CLASS A SHORTHORN

Doing what it does best, long fast glide with slow sink rate. Clean with excellent penetration for fast climb to find the elusive lift or thermal.

By WILLIAM 'Bill' CHENAULT . . . excellent contest class A free flight that has an amazing history of contest accomplishments but more importantly design accomplishments as well! Designed to suit the rules and the needs of the neophyte for a good beginning plane.

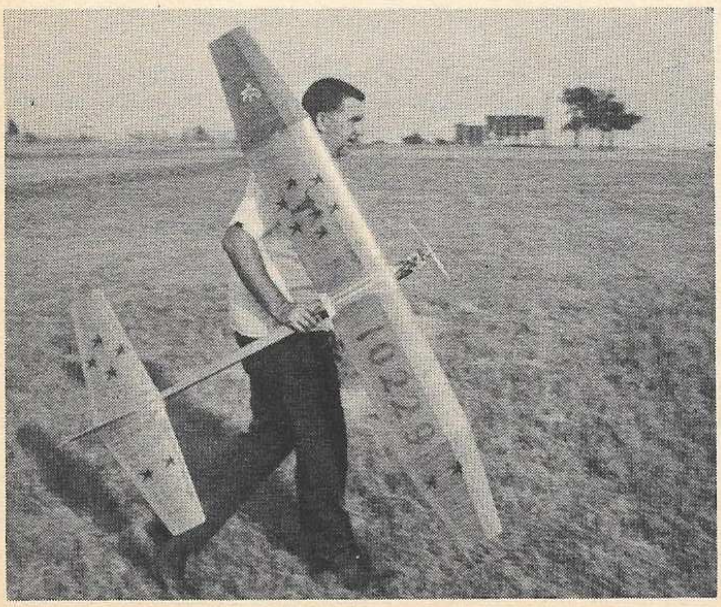
► Want to try something new? How about thin airfoils, using turbulators, with no undercamber?

When I first started working with this design I was worried about rule changes. I began with a ½A size 326 square inch wing. It's been very successful. So in the years when there was no class C gas I drew up a class B with 660 square inch wing. I used a favorite worked over Fox .201. It was really a tremendous model. I placed in almost every contest I entered.

Finally the rules changed and I was ready. I had built this 550 square inch wing size version to use the latest .15 engine on it.

About this time several manufacturers came out with new .19 engines. My close friend, Casey Hornbeck, was able to locate one of the first Super Tigre .19 engines with the G15 case. With my new added power I found I enjoyed flying this model more than any size.

The first full year of flying I maxed out in every contest I flew in except one, I won that



The author out in the middle of that Texas flatland and all he's seeking is a timer to quote him! Note generous wing and stabilizer area.

Author's number two daughter Susie holds the Shorthorn for Dad—too young for cheesecake or planes according to him, but time alters things.

More of that amazing Texas flat land but with one difference; Billy caught up with a timer and the 'Shorthorn' VTO's for a sure max flight.

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one and placed in all the rest. I couldn't figure out what was happening. My model would get higher than most but just couldn't hold up in fly offs. The only thing I could figure on was this different airfoil, I had picked up. It wasn't the same as my ½A or my C job, which I was beginning to win with.

Thanks to an Odessa, Texas, contest and a bad launch to the left with a little wind my class A model met with a mesquite tree and completely wiped out my wing. This was just too much because I had much to live up to in Odessa. The year before I had won ½A —2nd in C and 3rd in B along with grand champ, all using this same design; but the old style airfoils. So much for old contest!! So here was my chance to build a new wing and use that power.

So I selected the airfoil I have used on my ½A and class C models and found right away it was so fast in the climb that it couldn't stand to DT under power. I know any beginner can pull this stunt but I'm a vet and I can make a bigger mess than a beginner any day and I did at the Los Alamitos Nats last year.

I don't know if anyone can feel the same sorrow that an overgrown man feels, when he has to watch his pet model scatter all over the sky as if a missile had hit it. I could only say it isn't the first time and probably won't be the last for me. I put it back together and took it easy on class B day. I got 2 maxes and that was enough to really turn me on. I forgot about the California weather—they say anyone can get a model to fly there. My Shorthorn hasn't forgotten about the California weather.

I came home to place 2nd in a Oklahoma City meet after the 3rd fly off and it still wasn't trimmed.

I won the Southwesterns in both class A and B, changing from my .19 to my .23. My ½A flew out of sight on its last max to win 3rd but couldn't get back for the fly offs. It was found a week later.

My class A model won first in the next local contest and so did my ½A. This is just a short history of the Shorthorn design.

The story of all the mishaps is just a part of fun. I have won over 40 trophies with these classes mentioned.

If you worry about the new rule changes—which may not change—build one of these Shorthorns and you'll have a missile like climb that will take your breath away.

If you look at the airfoil you may wonder why I chose it and why I use turbulator threads. All I can tell you is after many experiments it has proven to be the best combination I've ever flown with. Construction is fairly simple —I use a box type fuselage for strength —fill in the nose with scrap balsa at the corners and round it off to fit the Tatone mount. I always fibreglass the fire wall on. But, before the fibreglass I check the 4° left thrust as it's a must with such a low pylon. While I have the resin mixed I usually paint some on the pylon where the bands hold down the wing—a little silk helps here too. Be sure and use plywood doublers on fuselage at the stab area. If you prefer you can glue the pylon in after your model is completely covered and doped. In this way you can shift the pylon back or forward to get your CG without adding weight.

The wing is also very simple even though the top and bottom spars with webbing may

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seem complicated. Lay out the leading and trailing edges, then the spars for the bottom front and rear. Cut ribs for a snug fit to the spars. Notching the trailing edge, prevents covering from wrinkling and warping structure. The tips are equally simple—I use the method of the Sattelite article. I start with a full rib, then draw two lines straight out from the inner panels to represent the leading edge. Then pin down my LE—place rib over and start cutting the nose of rib off at 90° from bottom. I check length at the TE and cut again. I then measure height of LE and TE—mark it off from top of rib then I slice off waste at bottom. Cut another for the other tip and proceed to next rib. The constant chord of TE stock helps to produce a natural wash out in airfoil, but I still recommend washing out the tips another gradual ¼ inch.

I leave out all ribs at panel joints and glue them in when I glue panels together. Another reason for leaving out the ribs is because I use full depth braces for all joints in front of the double spars. A bit of caution use 1/16 plywood braces. From experience I find it best to use one piece braces across the full center section. I use full depth on the front 2 spars. After the wing is joined together with proper angles I start on the sheeting.

I cut my sheeting and dry fit it. Then I run glue on all ribs, spars and leading edge. While it's still wet I press sheeting on and then remove it. After these parts are dry I do it all over again except this time I pin the sheeting down and leave it over night. Shape the leading edge next and sand it smooth and sharp.

Glue gauze or silk over all joints.

Now install webbing in front of spars with the grain vertical. When dry, sand smooth and flat.

The stab is a real simple Ramrod type. Lay out your LE and TE splicing at opposite angles. Cut and pre-glue all lower 3/16 x 1/16 strips. Use scrap balsa for tips, leave rough-cut spars from ⅛ contest sheet using matched grain—check sizes on your plans. Add 1/16 square stringers over bottom rib, strips at leading and trailing edge. Glue down spars and braces. Add top rib strips then fill in with 1/16 sheet at the two center ribs. This will make for better glue joints on braces, rudder, DT pull up hook and most important your covering won't sag at this joint. Stab LE is sanded round. Now sand tips smooth. If you would like to check weights as you build, here are a few from

my model. Wing uncovered 4 oz.—Stab uncovered 1 oz.—Wing covered 6½ oz.—Stab covered with rudder 1¾ oz.—Fuselage completed no engine or timer 5¾ oz. Total of model should be around 22 oz. My old model recovered and rebuilt now weighs 25 oz. But the never tiring Super Tigre .19 doesn't know it.

Flying—I start out with checking all the plans carefully—most important of all is the CG. It has to be at 80% of wing chord. Make sure all surfaces are flat. Hand glide for a wide right turn. When you have a slow sinking glide you can start with the engine. I use pressure so I can slow the engine to ¾ power and about a 3 second run. Prop on forward, then increase when safe.

If model dips to the right add more left thrust. If it starts to loop take out left thrust if the loop is right away.

If model climbs to right but doesn't seem to gain proper altitude add a piece of TE stock—1½ long by ½ inch to underside of right wing panel near polyhedral joint. Every single model has its own problems. If it starts out to the right and starts to head straight up with a longer engine run; then takes off to the left, it needs two things—more left thrust and a right rudder tab.

This is an extremely hot contest model and has to be dealt with slowly. Once the power pattern is achieved it will make about three full turns in the climb with the nose nearly straight up. The transition is almost as beautiful as the climb. The moment the engine quits the model flattens out as if it had been gliding for days.

A glide circle of 100 yards is most desirable, but not essential. If glide is too wide it will blow down wind too soon.

When you get this far you will be 600 feet high with proper power. And believe me there are plenty of thermals on the way down even in the worst of weather.

Never neglect a fracture of any kind on your model, whatever you fly. Good luck—good flying and keep me posted.