PERDIDO...

By GARY CHRISTIANSEN

Free flighters who really know how to build airplanes will find this definitely hot airplane does excellent job of handling power. For the .19's.

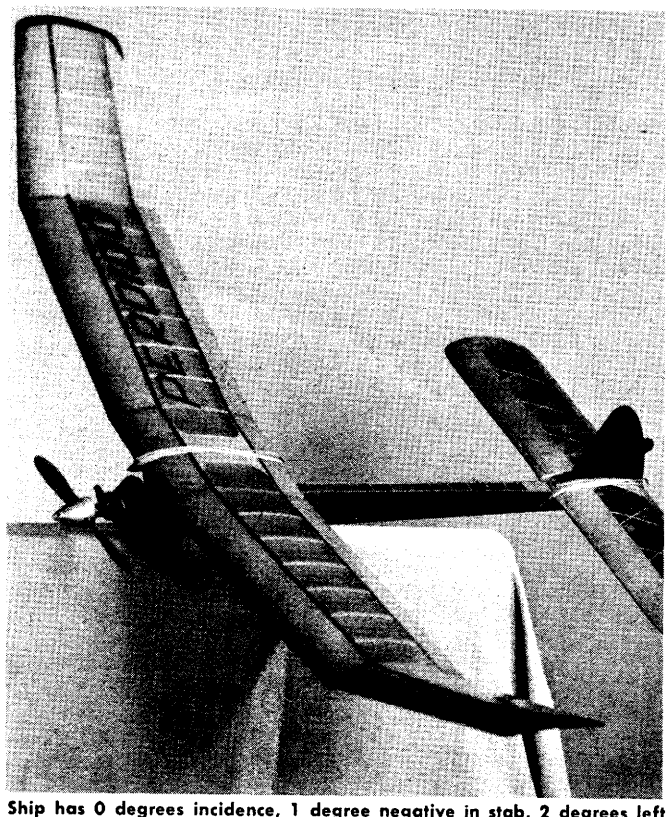
Perdido was evolved from earlier Perfidio design and is able to beat the older ship consistently, states designer, shown here with newer craft.

▶ The Perdido was conceived and built while I was at Annapolis, but I didn't get a chance to do any flying with it until I transferred to Harvard and came home for the summer. After three months of flying, the Perdido has undergone drastic revision in its force arrangement in the process of my trying to work out some ideas about controlling power in a small, fast ship. This revision, it seems to me, is the significant difference between a drawing board model and a ship more valuable for having had its bugs flown (and in this case, literally rebuilt) out of it. The upshot of it all is a much more docile airplane than one would expect of a rather small (466 sq. in.) and a very fast ship. With a good .19 the ship really moves out, yet handles surprisingly well and isn't oversensitive to adjustment.

Money difficulties limit a student's contest traveling; consequently, the only contests to which I've taken the Perdido have been local Intermountain area meets. In Idaho, the ship won first place in contests at Pocatello and Twin Falls. In Utah I've mainly used my B-C ship in the large class flight events. Partly because I haven't had a chance to do more traveling with the Perdido, I'm more concerned here with what the ship *is* as a design than with the as yet limited results of what it has done.

Intended in the original Perdido set-up was a method of controlling the looping tendency concomitant with high speed by using a large dose (8°) of stab incidence with adequate angular difference for recovery, giving the wing 9° with the airfoil used. I was confident that with such an arrangement I could hold the nose almost horizontal under full power if I wanted to.

'Twasn't so. Loops. Many violent ones. Conclusion was that wing position and incidence were largely responsible. I decided that the wing was taking the full blast of the prop stream along with the stab—only at greater angle of attack and with greater area for the prop blast to impinge upon. This reasoning quite simply explained the looping and led to the important idea behind the present Perdido. I decided to rebuild the fuselage to use the wing at 0° and set the stab at 1° negative. The idea is that the prop stream passing the wing at 0° induces as little looping tendency as possible from its impinging on the undersurface. The salient parts of the rest of the approach are a conservative combination of rudder area, dihedral and tail moment. Stab area is dictated by incidence and CG position desired and is really smaller than I prefer.



Ship has 0 degrees incidence, 1 degree negative in stab, 2 degrees left thrust, 1/4 in. wash-in left inboard panel, stab tilt for left glide.

It's easier if I avoid saying anything about airfoils, but the temptation to explain what I've used in the Perdido is too great. You will notice that the sections shown are, as I term them, just curves. True, the one in the wing is undercambered and 6409-ish, but they're still just curves, and they're that way because I've lost a lot of faith in the importance of exactly plotted airfoils. I don't mean to imply that just any section will do the job as well as any other, (*Continued on page 34*)

Foreign Notes

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airplane engines, we should mention that we have also operated McCoys, Doolings, Torpedos, Atwoods, Andersons, Foxes, Cyclones, Ardens, Cubs, Forsters and the like, as well as Amco, Allbon, BWM, Elfin, Eta, ED, Frog, Mills, Metro, Nordec, O.S., Enya, Fuji, Supertigre, Typhoon, Taifun, Webra, Waf, Wilo and many even more unfamiliar makes, all of which comes in very handy when sorting the wheat from the chaff.

Now, we have been talking about engines of various nations in MAN for the past three years or more. By European standards, or by international standards in general, some of these motors have been good. But with so many overseas engines now being imported into the U.S.A. (there are about 16 different makes at the moment), it becomes increasingly important to evaluate these motors in regard to the U.S. market only. The subject is too big to be dealt with in detail here, but if you are contemplating the purchase of a foreign motor and have not had any previous experience with one, it is worth bearing a few facts in mind: 1) American model motors are, in general, the best in the world; 2) Generally, they are the best value too; 3) Without mentioning names, there are, perhaps, a half dozen foreign makes worthy of the American modeler's attention; 4) There is no foreign glow plug engine better than its American equivalent; 5) Diesels are only worth considering in .15 cu. in. and smaller sizes; 6) Above that size, Diesels are rougher and are not as powerful as a good equivalent glow-plugger; 7) In the Half-A class, the Diesel is more powerful, although heavier, than the average glow plug job.

World's Record List

The Russians are still taking the FAI record list mighty seriously, despite apparent reluctance to compete with Western modelers in FAI-recognized World Championship events. The current FAI record list shows the USSR as holding ten world and International Class records. Hungary comes up in second place with seven records, while Czechoslovakia adds one more to the Iron Curtain bag. Heading the decadent West is the U.S.A. with three international records, followed by Great Britain, New Zealand, Germany and Italy with one record each. END

Perdido

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or to advocate haphazard building. In fact, as far as building goes, I intend just the opposite: I hold smooth, sound building to be of more utility than the sections themselves. Nor is my heresy complete with regard to differences between sections. Of course there is a difference and certain airfoil patterns are superior; I simply don't like to see the differences exaggerated. I'm convinced that the effects of structural deviations from the intended airfoil, placement of spars and the resulting turbulator effect do much more to change airflow than most builders realize. As I said, the curve in the Perdido wing is rather 6409-ish; furthermore, it doesn't differ performance-wise from a bona fide 6409, as far as I can tell. Thus is my argument reinforced. My position can be summarized simply: the fiction lies in the sharp distinctions between airfoils that designers are wont to make.

I don't like to say much about building—partly because the plans say enough, partly because I think the builder should make his own interpretations, but mostly because I think comment on theory and flying is both more interesting and more useful. I would like to say that the structure is rugged and fairly light, but in the fuselage especially hard balsa is important—particularly in the front where the weight is good. This is apparent in view of just how little structure is used in the fuselage.

After the fuselage sides are joined, build up the front section of the wing mount in any sequence desired. Wing and tail are simple, but do them carefully. I like a silked structure; it comes in handy when the ship whomps down in the middle of a sagebrush. If you lack sagebrush, make your own applications.

The Perdido is rather heavily adjusted. I like to avoid this whenever possible, but with all the flying that I've done with the Perdido, these adjustments have come to seem quite natural and almost necessary. I use 2° left thrust, 1/4 in. wash-in on the left inboard wing panel, 1/16 in. tilt in the stab table for the left glide, and left on the rudder tab as necessary to maintain trim. I would suggest that the 1/4 in. wash-in with the left climb pattern be used. This in turn makes a left glide mandatory, since gliding with wash-in outside the glide circle is akin to suicide. This is an old story, but be careful on the first power flights. With all the adjustment indicated, the ship should fly almost horizontally under low power with a little left turn, but this left turn is impossible to predict; it could be altered by a hundred things in the way a particular ship is built. Since the ship will stay quite near the ground under low power, any excessive turn will fly it into the dirt in a big hurry; so again, caution. Five or six seconds of power with the prop backward to start will give enough indication of where the ship is going. From here work carefully into the left-left pattern, aiming at one power turn in 20 seconds of full power. Make the ship glide left tightly.

I don't want to leave out our VTO approach to ROG here in Salt Lake City, where I live. The Perdido is beautifully tailored to such flying with its close incidences and resulting flat flying characteristics. I fly it off at about 70° and it holds that angle off the ground and into the climb pattern without any of the "rounding off" that slower ships exhibit with a steep VTO. Set it on its tail just once for a flight—it's infectious! I left the landing gear off the plan because of my uncertainty, at the time of design, about what AMA would do with the 1955-56 rules. If VTO becomes illegal, use any conventional take-off gear; if not, use a simple retracting VTO strut on the back of the fuselage.

The trouble with hot ships lies in the effect on the nervous system of the flier and in the need for constant minor trimming. I think you'll find the Perdido a happy surprise here. Once trimmed, it shows remarkable tenure of adjustment and you can trust it without using kid glove tactics on low power at the beginning of every flying session.

The ship is covered with red silk, doped on the wing and stab with Fuller's nitrate and on the fuselage with Fuller's butyrate. There is no need for plasticizing dope for the fuselage since nitrate doesn't pull up too tightly on the wing and stab. END