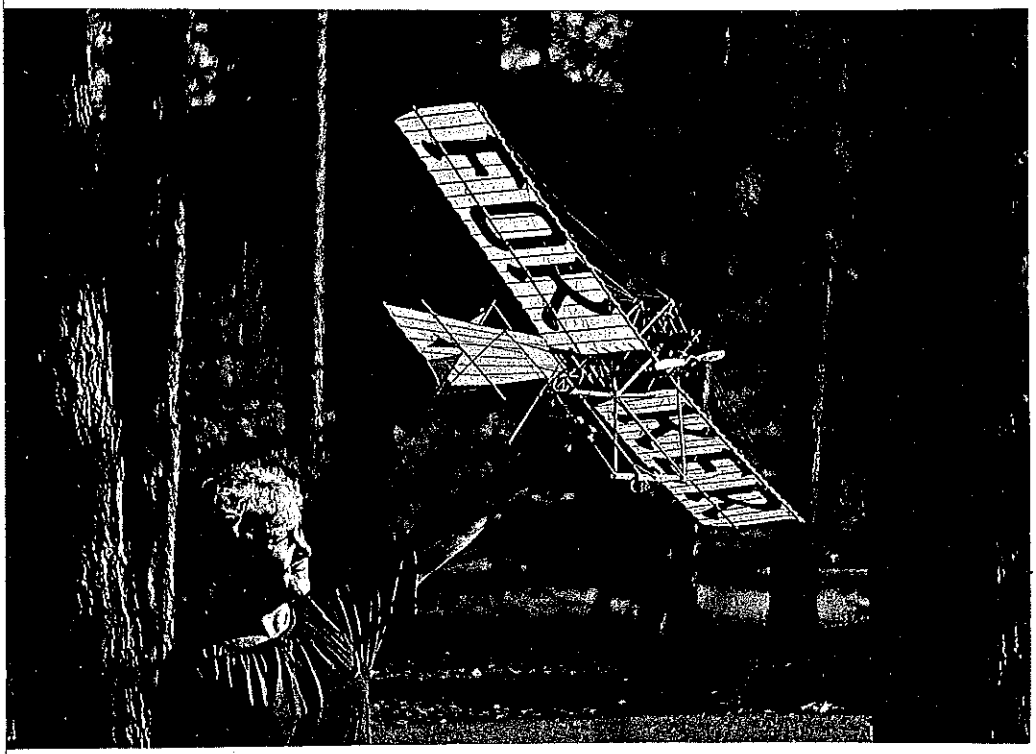
Fokker Spin III

This model is unique in every respect and full of surprising details. Has fully shock-absorbing landing gear and tail skid, single-surface wing with unusual airfoil, and full cockpit ventilation(!). Scale nuts and bolts hold it all together for funcational realism. Every little details adds up. #409

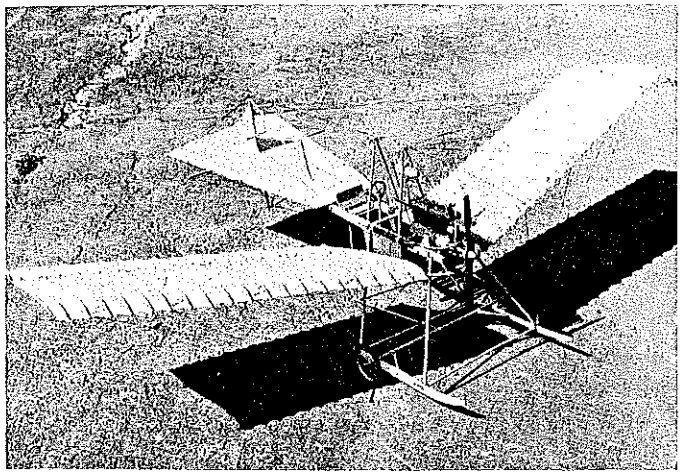


Mrs. Diane Plahn, mother of the author's wife, holds the Spin so that we can have a better idea of its size. Model uses much aluminum tubing, spruce, and bamboo. Not tough to build, really.

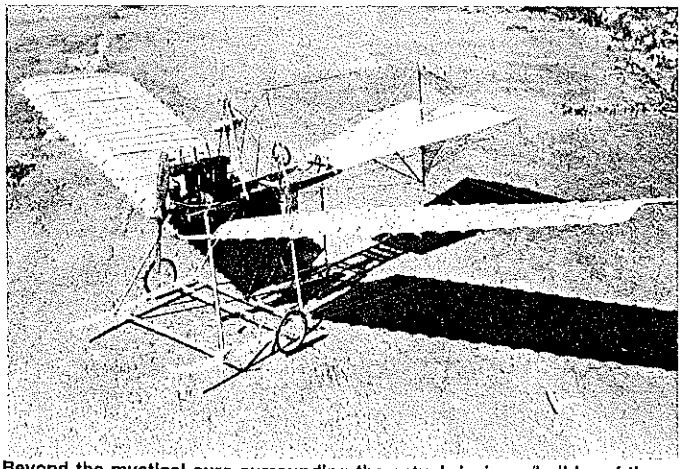
Consistent documentation on this early aircraft wasn't easy to come by, the author found out, but perseverance paid off. Eventually he was able to develop a very authentic Free Flight Scale model for ½A engines with construction very similar to the prototype.

David Haught

WHETHER it is a Fieseler Storch or a Fokker Spin III, everyone has that special airplane reverently hangared in the back of his or her mind waiting for that day when the building board and available time are ready for it. For me it has always been the Fokker



Models of vintage aircraft have a strange appeal. Their fragile appearance belies their strength. Ten degrees of sweepback and dihedral: stability.



Beyond the mystical aura surrounding the actual designer/builder of the original Spin III, the fact remains that it was a very successful airplane in its day. Having only rudder and elevator controls, it was easy to fly.

Spin III.

Bits and pieces of Fokker Spin information have been collected by me since I was age 10, and I've carried the tattered magazine pictures and meager three-views with me ever since. As my building skills developed, so did my interest in building the Spin III. As with most dream machines, I wanted to do the job as best I could, which meant I would need good documentation. This was something that was to frustrate the project for many years.

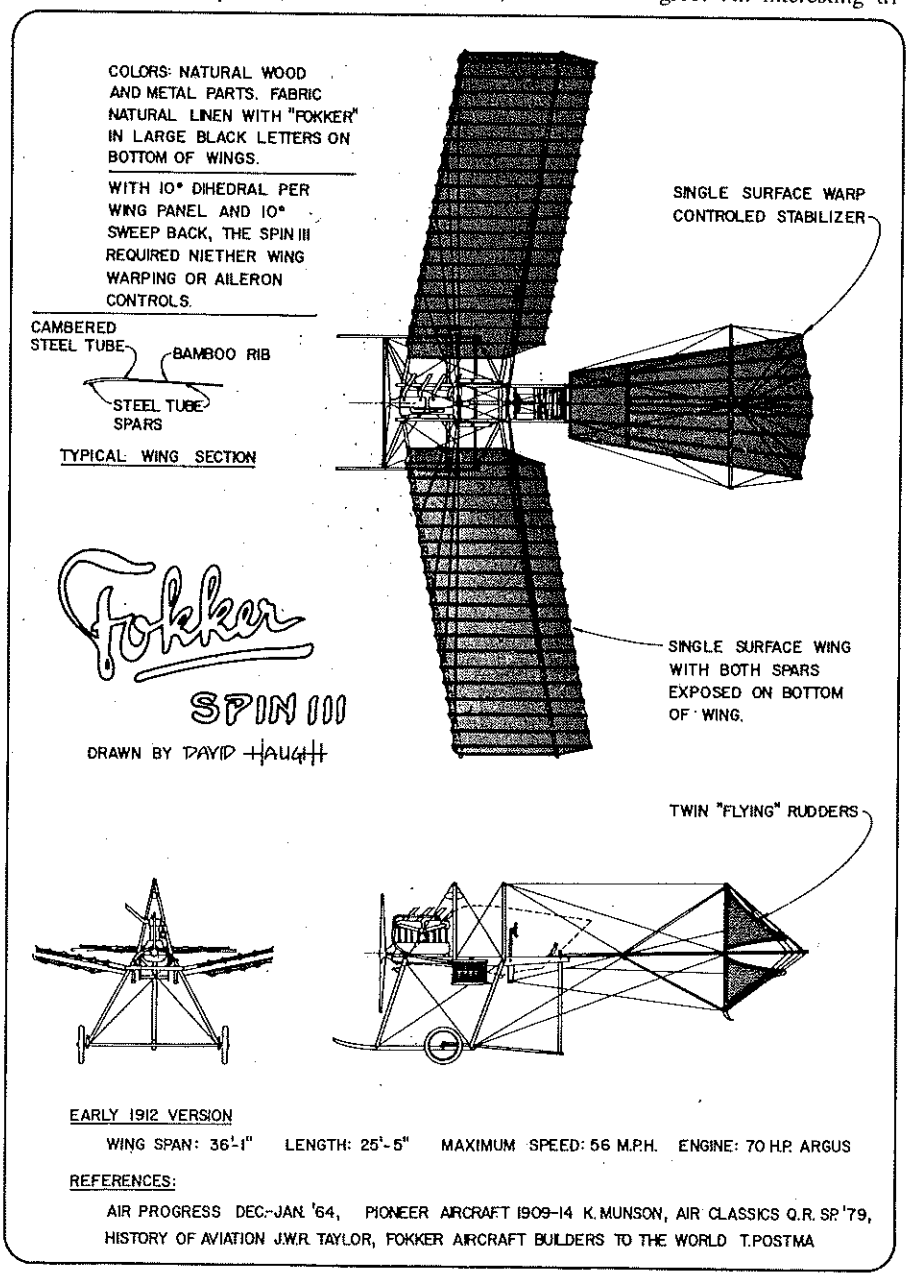
Beyond the lack of congruent scale data, other obstacles began to loom. Simplicity and ruggedness were the rule for all the Scale models I have had success with. Here in the Northwest, a model like the fragile Spin would be faced with possible collisions with sagebrush and canals on the flying site—not too nice an environment to 'raise' a model covered with wires. But it came to the point where the obsession to build it overcame the practical considerations.

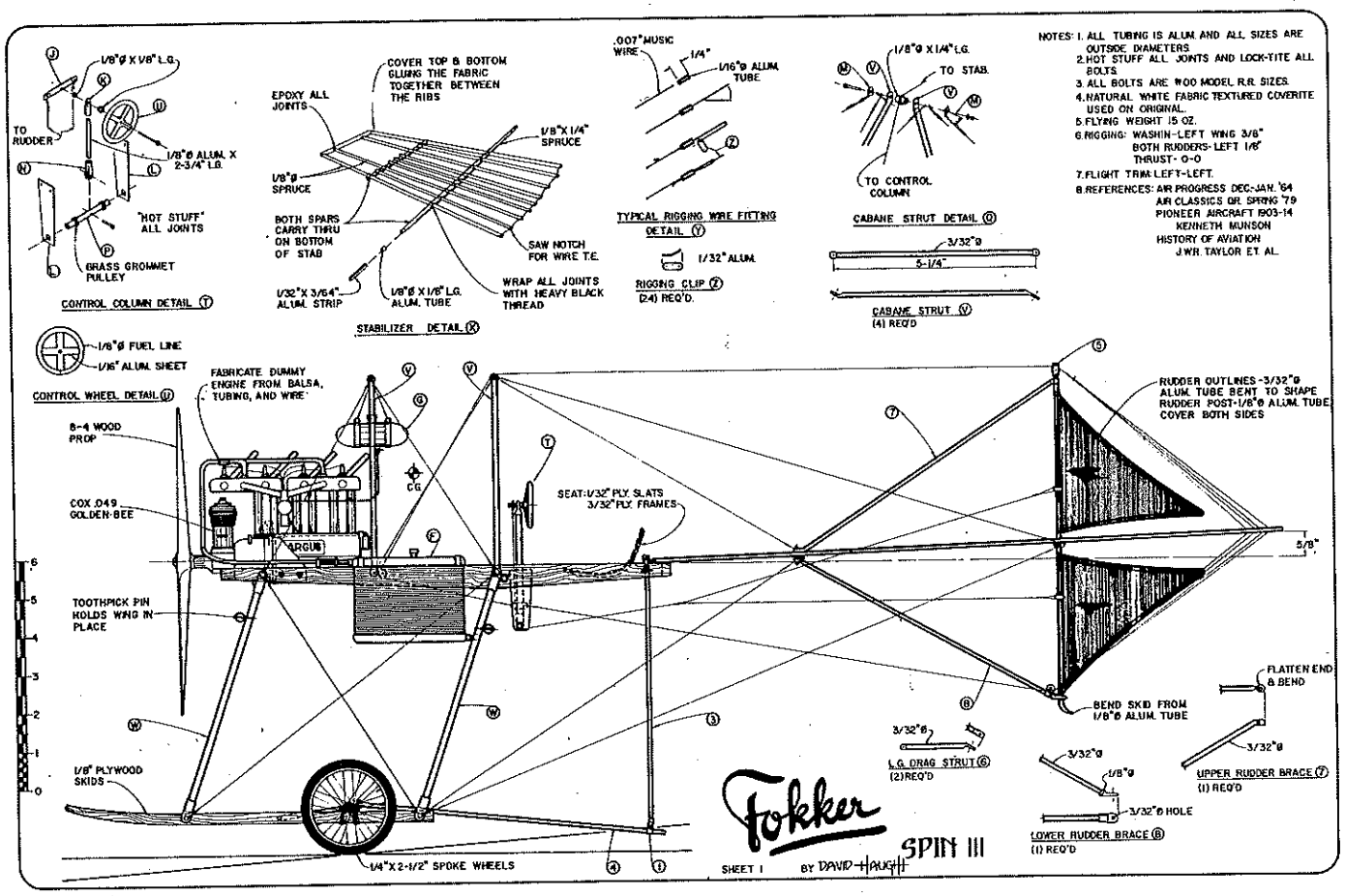
Obtaining the documentation for the Spin III was a long series of disappointments. The tattered photographs from *Air Progress* of December 1963/January 1964 presented information that was enticing. Several close-up photographs of a replica 1936 Fokker Spin III in Holland's Aeroplanorama appeared in that issue. But there were no three-views. In 1969, Kenneth Munson's book, *Pioneer Aircraft 1903-1914*, offered the first scale drawing I could find. It reflected the photographs of the Holland replica. Munson's color view looked like it was the original Spin III, but in fact it was a drawing of the replica. The critical difference was the lack of radiators and the inverted four-cylinder engine. Lacking the front view and only being the replica, I decided to look for something a little better.

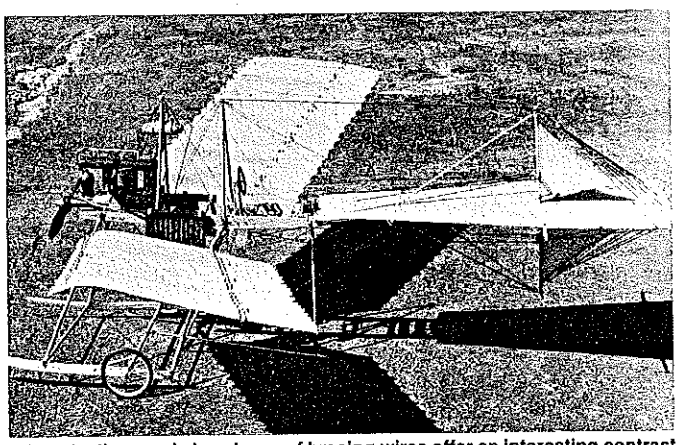
John Taylor's *History of Aviation* featured a page on Anthony Fokker with a good picture of a Spin III. The excitement of the find fell to more disappointment as I looked closely at the picture. It was not as pretty in real life as the replica was, yet it still had an element of appeal. The clean museum replica and the original Spin III were worlds apart, both visually and structurally. The old picture of the Spin III brought out the old rustic antique quality that had made it my favorite. But at the same time it showed me how far off the replica and the original were.

My research started anew. After fruitless hours of delving through the aviation magazines of the 1909-14 period, it became clear that there was little on the Spin III to be found. Recent books and magazines turned out to be the best sources.

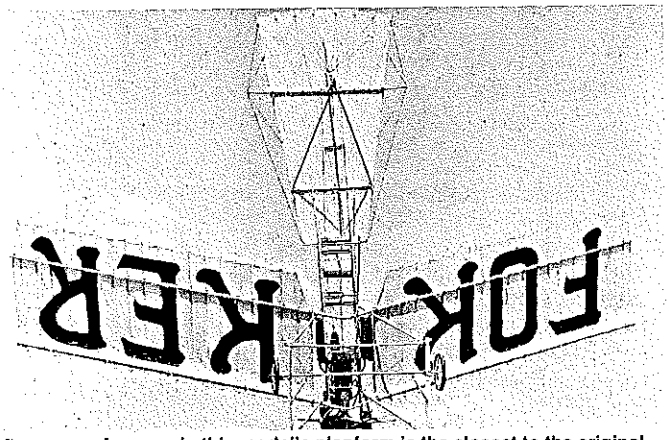
Of the shady history of the Fokker Spin III, few authors agree. An interesting tri-



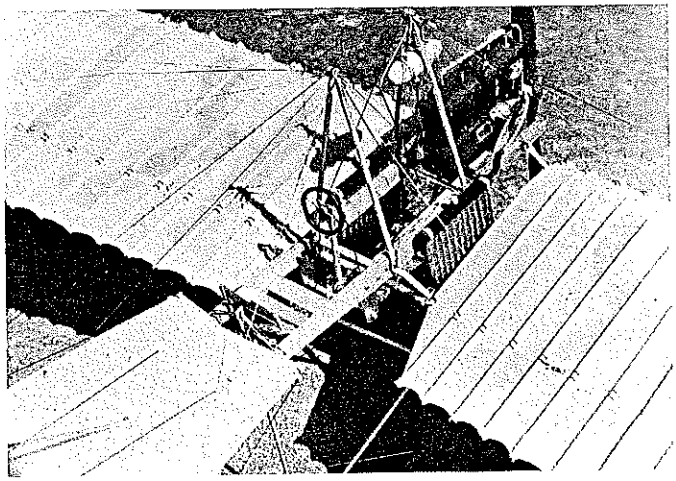




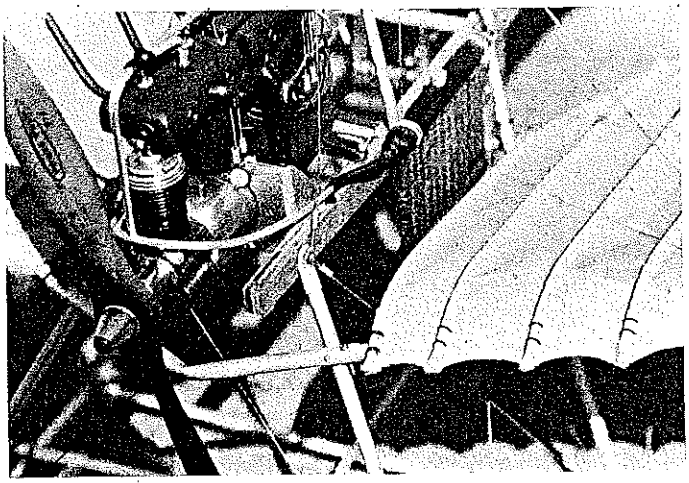
Angular lines and abundance of bracing wires offer an interesting contrast with most other aircraft. No frills, not even a seat belt for the pilot.



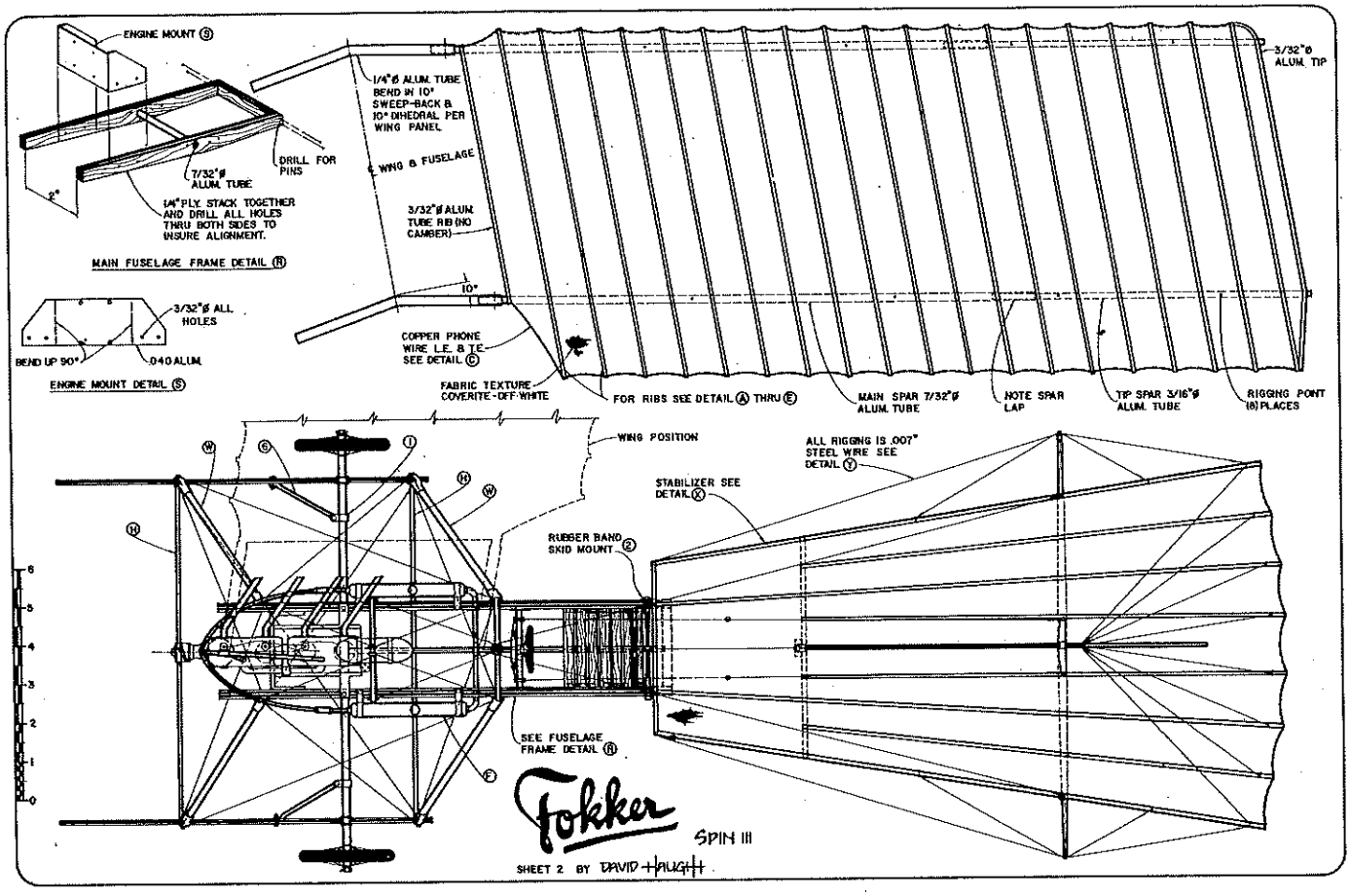
After years of research, this model's planform is the closest to the original that photographs so far can document. Note spars beneath wing.

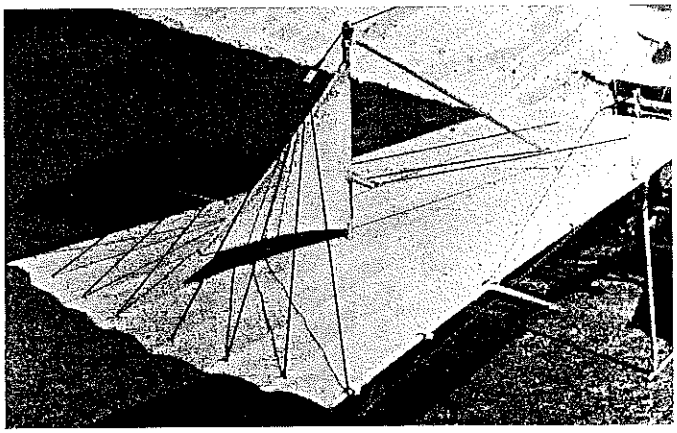


The "spider's nest." Every wire somehow finds its way there. It is a complex structural unit—lightweight and very strong. Each part supports the whole. Study the photographs carefully when rigging.

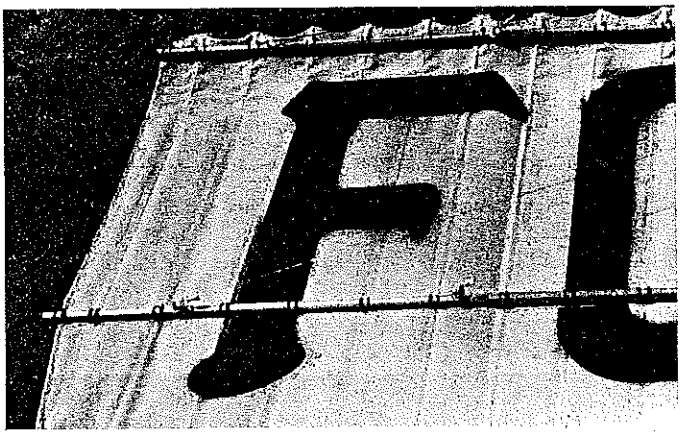


With simple aircraft you don't have much to work with, so you use it all. Note wing joint with the landing gear is a wood toothpick shear pin. The dummy upright Argus engine almost engulfs the venerable Cox .049.

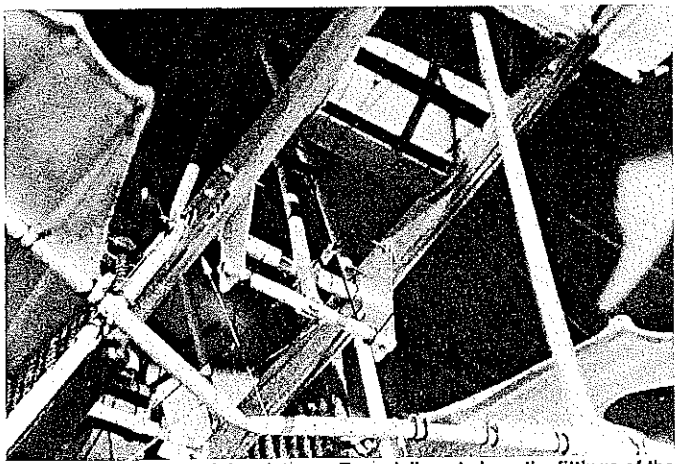




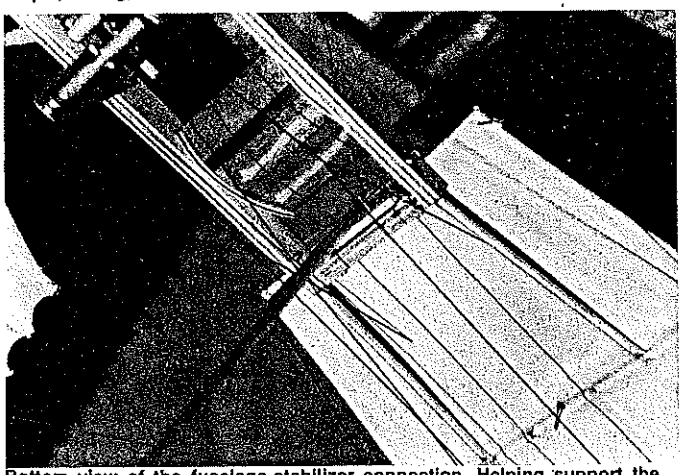
Antique planes seem to be full of contradictions. Here, the giant stabilizer and meager rudder seem to be at odds. And there's the "modern" flying rudder and archaic warp control of the stabilizer.



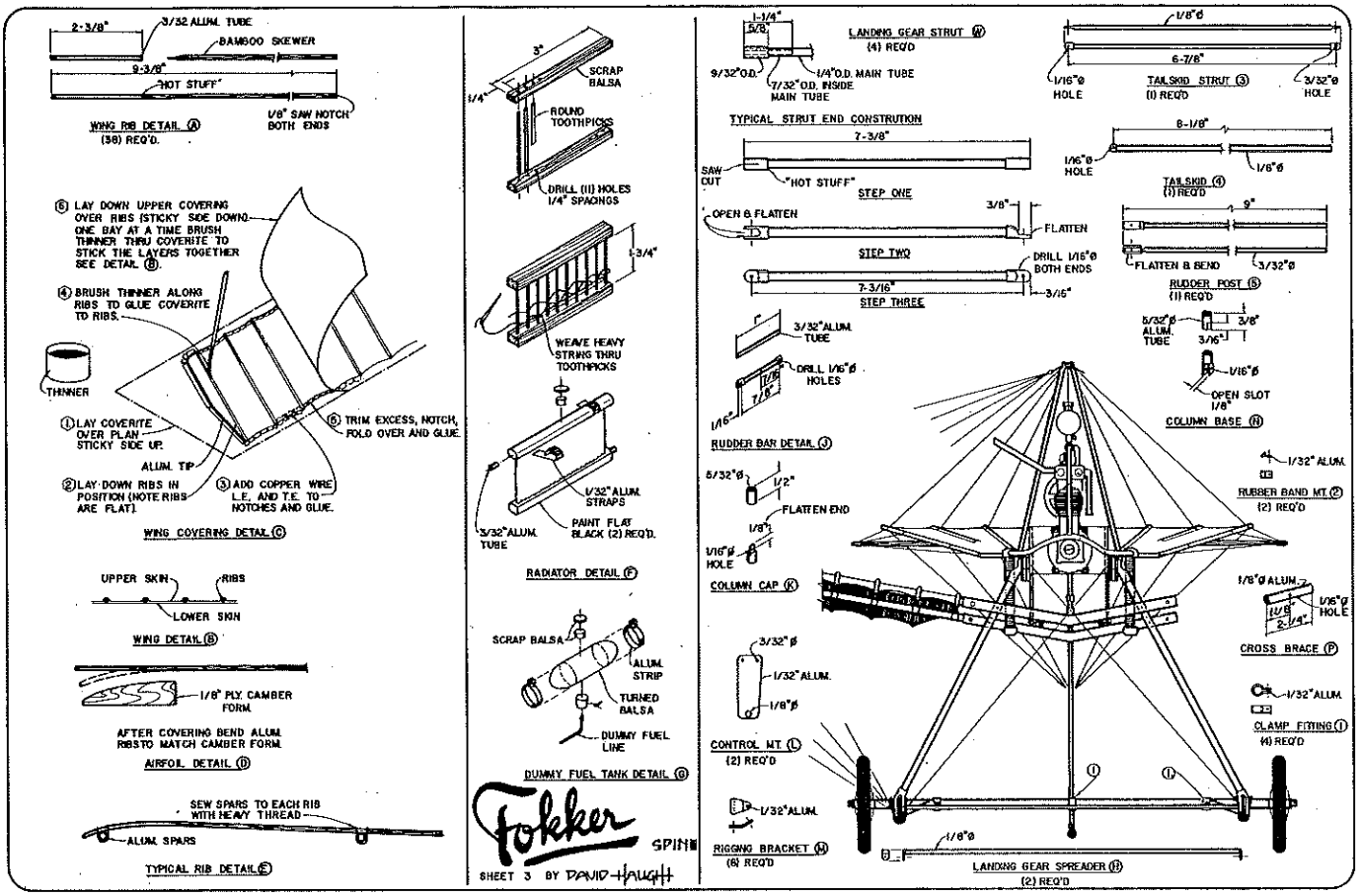
This model is guaranteed to be a unique building experience. How often do you sew ribs to the spar after the wing is covered? Fittings for rigging are simple, strong, and functional. Full of surprising details.



Look carefully at all of the pictures. Especially note here the fittings of the rear wing spar to the landing gear, control column mounting details and support, and the attachment threads for wing ribs to the spar.



Bottom view of the fuselage-stabilizer connection. Helping support the large stabilizer are 3/32-in. aluminum tube braces. An interesting feature is the bungee-attached tail skid, giving an unusual stance and takeoff roll.



angle of names each contributed something to the final design. Of Fokker, Lt. Von Daum, and Mr. Goedecker, in some combination, the Fokker Spin III was conceived, designed and built. Being only a two-control airplane and inherently stable, the Spin III was popular as a trainer. One photograph of an early flying school showed over 15 Spins on the field. Since it was built in large quantities, one can guess that the chances of them being all exactly the same are quite slim.

Just which version of the Spin to build became the decision I had to make. I've found photographs of six different Spin IIIs, all described as the original. When frustration almost cancelled the project, *Air Classics Spring 1979 Quarterly* crossed my desk. Eldon Quick's article brought a wealth of information to light. Several photographs and a series of neat scale drawings at first looked like I had what I wanted. While many points of the presentation were super, there were also many problems. His version of the Spin III was not the one shown in my pictures. I decided that this was the last straw.

It was only after piling all the data I had on the Spin III into one heap and sifting it by the hour that I came up with a few consistencies that would work together. The key was the heading picture in Quick's article and the artist's rendering of the Spin III. There it was in all its glory, the original Spin III. The two items pulled all the loose ends together. It was all there—the long stabilizer, twin forward cabanes, upright four-cylinder engine, and the side-mounted radiators. After years of frustration, the formula was pieced together. The plans were drawn in a week. I feel this is as true a representation of the Spin III as research this far can produce.

The Spin III was then built in various sizes to experiment with the force layout of the design. It was built in Peanut Scale size, 26-in.-span CO-2 size, and finally what you see here. All three versions were quite successful.

The design cannot help but be stable with 10 degrees of dihedral and 10 degrees of sweepback. A fellow modeler friend and I have been building Scale models of the same vintage and scale to compete against each other every year. Greg Davis built a series of Etrich Taubes, and I built the series of Fokker Spins. It is a lot of fun to see them flying together at the same contest.

Construction is somewhat different from most models. I've found the best way to build a Scale model is to duplicate the construction of the original as closely as pos-

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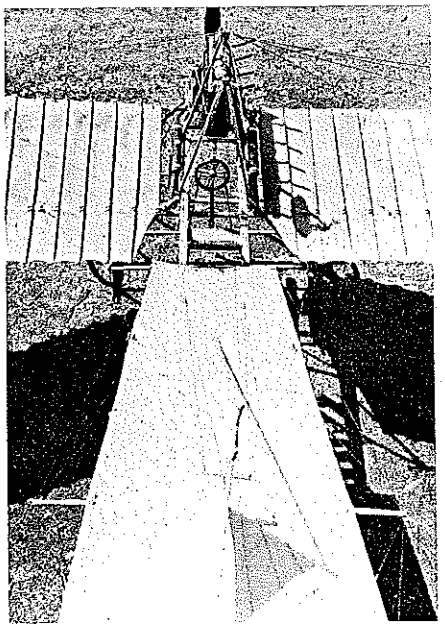
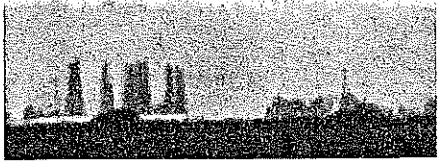


No cramped cockpit, but the pilot was totally vulnerable to anything that got past the engine and cabanes. Stab goes right to the seat.



The model Spin III chugs past. Scene could easily be from Germany rather than Boeing Field in Seattle, WA. Model is rock stable.

have equipment and needs help with Helicopters. Contact George by mail at 700 Fossil Drive, Ingleside, IL 60041 to set up a schedule.

Danny Floyd, I'll see you and others at Toledo. See you next month.

Dave Chesney, P.O. Box 16612, Greensboro, NC 27406.

Field Box/Edmonds

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17. Feet . . . . . rubber feet (hardware store)
18. Transmitter padding . . . . . ½-in. foam rubber

Editor's Note: For those who build the Custom RC Sailplane Field Box, it is recommended that they follow good cabinet-making practice and custom. Build the drawers to fit the case (cut the parts to fit the holes!).

Radio Technique/Myers

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officers and agents will not guarantee that following the instructions given in this article will protect the RC operator from interference, nor will they accept any responsibility for damages incurred, directly or indirectly, as a result of using the accompanying card as instructed.

George M. Myers, 70 Froehlich Farm Rd., Hicksville, NY 11801.

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Fokker Spin III/Haught

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sible. As a result, the Spin III is almost 90% aluminum tube and 10% wood. This also means working with new materials in new ways. The builder should not be discouraged, as the Spin III builds quite fast. A few special tools would be worthwhile—a small tubing cutter (very helpful), a set of small metal files of various shapes, and a set of small needle-nose pliers. None of these tools is *required*, but each will help speed the building process.

As for materials, there are a few things to look into. First, the large amount of aluminum tubing may require going to several hobby shops until you get enought of the right sizes. Try to get 36-in. lengths. This is not only handier, but considerably cheaper than the 12-in. lengths frequently found.

The rear portion of the wing ribs is formed from bamboo strips. These strips can be found in most imported goods shops in the form of shish-ke-bob skewers. They are the right size and have a handy point on one end. If they are not available, you can use 3/32 sq. spruce and sand it round.

The most expensive item on the model is the pile of 000 and 00 model railroad nuts, bolts and washers. All in all, the Spin III will not be any more expensive than a conventional Scale model, and it will be stronger and far more realistic.

The stabilizer is the best place to start. All the pieces are spruce strip that is sanded round, glued in place, and then each joint is wrapped with thread for realism and extra strength. The rearward edges of the "ribs" are notched for the wire trailing edge. Epoxy-coat all of the joints and set aside to cure.

The rudders give you a chance to try working with the aluminum tubing. Take care not to crimp the tube while bending it. For the small sizes of tubing it may help to slide a strip of solder into the tube before bending; bend the tube, and then remove the solder. Start each bend slowly, working it into shape a little at a time. File the ends of the tubing to fit the rudder spar tube, and join them together with a cyanoacrylate (CyA) glue. Add a small amount of epoxy to each joint for added strength.

The fuselage frame is the next item to build. Cut out the sides, and stack them together. Drill all the holes through both sides while they are together to ensure proper alignment. Add the cross braces and engine mount. Fabricate and install the cockpit controls and seat. Cut the seat frames, as well as the cross slats, from plywood. Cement the frames in place on the fuselage frames, and then add the slats. No record of seat belts being used was found in the research, so none are shown.

The plans detail the assembly of the control system. Fabricate all the parts before assembling, and try them all for proper fit. Glue the control system together, then mount it onto the fuselage with the brackets and bolts. Now is the time to add the cockpit controls, as later on it will be hard to work amidst all of the rigging wires. The control wires are made from black braided fishing line and added after the model is flight trimmed.

Cover the rudders and stabilizer next. The rudders are covered in the traditional manner—on both sides. I highly recommend fabric-textured Coverite. It is not only easy to work with, but it is super strong. Use acetone to adhere it rather than heat. Use the acetone just as you would use dope, and you will have no problems.

Cover the rudders first to get the feel of working with the acetone and Coverite. Cover the rudders on both side, taking care to fold the excess over the edges to hide the aluminum tube frame.

The stabilizer is a little different. Cut a piece of covering to the size of the stabilizer with a ½-in. margin to work with. Lay the stabilizer top side down on a smooth surface. Moisten the sticky side of the Coverite with acetone, and lay it on the stabilizer. Beginning at the leading edge, work your way back, pulling the fabric taut and smoothing out the wrinkles.

You will have to wrap the fabric around the stabilizer spars as you go. Take your time, and use plenty of acetone to get the job done right. Keep the room well-ventilated, and don't strike a match! Refer to the plan details on covering the wing for finishing the

trailing edge. Let the stabilizer dry for a good hour, and then trim off any excess fabric.

Covering the top is not so tough. Lay the acetone-dampened fabric onto the stabilizer, and work out the wrinkles. Fold over and glue the excess on the edges. After the cement has set, go back and brush acetone over the top surface; press the top and bottom surfaces together between the spars and ribs. Set aside to dry.

The landing gear is the key to the entire aircraft in structural terms. Study the steps on the plan for making the landing gear struts. The ends of each strut are reinforced from within with the inside tube sleeve. Form all four struts, and then drill the holes as accurately as possible. It would be good to make a small jig to ensure proper spacing for all the holes in the four struts. If they are not evenly spaced, the rigging will pull the structure out of square and will cause trim problems later.

Saw the skids from plywood, stack the skids, and drill the holes in both at the same time. It would be a good idea to make an extra set of skids as they are quite vulnerable to breakage in rough landings. Make up all the remaining landing gear parts and cabane struts, and install them as per the plans. The last step for the landing gear and cabanes is the rigging. All the wires should be taut and of equal tensioin to prevent distortion and provide adequate strength.

Cut the tube and form the rudder post, braces, and tail skid. Drill the hole through the stabilizer for the rudder post. Epoxy the stabilizer to the fuselage frame. Block it up to form the angle of incidence shown on the plan. Sew the joint with heavy black thread. After it has set, assemble the rudders, rudder post, and braces. Align the assembly carefully on the work board, and add the brace wires. All the brace wires are important, so make sure they all fit taut and do not warp the stabilizer.

The wings are next. Study the steps shown on the plan carefully. Begin by making the flat ribs. This is the most unconventional part of the design. The wings are built sparless and flat, covered, and then the camber is added to the ribs. Finally, the spars are added. Each rib-spar crossing is sewn together using heavy black thread. Look over the pictures carefully. The real Spin III used U-bolts to anchor the ribs to the spars. Also note on this version, as on the original Spin III, that both spars run under the wing surface.

Bend the aluminum tube wing joiners carefully. When joined, the wings should have 10 degrees of sweepback and 10 degrees of dihedral per panel.

You will note on the side view drawing how toothpicks are used as alignment pins to mount the wing assembly to the landing gear struts. Block up the wing with the fuselage in place. Take time to align the two with proper wing incidence and dihedral. Clamp the wing in place; drill the pilot holes for the wood pins, and insert them. These pins will hold the wings in place securely, but will also give way in case of a crash, minimizing structural damage.

The wing bracing wires can now be made and installed. Do this in pairs—top and bottom for both wings. In this way the stresses can be kept to a minimum, eliminating unwanted warps. When setting up the assembly for rigging, don't forget to set up the proper wing washin. The wires are functional, so take time to set it up right.

Locate a set of spoked wheels, and fabricate all the axle parts. The axle assembly is designed to be shock-absorbing, and so is the tail skid. Study the pictures and plans closely to see where all the parts go.

By now you may wonder why your finger tips hurt and you need glasses. Well, you're half done. It was at this point that I added the engine, nose weight, and went out to fly it. Don't omit the balancing step! After a short session of fruitless hand glides, I nervously started the engine and launched the Spin into the calm. It flew right off the drawing board without any additional trim being required. I stood, mouth agape, and watched it lazily climb in wide, flat, left-hand circles.

A speedster, it is not. The powered portion of the flight is the same as the glide, only the direction is different.

When the engine finally quit, so did my breathing. The transition was clean, no stall, just descent. The Spin III doesn't glide; it sinks. The glide angle is around 20 degrees, so the shock-absorbing gear is necessary to its survival.

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The Spin III handles wind well. The combination of sweepback, dihedral, and low center of gravity makes it very stable. I will caution you, however, when trimming and flying vintage-type models, to watch the amount of power you try to fly them on. Use as little power as possible to get the model to climb slowly. Excessive speed on this type of aircraft causes radical flight patterns.

I've been using a Cox .049 engine with a wood 8-4 propeller, and I have had good results. The engine will not turn that propeller too fast. A Davis Diesel conversion was used at one point very successfully.

If you haven't tried it before, it is a good idea to keep a flight log book on your Spin III. By recording the fuel amounts, flight times, flight pattern, and weather conditions, you will be able to closely predict future flights. The Fokker's rigging should be inspected and repaired regularly to maintain proper trim and strength. The vibration of the engine and occasional snags from sticks on landing will tend to loosen the rigging and the nuts and bolts. This may allow the model to go out of trim. The log book will tell you where everything should be before each flight.

Once trimmed for flight, you can spend as much time detailing the Spin III as you wish. The dummy engine, fuel tank, and so on can be made from wood and tubing. They add a lot of realism as would a pilot. For detailing and documentation, the resources listed on the plans are worth looking into. Check the library; it may unexpectedly turn up something.

I would hope you will try the Spini III. If not, use it as inspiration to build that one special model you've always wanted. It's worth all the time you put into it as you watch it circle overhead.

FF Indoor/Tenny

Continued from page 77

Oops! The previous column, which told all about Indoor Week (June 12-19, 1983) failed to tell how to enter, so let's repeat some and add to it: The Second United States Indoor Championships is sponsored by the National Free Flight Society (NFFS) and the National Indoor Model Airplane Society (NIMAS), and will be held the first four days of Indoor Week. The site is the atrium of Northwood Institute at West Baden, IN. Times are scheduled for practice flying on Sunday, June 12 followed by 15 AMA and special events running through 1 p.m., June 15. Beginning immediately thereafter is the Fourth Peanut World Grand Prix, which runs for 24 hours. Following the Grand Prix will be ENART, the annual NIMAS event, which runs until sometime Saturday, June 18, 1983. For more info about the U.S. Indoor Champs and to get entry blanks, send a SASE to Tony Italiano, 1655 Revere Dr., Brookfield, WI 53005. Entry deadline to avoid late entry fee is June 1, 1983 postmark. For entry in the NIMAS ENART, get entry blank and info from Dr. John Martin, 3327 Darwin St., Miami, FL 33133. For entry of proxy-flown Peanuts in the Grand Prix: Mike Arak, 10900 SW 61 Court, Miami, FL 33156. For more details on the Kit-Plan Scale event, contact Martin Varney, 1020 N. Wood, Griffith, IN 46319.

Join up! By the way, to compete in the Indoor Champs, you must be a member of AMA (you already are, or you wouldn't be reading this), and either NFFS or NIMAS (Juniors and Seniors excepted). If you call yourself a Free Flighter and you aren't a member of NFFS, then you are cheating yourself and all other FFers! Two reasons why: (1) NFFS is actively involved in many activities which help perpetuate the activity; your dues money helps insure that we will always be able to fly the most challenging kind of miniature aircraft; and (2) if your *name* is on the NFFS rolls, this is proof of interest in Free Flight. Of necessity, certain AMA deliberations are affected by the relative number of participants in each category (FF, CL, RC, etc.). They can't count you if you're not signed up, and this hurts us all. To a lesser degree, this is true for NIMAS also. To join NFFS, write Hal Woods, 707 2nd St., Davis, CA 95616 for info; for NIMAS—Bud Tenny, P.O. Box 545, Richardson, TX 75080.

NFFS Publications: Part of the on-going service of NFFS for the Free Flight buff is an impressive array of plans and other technical publications which have been gathered and made available for purchase. To obtain a list of what's available, send SASE to Fred Terzian, 4858 Moorpark Ave., San Jose, CA 95129.

Why so many cabin classes? Before the advent of Manhattan and Bostonian Cabin models, we had only AMA Cabin. These models are extremely delicate and have evolved to models which have flown over 31 minutes (see photo of Col. Bob Randolph launching the 31-min. model). Juniors and Seniors often fly paper-covered, relatively heavy versions in Nats competiton (see photo). A