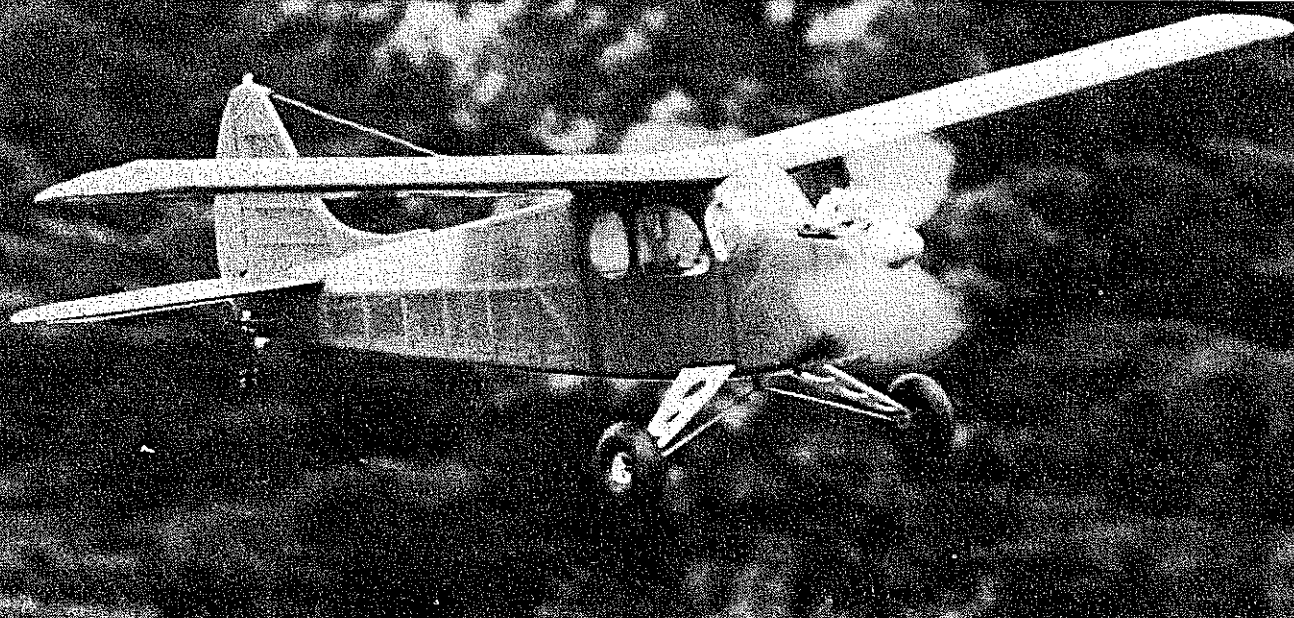


RC Special 313



Turning into a fast, low power approach, Don Srull who made the first test hop, puts crate on cameraman's nose. Our special thanks for John Preston's superb action shots—he's not number two but he tries harder anyway.

Editor's Note: Since this is my last issue of MA, I should like to make a token gift to the membership of this design. When it came down to the selection of a design, this ship seemed to have more significance to me than much more "modern" stuff. During 1948, I had designed as my first RC a 6 ft., 7 in. version with a Good Brothers radio, a 4-arm escapement, and an Ohlsson '60. It was a glorious controlled free flight. Walt Schroder built it beautifully. We had many wonderful flights in northwest Connecticut from the old Canaan airport, and the plans appeared in Mechanix Illustrated that year, and afterwards in their Annual. (I am indebted to Ralph Davis, of Portsmouth, VA, who supplied the old clippings to make possible the scaled down version you see—he has built highly modified versions of the big one all through the years.) After three years of flying, the model is being used by Don Srull as a test bed for engines for competition scale models. It is not a beginner's model, although it has lovely characteristics. If you are able to shoot two smooth touch-and-goes with your own stuff, the new RC Special is well within your flying capabilities.

This is not a construction feature—you are on your own with the plans which, incidentally, took perfectionist Lloyd Hunt over six months to draw—he is the sort of draftsman who "lofts" everything. We will talk nothing but flying. The spirit of the thing is well captured by photog John Preston.

DURING the fall of 1977, after a building lapse of 13 years, preceded by over 100 RC jobs, I was

This is a story about flying a scale-down version of a pioneering model of the same name printed in 1948.

● **Bill Winter**

bitten yet again by the modeling bug. It is tough to start up cold. One needs inspiration. I found it in the past and decided to scale down the first RC I had flown. This flying story lies in the things that occur when you scale down an airplane. Dimensions change directly but areas diminish as a square. So wing loading goes up, airspeed rises, response is different. In fact this "RC Special" named after its granddaddy, is related to it only in appearance. It proved "something else," just sheer, wonderful luck.

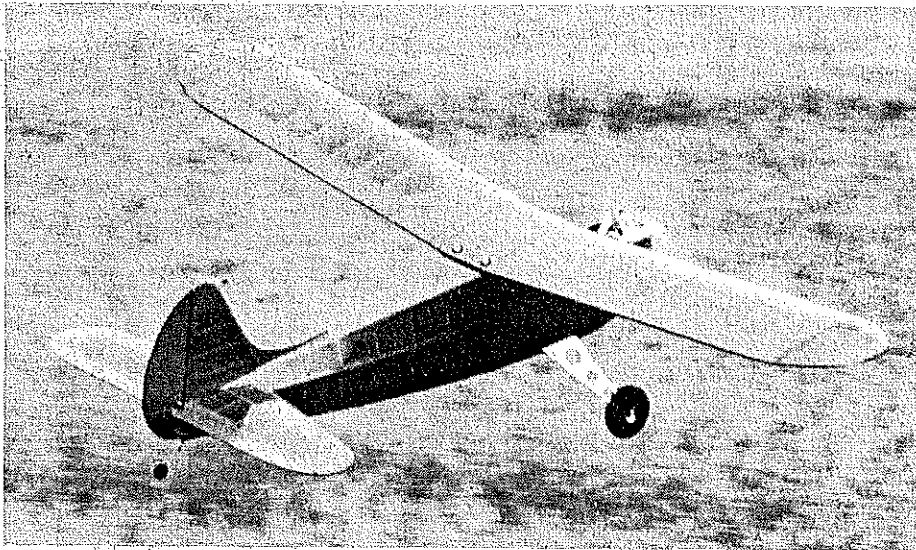
Span is 61¼ inches, wing area, including the portion over the cabin, about 515 sq. in. Gross is 4¾ lbs., so the loading is a high at about 20 ounces per sq. ft. For a few months it was powered by a Veco 19, later by an O.S. 30. On its first flight on a gray pre-rain evening at "Shangri La" it was off gently after a slight uphill run on grass into a 2 to 3 mph breeze. It was "right on" and during that flight it was handled by Hurst Bowers, Don Srull, John Worth, John Preston, and mysterious others. It tracked perfectly, climbed moderately, and had good sport performance aloft. What struck us all was its phenomenal

smoothness of response, and delightfully groovy turns.

Unmowed strips and hot humid days, dictated the increase in power to the O.S. 30—one of the nicest starting, and throttling sport engines a man could desire. The 19 turned a 10-3½, the 30 an 11-3½ or 11-4. In spite of the low pitch, when trimmed, the ship moved out surprisingly well—that wing is none too big.

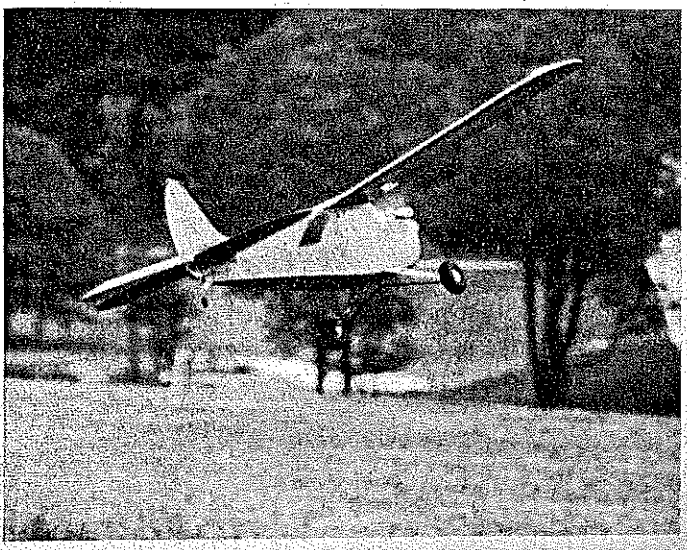
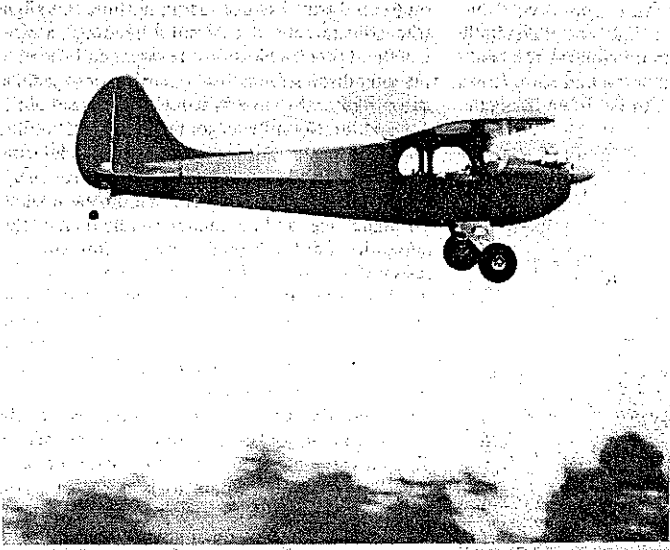
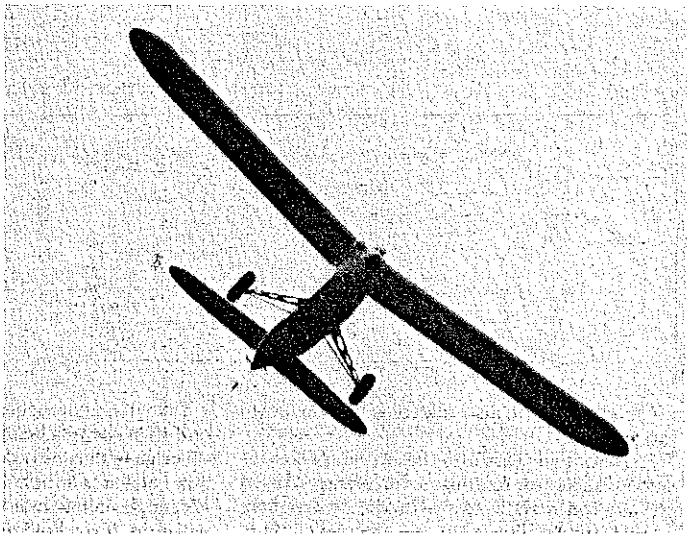
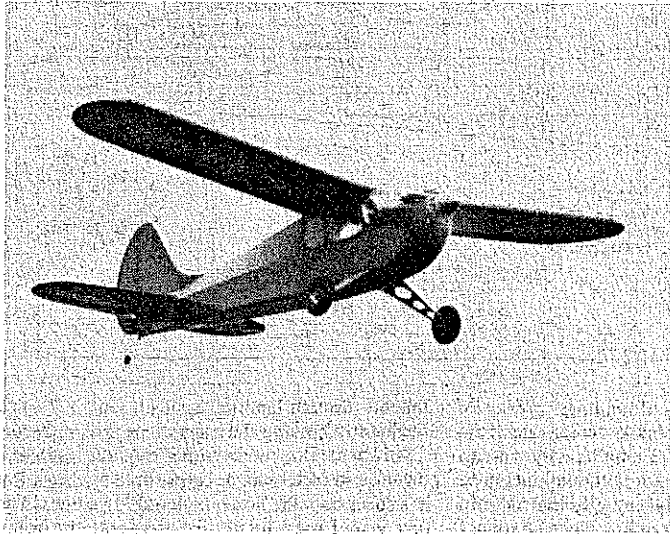
Having been checked out in some 25 light plane types in the dim past, I can relate this craft to you in terms of real aircraft, and where it fits into your modeling spectrum. If you fly it, you will find yourself thinking in real airplane terms—it is that kind of machine. It is not a Cub. The Cub is one of the most forgiving airplanes in history—students by the hundreds of thousands have hung it several feet off the ground in stall landings, hit with a thud, and bounced and bounced. You can't do that with a Luscombe. The RC Special might be more like a Tri-Pacer carrying four people. It has a bit of a bite if man-handled on takeoff, or nosed up in an oscillating glide approach, with small dips and zooms from over-correction. Not only is the loading high, but there is no twist in the tips—I couldn't afford that with this area.

That's not a handicap. I am a lousy pilot. But I've never stalled it and dropped a tip on the approach. I did suffer one major overhaul through a stupid transgression of safe flying rules. It was a 90-degree day with high humidity, on a medium-sized grass strip which had not been cut in weeks. The cross wind was at right angles to takeoff. The wind got under the right wing, causing a moderate left swerve on takeoff—you always get that



RC Special RC Special RC Special RC Special RC Special

A few seconds later, ship still curving in for the spot—yes, it three-pointed. Against-the-sky pix were made during same flight. Five degrees dihedral proved turn-and-bank perfect for three-channels. Continuous hands off 360 without loss of altitude and self-recovery. Bottom, right: After touch-and-go—still same flight—ship circled field inside those trees at the altitude shown in the photo.

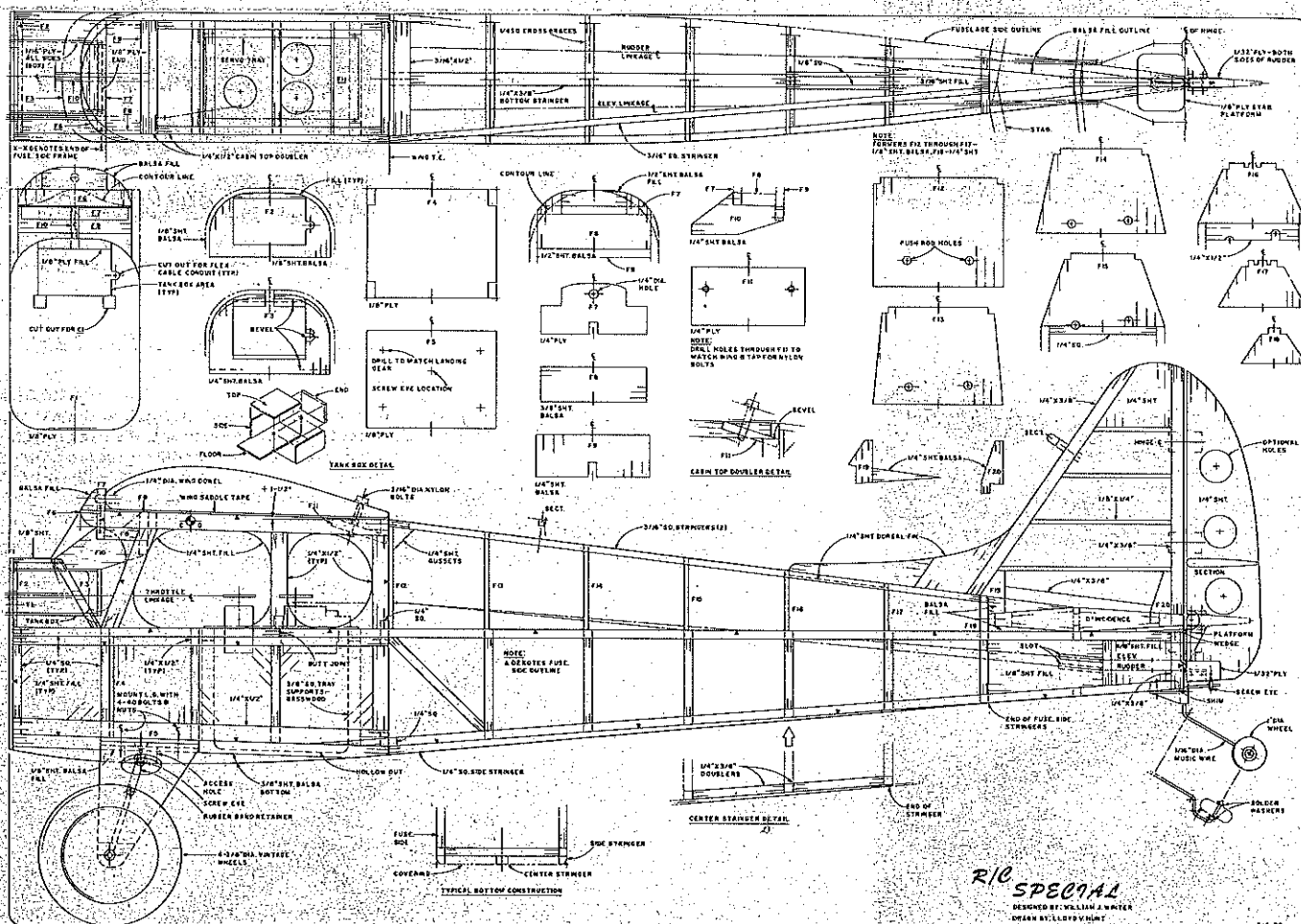


swing on a trail dragger when the tail comes up suddenly and torque is felt. Overcorrected to the right, the ship was hauled off badly—just darned stupid—into the wind diagonally across the strip. I would have gotten away with it but some irrational impulse made me use hard left rudder to align with the runway. Why, really? So it was over the runway, and another hard right got the desired heading. Now, when a ship is on the

verge of a stall—a real one—and won't break, you can wobble back stick from side to side and stall a tip, should you wish to spin. So suddenly the right tip stalled from the rudder corrections, and it went inverted.

Had I been Dave Brown I might have rolled it out, or stayed inverted had there been more area, and if the elevator pushrod had not been in the outermost hole: So, while I was thinking, it cart-

wheeled and tore out the cabin like a shark bite. Even 3/16 nylon bolts don't let go, it seems. Fortunately, that block under the cabin held the "fish head" and "fish tail" together so the major damage was easily repaired. During the repair we added 1½ degrees incidence—the wing had been on flat (but you have some positive incidence even then, if you consider the line draw through the L.E. and T.E.). This to increase natural fly-



off tendencies—it also added a modest down thrust effect.

I flew for two years with rods in outer holes for smooth scale-like responses. I wised up. Moved elevator rod in a hole, two on rudder, so that there is real rudder power in an emergency in a variable wind takeoff, to swing the ship back on line fast enough, that the inner-circle picks up lift on that side. You do this on a Cub, et al, by really booting the rudder bar. With proportional available, why not play it safe!

Takeoffs, approaches and landings, power on and off are simply picture book—when one of the other guys flies it! It doesn't stall easily with an outer elevator horn hole, but if you hold its nose very high on low motor, eventually the right tip will drop. If you hold right rudder it can be spun. I have seen a pattern pilot fail to spin it with that low elevator power, but had the delectable pleasure of showing him that if you rocked back-stick side to side, it would break and spin. It is a totally safe airplane that can be flown in a gale,

takeoff through landing, as Srull puts it. Only a beginner's horsing the sticks can cause trouble.

Now what do you do with a ship like this? Sure it can snap-roll, loop, not quite hold inverted. But it is so smooth. You imagine. Play games. The first year I used to set up cross-country in my mind, and travel about, using nothing but slight trim adjustments to hold solid headings. Power trim held precise altitudes. It was then I found to my utter disbelief that this heavily loaded machine soars like crazy on a warm day where there is vagrant lift. Soon I was going sky high, throttling back, setting up wide right turns with rudder trim, then flying hands off. Often it would spiral on up.

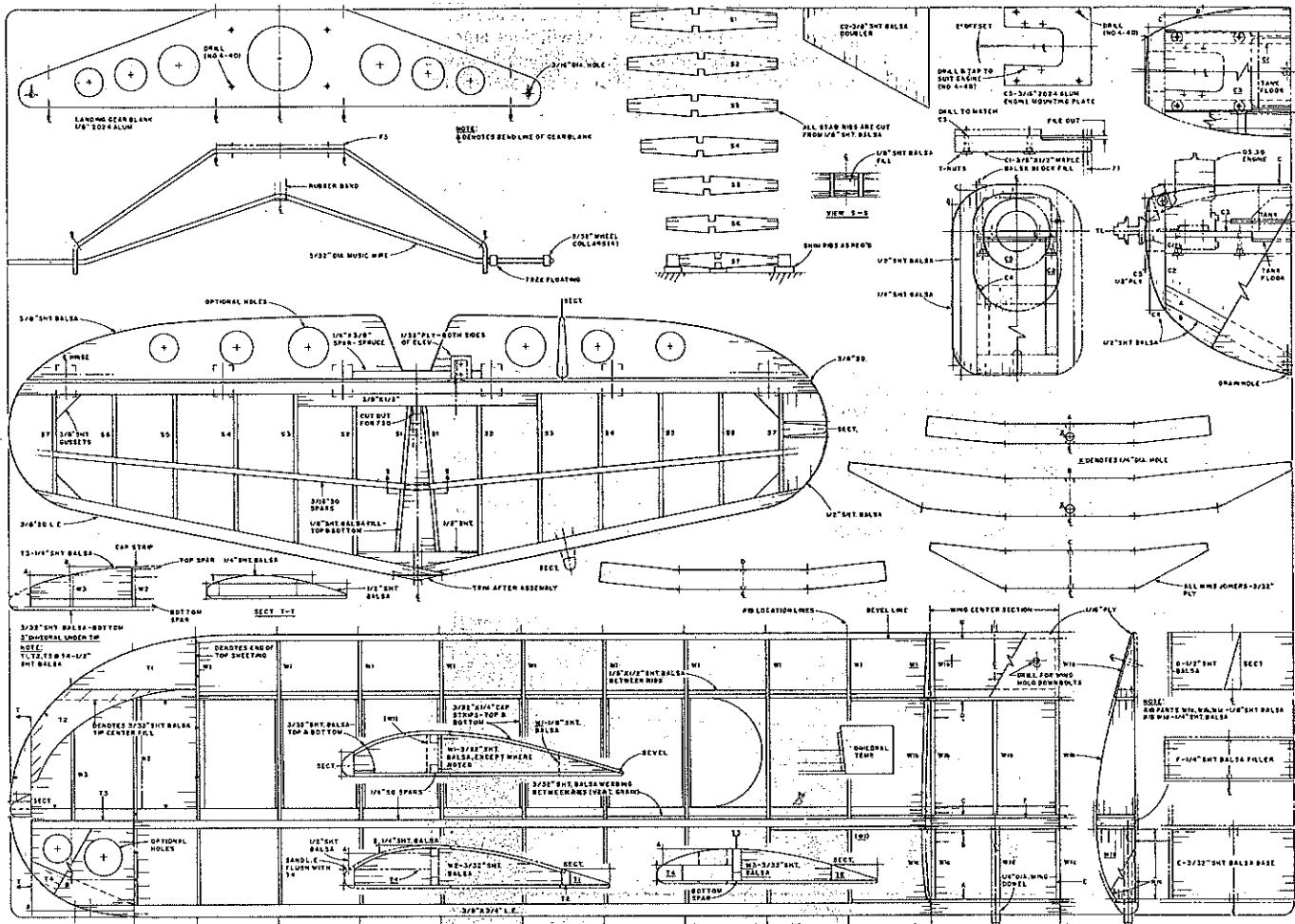
On one occasion, it was flown during a small sailplane meet and got higher on idle than all but one sailplane and, brought down, it immediately resumed a gliding climb to pin-point height. So there is soaring ability in a heavy machine provided a fair speed is maintained. It will swoop in fast, wide circles, nose down a bit, but going up and up. If you slow up that fast glide, it will sink right through the thermal.

I would urge you Falcon 56 pilots, especially Senior Falcon jockeys, to have a go at this. A Telemaster would be a formidable soarer. Perhaps even Sig's Cadet Sr. There are many others. You get the idea? Even pattern jobs have, on rare occasions, been soared in unexpected lift. After a chilly early morning, the hot sun, at, say, 11 o'clock, turns the place into a hat-sucking paradise. Everything goes up.

This kind of flying led me on and on—to a six-foot low wing lightweight (it out glides the Special 2 to 1, but the Special can outsoar it!), and the 6-ft. Sniffer, with an OS 35 on a 4-oz. tank. Incidentally, all my tanks are only 4 ounces. Sometimes the Special can be climbed at half throttle, soared on 1/3 throttle, with a 10-13 minute engine run. The heavy Sniffer—for windy



When the 6 ft. 7 in. original was designed in 1948, accidental aesthetic things were found to pay off in the more highly loaded small version shown here. One was the rounded windshield-wing junction, top of cabin being curved in to blend. A flat windshield definitely is inferior. You don't need strut lightening holes—a son is a handy machinist. A hard bounce landing tends to bend the hard aluminum strut across the bigger hole near fuselage—overdid it a bit!



weather flying—is a veritable buzzard in warm weather. At 1/2 or less throttle, sometimes idle, it will run for 18 minutes or more on 4 ounces, and glide until you bring it down. One in every four flights of the Sniffer finds lift.

The Special is a joy to shoot touch-and-goes, and to find the lift. It imparts a profound impression of flying a real aircraft. I have allowed many strangers to take it over in flight—even though I didn't know if they had flown radio. Some wring it out, with spins and snaps. Most hardly touch it and just fly with their mouths hanging open. All say, "That's nice."

Now understand that all this was a scale-down

accident. I had not designed into it any of these nice things. A lucky lottery winner, that's all. Get this straight. It is not an old-timer, for all of its looks and 32-year-old ancestry. It is a true sport cabin model.

If you build it, it should be MonoKoted. Fabric, dope, and paint will make it hotter—and perhaps it won't soar. Performance could approach so-called 40 trainers if heavier. I used the old-style truly transparent red MonoKote. The new stuff is more opaque. But blue and yellow transparent look great, too. Incidentally, I thought I hated MonoKote, but one grows flexible with age. Use Balsarite first to improve adhesion and run Balsarite over seams—seams should be over-

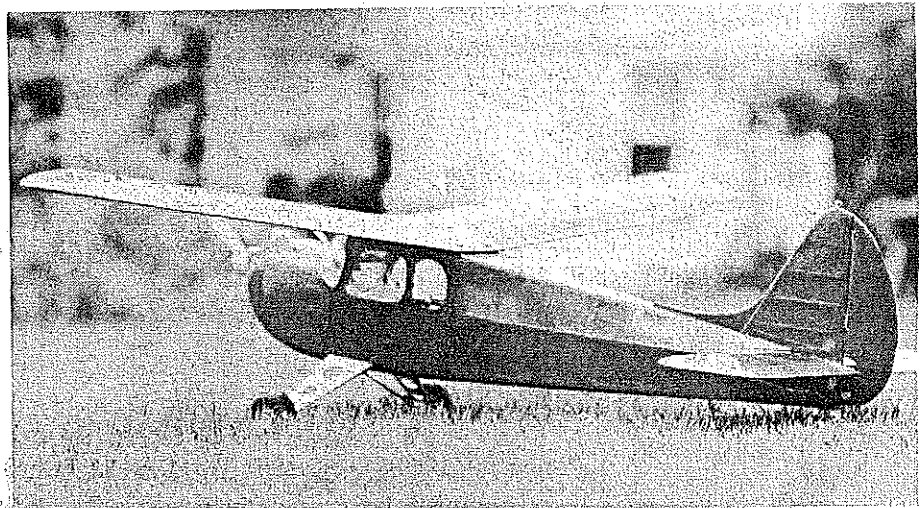
lapped going rearward to keep out fuel.

I am positive that the chord could be increased by one inch, leaving the wing right where it is, with the highpoint of the rib moved back about 1/4 inch. This will add perhaps 60 sq. in. of area, and silk, etc., and paint won't hurt so much—but use a 35, or a 40 if you must. That's OK if you are handy with the throttle. Perhaps a 6-oz. tank with a 40. I carry modest nose ballast—taken out now due to Srull's heavier dieselized 35s. The effect would be to lengthen the nose slightly, and, of course, loading would drop.

The accompanying 3-view shows how I would like to update this spry "old-timer" by going to a 23012 wing section (found on the T-Craft), a



Older highly transparent red MonoKote makes structure conversation piece at field. Our first attempt, had called wrong number for advice and guy who had yet to build his first RC told us how to do it. Did just as he said and it came out grand. So much for prejudice! Silk and colored dope not recommended due to rather high wing loading of scaled-down wing.

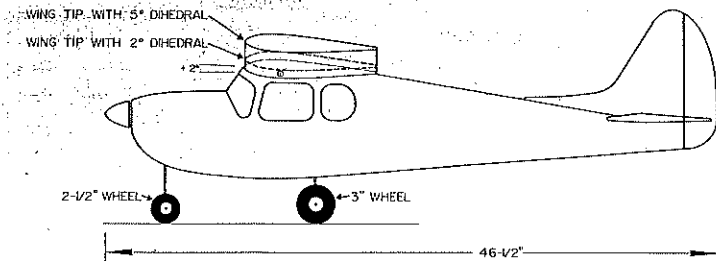


Another lucky feature is the narrowing fuselage top to a point at the fin leading edge—airflow over fin and rudder highly effective. Compare the rudder shape with plan—perfectionist, Lloyd Hunt, who made plans thought it looked more real as he "corrected it." Don't agree—what the heck!

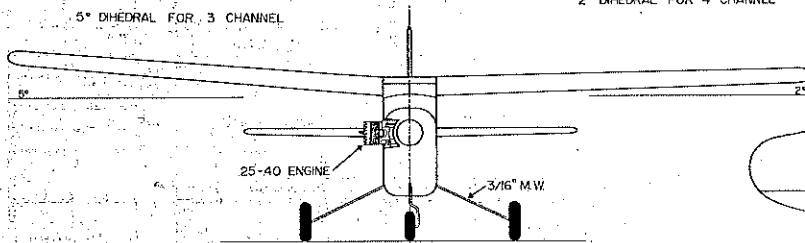
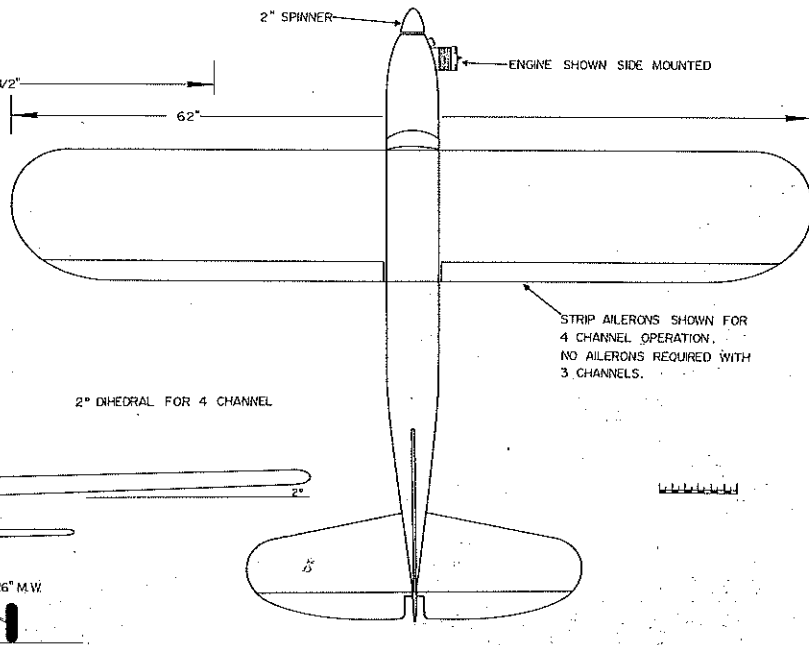
trike gear, and typical modern construction. The chord is increased for more area, and strip ailerons are shown for the 4-channel guys, along with two variations in dihedral—one for each mode. Ralph Davis has beautiful-flying original-

sized Specials with ailerons, so you don't need to worry. The trike geared ship will appease the guys fearful of tail draggers—and will track automatically. The nose is longer, too. Fly it like any other cabin job. The convex undercambered

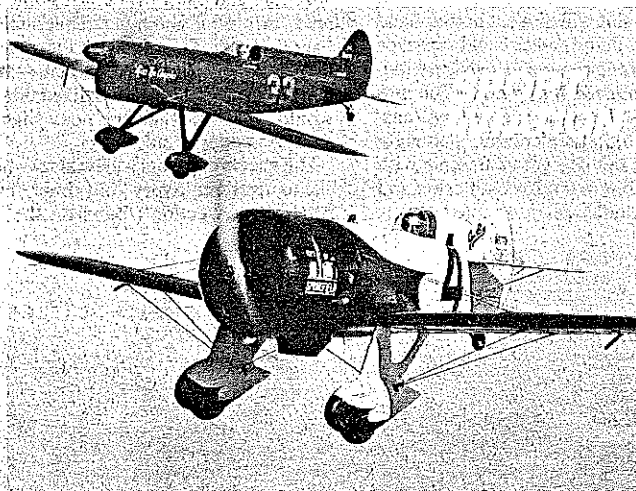
wing will be highly stable in pitch. It should be clean and groovy. I'd use foam and skin, but, as Davis did, with an open-work tip, like his to preserve planform, using laminated tip strips. Fuselage can be sheet, etc., even just a box. If you build the "oldie," I have not let you down. If you work up something new from that 3-view I doubt you will be disappointed. In either case, I prefer an inch more prop diameter than recommended by the engine manufacturer, and one to two inches less pitch, as fine tuning will reveal. You don't want a bomb. Or do you?



Someday we'll modernize the Special—like this. Airfoil is NACA 23012, an old standby found on T-Craft, many others, at 2 degrees incidence. Intend 4-channels—but it is shown both ways. Side-mounted engine and trike gear should please any sport flier. Chord is 1-inch bigger, and wings skinned foam. Fill in your own structure—modern sheet, etc. Nose wheel should be 2 $\frac{1}{2}$ —if unshorn grass, go to 3-in., mains 3 $\frac{1}{2}$. Ralph Davis, who still builds modernized originals of the '48 job, uses foam-core wing on authentic tail-dragger, but builds up the curved wing tips with laminated edges and ribs. A .40 displacement suggested.



**EAA members receive
SPORT AVIATION magazine**



**Whether
you own an
airplane or dream
about it, EAA
has a lot to
offer you!**

FREE BROCHURE • INFO PACK \$1.50 • ANNUAL DUES \$25.00

EAA EXPERIMENTAL AIRCRAFT
ASSOCIATION, INC.
P.O. Box 229
Hales Corners, Wisconsin 53130

Special—SPORT AIRCRAFT YOU CAN BUILD—\$4.95 pp.