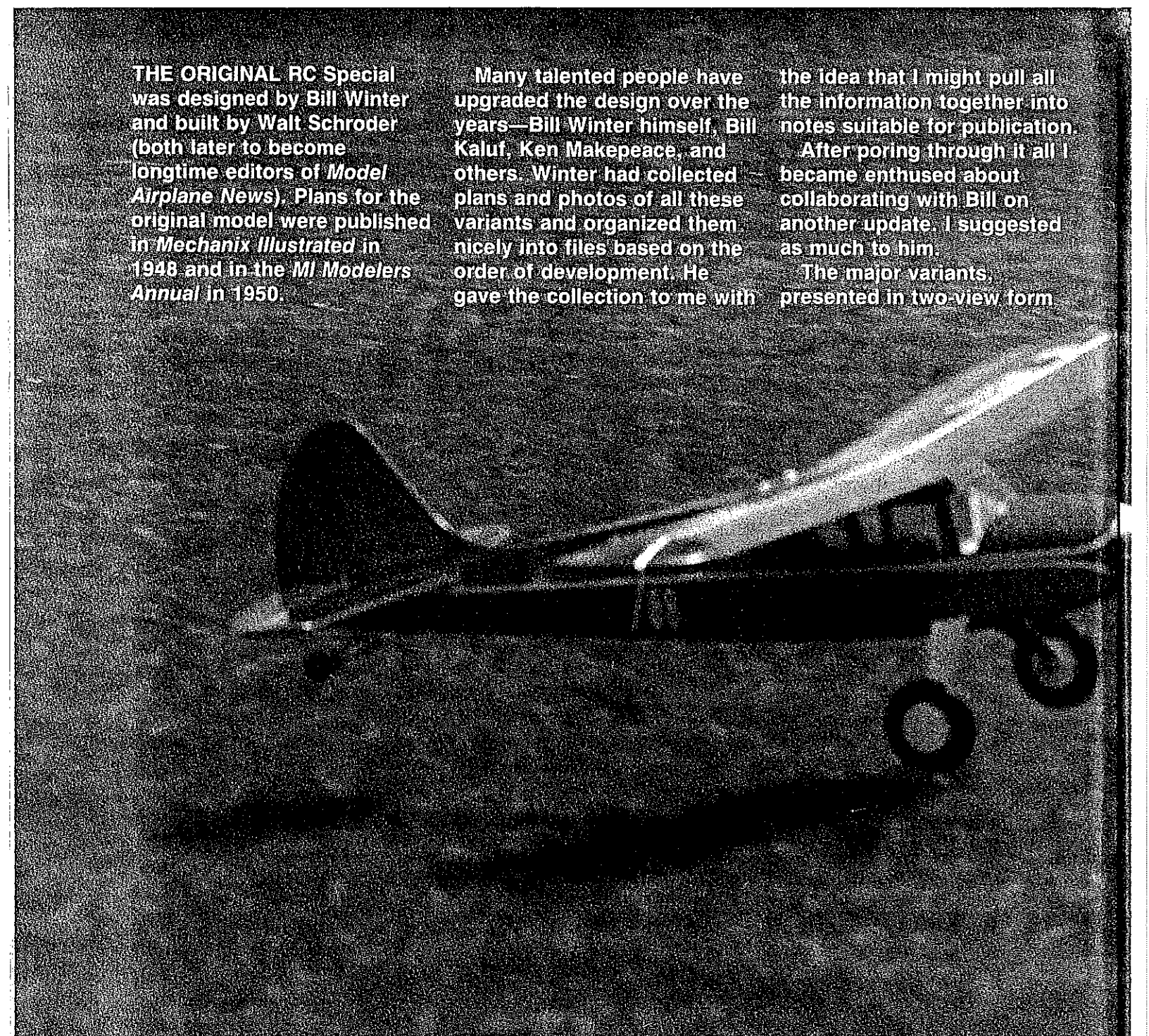
THE ORIGINAL RC Special was designed by Bill Winter and built by Walt Schroder (both later to become longtime editors of *Model Airplane News*). Plans for the original model were published in *Mechanix Illustrated* in 1948 and in the *MI Modelers Annual* in 1950.

Many talented people have upgraded the design over the years—Bill Winter himself, Bill Kaluf, Ken Makepeace, and others. Winter had collected plans and photos of all these variants and organized them nicely into files based on the order of development. He gave the collection to me with the idea that I might pull all the information together into notes suitable for publication.

After poring through it all I became enthused about collaborating with Bill on another update. I suggested as much to him.

The major variants, presented in two-view form



47/88 RC Special

Part one of this article traced the history of Bill Winter's original 1947 RC Special and the development of several later variants. Concluded here is a discussion of construction and flight characteristics of the latest version in this 40-year series. The model combines attractive realism, excellent handling qualities, and full aerobatics in an exceptionally wide performance envelope.

■John Hunton with Bill Winter

last month, included Winter's three-channel scaled-down design (published in the September 1980 *MA*) and Bill Kaluf's five-channel flapped version (published in Australia's *Airborne* magazine). Kaluf's model is on display in the AMA Museum. Ken Makepeace's further modification of that version was capable of doing rolling 360s even with the flat-bottomed airfoil.

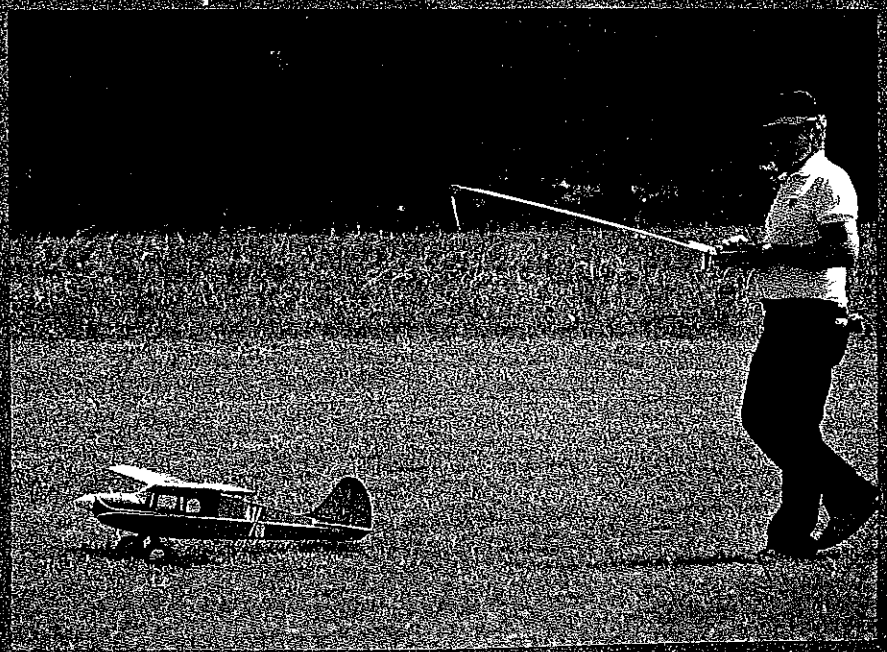
The new 1988 version that we came up with includes so many modifications that it borders on a complete redesign. It features increased wing area, semisymmetrical airfoil, and thinner and cleaner lines. The end result was to take the 42-year-old basic design into its first intentionally aerobatic version. It's significant to note that Winter originally had an Astro 40 electric motor in mind for power.

Because the design blends various historic antecedents, it manages to evoke different aircraft to different people. Some see the Piper Cub, others are reminded of the Aeronca, Rearwin, or Interstate.

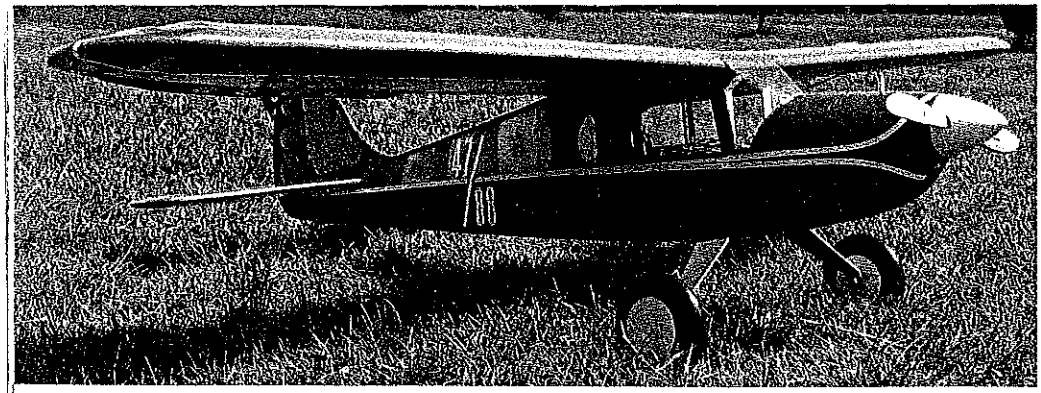
The debut of the full-scale Mustang couldn't have been more exciting than our first flights of the RC Special 47/88. The airplane turned out to have outstanding flight characteristics in addition to being extremely stable and forgiving.

Not only has building and flying such a classic model been fun, but my relationship with Bill Winter has been a rich and rewarding one. This project began with Bill's sketches and continued with his input and editorial expertise throughout its term. In structuring notes suitable for publication Bill continued to add touches to the canvas by editing the written material and commenting on the drawings (making them more complete for the builder). Every attempt has been made to produce a design that is Bill's in every detail. It is as if Bill's years of experience have flowed through my hands and onto the paper.

The end result of our collaboration is a model which, though suitable for casual Sunday flying, is still capable of performing all standard maneuvers. And for



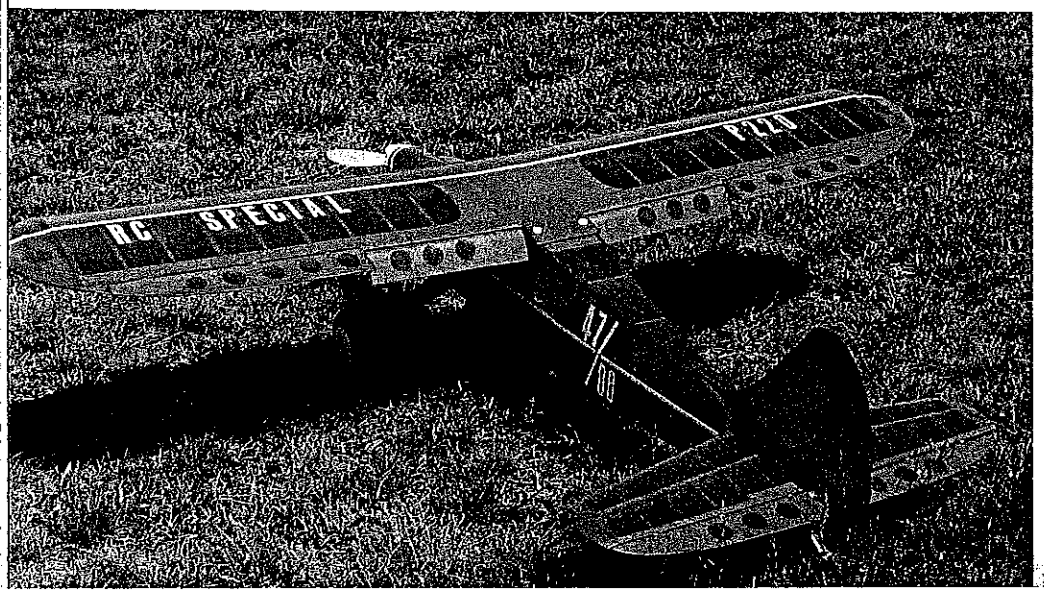
Big picture: The 47/88 RC Special captured by Tom Schmitt's camera as it lifts off. The flaps add a whole new dimension to the airplane's flight characteristics: quick takeoff, short landing, slow-speed cruise, and good stall stability. The semisymmetrical wing gives the model full aerobatics capability. It's a "pilot's" airplane. Above: John Hunton taxiing the RC Special for its first flight tests. He found that ground handling with his spring-loaded steerable tail wheel was no problem at all.



Stinson? Rearwin Speedster? Super Cruiser? The Special can conjur any of these in the mind's eye. Its designer gave priority to realistic appearance and control response. The model has excellent aerobatics capability without losing its stability and smoothness. A pastiche of then-and-now features, the modernized RC Special has a tight pressure cowl with everything, including the muffler, concealed—and a Klett nondistortional landing gear. The model is covered in red silk and finished with Sig clear dope to memorialize the original.

The builder, John Hunton, displaying his 47/88 RC Special. John worked in close liaison with designer Bill Winter in coming up with this latest version of a 40-year line of RC Specials.

Full use of 60° flaps requires considerable trim or velocity change. Hunton recommends starting with flaps on a proportional channel until you become accustomed to them. John has his model rigged for full *up* trim with no-flaps, and full *down* trim with full flaps. The flaps are controlled by a switch, and he can use them for performing some very spectacular aerobatics.



fun fly competitions the RC Special can be pushed way beyond normal limits. Because the model's flying characteristics and capabilities are so exceptional, this article discusses them in greater detail than is usual.

Construction. As construction notes are geared to the relatively experienced modeler, only unusual construction details and sequences are given.

Wing. For accurate and compact construction, major completion of the outer panels should be done on the work surface, with the center sections joined afterwards.

All the wing ribs are identical except for those which require deeper center slots for the spar doubler, and the root and end tip ribs. For correct alignment the spar notches must be cut as accurately as possible. Drill or saw lightening and access holes in the ribs.

Begin building the outer wing panels by first pinning down the bottom spar and then adding the spar doubler. Glue all the standard ribs to the spar. Note that the bottom spar extends to the wing tip outline at this point. Pin the trailing edge (TE) into place, and glue on the ribs. Pin $\frac{7}{16}$-thick leading edge jacks to the plan. Pin the leading edge (LE) in place on the jacks and in contact with the ribs, then glue the LE to the ribs.

Install the top spar doubler and then the top spar. Install all the spar webs. Install a ¼-in. spar doubler at the bottom spar extension at the tip, followed by a $\frac{1}{16}$ doubler over that. This should provide proper wing tip plate alignment. Glue the $\frac{3}{32}$ wing tip plate to the extended spar, aligning the trailing edge of this piece to the top of the TE. Note exactly where this plate meets the leading edge so that this dimension can be repeated on the other wing panel. Add the top tip spar and the top tip bow (the bottom tip bow can be added later), and install the spar guides.

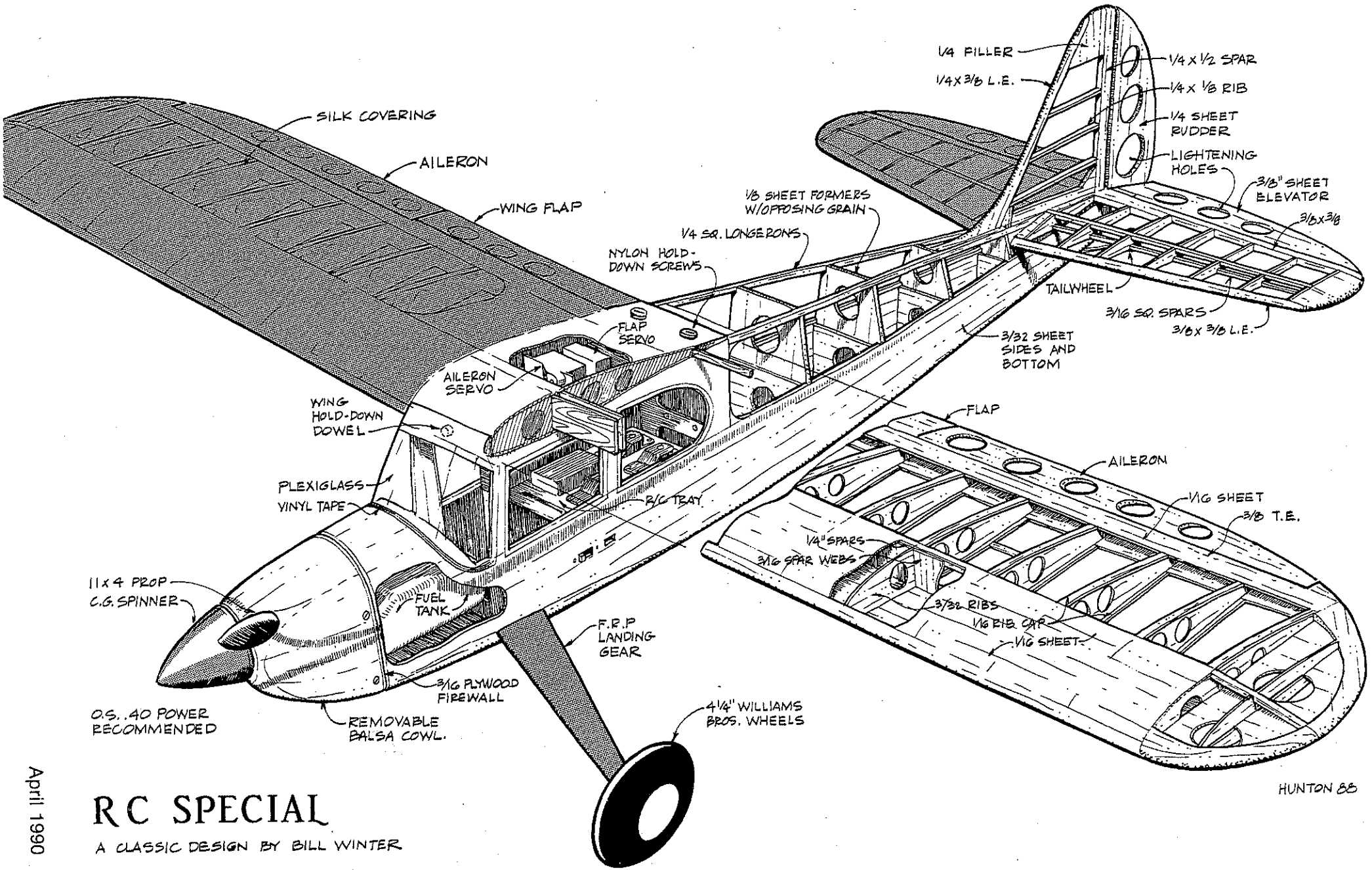
Taper the tops of the leading and trailing edges with a sharp knife, then sand the wing structure to knock down any high points (use a long, straight sanding block to true the wing). Install the top leading edge sheet, making certain it's pulled down tight to the ribs (use a slow-drying glue on the ribs). Install the top TE sheet, the center section sheeting, and the cap strips.

Most of the top surface truing, shaping, and sanding can be done while the wing is still pinned to the board.

Remove the wing from the board. Taper the bottom of the trailing edge as it fairs to the wing tip to provide washout. Trim the ribs near the tip to conform to the trailing edge. Taper the bottoms of the leading and trailing edges, then smooth the entire bottom surface with a sanding block, removing any high points. Add the bottom sheeting and the cap strips.

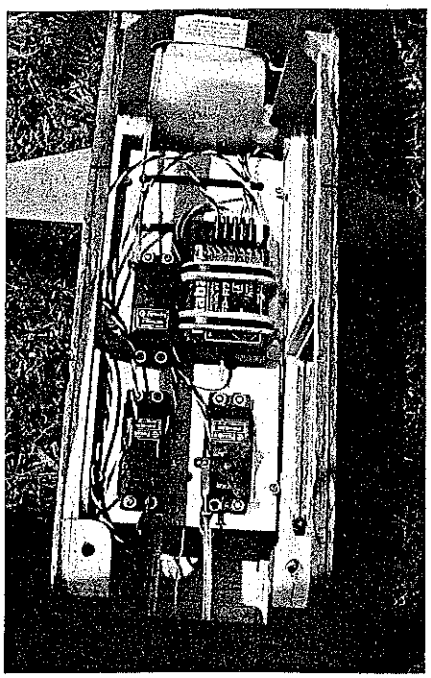
Flip the plan (a little vegetable oil rubbed into the plan will make it translucent), and build the other wing in the same manner.

Build the center wing section. Pin down the center section bottom sheeting, then pin down the root ribs at the correct dihedral an-

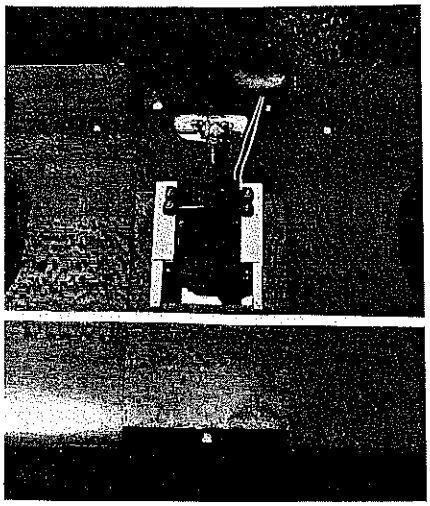


RC SPECIAL

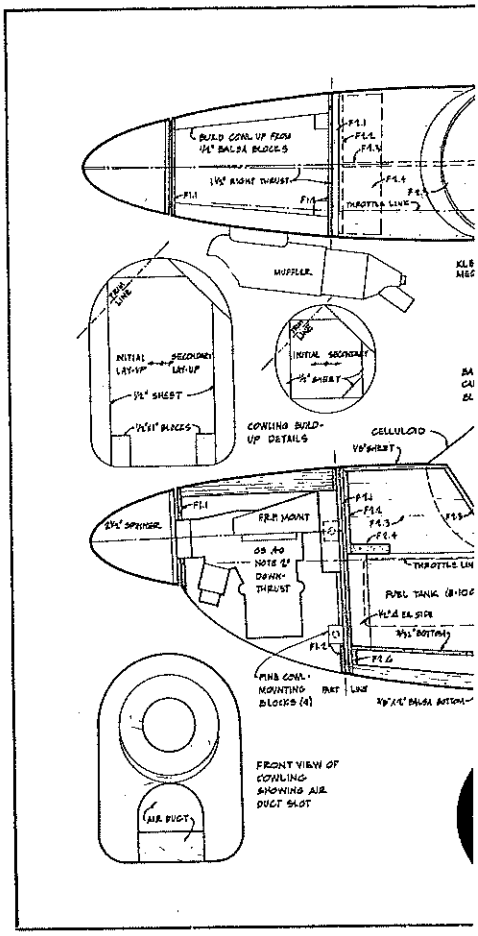
A CLASSIC DESIGN BY BILL WINTER



A neat and functional servo and receiver installation. The servos are mounted on a plywood tray which is screwed to hardwood blocks on the fuselage sides. The receiver is mounted on an antivibration pad and secured with foam-backed straps. The piece of tape attached to the back of the fuel tank is used to remove the tank when necessary.



The flap and aileron control servos are shown here neatly mounted close together in the bottom of the center wing panel. Note the peg in the leading edge and the two holes (for nylon screws) in the trailing edge used for securing the wing to the fuselage.



gle. Install all the other center section parts, including the main spar and trailing edge doublers. *Do not* install the top sheeting yet.

Make blocks to prop up the wing tips at the proper dihedral angle. Prefit each wing panel to the pinned-down center section. Liberally apply slow-drying glue to the doublers and all butt joints, then slip the wing panels in place. Let this assembly dry thoroughly before completing the center section sheeting.

The faceted horizontal stabilizer can be accurately and easily assembled by pinning down the lower spar, then tapering the bottom surface of the trailing edge and pinning it in place. The entire stabilizer can be built from this basic assembly. The leading edge will be floating above the board, but this should present no problem. This faceted assembly is easy to block sand to final shape. It's strong and provides something of a lifting surface which improves the model's handling.

The fin is straightforward and is built right over the plans.

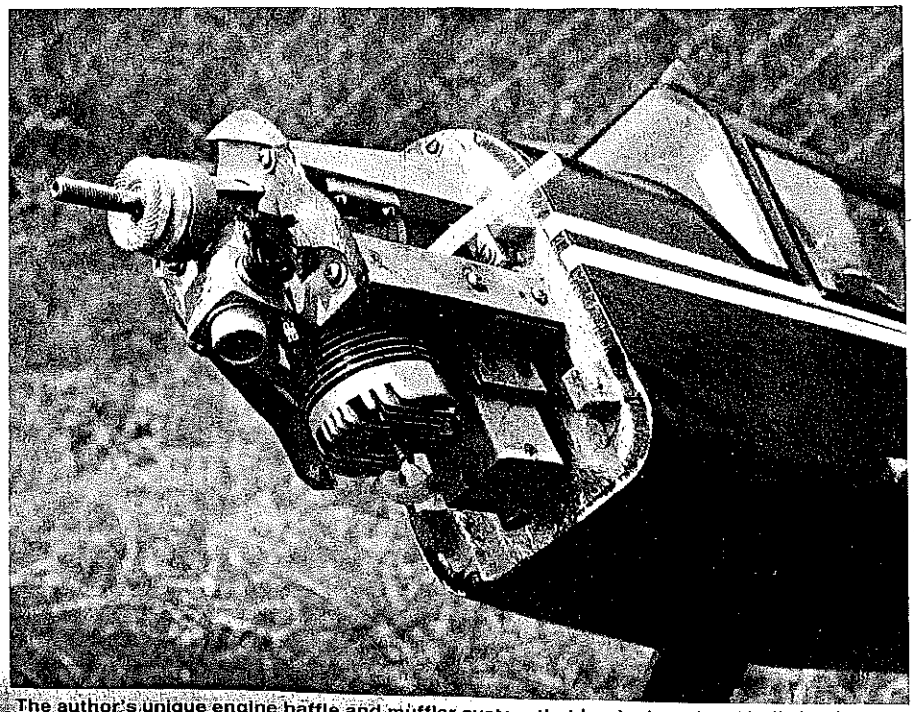
Fuselage assembly begins by building the two sheet sides. Note that the manner in which the front edges of the two sides are trimmed determines engine alignment. Building in a slight amount of down and right thrust improves flight characteristics considerably.

Cut the ⅛-in. balsa formers to shape, carefully noting the direction of the grain, and glue the pieces together. Assemble the formers to the fuselage sides over the plan to assure correct alignment. Cut out and install the two plywood formers.

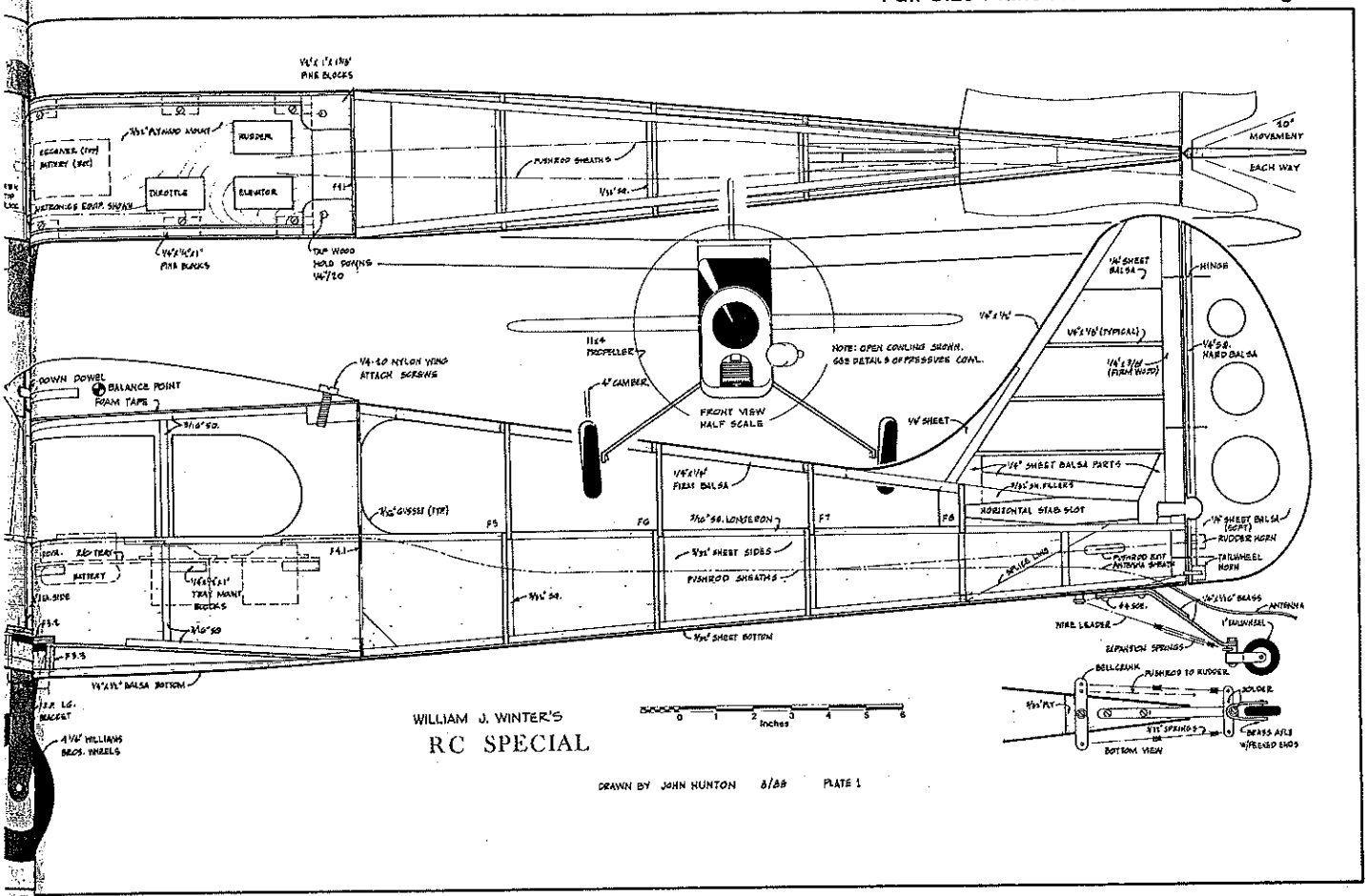
Drill the firewall for the engine mounts, and install the blind nuts. The cabin area should be four inches across. The 3/32 sheet balsa false front fuselage bottom provides for good fuselage alignment before adding the bottom fuselage fairing blocks. Assemble all the bottom fuselage parts. Provide a cutout for the plywood landing gear mount. Drill the landing gear mount to match the gear, and install blind nuts in the mount. Install the top longerons.

Control surfaces and flaps. Center hinges are used with the exception of the ailerons and the flaps. The ailerons are top hinged for good upper surface continuity and close fit. The flaps are bottom hinged for good airflow across the top, as well as a tight fit.

Engine installation and cowling. An inverted engine installation is shown on the plans with an open duct for cooling. The O.S. muffler fairs well with the fuselage. The only complication you'll encounter is the difficulty in getting the cowl on and off



The author's unique engine baffle and muffler system that he designed and built for the pressure cowl. Note the aluminum foil between the muffler and firewall to help dissipate heat in the enclosed system. Hunton fashioned the parts from commonly available aluminum stock.



around the muffler and needle valve.

For the needle valve you'll need a deep socket to fit the needle valve hex (or modify one as a two-flat version). This tool can be notched (with a Carborundum wheel on a Dremel tool) to clear the needle valve spring. That way the needle valve can be easily removed to facilitate cowl removal.

For the muffler, either provide access holes for muffler removal or notch out the cowl to the rear so that it will slip over the muffler extension.

Pressure cowl alternative. An alternate cowl used on the prototype is shown in the plans. It's a pressure cowl installation with the muffler concealed. Though it's a great deal of trouble to build, this system is considered to be the most authentic installation, since the older engines didn't have mufflers hanging out the side. It's also very clean aerodynamically (see the section on flying the model).

This cowl utilizes a pressure differential between the air intake and outlet to move air across the engine. Baffle plates are provided at the engine cooling area in order to reduce the cross section and increase air velocity over the engine cooling fins.

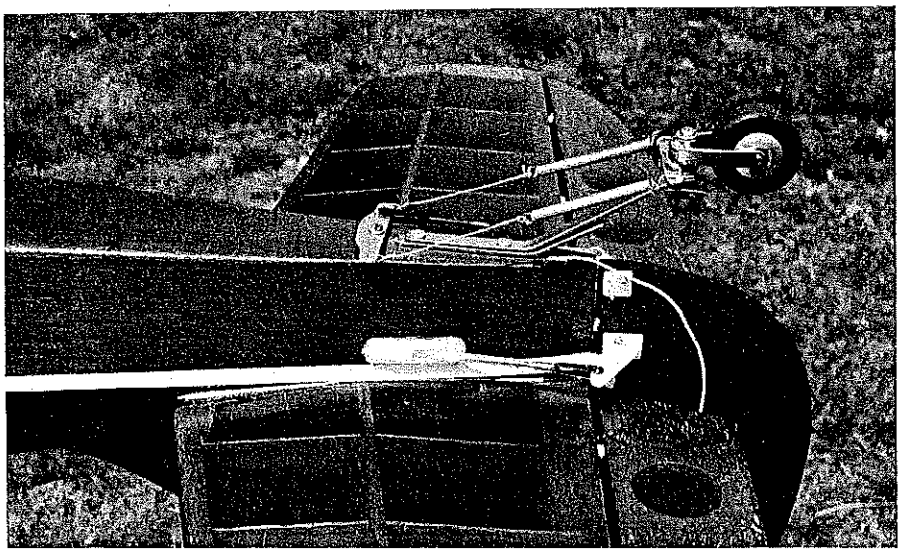
The pressure cowl works very well. If you smell something after your initial flights, remember that the muffler is inside the cowl, and it does get hot. It helps to cover painted surfaces near the muffler with aluminum foil to reflect heat.

A transfer tube and muffler were built to occupy the space behind the engine (rather than extend outside the cowl). These are detailed in the plans in case you wish to go to the extra trouble of building them.

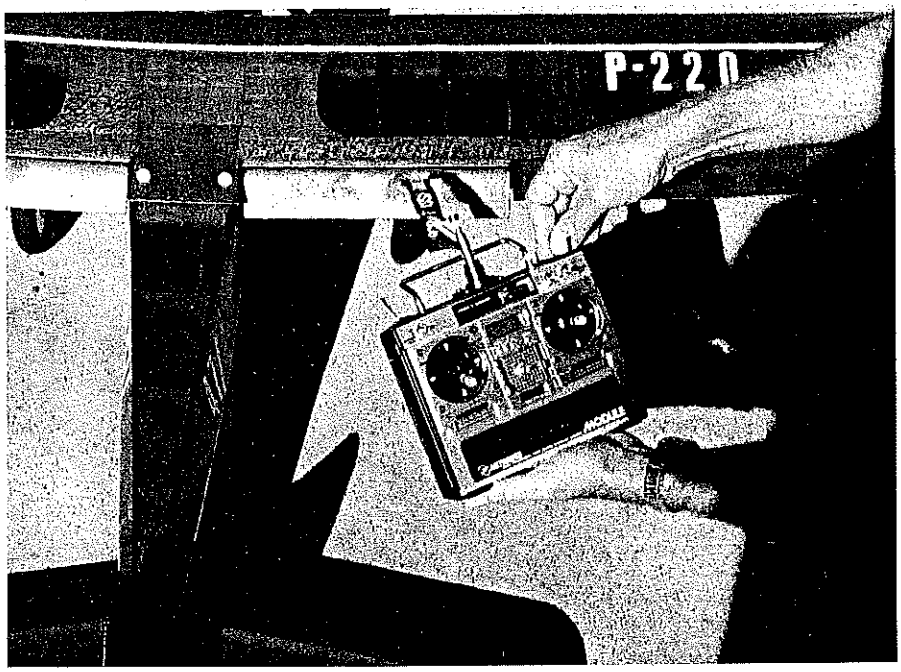
It was hoped that the O.S. .40 with the new exhaust system would have nearly as much power as the original assembly. Surprisingly, tests proved that my O.S. .40 actually performed a few hundred rpm *better* than with the stock muffler. Also the engine seems quieter with this new system.

Covering with silk is tedious, but the result can really be worth it, especially if a clear finish is used. The covering method used on the prototype is as follows:

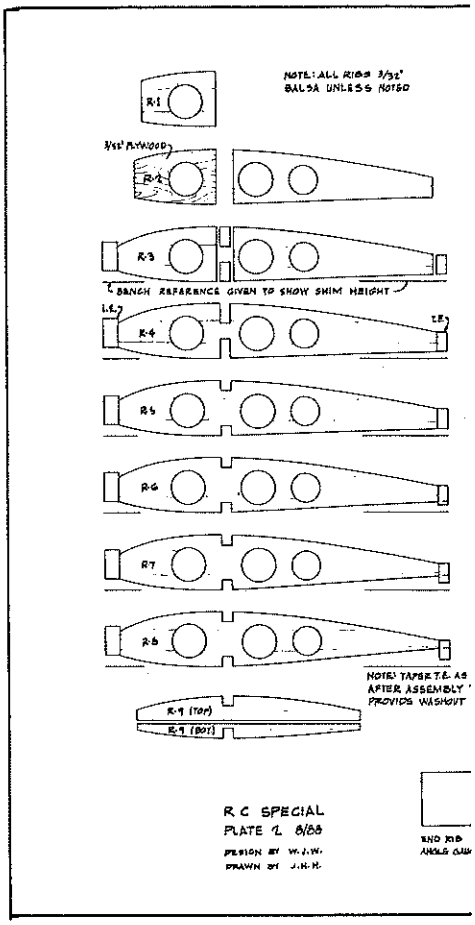
1) Use nitrate clear dope thinned 50/50 to coat the framework with at least three coats. 2) Cut the silk into as large a panel as practical (e.g., wing panels and horizontal stabilizer each in one piece, and continuous around the leading edge). The grain of the silk is spanwise on surfaces, lengthwise on the fuselage. 3) Wet the silk, and keep it wet until the last edge is doped in (keep a spray bottle handy). 4) Begin at one edge and pin the silk down. 5) Stretch the silk across the middle of the surface, and pin down. Work it out in both directions,



The steerable tail wheel is attached to the rudder via a bellcrank, control rod, and horn. Springs were incorporated in the system to absorb shock and reduce stress on the servo.



Bill Winter's Airtronics MD7SP seven-channel radio specifically designed for Sailplaning is an example of today's "super" radios that allow elevator/flap and flap/elevator mixing. These features could greatly enhance the flight characteristics inherent in the 47/88 RC Special.



stretching and pinning down as you go. 7) Each time you get an edge pinned and tight, dope it down. 8) Overlap edges by stretching the silk with your fingers. 9) Use very thin clear nitrate for the first coats until the silk is sealed. (Suggestion: Dope the surface upside down.) 10) After sealing the silk with nitrate and allowing it to set completely, go to butyrate clear dope (nitrate isn't fuel-proof) for the final three coats or so.

When doping, the use of a retarder can prevent blushing in humid conditions.

Fine-grain silk is available from Model Covering Co., 2320 Ocean Parkway, Brooklyn, NY 11223.

Flying. Since I'm more accustomed to flying a sport model than a high-performance one, those first flights of the 47/88 were a surprise. These notes from the maiden flight should prepare you for what to expect:

"The photo session for the first flight seemed very long, but the time for the big test finally came. Bill Winter was there, of course, as were several other prominent interested modelers.

"The Special taxied straight ahead, being very responsive to the rudder, and left the ground of its own accord after a rather short takeoff run. I lifted the nose in a fairly steep climb attitude to get some altitude safely under the model. It was readily apparent that the new Special had a high rate of climb and was—literally—in its element.

The following article, published in *Feedback*, the newsletter of the Northern Virginia RC Club, gives an intriguing look at the latest RC Special in the hands of its designer, Bill Winter.

H.A. THOMAS was in Washington recently to receive his well-deserved AMA Hall of Fame induction. It was natural that H.A. should get together with old friends and well-wishers Bill Winter and Bill Kaluf at the Fredericksburg Airmasters club site for a flying session. Bill Winter asked if I wanted to take our new 1988 RC Special to the gathering. Naturally, I wanted to go.

At the field, after I had put the new Special through its paces, showing off its high-speed capabilities, aerobatics, and low-speed flight with flaps, Charlie Rector put up his four-stroke-powered antique Quaker Flash and was buzzing gently around the patch with almost everyone taking a turn at the stick. The historic Quaker had three channels—rudder, elevator, and throttle. It handled perfectly at very low throttle. Bill Kaluf started flying the Quaker and soon found some lift. He had maneuvered the model up fairly high.

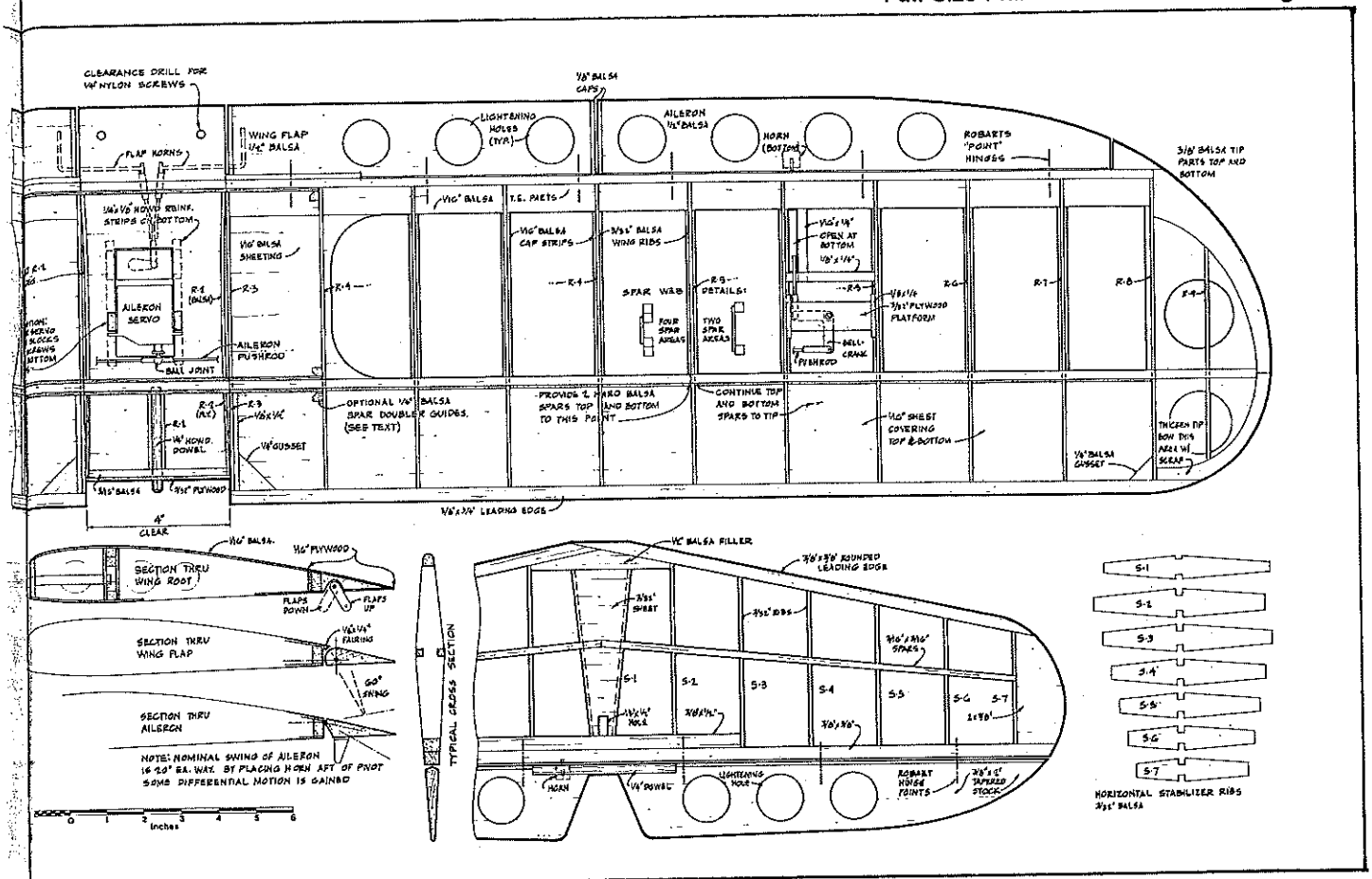
Bill Winter was relaxing in a lawn chair, eating his lunch, when I put the Special up again. He had eaten half of a sandwich when I handed him the transmitter and asked him to see if he could find a thermal.

There were no puffy clouds in the beautiful September sky, but there was an occasional breeze. Bill began fussing about the semisymmetrical airfoil that now made the Special capable of full aerobatics, and, in his opinion, incapable of thermaling.

He fussed with the trim and changed the wing flap setting a few times. He made several passes at low power, then started circling. Soon it was obvious that the model was ascending. I reached over to the transmitter and went to low throttle, then to low throttle trim, and finally, I shut the idling engine off. The Special was still gaining altitude with each circuit. After about 20 minutes the Special was at the limits of vision. It was circling automatically now; Bill had not touched the controls for some time. The half-eaten sandwich was still hanging from his mouth when he handed me the transmitter. I could not find lift again, even from that great altitude. The Quaker had also lost its lift and had landed just ahead of me.

What a wonderful lesson that session was, and what a different outlook on flight. Instead of powering the Special to any point or altitude desired in the sky (which it was well capable of doing), Bill went with the natural characteristics and capabilities of the airplane and the environment and used them to best advantage. He found the model's best L/D ratio with trim. He sensed the air in the sky and was able to detect minute changes in altitude and direction. He set the model up so that it would seek and center itself in weak lift, and take advantage of it.

This did not take power, or fuel, or streak the model with oil, or leave smoke in the sky. This did not make noise. This took years of experience and thought. This was the designer's own design in his hands, conceived in 1947 and improved through iteration after iteration to this pinnacle of performance. This was the art of flight.—John Hunton, September 1988.



"Trim changes were well within range. This seemed amazing, since the model had a new airfoil and incidence.

"The model seemed rock-solid stable in turns. It was moving through the air very fast and covering a lot of sky.

"Some low passes were made for photographic purposes, and while going around for one of these runs the engine flamed out (a problem that plagued us that day until the glow plug was changed to a reliable Fox plug). I set up for a normal dead-stick landing. The model was not coming down as it should have, so I put the flaps down (the flaps were on an on/off switch at the time). I forced the model in over the threshold, but it was much too fast and too high.

"There seemed to be little choice but to make a 180° turn and land downwind. But would the model have enough airspeed to make the turn? I racked it around in as tight a turn as I thought advisable, and there was plenty of speed left. The downwind landing was no problem."

In discussing that first flight, we concluded that the RC Special is very clean aerodynamically. Later flights confirmed this. With the engine fully cowled and no muffler hanging in the breeze, the model has a very shallow glide angle unless it's slowed way down.

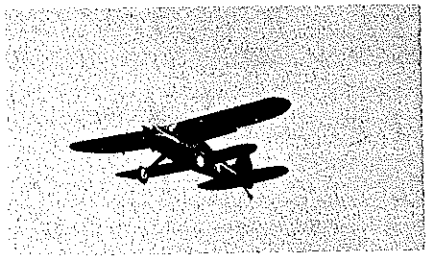
We had a lot of fun that first flight day. Don Srull (noted Northern Virginia modeler and *MA* author) flew the new RC Special, as did Bernie Stuecker (the photographer for this article) and Bill Winter himself. Bill was very content to fly the model in loose circles and figure eights. He can probably tell more about a model by doing these simple maneuvers than can most of us by doing the pattern. Bill suggested a minor incidence change which has been implemented into the plans and the test model.

The following notes on the RC Special's flight characteristics may help you on your first flights:

Takeoff. This model is a tail-dragger. Stay on the rudder through the takeoff and into the climbout. Use aileron only to keep the wings level.

Climbout. You can climb at a very steep angle (in fact you can loop soon after the wheels leave the ground), but it would probably be better to restrict the climb to under 30° or so to maintain good engine cooling airflow.

Flight characteristics. This is the most in-



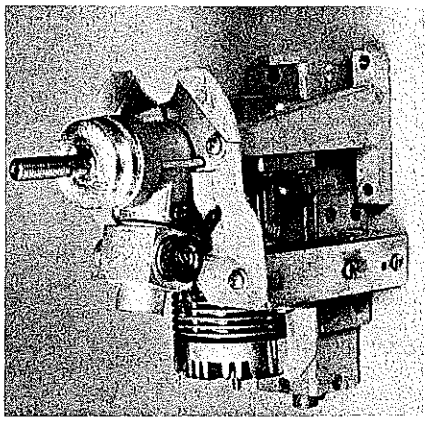
Left: Forty-one years after flying his first RC Special, Bill Winter, attended by John Hunton (left) and Don Srull, seems awed by the speed and smooth flight of the latest version. Above: John Hunton's biplane version flies by with flaps half down. The lower wing's chord and span is ⅔ that of the top wing, and it can be removed in two minutes.

Bill Winter, the first editor of *MA* in its present magazine form back in 1975, holds John Hunton's latest version just prior to its first test flight. Even on its first flight it flew effortlessly, requiring little or no adjustment.

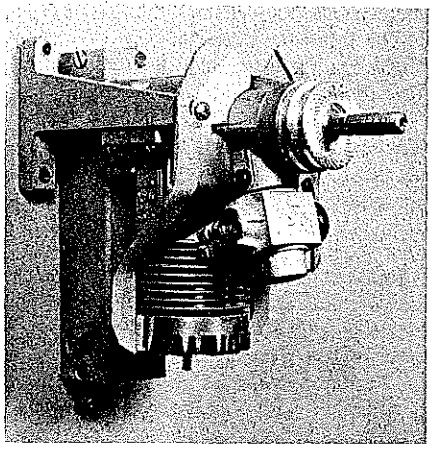
Pressure Cowl for Concealed Installation

As the photographs show, the builder designed and used a true pressure cowl in order to eliminate all protuberances in the nose. A totally concealed installation is rare. As part of this tight cowl design, Hunton created his own compact muffler from square tubing found at any hardware emporium. The O.S. .40 engine turned 300 rpm faster than when in a stock installation. It features superior performance with its clean lines and properly engineered baffles controlling airflow over and around the engine. Bill Winter then suggested that the plans show a normal engine/muffler installation, with the pressure cowl details grouped separately for the benefit of those builders with the required expertise.

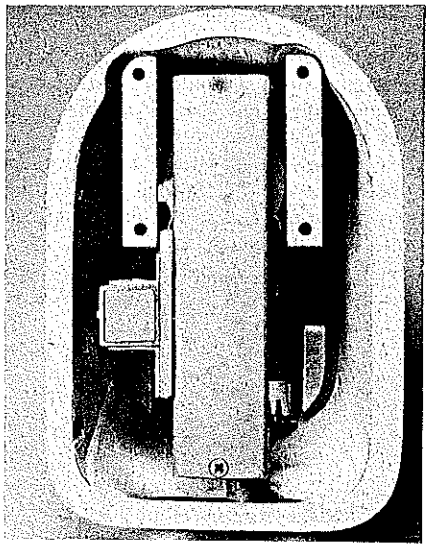
An O.S. .40 engine installed on Sig metal mounts. John Hunton's custom muffler nestles behind the side exhaust engine. The baffles increase air flow over the cooling fins.



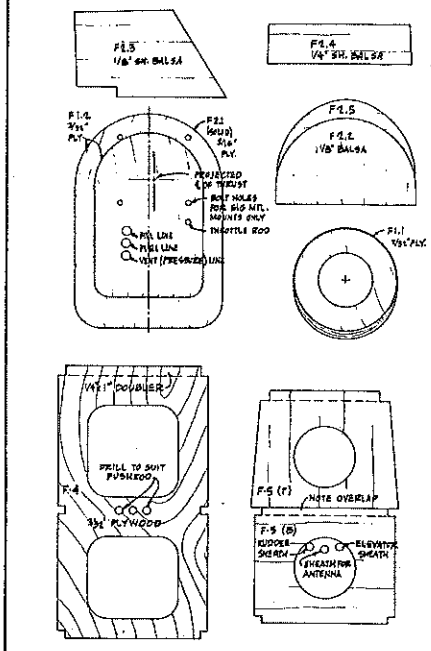
The engine mounts upside-down in the model, and the exhaust exits through the bottom. The V-shaped opening in the baffle allows cooling air into the muffler area. The transfer duct connecting the engine exhaust port to the muffler is visible in this photo.

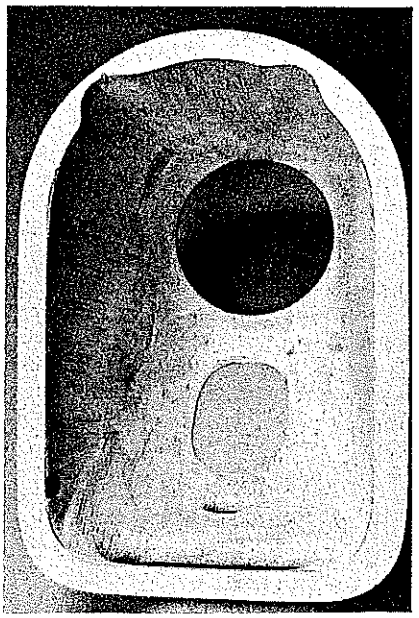


This photo shows the pressure vent tube connection on the muffler. All the muffler components are assembled with machine screws, and all joints are sealed with RTV.

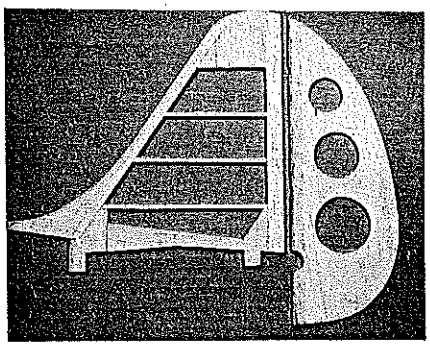


Rear view of the engine/muffler assembly in the balsa cowling. The transfer duct is on the left. The muffler proved to be very quiet and actually resulted in a higher engine rpm.

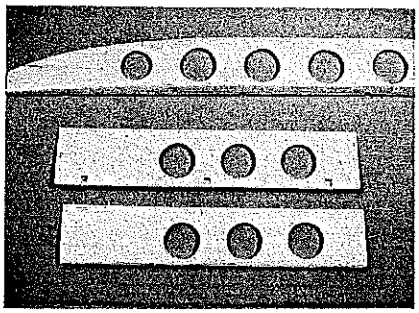




The carved balsa tight-fit cowl viewed fror the rear. This shot shows how blocks (loca tions on the plan) provide thin walls with ad equate strength. This cowl accommodate an O.S. .40 engine on Sig split-type mount and John Hunton's home-brew muffler. Th cowl can be modified as necessary for a num ber of optional engine/muffler installations

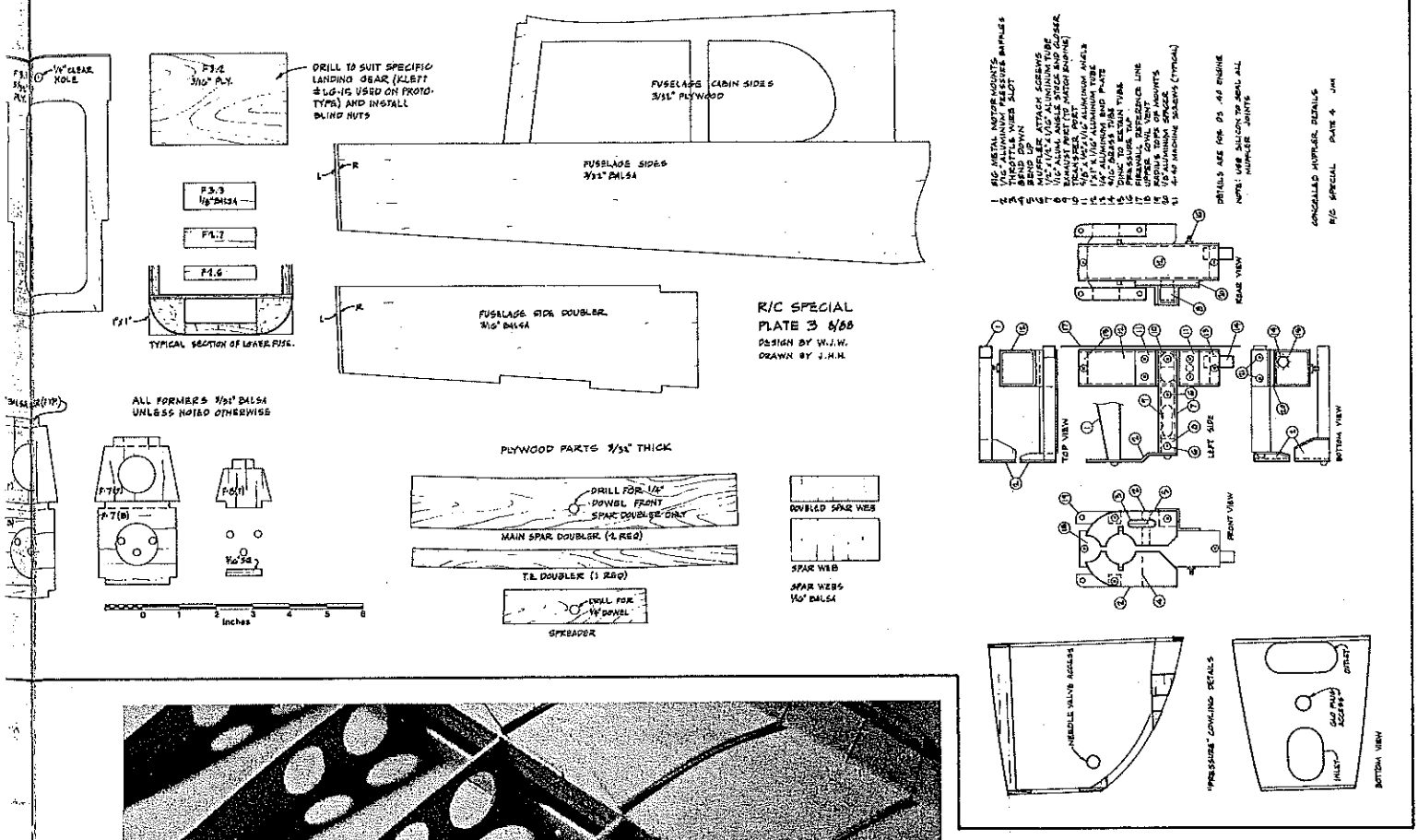


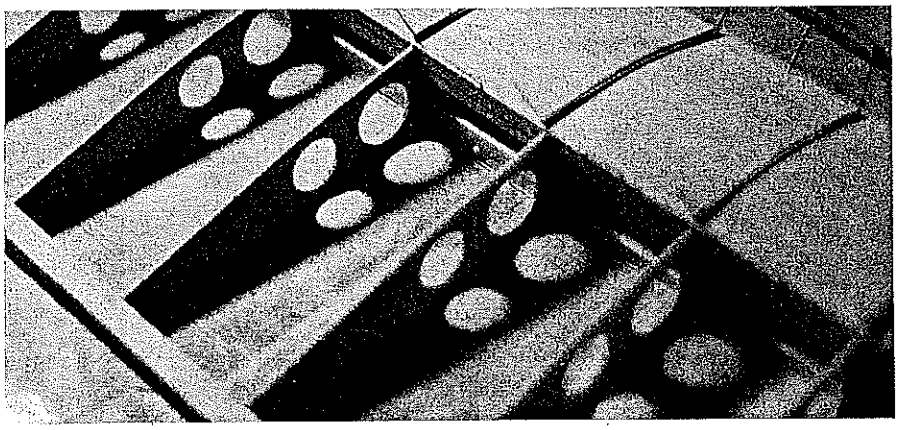
The fin-and-rudder assembly ready for covering and hinging. The fin incorporates tabs that fit through the stabilizer to lock it rigidly in place. The open structure is light, yet strong. The soft sheet rudder has a hard balsa leading edge glued to it for firm hinging.



One aileron (top) and both flaps ready for covering. One flap (center) shows the slots cut out for the full-scale-type Robart hinges. The other flap shows the curved upper surface. Both ailerons and flaps have antiwarp end caps. The lightening holes can easily be cut out with sharpened thin-walled tubing.

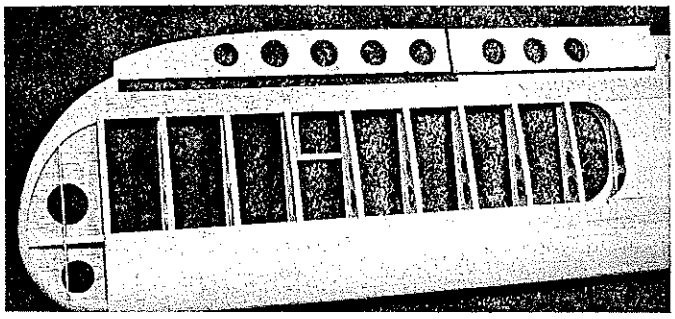
Full-Size Plans Available . . . See Page 196

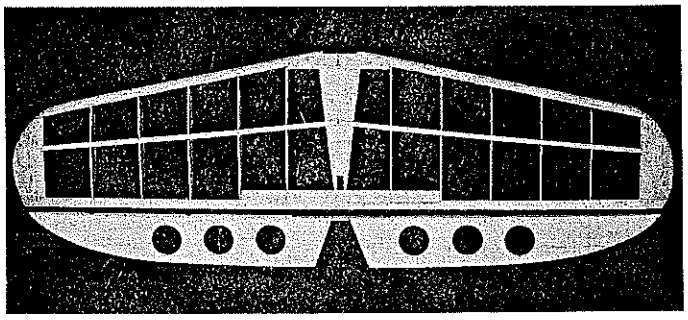




A neat trick for sheeting the tops of D-tubes that ensures continuous and even contact with the ribs. Use slow-drying glue, and install all the sheeting in one operation. Insert pins for each rib at the leading edge and spar, then stretch rubberbands between each pair. This will exert even pressure across the rib face. Be sure to use easy-bend, medium balsa sheeting.

Landing. Here is an area of significant difference with a sport model. The RC Special is a very slippery and clean airplane. Without flaps the angle of glide is very shallow, which makes it difficult to get the model down if you're flying in a restricted area. Be sure your engine is capable of a very slow idle. Use the flaps if you feel confident with them. It will be best to establish a pitch trim position for flaps-on and flaps-off so that you can use the flaps at will. With flaps-on, you can fly the model very slowly without fear of stalling and thus attain a good





Left: The structurally complete right wing clearly shows the high-quality wood used throughout. The D-tube, generous top and bottom spars, and aileron spar cap strips make for a rigid, strong wing. Note the contoured wing tips and the triangular piece that closes flap gap in all positions. Right: The faceted stabilizer and elevator assemblies. The stabilizer has a thick cross-section with upper and lower main spars; it's very strong across the middle and the leading edge. The elevators are joined with a ¼-in. dowel. The horn is located on the left elevator.

herently stable model I have ever flown. Not that it's overly stable, but it's definitely not twitchy. Yet the RC Special can be turned on a dime, looped tightly, and flown on the edge of a stall without concern. With flaps down, the model will seem to hover in the sky. (The flaps were later changed from on/off to a proportional channel, and they worked great.) Using the flaps introduces pitch changes. Trim is only rectified with flaps when the model is flown very slowly. It will be best to become familiar with the flaps at good altitude so that they can be used reliably on landing.

rate of descent. More precise control can be achieved with radios that are capable of mixing flaps with elevator trim.

As these notes were being written I was also flying the RC Special quite a lot. I've been amazed to find that in addition to its excellent flight characteristics, the plane has a

Comments by Bill Winter on some of the innovations that went into the latest version of his 40-year-old RC Special design.

THREE MONTHS AGO I did not dream that a nice, easy-to-fly pleasure model could have its performance envelope broadened to the degree achieved by John Hunton from my rough markings on the last-generation plan from Australia's *Airborne* magazine. I would not have carried the Special beyond the 1977-designed three-channel configuration. But demanding chaps like Bill Kaluf and Ken Makepeace changed my mind. Supplying them with modification drawings and seeing their resulting achievements was an inspiration.

For example, Makepeace, using the highest power to that date in his variant, demonstrated unexpected aerobatic performance in a flat-bottom-winged cabin model—including rolling 360s. If people insisted on aerobatics from such a machine, what might they do with one *intended* for aerobatics? And could it be as right-side-up stable as before, excel at inverted flight and outside loops, and still remain within the limits of the moderately skilled Sunday flier? With this happy ending, some explanation of this modified design might be of interest.

Kit manufacturers would perhaps prefer a lower parts count, but why not go a step up from economy cars, so to speak? Pride of ownership requires special touches. If it looks like an airplane, and flies like an airplane, it is (only then) an airplane.

On his model, John engineered a true pressure cowl—which I barely understand, although he says that we modelers have things backwards. If you are that savvy, he includes details in the plans. But the plan (papa is conservative) also provides for a standard inverted .40-sized engine installation. This retains the authentic theme of the 1947 design with its inverted Ohlsson .60 ignition engine. Inversion presents no problems for many, but others need to play it safe. It's easy to modify the cowl for a conventional upright or side mounting, although a protruding cylinder is "dirty."

John also wanted to use old-fashioned red silk covering in faithfulness to the 1947 original—although almost everything else is changed. John flipped out with all those lightening holes. Though I had never used it before, I found that twisting a piece of tubing (its cutting edge sharpened with a file) worked great for cutting all those holes. It was so easy that I holed much valuable sheet balsa.

John, it must be said, is too humble. I modified basic concepts, but the detailing of the effectively shaped and hinged flaps is just one example of what a real engineer can do. How he uses those flaps when shooting rapid touch-and-goes is something else, and there is another wild aerobatics mode with flaps partially down.

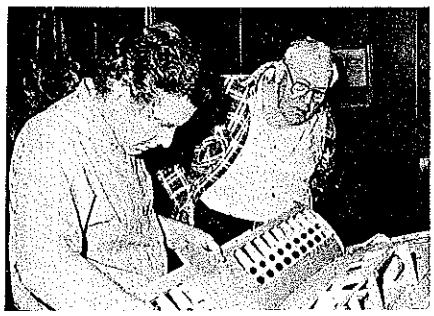
In recent years I have been most impressed by airfoils with a long Phillips entry, say back to the main spar, and a convenient flat bottom from there to the trailing edge. I find them effective for soaring undistinguished planes. L/D ratios obviously are improved because landing approaches become longer, and even a "truck" seems to reach out.

If such an airfoil is rotated so that its flat bottom is at a negative angle (my plane uses 2° negative), it behaves like a semi-symmetrical section, giving flatter, faster power flight with less down trim, and showing less tendency to climb steeply at high cruise. This enhances outside and inverted modes. At 2° negative, a maximum one-quarter *down* elevator suits inverted flight. It's possible to increase the negative until neutral stability is reached, but the envelope would shift, and I wished to maintain pleasant right-side-up handling. The profile of this foil, given the negative setting, still has *positive* incidence, and therefore an angular difference between the wing and stabilizer (incidence being the line running through the trailing edge and precise leading edge point).

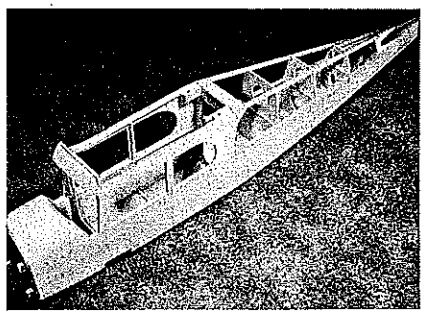
Hunton climbs out his Special at a 60° angle. Obviously, a two-stroke .40 is adequate (he turns an 11 x 4 prop at 15,000 rpm). Any more pitch and you might break 100 mph, and no-flap approaches will begin in the next county. If a four-stroke engine is contemplated, I'd recommend a Saito .60 or an Enya .46.

Transmitter mixing of elevator trim with flap deflection would please F-15 jocks. I mention this because I've had ships that did consecutive outside loops with a .40, when some magazine folks insisted I needed a 1.20! Straight up is only a matter of thrust-to-weight and impresses me not!

I wish to thank John Hunton, and all the others mentioned, for making possible this wonderful Golden Age experience. Compared to its 1947 ancestor, John's 47/88 RC Special is a red Ferrari.

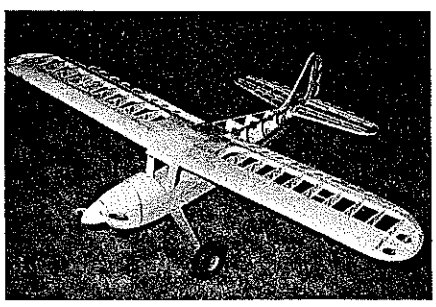


The designer, Bill Winter (right), looks on as builder John Hunton checks over the nearly completed wing structure. John took great pains to ensure that Bill Winter's design concepts were carried through the entire model (except for John's optional pressure cowl).



The nearly completed basic fuselage structure. The cabin sides and window areas are plywood, the lower full-length sides are medium-grade balsa sheet. The two-piece rear bulkheads overlap slightly, the upper being vertical-grained, the lower horizontal-grained. The structure is lightweight, yet very strong. Note the four tapped pine cowl-mounting blocks attached to the firewall.

The partially completed fuselage showing the cowling under construction around the temporarily installed engine. The top piece is fitted between the firewall and spinner and supported by balsa blocks. One side piece (behind engine) is in place. When the blocks are glued together, the cowling is carved and sanded to the fuselage contour.



The completed 47/88 RC Special in its bare bones. Though the parts count is higher than in a kit, the model is far less complicated than it looks. Construction is straightforward except for the pressure cowling, which is optional. A wide choice of engine installations is feasible with the standard cowl. The model has very clean aerodynamic lines. Note how the upper fuselage longerons fair neatly into the fin structure.

very wide flight envelope. If you choose to push this model, you'll find that everything at the top end is outstanding—it's fast, has an excellent rate and angle of climb, and a good roll rate. But it's the bottom end of the flight envelope that offers the most contrast. With flaps down it will take off in just a few feet, turn on a dime, hover, and land where you want it to land.

Bill Winter has designed a classic-looking and honest-flying airplane. The RC Special has the kind of broad-spectrum performance that will keep you happy for years to come.

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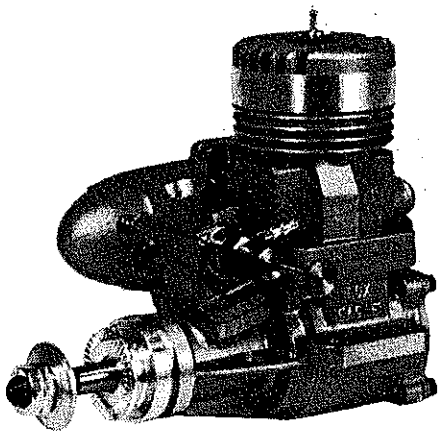

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