

Tsunami

BY THE TIME you read this article, perhaps Tsunami will have taken to the air on the first leg of a journey that will likely end in the Smithsonian Institution's National Air and Space Museum. This remarkable racing aircraft has been designed for John Sandburg of Minneapolis, MN by Bruce Boland.

Tsunami was conceived to be capable of doing many things better than any other aircraft has done before:

1) To be superior in the Unlimited class of closed-course racing. Expectations are that it will compete at Reno.

2) To better the land speed record for reciprocating-engine-powered aircraft. The record is currently held by the Red Baron, another project having the participation of Bruce Boland.

3) To establish a new seaplane speed record for propeller-driven aircraft. The Italians have held this record since 1938.

4) To try for the absolute speed record for prop-driven planes. This would be with a turboprop version.

Although Tsunami bears a superficial resemblance to the venerable P-51 Mustang, the only things the same are the spinner and the 2,400-hp Rolls Royce Merlin engine. Otherwise, it is a new original design for speed flying. It is a flush-

riveted, compact, finely-detailed thoroughbred.

The model in its profile format for a $\frac{1}{2}$ A engine was the simplest and quickest way to



Top: Artist's rendition of the Tsunami racer. Above: Our author's daughter Carol poses with his model. Hunton was also the architect of the National Center for Aeromodeling.

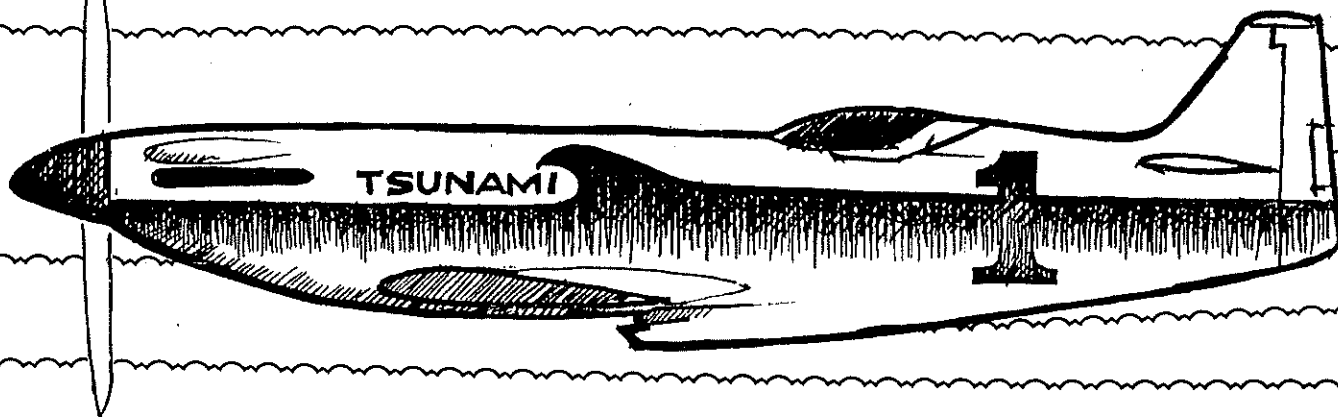
get a new and significant design built and flying. Even in profile form, the sleek lines come through, particularly in flight. This model is easy to fly and even is good for a beginner.

The racing heritage seems to require better than usual attention to detail, so some optional features are shown—such as the enclosed pushrod, offset engine mount (which preserves the lines of the spinner), and a removable landing gear so that the model can be flown with or without it.

Construction. Obtain the full-size plan from the MA Plans Service, as this will make it easier to lay out accurate profiles. Select firm $\frac{3}{8}$ -in. sheet balsa for the wing and fuselage and $\frac{3}{16}$ sheet balsa for the tail surfaces. Cut all the balsa parts to the outline of the plans with a band saw (if available) or a knife.

Shaping the airfoil in the wing is the most tedious chore, so begin with that. I'll describe a method of doing this that may make the job easier for you.

First, mark one wing blank *left* and the other *right*. (You may be surprised at how many times two right wings are made by mistake!) Using a ballpoint pen, scribe a line along the trailing edge of the wing blank $\frac{1}{8}$ in. up from the bottom. Run another line



The final paint scheme has not been decided for Tsunami. What's shown could be representative in aqua, off white, and deep aqua trim. Watch for the final design, as it's sure to be a newsmaker at the race course. Full-size plane uses the P-51 engine; prop, and spinner.

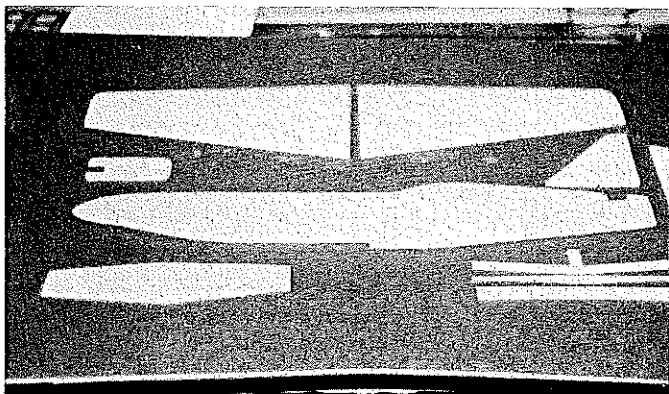
Designed to emulate the brute fury of its namesake, the full-size unlimited racer will be out to take all speed records for propeller-driven aircraft. The 1/2A Control Line version we present provides an advance look at the lines of this yet-to-be-completed airplane. ■ John Hunton

down the top surface of the blank halfway between the front and back. Using a knife and coarse sandpaper on a block of wood, remove the material to a flat between these

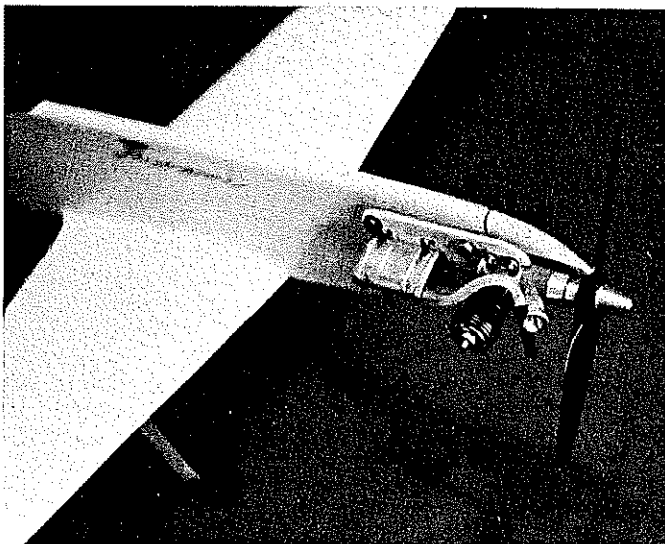
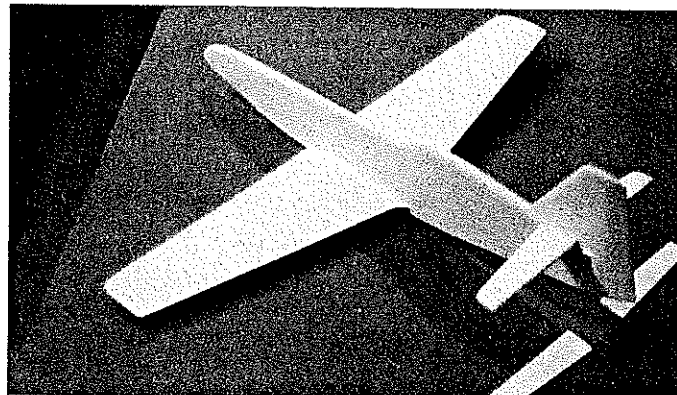
two lines. Mark another line 1/4 in. from the bottom along the leading edge. Run another line midway between the previous line on the top and the leading edge. Remove the

material between these two lines.

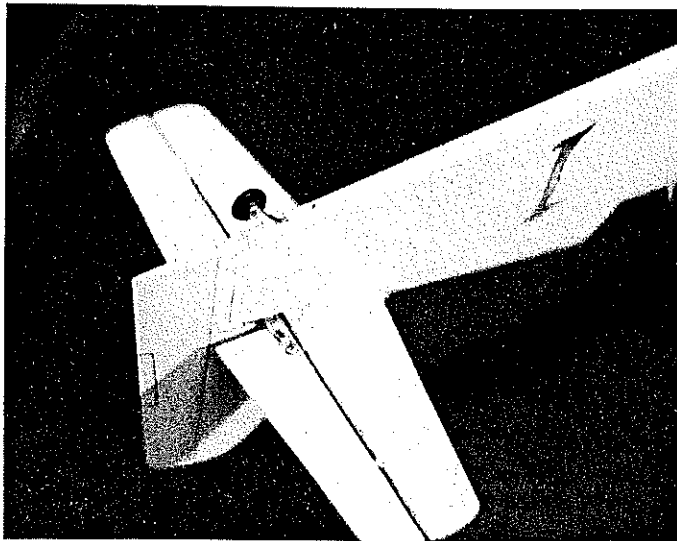
With the sanding block and finer sandpaper, round the airfoil to a fine trailing edge and a well-rounded leading edge. The



Left: All parts are finish-sanded and primed separately before final assembly. Right: After assembly, re-prime and then apply color paint.



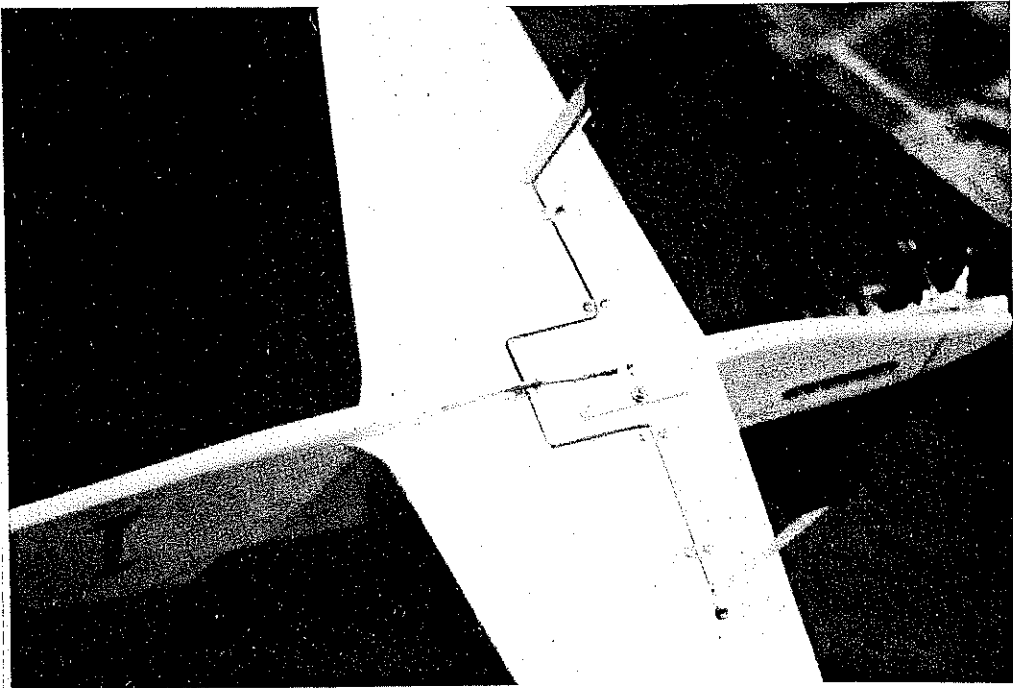
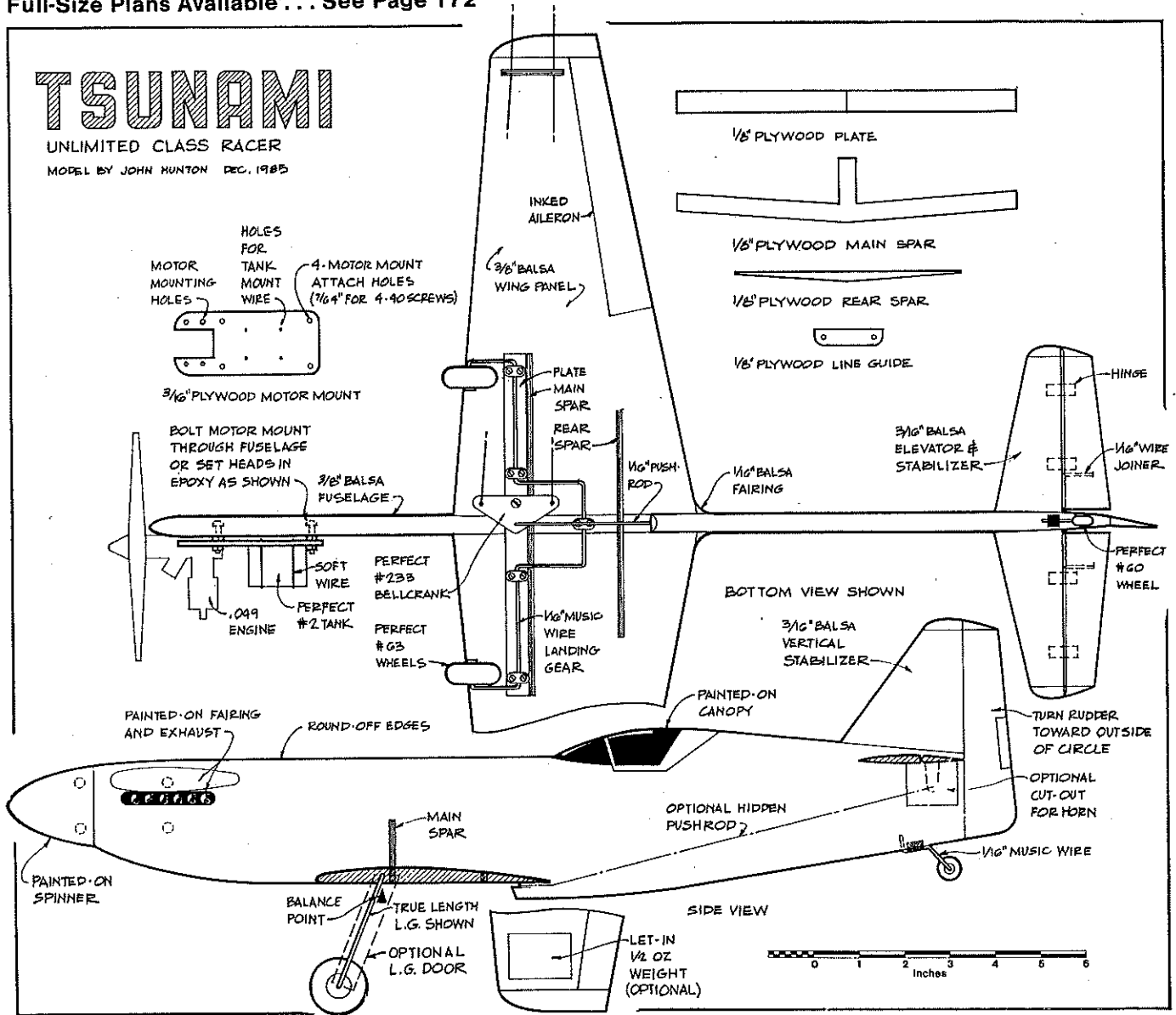
Left: The TD .051 is located on a floating mount to preserve the lines of the profile nose. Right: A piece of painted tape hides elevator horn.



TSUNAMI

UNLIMITED CLASS RACER

MODEL BY JOHN HUNTON DEC. 1985



Detail of the underside with its one-piece gear wire. Gear is well back, so it will be necessary to hold up-elevator until the model gets moving to keep it from nosing over. In flight it's very stable, though—almost to the point of making this a good candidate for a CL trainer.

airfoil which results is not in any book, but at the very low wing loading at which this model flies, it works fine. Use a similar method for the horizontal and vertical stabilizers.

Round off the edges of the fuselage except where the wing panels fit. Apply a coat of paint primer to all the parts before they are assembled, then lightly sand the primer when it is dry. Cut all the plywood parts from 1/8-in. plywood.

Assemble the pieces of the model. The plywood main spar automatically aligns the wings to the fuselage at the proper dihedral angle and reinforces the fuselage. Cut out the plywood landing gear mount. Pre-fit the parts to make certain they will end up flush with the wing. White glue is good for this assembly.

Mount the tail surfaces, being careful of the alignment. The rudder should be mounted to cause the model to turn outward from the circle to keep the lines tight. The concealed pushrod can be made by splitting the fuselage along the pushrod line and hollowing each half about 1/8 in. wide and deep, then gluing the parts back together.

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approximately half the weight of anything else I have seen. This filler can be used with the company's glue, MM111, and I suggest that you try it for lightweight fillets and general filling on Racing aircraft. The manufacturer's address is Model Magic, Inc., P.O. Box 19784, St. Paul, MN 85119.

Another product which I found worked exceptionally well on frozen elevator hinges is made by Micro Research, Inc., P.O. Box 277, Danbury, CT 06813. On many occasions, I have had to replace worn or damaged elevator hinges on my planes and found that, after the repair, the hinges had some residual epoxy or Hot Stuff in their innards which restricted their movement. By applying a drop or two of this material to the hinge, the bind was completely eliminated.

In addition, this material does not remain a liquid after it is applied but dries and leaves a fuel-proof deposit on the hinge which allows a permanent freedom of movement. The material is also excellent for bellcrank mounting bolt bushings and pushrods which are used to control the elevator or a fuel shutoff. I have had a considerable amount of trouble with these items of hardware binding up after they have been in use for a while. This product seems to eliminate binding as it penetrates and actually deposits a thin, permanent coating which dramatically reduces friction. You might want to try this product when you have to make a field repair of the elevator on your Racer.

I have also found an inexpensive fiberglass-filled propeller for Scale Racing which requires very little deflashing and filing. It is the GY-4 prop from J&J Sales, and they are sold in pairs for approximately \$4.55 each, which is certainly a bargain. I've used a couple of them on my Scale Racers and found that they have excellent performance. They are copied from the 1985 Nats winner.

We've also discovered an inexpensive source for replacement cells for the GloBee Fireplug starting battery. After several years of use and recharging, these batteries have a tendency to completely lose charge, and we have found an excellent replacement battery in stock at most Sears stores.

Sears has a line of battery-operated, rechargeable hand tools, and they each use several Ni-Cd cells as a power source—cells which will fit right into your Fireplug case. You will, however, have

to make a slight adjustment of the cells' plus and minus probes before using them.

Nats preparation. I have it on good authority from several competitors that additional cylinder-head clearance is going to be required for the races at this year's Nats. It seems that the air temperature in Lake Charles, LA is way up there in late July—when the Nats is scheduled.

In a recent series of test flights on 95° days with 70% relative humidity, we found that engine performance had certainly dropped, and glow plug failure became a problem. By raising the head another .006 in., we were able to minimize this problem. I think that it is mandatory that any engines used in extremely hot weather be thoroughly broken in first—and they should also have been bench-run under high-temperature conditions before being flown in competition. Doing so will eliminate a lot of problems at the Nats site.

As always, your comments are solicited (and photos, too).

John C. Ballard, 10102 Kimblewick Dr., Louisville, KY 40223.

Tsunami/Hunton

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The model shown in the photographs is finished with the Black Baron epoxy system and primer. Two coats of primer with a light wet-sanding between coats will do well. Use flat paint for the basic finish coat. After this coat dries well, all trim can be applied with felt-tip markers; then apply a finish coat of gloss clear.

Install the elevators with the wire joiner and plastic hinges. Install the pushrod and elevator horn. Then install the bellcrank, which is bolted through the wing, and be certain that the controls are well-centered and move freely.

Cut pieces of plastic hinge material to serve as landing gear mounts. Bend the 1/16-in. gear wire to shape, attach the wheels, and mount the assembly to the model. Install the tail wheel so the model will track straight ahead.

Mount the tank to the plywood plate with soft wire, and bolt on the engine. Hook up the fuel line. It will be best to run the needle valve to the top side to prevent its being damaged in the case of a nose-over on landing.

Drill blind holes in the fuselage, and insert epoxy into the holes. Then, using the plywood plate as a guide, epoxy in the mounting bolts. After the epoxy has cured, run nuts onto the bolts, slip on the plywood engine plane, and install nuts to hold down the plate.

Balance the model at the point shown on the plans. Use modeling clay if necessary to achieve balance. For initial flights, add approximately 1 1/2 oz. of modeling clay to the outboard wing tip; this can be removed when you become a more experienced flier.

Continued on page 162

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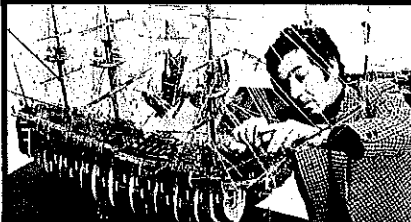
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Flying. A 6-3 prop is recommended. Use Dacron lines approx. 25 to 30 ft. long. Wait for a reasonably calm day.

Use full power on the engine, just slightly on the rich side. When the plane is released, you want to have full-up control initially to keep the nose up. After sufficient speed is built up, however, go to neutral control and let the model take off by itself.

Do not let the model climb too high and go slow, as line tension will be reduced or lost, and you will lose control. Pay particular attention to where the wind is coming from, and do not let the model climb into the wind until you are used to it.

Good luck with your model. Watch for the full-size Tsunami, for it will be in the news.

FF Indoor/Tenny

Continued from page 69

The Bat Sheet—"\$5 for 12 fantastic issues, however long that takes;" Tom Cashman, 2521 SW 23rd St., Federal Way, WA 98023.

WMC Patter—\$3 per year, Bullet Bob Stalick, 5066 NW Picadilly Cir., Albany, OR 97321.

The Thumb Print—\$3 for six issues (bimonthly); David Mills, 10-D Pine Circle, NE, Atlanta, GA 30305.

The Dope Bucket—???; contact Laron R. Huddleston, 3475 W. 14400 S., Bluffdale, UT 84065-5106.

The Okie Free Flight Flyer—\$5 for eight issues; Bill Baker, 1902 Peter Pan St., Norman, OK 73072.

Free Flight News—???; Ian Kaynes, 7 Ashley Rd., Farnborough, Hants, England GU14 7EZ.

Read this! One of the most fascinating catalogs I've read is the *Model Research Laboratory Catalog* by Curt Stevens. He sells hi-tech substances which are dangerous to use. He issues this warning:

"No one under the age of 65 may purchase any modeling materials without the written permission of their mother. Modelers over 65 must have written permission from their doctor, their wife, and the wife's doctor. In the event the modeler is over 65 and unmarried, the doctor's wife's written permission may be substituted for permission of the nonexistent wife. In such cases, the wife's doctor's permission shall not be required except in such cases where you wish to pay with a post-dated check.*** In other words, you could get hurt with our products.

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Hi-tech Indoor modelers who haven't seen this catalog will be fascinated with the range of products available. The listing is introduced with a report on the various materials, rating them on cost, density, stiffness, heat resistance, toughness, and impact resistance. This booklet is almost a "must" if you want to learn to use the new materials! Get your own by sending \$1 to Model Research Laboratories, 25108 Marguerite Pkwy., B-160, Mission Viejo, CA 92692.

CDs note! The latest issue of *The Thumb Print* lists the following Indoor season activity already defined for the Atlanta area: Contest/flying sessions, Forsyth County High School, Cumming, GA—October 5, November 9, December 14, 1986, and January 18, February 22, March 29, April 26, 1987. The March 29 date is billed

as the 1987 Peach State Indoor Championships. (See address above for Thermal Thumbers' contact.)

As usual, I will be happy to list your scheduled activity if you can get me word with the required lead time of approximately three months. If you want a listing but can't schedule that far in advance, send me contact man info and possible time frame.

Easy B "No-No." One of this month's photos shows an Easy B with variable pitch prop which was flown at the 1982 Indoor World Champs. Most of you will have seen (August 1986 *MA*) that the Indoor Contest Board has interpreted the AMA Rules to mean that variable-pitch and variable-diameter props are not acceptable on Easy B models. If you read the notice closely, you also realize that this is a temporary ruling, pending confirmation by a vote of the Indoor Contest Board. If you fly Easy B, you should tell your ICB member how you feel. (Note: if only those "against" this interpretation express themselves, the ICB would have to reverse the ruling. If you agree with the ruling, say so to offset any who might complain! The ICB can't make rules you like without knowing what you want!)

Props, etc. Yes, I promised to talk about prop blocks and covering this time! However, there is a limit on how many photos I can use in a single column. The prop block I will describe was built by Stan Chilton, but if any of you can document where the basic technique came from, I'll be happy to give you credit.

The traditional prop block is carved from a single block, which is difficult to do accurately and is somewhat inflexible if you want an unusual pitch distribution.

Stan's block starts with a rigid base, longer than the finished prop will be. The basic idea is to construct an angular support which creates the proper blade angle at each rib station, with a central fixture to align the shaft and prop hook. The first photo in the prop-block series shows the tip template and center fixture mounted on a plywood base. A thread stretched between the two establishes the baseline for the prop shaft.

The second photo shows all the blade station templates installed, with each just touching the string guide. The third photo shows two steps: each blade-angle template has been painted black, and filler blocks of balsa have been glued in place.

The blocks are then carved level with the templates (down to the black paint), and the finished block is painted black to give better visibility to the white balsa prop frames. The final photo shows the finished block with a built and covered blade drying in place. As recommended in a previous column, the blade was covered right on the block to minimize stress on its fragile structure.

Unfinished business. Last time I showed a wide-blade Novice Pennyplane prop by Jim Clem and promised some performance figures. The prop/model combo has been very consistent and has set Category I (26-ft. ceiling) and Category II (31-ft. ceiling) records of 8:11 and 9:02, respectively. The same setup was flown at the U.S. Indoor Championships and took sixth with 10:39 (67-ft. ceiling).

Next time, I'll have more details on prop blocks and covering techniques.

Bud Tenny, Box 545, Richardson, TX 75080.

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