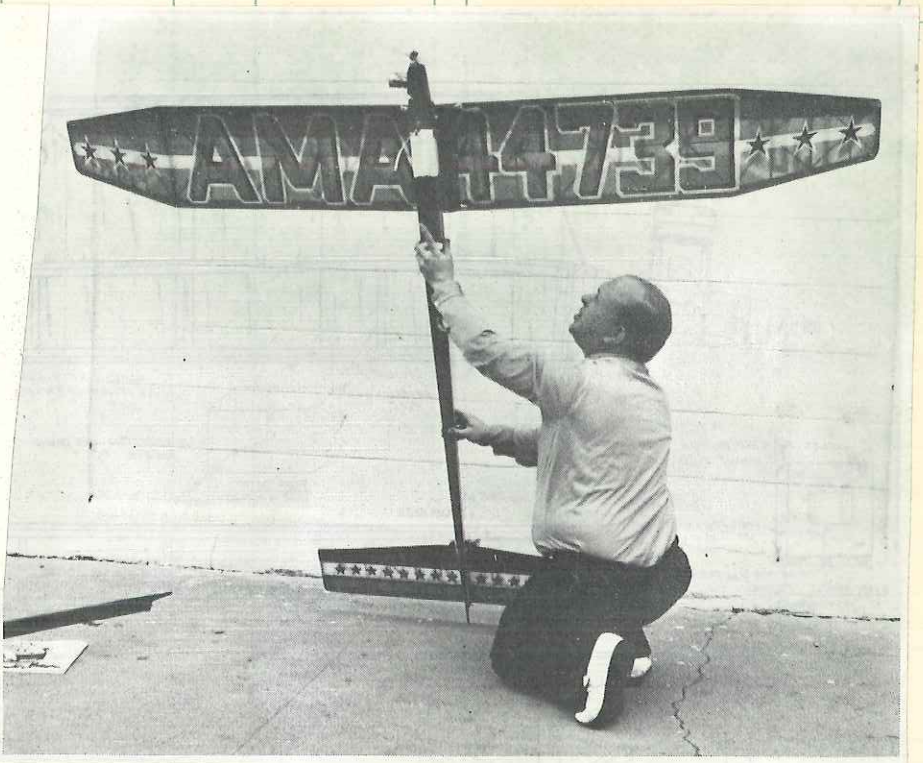
G.Y.S.O.B.



By ED BELLINGER . . . The newest Class C record holder is a man-sized hunk of model. If you can handle a Schneurle .40 at close quarters, you're ready for it . . .

• FAI Power, you say? They're OK if you like overweight hand launch gliders, but I'm talking about hairy-chested, two-horse-power, man-sized competition. In other words, Class "C", as flown in our large California annual contests. You say you want proof? OK, just check the results of the last U.S. Free Flight Champs. It took over 30 minutes just to place fifth in "C". Hey! You there with that Ravioli .15, you ever make over 30 minutes? I didn't think so.

If you're still with me, perhaps I can interest you in a model that has proven itself in this type competition, in several series, since 1967. The name is "GYSOB", and if you don't have enough imagination to figure that out, go build an old timer. In the only two Nats I've attended, it placed second in "½A", and first in "B" (Yeah, I build little ones sometimes). It took back-to-back firsts in "C" at the old West Coast F.F. Champs, and back-to-back wins in "C" at the first two U.S. Free Flight Champs. It also took back-to-back wins for the Northern California Class "C" Trophy. I certainly hope that there are no Freudian implications in all this back-to-back business.

The model actually took shape while I was overseas in the middle sixties. We had little free flight activity, so I finally had time to fool around with various ideas. Up to that time, I had been a big stab freak. In fact, some of my models looked like they were flying backwards, and usually glided like an open foot-locker. I knew that there must be a better way, so I began reducing stab area. As I got below 30%, I started to note an exciting increase in total performance. All was not roses, however, because trim became different and somewhat more critical.

I found that the smaller stab models did not lend themselves to the right/left pattern I had been using, but required a right/right pattern to achieve full potential. All in all, I found that these compromises were well worth the increased time potential. After I settled in Sacramento, California, my brain-picking of Doug Galbreath, and a few more changes, finally jelled into the present GYSOB.

Back in 1967, the 25% stab, really looked tiny on a "C" ship. The subsequent progression has been in that direction and now almost any really high performance model is of that general configuration. The GYSOB uses the old proven combination of left thrust, right tab and right glide to achieve its pattern and recovery without the use of gadgets. I don't know who originally came up with this trim method, but as far as I am concerned, it reached its final development in the "HI-FAIs" and "Orbiteers" of Galbreath and Cherny. I greatly profited from their acquaintance.

With this trim, the left thrust controls the initial climb, the right tab the final portion of the climb, with the two forces giving a good recovery down to even a five-second run. The left thrust may look excessive, but it is absolutely essential to a good recovery. Most recovery difficulties can be traced to a lack of left thrust.

There have been some recent GYSOBs built with auto-rudder, including a particularly impressive one by Doug Galbreath. I do not utilize one, because I am so used to the model and to the trim method I use. I will admit, however, that the auto-rudder makes for somewhat more flexibility of trim. If you do not have considerable experience, I would suggest that you consider the addition of auto-rudder. All you need do is add a tubing guide just forward to the stab platform and run the auto-rudder line over the top of the stab.

There also have been several aft-rudder versions flown, the most notable being John Warren's former record holder. With an aft-rudder, auto-rudder is necessary because you will lose all of the left thrust. If you go this route, what the heck, let it all hang out and also add auto-stab as John Warren did. As for myself, I don't like the long fuselage demanded by an aft-rudder, and probably couldn't remember to hook up all that stuff.

The plans are quite comprehensive, and since you should have adequate experience before building a model of this type, I see no reason to go into a "Glue part A to part B" type article. I would rather utilize the space for trimming instructions, so my construction advice is to use good wood, and build the fuselage straight.

I do want to go into covering materials, first to warn you to avoid the heat-shrink plastics like the plague. I can guarantee continual trimming and adjustment problems with their use. I prefer silk, primarily for cosmetic reasons, but double tissue is every bit as satisfactory. Good silk is expensive and difficult to obtain, but regardless of what you may believe, *properly* sealed silk is *lighter* than double tissue or plastic.

The only problem is that there is only *one* way to seal silk to achieve maximum lightness and rigidity. I've used every method known to man: spray starch, upside down application, strong drink and prayer. *All* are unsatisfactory. The only way to go is to thin the dope approximately 80% (20% dope, 80% thinner), and use at least a one-inch brush. This thin solution will not run, but will film on the surface. After about four applications, you'll probably give up in disgust because you'll notice absolutely nothing happening. Go inside, read some spiritual literature and persevere. After a couple more applications, you will notice a thin film forming. Thicken the dope slightly and continue until it appears to be just about completely sealed. Now go to a 50/50 mixture and complete the doping. Finish off with a spray coat of 50% thinned clear epoxy paint. Now stand back and admire your beautiful and *light* wing. That is, if you can bear the pain from the partial paralysis of your right arm. So I'm crazy! Go ahead and double-tissue the thing. Single tissue on the stab, please.

Now if you'll stop fondling your completed GYSOB, I'll help you trim it. Set it up with at least as much left thrust as shown, CG as shown (right on, not close), rudder keyed absolutely straight (no left), rudder tab straight, approximately 1/4 to 3/8 inch wash-in of the right main wing panel, and some right stab tilt. The left main wing panel should be flat. The tips will probably wash-out a little, so make certain that they are even. Use some sort of quick D.T. system that will pop approximately three seconds after engine cut. I use nothing but Selig timers and consider anything else "Mickey Mouse"; among other things, the Selig timer makes quick D.T. simple. On the first flight, make a quick run through the Beads, use near full power, approximately two- to three-second engine run, and a steep launch. If it doesn't attack you or do something silly, proceed from there.

On the first short runs, the climb should be steep and relatively straight. If it turns excessively and everything eyeballs straight, adjust turn with thrust adjustments. As you increase the engine run, a right pattern should begin to develop. If it goes into a loose right turn and keeps the right wing up, you got it made. All you should have to do is play with the rudder tab to make the final pattern adjustment.

You probably won't luck out, however, because most people do not throw a "C" ship hard enough on the test glides, and shim in excessive incidence (quit nit-pickin' this term, you know what I mean). In this case, the model will most likely start out steep, go into the right pattern, and appear to drop the right wing as the turn steepens. Re-eyeball the wing to insure that you have adequate wash-in. If you do, this tendency almost always indicates excessive incidence. Shim the front of the stab and try again. As you continue to remove incidence, you should notice the climb speed begin to increase, and the right wing start to stay up. It is safe to continue with this adjustment as long as you are certain that you have enough wash-in, and as long as the climb does not begin to flatten out.

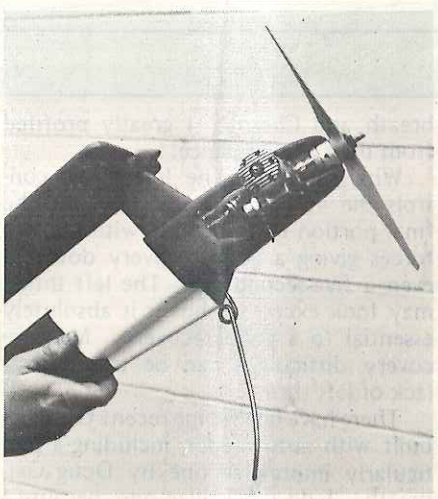
If an experienced right/left trimmer happens by in his '37 Studebaker, he will probably advise you to add left rudder and incidence. Stick with me, and let him go back to his modified Civy Boy. *Never* add left rudder.

At this stage, five to eight seconds, adjust primarily with thrust and incidence, but you can sneak in a little right tab now, if necessary. As you approach maximum runs, if the model straightens out and starts to roll to the left, evaluate the attitude carefully. If the climb flattened out as the turn straightened, then you obviously need to add incidence. If the climb remained steep and you can't make it behave with rudder tab, you probably have one or a combination of the following: Excessive wash-in, built-in left rudder, excessive left thrust. You'll just have to eyeball it all again (get some help) and decide. The model should make about one turn in ten seconds, and fly right into the recovery. Since incidence was determined by the climb requirements, only CG and stab tilt are used to adjust the glide.

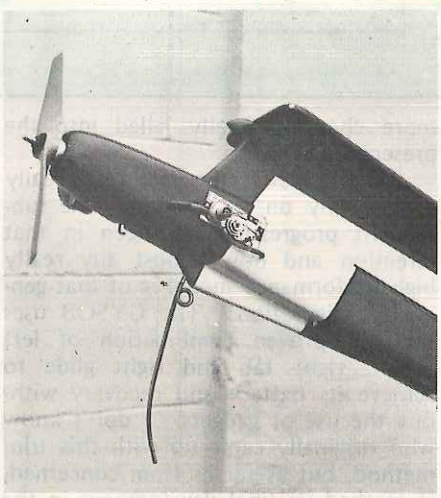
Check the plans and you'll note that the fuselage droops down below the datum line. I did this to get as much rudder area below the thrust line as possible for a very strong right power tendency. For this reason, the proper glide attitude sometimes looks a little tail low. Keep this in mind, and if the glide does not appear responsive, move the CG aft.

There you have my GYSOB. Perhaps it can help you win. Just remember one thing . . . most of it is up to you and not the model. The winners will win no matter what they're flying. All the GYSOB can do is give you a little better chance of picking good air.

One final word of caution. If you want to build this thing, you better hurry. AMA just presented the F.F. Contest Board with Oscars for their supporting roles in, "One VTO'ed Over the Cuckoo's Nest." There's no telling what heights the annual absurdities will reach next year. Anyone for a separate competition organization? OK, but just remember that I'll be the first to tell you, "I told you so." ●



Timer side of cover model, with "Cosmetic" nose. A 1300 version is in the works for 'D'.



Engine side of Hal Woods' cowled version. Final version has shorter fore and aft moments.

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