■Tony D'Alessandro

Skinny Minnie

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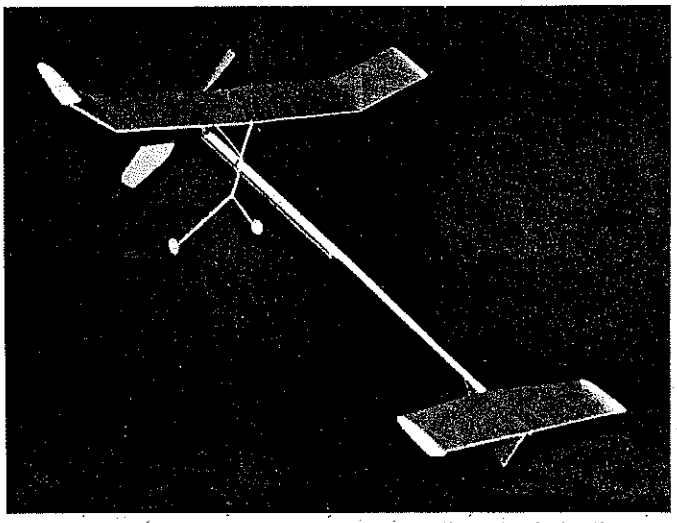
Designed in conformity to the Delaware Valley Federation ROG rules, this is one Indoor model that most people can build with excellent chances for good flight performance.

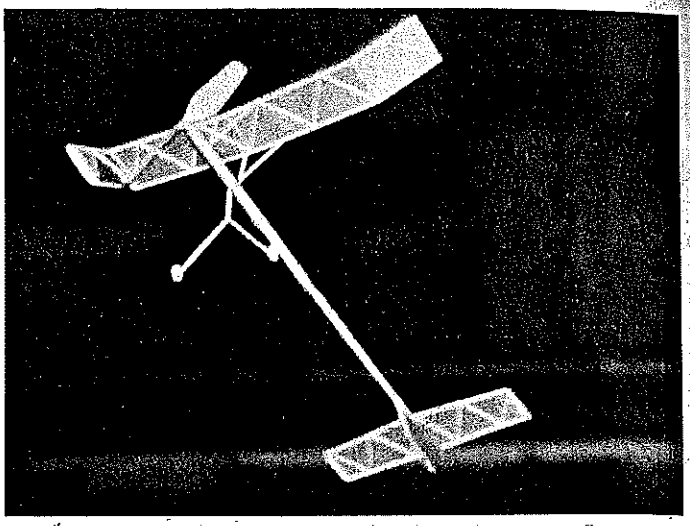
THIS AIRPLANE was my first attempt at building a design to conform to the Delaware Valley Federation ROG rules. These specifications were written by Doug Barber (member of the Indoor Contest Board) with input from Joe Krush (founder of the Valley Forge Signal Seekers and now an avid Indoor modeler). They wanted this event to result in a fun model that anyone could build, fly, and successfully compete with.

I think they succeeded pretty well. Skinny Minnie and other models built to these rules are easily built, rugged, fun to fly, and capable of impressive flights. The high aspect ratio wing combined with a small, fast prop makes it easy to control under full power. The geodetic construction makes the wing and stab strong and resistant to warps. The wing and landing gear are set far forward on the stick because the prop is the heaviest part of the model, and the rules require that the gear support the model in a normal position both before and after the flight (a point I overlooked during my first few outings with this model).

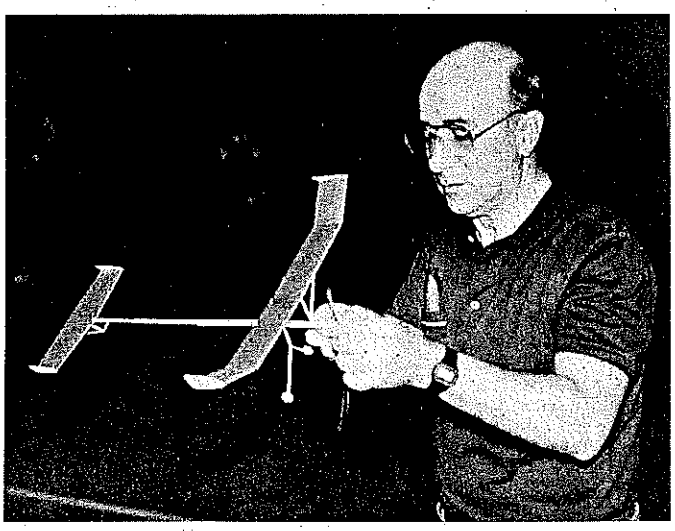
My original model was constructed with Indoor-grade wood, but lightweight ordi-

Top: Posed view displays the geodetic construction details which account for the model's strong, warp-resistant flying surfaces. Above: Skinny Minnie designer Tony D'Alessandro is flanked by the authors of the Delaware Valley Federation ROG rules: Doug Barber (L) and Joe Krush (R). They're on the flight line for the DVF ROG event at Glassboro State College.





Left: Another posed picture shows the long lines that led to the name the model was given. Note that the landing gear is shown in the original position. It was later moved forward per the plans. Right: Skinny Minnie grabs some altitude at Philadelphia's Memorial Hall Gymnasium.



Our author snaps the prop shaft into the double bearing in preparation for a flight at left. At right the Skinnie Minnie is about to take to the air following release. Rules require use of a ready-made plastic prop, but it can be thinned (the most difficult part of all, Tony says).

nary balsa may be substituted. Note that the overall minimum weight of the plane for these rules should be equal to .109 oz. (3.1 grams), approximately the weight of a new penny and the same weight as a Pennyplane model. Use the weights shown on the plan as a general guide about what the various parts should weigh.

Have you ever entered a mass-launch event? I recently had my first encounter with this type of competition and quickly learned that it takes more than a good model to do well. You have to be cool under pressure, able to go from a landing to back on the flight line in two or three minutes, and avoid broken motors and hang ups during the flight. Luck and flying skill both count. It is great fun as a participant, and the event is a real crowd pleaser.

General construction tips are as follows. Use clean, straight-grained balsa that is free of warps. I use Ambroid cement thinned about 50/50. Apply it carefully with a glue stick or a small glue gun. For cutting and trimming, I use a double-edge razor blade—the old-fashioned kind that is brittle and can be broken into a sharp point (protect face and hands while doing this).

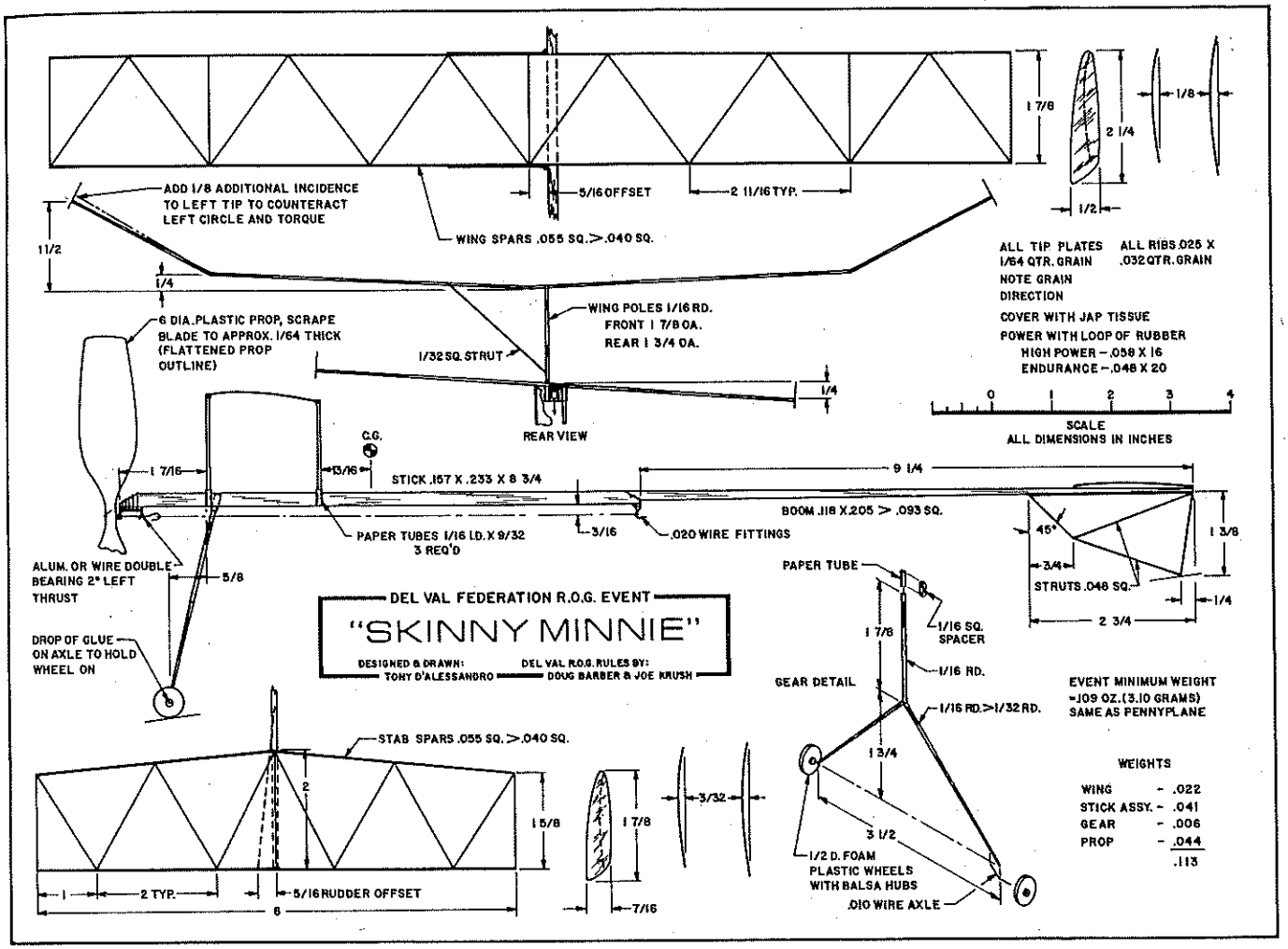
Construction of the wing and tail surfaces is straightforward. Make rib templates from any thin, flexible material; 1/32 sheet aluminum is my favorite template material. The ribs are cut from quarter-grain 1/32 balsa sanded down to .025 in., then sliced off at 1/32 intervals. Cut wing and stab spars from stiff, straight-grained 1/16 sheet. Sand down to the thickness noted and cut to the finish size shown. Assemble over the plans. Be sure to shim up the leading edge of the left wing tip 1/8 in. to help the model maintain altitude in flight while circling to the left. Trim the ribs from the rear, and glue them carefully in place. Let all the glue joints dry thoroughly. Cut the dihedral joints. Apply glue to the joints and block up the wing panels to the correct dihedral dimensions.

Flying surfaces are covered with Japanese tissue, though any suitable covering material may be used. Tissue for the inner wing panels is cut to exact length but somewhat wider than the panel. For covering all the other parts, cut the tissue somewhat larger than the piece in all directions.

I use 3M brand #77 spray cement (from an art supply store) to adhere the tissue. Spread out newspapers on which to lay the wing and tail frames; aim the cement spray about 1½ ft. above the parts, and give two light spritzes. (I usually do this in the garage with the door slightly open. This gives me a subdued light except for a strong light shining from the side just above the floor. This allows me to see the amount of spray being released.) The cement will remain tacky for a long time.

Carefully return the parts to the workbench. Iron the pre-cut tissue pieces with a warm iron to smooth out wrinkles and reduce the moisture content, then apply the tissue to the frames as smoothly as possible. Trim the overhanging tissue with a new razor blade. Spray some of the cement into a small container, and use a fine brush to apply adhesive to missed spots and dihedral overlaps. (Parts can also be covered in a more standard manner with thinned dope or some other adhesive.)

Select balsa for the stick and tail that is lightweight, straight, and stiff. The tail boom can be softer wood than the motor stick. Sand and cut the parts to the dimensions and shapes shown on the plan. Bend the rear hook; fit it, then glue in place—making sure it is centered on the



stick. Glue the tail boom to the stick while the top edges are lying on a flat surface. Make sure that the boom is in a straight line with the stick.

The front double bearing is made of aluminum and is designed to make the prop run smoothly, especially when the rubber motor begins to slacken. Such bearings can be purchased, or you can bend your own from wire if you are very good at this kind of work. The kind of bearings I like best can be purchased from Ray Harlan, 15 Happy Hollow Rd., Wayland, MA 01778.

Glue the bearing to the front of the motor stick with approximately 2° offset to produce a left circle. A purchased bearing may have to be shimmed a little to make the holes stand 3/16 in. away from the motor stick. Wrap a few turns of light thread around the stick and bearing and glue well for additional strength.

To make the tubes which hold the wing and landing gear poles, first cut about a 1½-in. square of tissue. Deburr the end and polish about 2 in. of a piece of 1/16 O.D. wire or tubing. Apply dope to the tissue and wrap it around the wire. The tissue should go around the wire six or seven times. After a few seconds, hook a fingernail on the top edge of the rolled-up tissue and, slide the tube off the wire form. Let the tube dry for at least an hour. Slide it back on the form. Mark the lengths required, and cut them with a razor blade.

Wing poles are cut from medium-weight balsa, landing gear pieces from fairly hard quarter-grain wood. All should be cut slightly oversized and sanded to a circular

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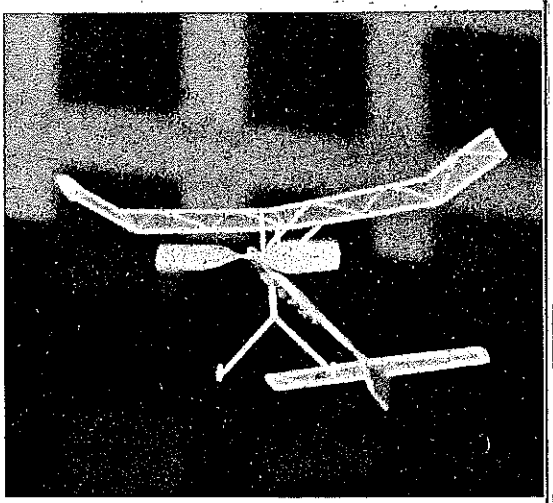
Delaware Valley Federation ROG Rules

1. The model must be rubber-powered.
2. All flights must rise-off-ground.
3. The assembled model without rubber must weigh 3.1 grams (.109 oz.) or more. Same as Pennyplane.
4. The propeller must be one-piece molded plastic. Diameter of 6 in. or less. You can add a bushing to the prop shaft hole and lighten the prop by scraping or sanding. You cannot cut out and recover any part of the prop.
5. The projected wing area must be 30 square inches or less.
6. The projected stab area must be 50% or less of the projected wing area.
7. The landing gear must have two wheels and support the model in a normal position when at rest. The wheels must be ½-in.-dia. or more and turn freely. Gear and wheel tests must be met before flight and after landing without repairs or adjustments; otherwise, the flight is disqualified.
8. Except as noted above, there are no restrictions on covering, dimensions, or construction.

The intent of these rules is to encourage competition between all experience levels, allowing the less experienced to gain indoor skills. It allows design freedom for everyone without evolving into an "experts only" event.



Rubber winds almost exhausted, the model cruises down to a gentle wheeled landing.

Next time: an adjustable bracing stand suitable for most model sizes, and several bracing schemes.

Bud Tenny, P.O. Box 545, Richardson, TX 75080.

Skinny/D'Alessandro

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shape for a snug fit into the paper tubes.

Wheels are cut from foam cafeteria dishes. Use white glue to fasten balsa hubs to the wheel discs. Assemble the landing gear as per the plan; bend wire axles and glue in place. Pierce the wheel hub in the center with a thin straight pin; place on the axle and retain with a drop of glue on the axle.

Begin final assembly by marking positions of the wing tubes on the left side of the stick and the landing gear tube on the opposite side. Pin the stick assembly in a vertical position on a flat surface. Glue the paper tubes (with poles inserted) on the side of the stick. Before the glue is firm, use a small square or triangle to get the poles perfectly vertical in all directions.

Glue the wing to the top of the poles. A small flat may be cut or sanded at the pole tops to make a stronger joint. Note that the wing is offset 5/16 in. Block up the wing to the proper position while the glue is drying. Glue the stab in place at the end of the tail boom, tilting it slightly as shown. When all is dry, remove from the work surface, and glue the rudder in place—aligned with the wing poles by eye.

Insert the landing gear assembly into its paper tube. Cut a 1/16-sq. balsa spacer and glue it to the tube. Glue the landing gear assembly to the right side of the stick. Align it vertically with the wing poles and tilt it forward so that the wheels end up about halfway between the front wing pole and the prop bearing. The landing gear is made removable only to reduce storage and transportation problems. If your model comes out substantially overweight, the landing gear parts and paper tube may have to be heavied-up to 3/32 in. to produce the proper balance point.

Knowledgeable people have told me that tip plates increase the lifting efficiency of wings and tails. I have never been able to prove or disprove this, but I decided to use them because they add a certain racy appearance to the Skinny Minnie. If you want to use them, they should be glued in place at 90° to the surface.

To fit the DVF rules, a commercially-available plastic propeller of 6 in. maximum diameter must be used. You may scrape the blades as thin as you wish, the same for the hub. You cannot cut holes in the prop. I used a curved X-Acto knife blade to scrape the prop and installed a piece of telephone wire insulation for a bushing in the center hole—which was too large for the wire shaft I wished to use.

Scraping and finishing the prop is perhaps the most tedious part of building the whole model. When scraping/thinning is

nearly complete, balance the prop by placing the center over a thin edge to see which blade is heavier (scraping a bit more on the heavy blade). Finish the prop with fine sandpaper. Bend and install the wire shaft, making sure the shaft extends beyond the rear of the double bearing. The prop I used had low pitch and was made of fairly heavy plastic. You might experiment with a prop of different shape, higher pitch, and lighter weight.

Flying. Skinny Minnie flew quite well from the beginning. The combination of left thrust, tilted stab, and offset rudder give it a left circle of about 20-ft. diameter. If your model stalls, reduce incidence in the front wing pole; if it dives, increase incidence. The center of gravity (balance point) with rubber motor installed should occur about where the plan shows.

The model originally flew well on a loop of rubber sized .058 x 16 in. It ran out of winds (dead-sticked) on almost every flight until I changed the rubber size to .048 x 20 in. For maximum flights, Skinny Minnie should be wound to approximately 2,300 turns or more.

My main sources of Indoor supplies have been Indoor Model Supply (Box C, Garberville, CA 91234) and Micro-X-Products (P.O. Box 1063, Lorain, OH 44055). I highly recommend Ron Williams' book, *Building and Flying Indoor Models*. It covers all I have written about in greater detail—and a great deal more. It is the best book on this area of modeling that I have ever read. It should be on every modeler's bookshelf.

CL Aerobatics/Fancher

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Mustang was a considerably better Stunt ship, but nothing has ever matched the air of excitement that was generated when that massive and capable ship took to the air. An impressive achievement not apt to be duplicated. A close second would be Scott Bair's Stunt Fury, a .60-powered ship whose static thrust was about twice its 46-oz. weight. It never got the exposure it deserved because Scott has never campaigned nationally.

The best Stunt engine. It's gotta be the ST .46. In the proper-sized airplane, the .46 is ideally suited for the space the rules allow us. Perfectly-suited for constant four-cycle operation or easily trimmed to provide a helpful—but controllable—break in the corners. If you've got a good one, you'll be tough to beat. Not the .60? 'Fraid not. The .60's great strength is consistency. Unfortunately, properly-suited airplanes are just too big for a 70-ft. circle. A .60-powered ship is all too often overpowered or appears cramped.

Most deserving of the thanks of their peers. Keith Trostle and Wynn Paul, both of whom contributed so much to the birth of PAMPA. Plaudits must also go to all those who have followed in their footsteps in keeping PAMPA a vital and effective voice for our mutual benefit. It behooves all of us to stay informed on PAMPA activities and politics and to keep energetic and committed people filling those shoes.

Best natural pilot. A tie between two Southern California pilots, Bart Klapinski and Bob Whitely. Either of these guys can pick up a strange airplane and, within a few laps, usually put its owner to shame. I did see a real threat to their prominence after last year's Walker Cup flyoff. There was some big guy who picked up Dave Cook's "backward" (flew clockwise) airplane and flew it for the first time to a standing ovation from the crowd. I think he said his name was Aldrich!

Greatest Stunt family. We've had many great ones. The McClellans from California, the Coopers from Florida, the Giffords from New England, etc. However, there is just no contest when the name of Adamisin arises. Big Art, Betty, all the boys (Archie, David, Allan, and Denny), and the constant glimmer in Art's eye: beautiful Marie. They are a family without equal. Championship flying, design innovation, peerless skills used unstintingly on behalf of other modelers in the production of engines, mufflers, etc., and an unending willingness to do anything to promote Stunt and Stunt people make the Adamisins a class act without equal. We're lucky to have them.

Most influential Stunt design. I'm not crazy! What else but the Nobler? There are others deserving of mention that have come along over the years. The Zilches, Lou Andrews' Barnstormer, Palmer's Smoothie and T-Bird, the Detroiters, Gialdini's Stingray, and so on. But, in the final analysis nothing so typifies all that is fundamentally sound in Stunt design as the Nobler.

I know, I know! It was designed 35 years ago, so it must be old-fashioned, right? Well, newer isn't necessarily better, and I'll bet that if you