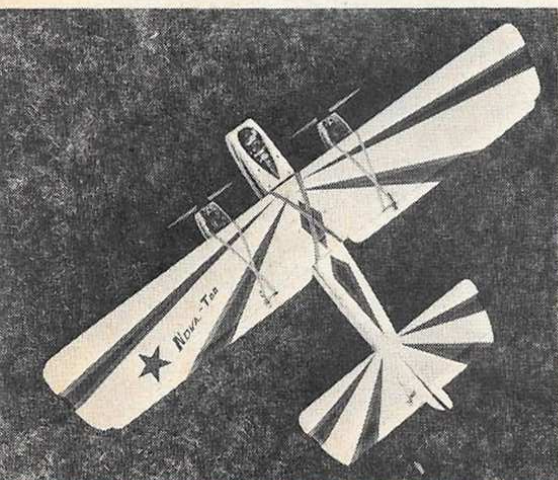


Here we have the single-engine version with cockpit hatch and wing nacelles removed. Actually, the complete package for 1, 2 or 3 engines shown here.

# NOVA-TOO

Looking for something different with a challenge? Yes? Then try our one, two three'r. Imagine a single, twin or tri-motor machine that can do it well in any combination. For the timid, start with single engine; for the dare-devil, go all the way; in between, stick with the twin.

By MEADE E. HALLOCK



Top, rear view of the twin-engine plane. Six machine bolts hold the cockpit hatch in place.

► 2, 3, 1! 4, 6, 8, 10! 12! And . . . .? All these numbers added together make the sum of 46! 46 minus 30 equals 16! Sixteen divided by 8 equal 2! And . . . 2 (Too) is the magic number.

If all of this fails to make any sense to you, don't feel too badly! Cause it wasn't meant to make sense! In fact it could be some big gambler's magic formula for beating the numbers at Vegas . . . or even a mathematical problem for a second grader!

But, it's really a way of getting across to you that 2 (Too), is the magic number when it comes to how many engines on an R/C model. It really livens up that

dying R/C spirit you might have after mastering all those single engine innovations.

And, if you really want something different—spin the wheels, pick your combinations—and get on the 2-engine kick, "Too" . . .

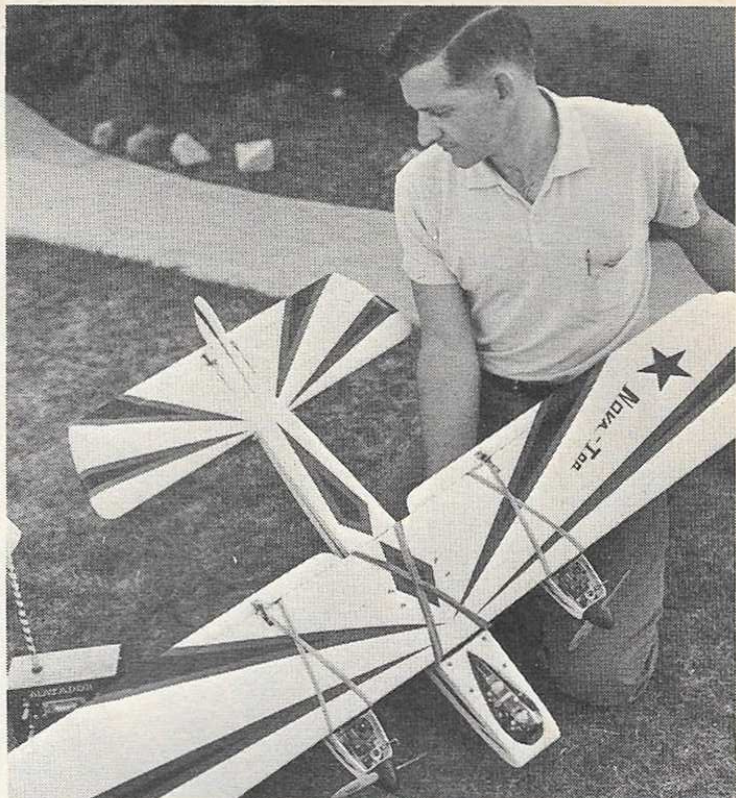
By way of reiteration . . . (man, what a word!) . . . or in other words . . . I'll tell you how it all came about.

Had this model—(The Nova, to be exact) that had been flying for quite some time. In fact many moons! It had gone through many contests, Sunday flying sessions, and even through a few fences!

# NOVA-TOO...CONTINUED



Author at the reed transmitter of his twin-engine machine. Original Nova is seen in background. Rubber-bands hold engine nacelles to wing.



Clean functional design of the Nova-Too is seen in this photo. Author holds up the rear section to better show the elevator/rudder linkage.

In fact it seems to be virtually indestructible. But, after trying every size engine, flying it with every number of surface movements and every combination possible; it left me with a feeling of something still to be desired. Something better and something hotter! Had been thinking of modifying it to a shoulder-wing anyway, when the idea struck me! Why not make a twin? As long as it was to be modified, why not work it up so it could be one, two, or three engines at the modeler's choosing, and without having to build three separate models? So this was the object!

After many notes, sketches, and reading of model magazines, things were beginning to take shape. Now the only thing remaining was to get some firsthand information and advice from an old pro with twin-engine experience. Of course, it could only be Mr. Twin himself! Bob Heise is the name. And this was a logical choice, as Bob is an old circuit buddy and good friend. With his able help, the technicalities such as how much engine thrust (right, left, up down), control movements, etc, etc, etc, were noted and used in the configuration of the final model. Thanks Bob!

It was decided to make the model patterned after a bomber. This would call for a canopy up front and engines slung low below the wings which would also keep the center of gravity lower. The landing gear on the original Nova's proved stable even in high winds, so it was decided it would remain the same. This and a myriad of other details were finally figured out and put on the plans, and in the notes.

Now, we were at our field, and of course, all other activities came to a slow down when a twin was brought in. My wife, Velma, had been informed by me that this day would only be for getting the engines synchronized, adjusting the nose gear linkages, as well as some low and high speed taxi runs. I assured her that there would probably be three or four Sundays of this before my courage would be sufficient to lift it off the ground. But then . . . everything was adjusted and corrected so much more quicker than anticipated. But . . . the aileron servo had stopped working during all that ground practice. Anyway . . . that inner urge took

Construction went smoothly and before long the Nova-Too was ready for some test flights. It had been set up for an F&W 10-channel reed set (8 channels) during construction. But, in the interim I acquired a Bonner Digi-mite and the change over was made with little difficulty.



Close-up view of the underneath section shows simplicity of design, and bolted landing gear.

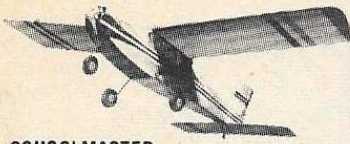
over and on the next high speed run down the runway, I fed in just a little more engine and off the ground it jumped. Then it happened, a tight left turn and me with no ailerons, and six hands (this was my first experience with a two-stick propo, and in fact with any propo!). Then, too, this guy I had bought the set from had it all reversed! Backwards from what any reed flier was used to! So, everything I did on the box only made matters worse! Not hardly any damage though, and we returned home as it was getting dark. Two things I knew for sure after that first flight! I'd have to get those sticks back in order and get a little more practice on the handling of the transmitter! Also knew that with a few minor adjustments, the plane would fly well and that it would be a hot one!

Five more times in the air ended in more minor damage and then it was evident that I just had too many hands and was too confused with the setup on the transmitter to fly it myself.

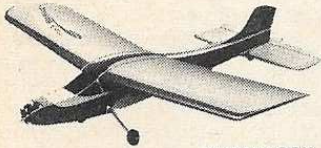
The West Coast Championships were coming up and I knew Mr. Twin (Bob Heise) would be there. If it would fly he could fly it!

The judges gave us a spot in the program and the time finally arrived. Bob had given it the once over and was satisfied with all details. He asked me to stand by him to feed in trim if he needed it. Got the engines started and away she went. Took up my position next to him and a little behind. The take-off was smooth with only a slight right turn evident. Bob hollered, "Down trim."

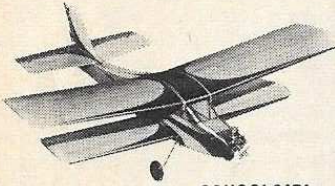
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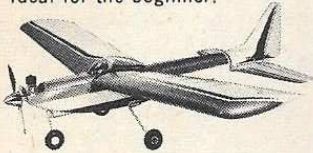


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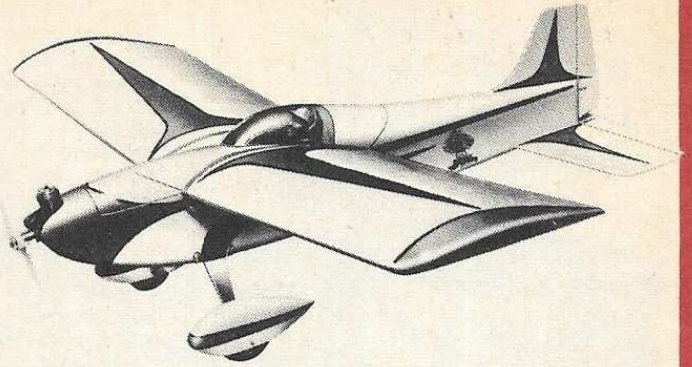
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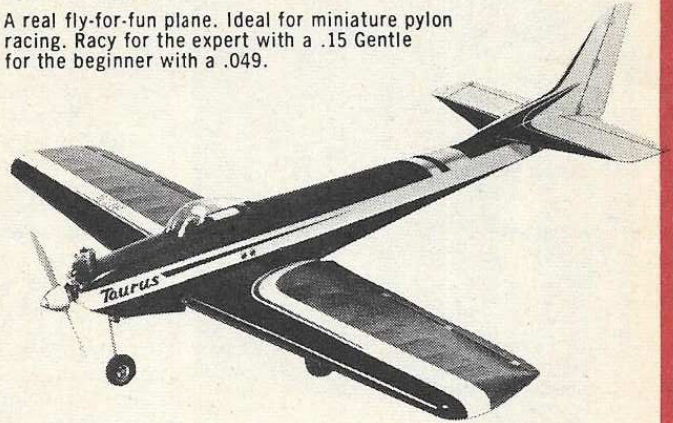


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## Nova-Too

I obliged with a sure finger! Now, he was working up a sweat and quickly assured me everything was all right. Man was it hot and he didn't even have the throttles wide open! A few times around the strip and he set her down pretty as a picture. Then he turned and said, "Thanks for the down trim—only thing was you gave me up trim!" Sure enough I had pushed the button down instead of up! Then he told me another bit of info, after it was all over. He said, "That's the first time I ever flew a two-stick propo and did I ever have my hands full!"

We knew then everything was all right.

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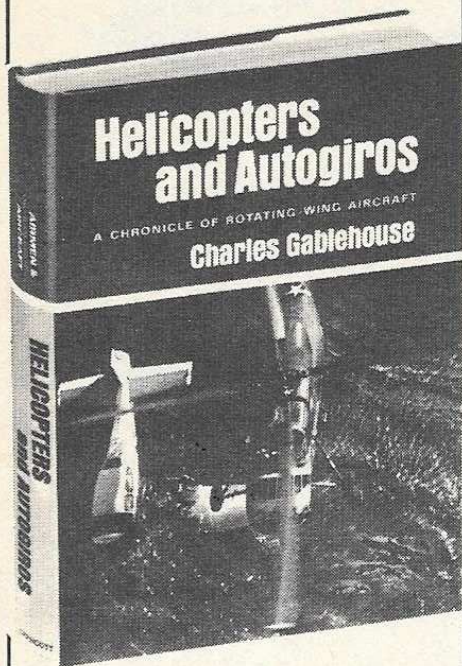
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We returned home with the model in one piece and unscratched thanks to the able control of Mr. Twin's masterful hands.

Since then the model is being flown full-house so that I can gain more experience prior to going back to the twins, and then perhaps even to three!

'Nuff said, put on your apron and get with it! No, you dope! Don't set the table for dinner! Set up your tools, wing board, etc., etc., and feed yourself on some real enjoyment. Build and fly the Nova-Too! (I guarantee it will keep your weight down and your waistline trimmed!)

Construction is basic, and except for the following note on how the motor and aileron servos are built into the wing, the plans are self explanatory. Medium weight balsa (neither soft, or hard) is used throughout entire model, as well as white glue.

Note: Aileron servo goes to the right of the center of the wing and motor servo to the left. Both servos are mounted lengthwise, parallel to the pushrods. Pushrods are all .045 music wire. The center (top) section of the wing from two ribs from center, both ways, is built straight across from the front spar position to the rear spar position. This is done after the front and back top balsa sheeting has been glued in place on both wings. This provides more depth to the wing and a place for mounting servos. (Use 1/16" ply for this center section.) Then build up front and back spar to meet this flat sheet. This will produce a raise in front and back of the wing. Fill these in using triangular 1/32" ply front and back. These pieces will run from the end corners of the ply servo mounting platform, fore and aft to the center rib of the wing at the leading and trailing edge.

Note: Wing has a total of 5 1/2" of dihedral with one wing flat on table.

Also Note: All parts for the fuselage (with the exception of the formers) are glued directly onto the sides before assembly. Top view of the body is shown. Formers are glued into the sides.

Thrust: Left engine is set at 0° thrust and right engine is set at 3° thrust to the right.

Good luck with your Nova-Too! Be careful of those throttles, it's a fast bomb! And if it's too hot for you, try it on just one engine by removing the nacelles and cockpit hatch.

Or . . . if you don't think it's hot enough . . . try three engines!