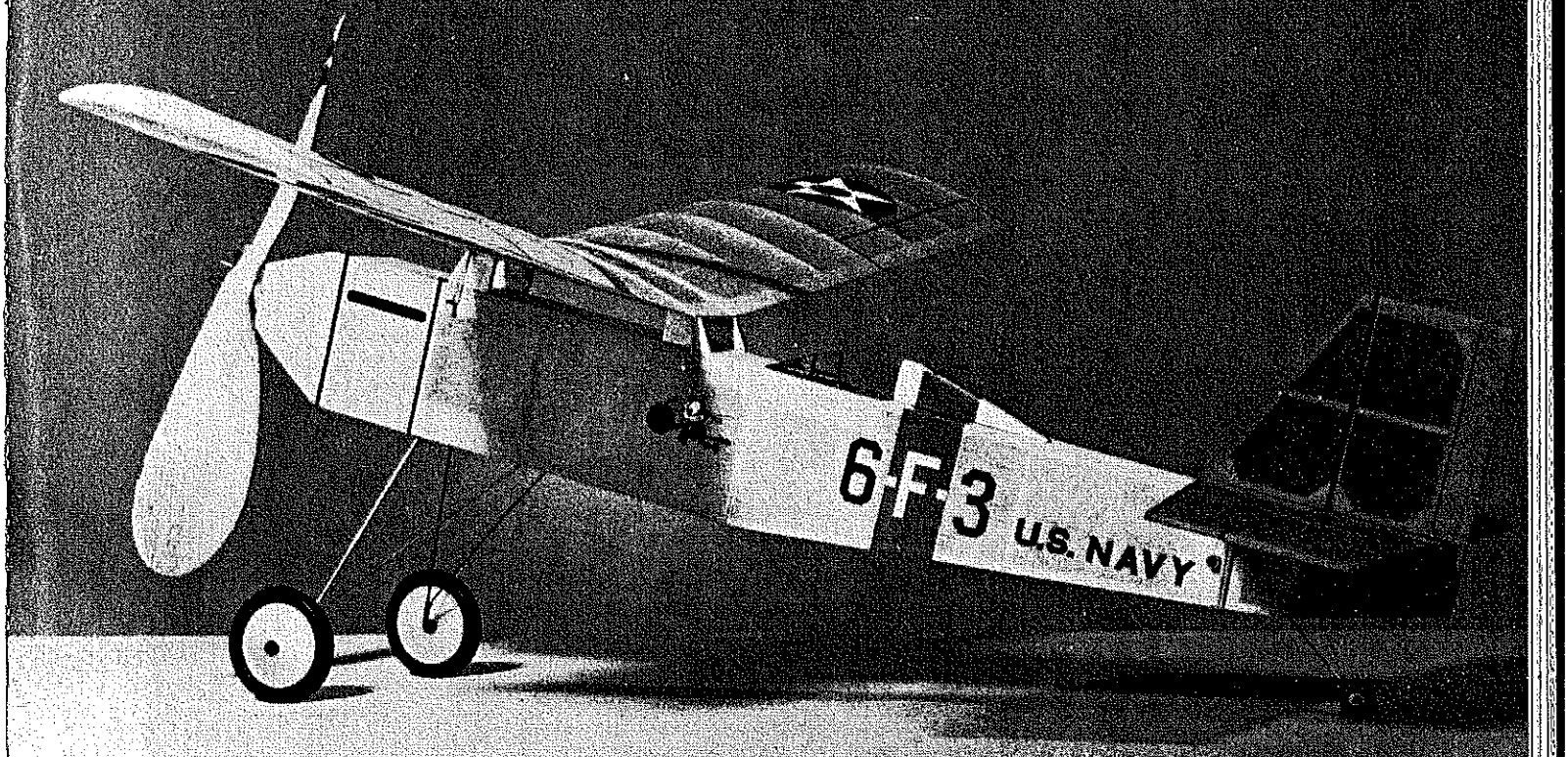
NAVY FLIER



Fun with a FF Rubber Power model? You bet! This cutie will do about 30 seconds when hand-wound and a minute or so when winder-wound. It's a great small-field flier. ■ Sherman Gillespie

Although the wingspan is only 26 in., the model has a "big" look. It's a fine change-of-pace building project. Rubberband wing hold-down and movable rudder tab make for easy adjustments. Best performance was with the carved balsa prop shown, but a 9½-in. plastic prop is also good.

THE NAVY FLIER is a durable sport model that is easy to build and simple to adjust. Designed as a small-field ship, it can serve well as a club trainer for the younger builder or those new to Rubber Power flying. If it is finished in one of the color schemes of the U.S. Navy fighter squadrons of the 1930s, it looks most realistic in flight.

The glide is very flat. Although not exactly a lightweight for its size, it has a decided tendency to float and will hang up there if the thermals are around. It has averaged 34 seconds when hand-wound in a series of timed flights in morning air. Typical winder-wound flights are around a minute to a minute and a half in warm air. Top time so far has been a beautiful thermal-assisted 2:21!

Before beginning construction, study the plans, building notes, and photos thoroughly. Careful selection of materials and accurate building make covering and assembly easier and give that sharp look to the finished model.

The prototype weighed approximately 2.5 oz. (less the motor), which should probably be considered about an upper weight limit for the type flight desired. Experienced builders can reduce the weight by using lighter or smaller-dimensioned wood and obtain an improvement in flight performance.

Fuselage. The basic construction is quite conventional. Select medium-hard, straight-grained ⅛ sq. balsa for the longerons, uprights, and cross braces. Sheet balsa sections should also be medium-hard except for the rear motor pin receivers, which should be harder to avoid crushing under the tension of a fully-wound motor.

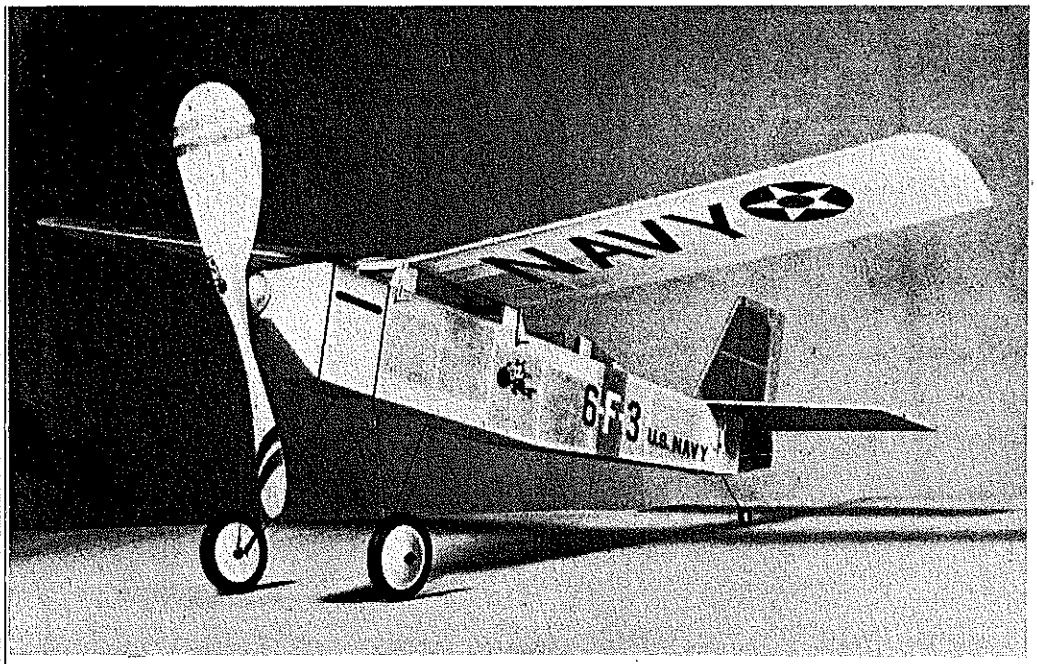
Build two fuselage sides as indicated. The wing mount struts of ⅛ sheet are laid down as integral parts of each side, thus assuring strength and accuracy. Drill the 1/16-in. holes in the wing pin sections, and cement in place. Add the pre-drilled motor pin receiver pieces and other sheet fill sections. Allow ample drying time for all glue joints, preferably overnight. Trim away any excess glue.

Assemble the two sides directly over the top view. Pin and block the sides to maintain squareness. Cut crosspieces carefully, and check to be sure they are equal in length. A square fuselage structure assures alignment of tail units and the wing. Again, allow ample drying time.

The nose block can be shaped from a balsa block or built up from ¼-in. stock. Hollow the nose section to the indicated thickness. Drill the block to receive the removable nose plug, and cement in place.

The nose plug can be made from laminated sheet balsa or turned from birch or maple on a wood lathe. Drill the plug for a bushing of 3/32-in. brass tubing, or cement ¼-in. dia. washers on the front and back as bearing surfaces.

Finish the wing mount assembly by cutting



The functional simplicity of the design is clearly seen in this shot. Free-wheeling prop improves the glide and adds a realistic touch on the landing approach.

small grooves in the wing struts. Cut pieces of 1/32-in. wire to size, and cement in place. Cement the balsa cross braces in position. These serve as rests for the leading and trailing edges of the center section, and they tie the wing mount rigidly together.

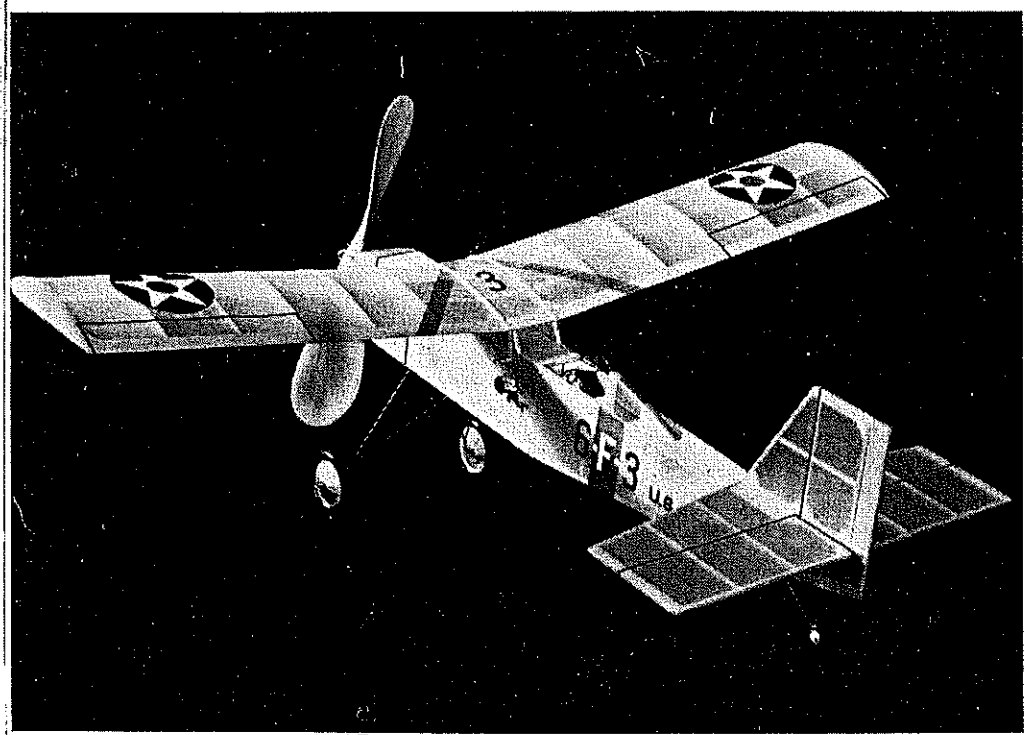
Landing gear. Bend the legs to the shapes shown in the patterns. Cement one side of each sheet balsa sandwich in place in the fuselage, let dry, and then put the wire gear legs in place. This will allow adjustment for squareness. Cement thoroughly, and add the other half of the balsa sandwich; fit this snuggly to hold the gear. Check for trueness before the glue sets up.

If the fuselage is square and the gear is properly aligned, the finished model will sit squarely as it should. It is quite annoying to discover that one wing is lower than the other because the landing gear is cockeyed! Bind the legs together with thread and cement.

Williams Brothers 1⅞-in. Vintage or Golden Era wheels look very sharp. However, wooden or plastic wheels will work equally well. About 2-in. diameter for the wheels is fine, and this size gives the right "scale" appearance. Most old fighters had big wheels. Wheels can be held on by small pieces of tight-fitting plastic tubing or drops of glue.

The tail wheel can be hardwood (as indicated) or made from laminated balsa. Cut and fit 1/16-in. brass tubing as a bushing. Bend the tail wheel wire to shape, and cement in place. The wheel is held in place by a drop of glue on the end of the axle.

Tail surfaces. The stabilizer and rudder are made from medium-sized 3/32 sq. strips. The tips, gussets, and rudder tab are cut from medium 3/32 sheet. The tab is fixed by three soft wire hinges inserted in holes made by carefully piercing the balsa with a pin. The paper ties that come with plastic garbage or trash bags are a good source of such wire.



Using the color scheme of a famous Navy fighter squadron makes the model look sharp in the air. Decorating with decals and tissue is easier than you may think. Text gives the details.

Wing. The structure is quite standard. Medium-hard wood is recommended. Cut the 14 ribs from 1/16 sheet, using a template made from hard balsa, sheet aluminum, or 1/32 model plywood. Stack and carefully pin the ribs together, and sand them for uniformity. Cut the spar notches as indicated.

Lay out the leading and trailing edges for left and right panels, and cement the ribs in place (except for the wing root ribs—these are added as part of the center section. The wing tips are carved from soft balsa. Finish-sand the tips to final contour when the panels have dried thoroughly. Trim and sand the leading and trailing edges to complete the airfoil shape.

Set up the panels over the plan. Block up the tips to the correct dihedral. Add the wing root ribs, the leading and trailing edge pieces, and the gussets. Additional spars are used across the center and wing root sections for strength and improved covering.

Propeller. Various propellers of 9 to 10-in. dia. may be fitted. The 9½-in. plastic props available at most hobby shops will fly the model quite well. The best performance in tests was with the 10-in. wide-bladed balsa prop shown.

The key to a good carved prop is a properly prepared blank. Patience and a very sharp pocket knife are also essential. The blank layout shown on the plan has long been the standard for Rubber-Powered models. It is best to drill the blank for the shaft bushing before beginning to carve.

Carve the back of the blades first, working from flat to concave. Carve the face—first flat, then curved—and sand. Shape one blade to the desired outline and trace it on paper as a pattern for the other blade.

Finish sanding the prop and balance it carefully. Give it several coats of thinned dope, sanding lightly between coats. For additional strength, the prop may be covered with Japanese tissue or lightweight silk.

Free-wheeling. A free-wheeling prop device improves the glide considerably. To make the unit shown, cut a ⅜-in. length of 1/16-in. aluminum or brass tubing. Clip a 1-in. length of 1/32-in. music wire, and insert it in the tube. Bend it as indicated on the plan. These are right-angle bends, the upper pin to point left while the lower pin is vertical to engage the prop shaft arm. Cement the assembly in place on the prop, bind with thread, and coat with cement.

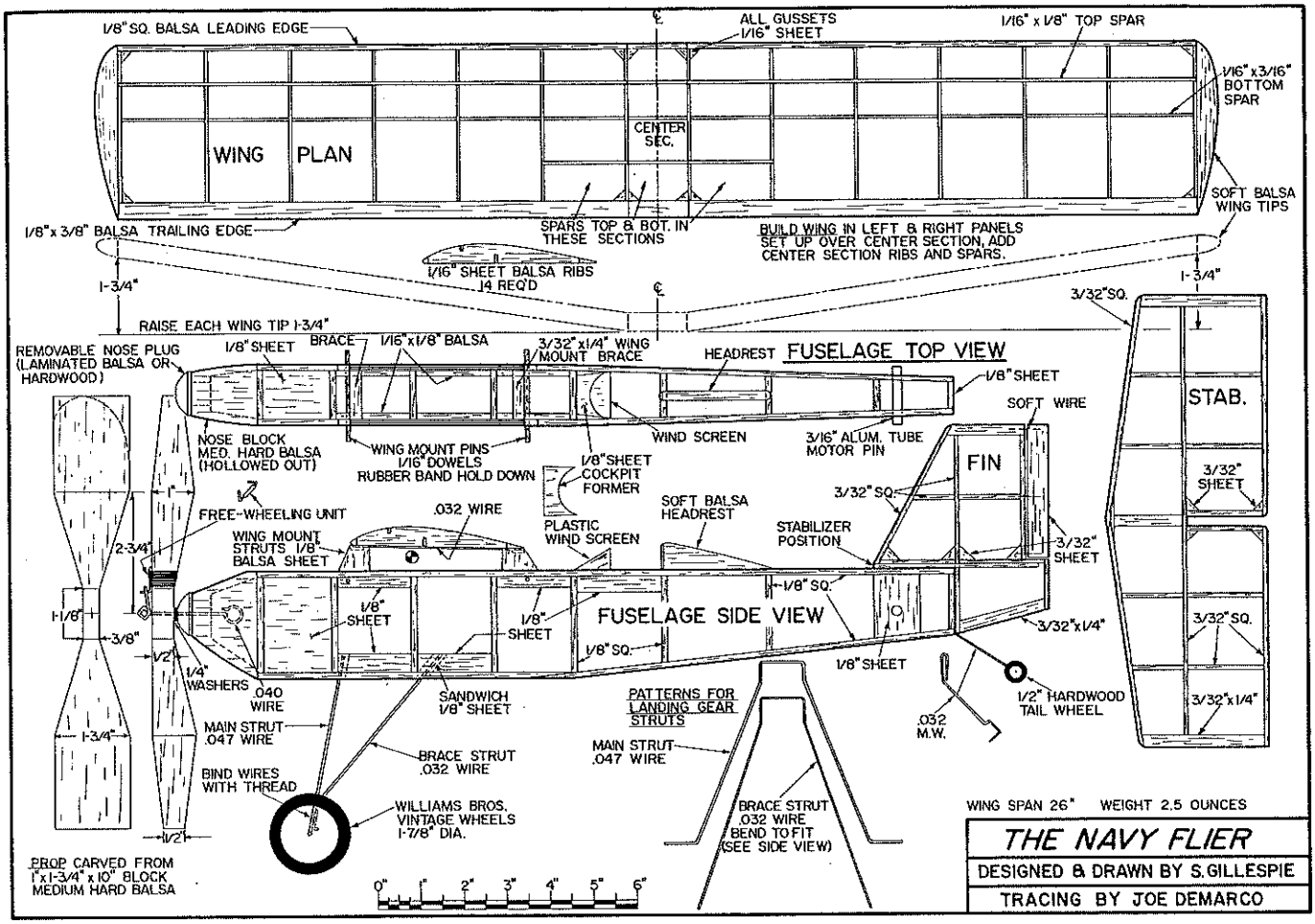
Check the prop balance again to assure a vibration-free motor run.

Color schemes. For a good treatment of U.S. Navy color schemes consult *Profiles* numbers 27, 92, and 116 (if available) or the hard-cover editions, *Aircraft in Profile*, Vols. 2, 4, or 5 (possibly in the local public or college library). The individual *Profiles* cover Boeing, Curtiss, and Grumman fighters for the 1930s. The same material can be found in the hard-cover volumes.

These sources show marking and insignia for many of the famous carrier squadrons such as the High Hats, The Red Rippers, the Diving Eagles, and of course, the "Felix the Cat" fighter squadron from the U.S.S. Saratoga. The section colors were red, white, blue, black, green, and yellow. These colors were used on engine cowlings, fuselage bands, and wing chevrons.

The prototype Navy Flier was finished with a silver fuselage, yellow upper wing surface with

FULL-SIZE PLANS AVAILABLE . . . SEE PAGE 156



white undersides, red tail surfaces, and a red fuselage band with black-white-black squadron designation. The wing chevron was red. All fuselage lettering was done with decals. Control surface separations were represented by cut strips of doped-on black tissue.

The U.S. stars on the wing were decals, and the under-wing U.S. Navy letters were cut from black tissue and doped on. The Felix the Cat insignia were very old decals from some now-forgotten source. The insignia can be drawn on paper with ink, cut out, and doped lightly in place on the doped fuselage side.

Plan the desired color scheme and secure good quality Japanese tissue either from a hobby dealer or the mail order sources listed at the end of this article.

Covering. The model is easy to cover, as all areas except the top of the wing are flat and squared off. Give all framework surfaces a final sanding with very fine sandpaper—wet-or-dry 400-grit, for example. If dope is to be used as an adhesive, all framework should be given a sealing coat of dope. This is not necessary if a water-thinned white glue is to be used.

Cover the fuselage with four pieces (sides, top and bottom), doping to all parts of the structure. The covering on the tail surfaces need only be doped to the framework outlines on both sides. Edges may be lapped over, or they may be finished after trimming with a strip of tissue cut 3/32-in wide.

The wing should be covered in several pieces, doping only to the outlines—panels first, then the center section. It is perhaps easier to do the bottom first. The wing tips can be covered with tissue or painted with a matching color of Floquil paint.

Shrink the covered components by water spraying or by applying rubbing alcohol with a brush. Pin and block the wing during drying to maintain the dihedral angle and to minimize warping. Pin the tail surfaces flat during the shrinking and doping process to prevent warps.

Give the fuselage two coats of thinned clear dope, either nitrate or Sig Lite-Coat. The flying surfaces need only one coat.

Detailing may be added as desired. Exhausts and "engine section" panels can be represented with black tissue. The simple plastic wind screen can also be outlined with strips of black tissue to make it stand out. An instrument panel may be drawn on bond paper and cemented in place on a 1/32 sheet balsa insert in the cockpit.

The addition of a pilot can be a neat final touch. A simple profile pilot drawn on bond paper and cemented on a 1/32 sheet balsa shelf can look

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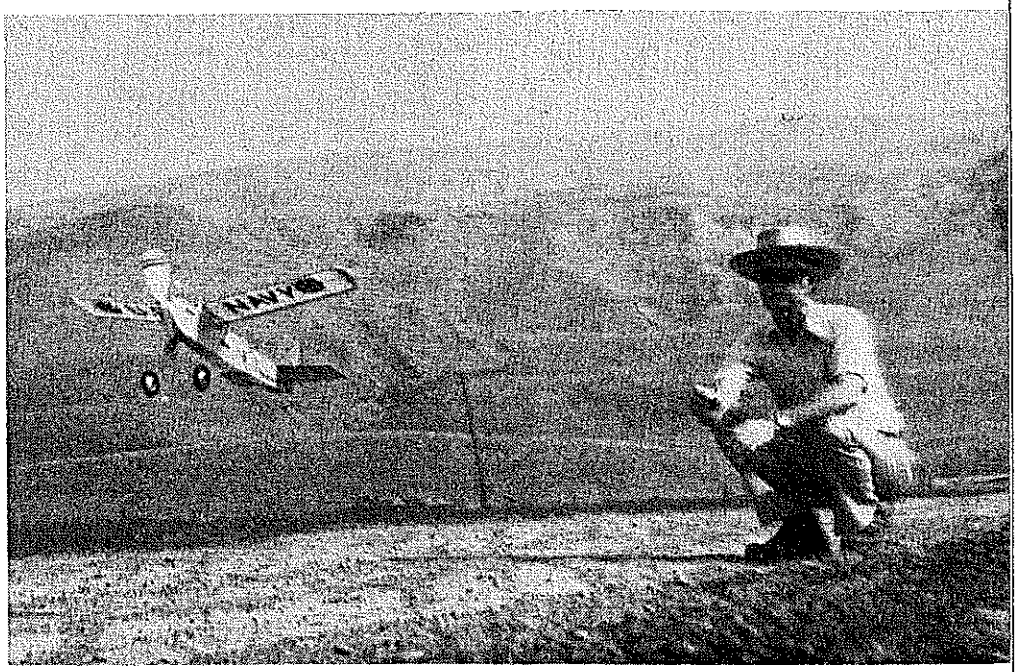

The Navy Flier lifts off a dirt strip for a little practice flying in this view. Big wheels are good for takeoffs and landings. The plane is a tough, consistent performer.

two full airborne laps around two balloons which are tethered 20 feet apart. Martin Varney repeated his Peanut Speed victory of 1981, again flying a Folkerts racer. Marty's ship polished the course in a mere 5.94 sec. to win, while Millard Wells got his reluctant Andreasson MF-1 to go the two laps in 8.77 sec. to take second place. Marty's Folkerts also took the Unlimited Speed event, this time with a 5:49 clocking, with his son, Brian, finishing second with a Guillow ROG in 8.6 sec.

An interesting additional Scale event was held by the Calumet Aircraft Modelers of Griffith, IN. It's called Kit/Plan Scale. Models are scored for flight duration and for fidelity of construction to the kit or published plan from which they are constructed. No conventional scale judging is used, so the old Comet, Megow, and Peerless plans are excellent subjects. There were eight entries, not bad at all for a new and somewhat unfamiliar event. Miami's Dr. John Martin took first place, flying a Curtiss Robin from a 1931 model airplane plans book. Second went to Terry Mrakava of the Chicago Aeronuts with a Peck Lacy M-10, while Ted Dock was third with a Golden Age Rearwin Speedster. Doc Martin's Robin turned in times of 1:21 and 1:23, not bad for a 51-year-old design.

Capping the three days of flying was a banquet on Wednesday evening featuring, as guest speaker, Dr. Paul MacCready of man/solar-powered-flight fame. A former Indoor modeler himself, Dr. MacCready presented many fascinating insights of his Gossamer and Solar series of aircraft and their history-making flights.

A straw poll taken at the banquet indicated those in attendance would like to see the U.S. Indoor Championships become an annual part of Indoor Week at West Baden. No matter what the exact schedule, most contestants were already looking forward to another session of fine flying and fellowship in 1983.

NIMAS RT/Clemens

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Collegiate and a Telco-equipped Farman Jabiru transport; and Phil Cox's Wittman Buttercup was proxy-flown by Martin Varney.

The Buttercup, largest model of the four, set the early pace with realistic-looking flights of 1:18 and 1:42 (90 seconds is max in AMA Scale). Clemens' Porterfield, suffering a leaking tank, could manage only 39.5 and 36 seconds, while Arak's new Lacey had trimming problems and managed only 27 and 31. Clemens cranked up the three-year-old Jabiru for high-climbing flights of 2:00 and 1:50.3 (only counting on the score sheet as two 90-sec. efforts) to win first place with a 180.8 total. Cox's Buttercup was second with 166 points, the Porterfield third at 127.75, and the Lacey fourth with 108.8.

So VIINART came to an end. Although momentarily saturated with Indoor flying, most of the fliers were nonetheless looking forward to June, 1983, and . . . "Eighth-NART"(?).

Navy Flier/Gillespie

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great in flight.

Flying. Make up an eight-strand 15-in.-long motor from 3/16-in. Sig rubber. If 3/16-in. FAI rubber is used, six strands will probably be sufficient, as it is thicker and more powerful. Lubricate the motor with rubber lube, and wipe off the excess. For testing, only slight motor slack is needed for easy, positive disengagement of the free-wheeling prop. Use a #8 rubberband to hold the motor in place on the prop hook.

Balance the model with the motor installed. The balance point should be close to the C.G. indicated on the plans. If the ship stalls in the glide, try slightly heavier wheels, move the wing back on the mounts, or decrease the built-in incidence by shimming up the trailing edge slightly with a cut piece of 1/32 sheet balsa.

Adjust for a long, flat glide, then add a very slight amount of right rudder tab for a gentle right turn.

Try about 150 hand-wound turns for first power tests. If a stall under power occurs, shim the nose plug for slight downthrust. Use side-thrust only with great care if a tighter turn under power is attempted. At near maximum turns, a 2- or 3-ounce Rubber job can hit the ground at a frightening and destructive speed if the nose drops in a power spiral!

Once a smooth climb and a constant power-to-glide transition are attained, mark the nose plug position so it can always be inserted the same way in the nose block.

As flying experience is gained, build up to maximum safe winds with a winder. A well-lubed 15-in. eight-strand motor of 3/16-in. Sig rubber stretch-wound should take 380 turns easily. Experiment with longer motors for longer motor runs.

The test model Navy Flier has now been flying for three summers. It has provided hours of colorful fun whether settling in for a landing on the grass of a schoolyard or floating in rising air over fields of stubble.

Sources of materials. If some Rubber Power supplies are difficult to obtain in your area, the

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following sources can supply very good materials:

Oldtimer Models, P.O. Box 913, Westminster, CA 92783. Japanese tissue, balsa prop blanks, balsa tapered trailing edge stock, hardwood and balsa wheels, brass washers, rubber motor, rubber lube, etc. Catalog $1.00.

Peck-Polymers, P.O. Box 2498, La Mesa, CA 92401. Japanese tissue, plastic props, rubber lube, rubber motor, Williams Bros. wheels. Catalog $1.00.

Sig Manufacturing Co. Inc., Route 1, Box 1, Montezuma, IA 50171. Sig rubber motor, rubber lube, balsa, tissue, plastic props and wheels. Catalog $2.00.

FF Duration/Meuser

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Freeze, but is now big enough to handle the full-size gliders; he got two maxes and third place using a Polly.

Yet another Outdoor Rubber winder: The price tag on this baby will knock your hat off, but then what doesn't, nowadays? It is built by Burt Precision, which is headed by Mike Di Martino. The housing is hogged out of a block of aluminum alloy, anodized blue for corrosion and skuff resistance, and it is absolutely gorgeous! Speed switch is by a set of helical gears. All bearings are anti-friction types: ball, roller, needle. Bob Piserchio has been using a prototype for several years without a hitch.

Helical gears are a wee bit on the scarey side; essentially they amount to a worm-gear set run the wrong direction, but that's OK if they are aligned and lubed properly. Larry Parsons built one some 40 years ago which worked fine for about 25 years, then started binding up. It turned out to be a lube problem, easily cured.

The Burt Precision device is lubed with a Teflon-loaded goop that is supposed to stay put and not wipe off. Let me know in 25 or 30 years whether the claims are true; I'd like to know. The base price is (gulp!) $162; white sidewalls, radio, and air conditioning are available at slight extra cost. Order from Burt Precision, c/o Bob Piserchio, 5257 Stone Court, San Diego, CA 92115.

New rubber-stripper available. Most Indoor modelers have a rubber-stripper of some sort, or access to one—to cut down ¼-in.-wide stuff to more useful sizes. (The alternative is to buy pre-stripped rubber from one of the suppliers that caters to Indoor and Peanut Scale modelers.) A favorite stripper has been one by Czechowski of Poland, but it is no longer available. To fill the need, Ray Harlan, who manufacturers all sorts of neat stuff for Indoor modelers, has started manufacturing one. According to Ray:

"I redesigned Czechowski's cutter, which he improved over a Hungarian model of about 1970, and came up with the one shown in the photo. It has an improved rubber gate which is a smooth tunnel with no interruptions, unlike Czechowski's. Also, micrometer thumbwheels are calibrated in thousandths of an inch and numbered every five, so one can keep track of settings for a particular batch of rubber. Cutters are hardened, honed stainless steel of the sort used in high-quality knives."

The price is $80 plus postage, which is about twice the selling price of five years ago. You might justify the cost if you think of it in terms of how many tanks of gas that would buy, and I hear that a Japanese copy sells for $105. Of course, there isn't the demand that would justify high-production methods, and there is a lot of work in one. Order from Ray at 15 Happy Hollow Road, Wayland, MA 01778.

Hot tip. You have undoubtedly seen the Satellite City ads for "Hot Stuff Video-Tips," and your club or dealer has probably received order blanks, although you don't need the form to order the tape. Perhaps you gave it a ho-hum; if so, I strongly recommend that you reconsider. Even if you aren't big on cyanoacrylate adhesives like Hot Stuff—you might become a believer after seeing the flick—the other hints and tips are worth the price of admission by themselves.

During the one-hour presentation the Hunters, Bill and Bob, build about half of the carcass of an RC model, D-box leading edge and all. They have developed a sneaky way of avoiding the use of pins altogether, so provided the parts are all accurately cut, the time to build the model is little more than that required to put all the sticks in their proper places on the plans. The gluing itself takes hardly any time.

The flick is available on VHS cassettes only. A $30 deposit is required, and the cassette must be returned within 60 days or you have bought it. Order from Satellite City, P.O. Box 836, Simi, CA 93062 or phone (805) 522-0062.

The "Self Stooge," and other stories. Ordinarily I write (or at least severely edit) what appears in this column. However, the following item wouldn't benefit a drop from my editorial expertise, so I'll lay it on you exactly as it appeared in *Bat Sheet,* edited by Tom Cashman. It would be neat to have a photo to go with it, perhaps, but