelin Hindenburg and flew in hundreds of air shows here in the United States in 1936 to 1938. In 1938, another airplane landed on top of Papana's Jungmeister while he was taxiing on the runway. Papana escaped with minor injuries, but the airplane was pretty badly mangled. The Jungmeister was then acquired by Mike Murphy and friends who restored the aircraft. Papana's Jungmeister has a sunburst on both wings. When Mike Murphy and friends rebuilt the Jungmeister, the sunburst was retained, a sweeping split stripe down the side of the fuselage was added, and checks added on the bottom of the lower wing, tail and landing gear. Bevo Howard retained the basic paint job and added more horses.

It seems traditional that all Jungmeisters and Jungmanns in the United States must have a sunburst on the wings, and so what does Mira Slovak do? Why refinishes his newly acquired Jungmann with a sunburst on the wings of course, also a sweeping split stripe down the side of the fuselage and checks on the landing gear, a la Howard. A Lowenbrau beer label inspired the griffin on the tail. (You can tell where he spends his evenings!) When Mira first obtained the Jungmann, it had a Walter Minor engine of 105 hp with fuel injection. The plane was conventionally covered, complete with zippers and lacing. With one man in the aft cockpit, it was a nice handling aerobatic airplane, but nothing spectacular by today's standards. With another man in the front cockpit, it would just about fly, and not much more, unless it had a real head of steam up. So Mira had a few modifications made in late 1964-65. Things like: putting a 205 hp Lycoming up front, eliminating all the zippers, lacing and replacing them with conventional access panels, a new paint job and griffin on the tail, a gold pin stripe along the edges of the sunburst on the wings and a black pin stripe outlining the gold on the tail, and hydraulic brakes added. Man! Now there is a flying machine. But look at it. All the old world character is gone. That lycoming and sloping front end does absolutely nothing for me. Hence presentation of Mira Slovak's Bucker Jungmann a la 1963, complete with zippers and lacing. Now that takes me back to the way a Jungmann should look. True, it doesn't climb straight up. But, by golly, it's still got the old world flavor in it!

Mira is flying his modified Jungmann around the country in numerous airshows and competing as a top driver in the unlimited hydros anywhere there is purse money. He is no longer flying for Continental Airlines. He is doing the things he likes and does best, thrill the crowds, whether it's in an airplane doing a Luncevak or racing a hydro at 180 mph down the straightaway. If you ever get a chance to see him or his airplane, don't miss it. If you ever get a chance to talk to him, you'll find he is a modest and personable man with a gift for enjoying life.

Biplanes have always been a little bit special with me. My first multi ship was a deBolt Custom Bipe. The Bucker bug bit hard about 1965. I built a R/C single channel version of the Bucker Jungmeister prototype which was published as a free flight in the September 1963 issue of MAN. I was really hooked then. So off I went on a research project, little realizing that not too much information was available on the Bucker Jungmann. Why the Jungmann instead of the Jungmeister? That big cowling, that's why! Also, I'm chicken, and I like two seats when I fly!

Information was gleaned from old articles of the Jungmann and Jungmeister. Plans of a 125 hp conversion version made in Sweden were obtained from Don Davidson of Seattle, David Gauthier (1966 President of Chapter 26 of the EAA) is building a Jungmann from scratch (as well as tubing). Much of the information I obtained was generously furnished by them, including copies of the fuselage measurements taken from factory drawings. Plans and photographs made by Frank Price of Waco, Texas of his Jungmeister furnished additional data. An all-out effort was made to duplicate the internal structure of the Jungmann as accurately as possible. Photographs of

Only the rubber bands give it away as being a model. Note starting wires hanging from glowplug access hole.

Mira Slovak's Jungmann and photos from Peter Bower's files of prewar Jungmanns furnished information on external details. Incidentally, the Jungmanns were built by several different manufacturers and so no two Jungmanns seem to be exactly alike. Also as planes are flown, many modifications take place during the lifetime of the airplane. The only way to get accurate information is to concentrate on just one airplane and track down its life history. I hope I'm reasonably accurate with Mira Slovak's airplane. Keep in mind that this is a model of the 1964 version and earlier. Many modifications were made to the airplane after 1964.

The airplane has generous tail area and moments, thereby ensuring smooth flying. The model is no exception. It flies extremely well, no hot rod, but good stable flying with the ability to do most of the AMA maneuvers. It's been flown in 20 mph winds safely. Well, maybe not so safely, but at least I got it down for a good landing without any bounce. For me, that's safe! I can't say that I've won umpteen trophies with it; I'm not long distance minded and so it's only been entered in contests in the Washington-Oregon area, and there are doggone few scale contests around here. It placed first in the Annual RAMS (Radio AeroModelers of Seattle) R/C Symposium in February 1966 (prior to first flight) and placed third in the Annual Sand Point Naval Base contest in May of 1966. That was the 20 mph wind one. In Oregon on September 19, 1966 at Delta Park, I learned something. Don't move the landing gear back! On my model the landing gear was moved back one inch to, quote, "ensure good take-off characteristics." On cement it worked fine. At Delta Park on grass — oboy! The movies taken by George Hickson of the RAMS are a riot. That plane made so many nose-overs in the grass I lost count. The judges were extremely patient. By the time I was frustrated enough to hand launch it, the vertical fin was broken and so back to the drawing board. I moved the landing gear back to the scale position and there it will stay. The correct location is shown on the plans.

The Jungmann is a ball to fly and a lot easier to build than you might think at first glance. Don't let all the plywood scare you. It's not as heavy as you might think and provides good strength. It has to be strong to survive my crash-er-landings. The plane is surprisingly strong and should weigh out at no more than 7½ pounds ready to fly. I do suggest that you have a jig-saw available. The jig-saw can be used to cut out all the parts including the turtle deck formers and the metal fittings. Various blades can be obtained for the saw. I recommend a 28 or 32 tooth to the inch blade for good clean cuts. Since my radio gear is reed equipment, the hinges are of metal. If you expect to use proportional, I highly recommend that a good grade of cloth Micarta be used for the hinges and where possible, nylon fittings be made to avoid metal to metal contacts. I also recommend that all parts for any one project be cut out ahead of time before actual construction is undertaken. That way, the fuselage — for example — can be glued or epoxied together and while drying, the tail feather components can be cut out. While one component is drying, you can cut out the parts for the next component. Construction goes quite fast this way. Study the plane carefully and fix in your mind exactly what order each part must be assembled before beginning construction.

FUSELAGE: Build the two fuselage sides from hard straight-grained balsa. Watch for the tack glue joints at the aft cockpit gusset and on both ends of the lower wing saddle. This area is split and then reglued permanently when the two sides are joined together to complete the basic box as shown on the top and bottom views. The fuselage is not a square box so make sure you build the box assembly first on the bottom view and then flip it over onto the top view and glue in the top cross braces. The wing saddle and aft cockpit gusset are glued permanently after the box is formed, and the extra wood shaved off the sides. This ensures the sides are straight and not bowed. Glue the plywood doublers inside the fuselage box. Epoxy the firewall in place after the basic box is completed, then build up the remaining portions of the fuselage with very light balsa. Don't forget to attach the engine mount retaining plate before the firewall is installed. Install the 1/32" plywood air duct plate and sheet the

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The author, after a demonstration flight at EAA fly-in. RAMS (Seattle) RC club hat.

BUCKER JUNGMANN

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sides from F5 to F3. The wire cabane strut assembly is then sewn into the airplane with heavy thread and epoxied. The forward nose section ring is attached when nose planking is begun. Measure the length of four 3/8" x 1/8" planks from the nose section outlines shown on the top view and side views. Line these carefully up on F2, F3 and F5 and glue in position. The correct angle for nose ring F1 is then established. Glue in F1 and complete the rest of the planking. Note that the planking on the side of the nose sections overlaps the sheet between F3 and F5. This simulates the area where the cowling sticks out from the fuselage and should be painted black or dark grey later. The cabane struts fairings and upper wing saddle can then be added. The tail wheel assembly is then mounted on the mounting plate and epoxied in position.

EMPENNAGE: The tail feathers are assembled on top of the plans and then sanded to airfoil shape after removal from the plans. Make sure that the plywood ribs and L-shaped plywood hinge pin retainers for the outboard elevator hinges are cut to shape and drilled before assembly. The metal elevator hinges are roughed with 220 sandpaper and faced with epoxy and plywood to ensure good bonding to the stabilizer and to provide the correct hinge shape. Cut slots in stabilizer for the hinges. Connect all four hinges to the elevator sections with 1/16" steel pins and align with the stabilizer slots. Jig the assembly so that it can't move and epoxy the hinges in the stabilizer. This must be accurate to avoid twisted elevators. The rudder hinges are assembled and then slots cut into the fin and rudder. The rudder horn is then epoxied in place and the rudder hinges epoxied and pinned in place. The stabilizer-elevator assembly is then epoxied to the fuselage and the fin-rudder assembly epoxied in position. Soft block fairings are then carved and added at the tail. Control linkage can be added at anytime prior to covering.

WINGS: The wing assembly is next. Use the lightest balsa you can find for the ribs. Cut out all ribs, wing tips and shape the main spars. Notice the taper on the bottom and top of all main spars. If your jig-saw has a tilt table, the main spars can be quickly cut out of 1/4" hard balsa sheet, complete with taper. Measure the angle from the plans. Cut the spars to length making sure you keep the forward spars separate from the aft spars. Both wing panels can be built at the same time on the plans. You can build up almost the entire wing in one night. Pin the ribs in position, drop in the main spars, and glue in place. Don't forget to tilt the inboard rib for dihedral. Block up and epoxy the tips and trailing edge strips to the ribs. The trailing edge strips can be tapered with a Moto Tool sander after the wing is lifted from the plans. Add the sheeting on top and the sheeting in between the ribs at the aileron cutout. Glue on the top sheeting by the aileron cut out. Add top cap strips and remove from plans when dry. Add the bottom sheeting by the ailerons and set aside till the center sections are built.

Laminate the dihedral braces with epoxy and clamp in the jig shown on the plans. Making more than one jig will speed up this process. Build the center sections similar to the wing panels and lift from plans, flip over and cut 1/16" out of the end ribs against the main spars and epoxy the dihedral braces in position. Then cut 1/16" out of the end ribs against the spar on the wing panels. Block the center section up the correct amount for upper or lower wing directly over the wing plans, and that the wings are not twisted. When dry, sand down the bottom of the wing, sheet and add cap strips. Add the aileron control linkage before sheeting the bottom wing.

AILERONS: Build the ailerons by first laying the bottom sheeting directly on the plans. Glue on all ribs, spacers, and trailing edge. Sheet the vertical leading edge and then add the top leading edge sheeting. Lift from plans and cut out the hinge slots in the leading edge with a razor saw. Epoxy the aileron control horns on all ailerons and also the aileron pushrod horn on the bottom wing ailerons. Epoxy the plywood hinge mounts in each aileron. Cut a 1/32" slot in the trailing edge sheeting against the hinge ribs in the aileron cutouts in each wing. String 6 brass aileron hinge plates onto a piece of 1/16" wire cut to the length of an aileron. Carefully align and epoxy the hinge plates to the wing ribs, making sure the wire is centered with the aft main spar. Remove the wire when the plates are dry and fasten the aileron hinges to the hinge plates with 0-80 nuts and bolts. Slip the hinge through the slots in the plywood aileron retaining plates and epoxy the ailerons in position. The aileron pushrods can then be added in the lower wing as well as the plywood rigging plates which have 2-56 blind nuts on the back side.

LANDING GEAR: Build the landing gear directly in the slots on the bottom wing landing gear mount. This ensures proper alignment while wrapping and soldering the gear. The gear is made removable since this part of the airplane takes more of a beating than any other part and seems to need continual repair if hard landings are made. The slot can be covered over, after assembly, with silk, then doped. Only the mounting screws will show.

RIGGING: The wing struts and rigging plates can be made during any spare moments between main component construction. Notice that a strut rigging jig is required. This keeps the struts at the proper spacing for removal and installation. Without it, the elastic rigging pulls the struts together and you'll have a devil of a time installing

them. To install the rigging, the lower wing inboard fittings are screwed tightly in place, then the lower wing is rubber banded to the fuselage. The upper wing is rubber banded on, and then the struts (in the jig) are put in position at the wing tips and held there by a buddy while you add the 2-56 screws which hold the strut fittings to the wings. Your friend can then let go of the struts. Remove the jig and fasten the upper wing inboard fittings with 2-56 screws. Removal of the rigging is the opposite sequence. If you use a heavy white elastic for the rigging, there will be very little rigging vibration when the plane is in the air. A spare set of struts without rigging fittings should be made for Sunday sport flying. These I use for most of my flights. I save the fancy rigging for contests.

DOORS: The cockpit doors and scale goodies can be made at any convenient time since they can be completed very quickly. The model shows magnetic latches for the doors. This is not scale, but it's a whale of a lot simpler than the spring loaded pin latches I used on my model!

FINISHING: Install all controls before covering. The airplane can be covered with silron or very light silk and dope. Wax all surfaces heavily in those areas where you don't want the silk to stick. Plasticize your dope heavily, or better yet, use the non-shrink dopes available. I won't go into finishing such as adding the griffin on the tail, etc. since this was covered in the September and October 1966 issues of MAN. The airplane is first painted all white and then the black and gold trim is added. Notice that the black checks on the landing gear fairings are only on the outboard side of the gear. The registration numbers and experimental numbers slant forward on both sides of the airplane. The griffin faces forward on the left side and aft on the right side. Templates are included on the plans to provide the correct curves for the black trim on the fuselage nose section. All cowling lines, gas tank lines, zippers, lacing, drain holes and screws were simulated with dark and light grey dope in the appropriate locations. The whole thing is then sprayed with clear dope and rubbed.

FLYING: Install your radio gear and check the C.G. My airplane came out right on the money with no shifting required. Keep the C.G. within a ¼ inch of what is shown on the plans for a good stable airplane and don't let the swept back wings scare you. The plane absolutely will not snap unless deliberately put into one while going full bore. It's the finest flying biplane I've ever had and I'm sure you'll enjoy flying it on weekends as well as at contests.

If additional information is required feel free to write me at 15837 28th Ave. So., Seattle 88, Washington 98188.