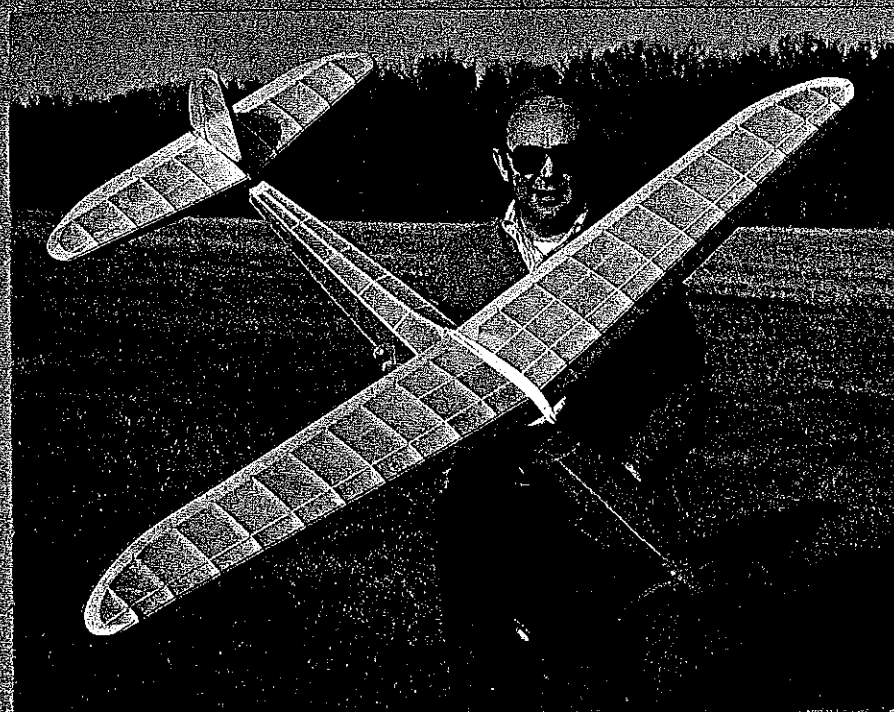


ELECTRIC

It's a twice-up RC version of a 43-year-old rubber-powered classic that is a perfect match for the new geared electric 05 motors and lightweight three-channel radios. It really performs. ■ Don Srull



Clean and classic lines of Ed Lidgard's original 1940 Sparky rubber-powered model are preserved in this double-sized electric-powered version. Has ideal size and weight for geared 05 motors.



Don Srull shown with his proof that Old-Timer Outdoor Rubber designs make great Electric fliers. It gives the impression of being larger than twice size. Of course, that squares the area.

IF YOU HAVE ever thought of trying an electric-powered RC someday, this model is an ideal way to satisfy your curiosity. Aside from being an attractive sport model with lots of nostal-



The Electric Sparky at its best: whirring away and reaching for altitude. Power for two minutes puts it into soaring territory—with enough "juice" left for a second trip up.

SPARKY

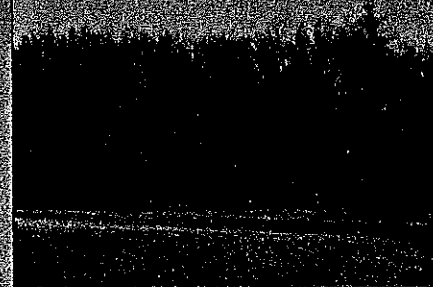
gia for the old-timer Comet kit fans, the model seems to be an ideal mate for the new 05 geared electric motor systems from Astro Flight and Leisure Electronics. Even if you are not into the Old-Timer thing, the Electric Sparky is a superb sport model with smooth flight performance, hands-off stability, and respectable thermal-soaring capability.

Since Ed Lidgard, one of the great Free Flight designers of our time, conceived the original Sparky, we shouldn't expect anything less. By the way, Ed has a fascinating article in the May 1981 issue of Model Builder magazine. There, he shows how to build his original

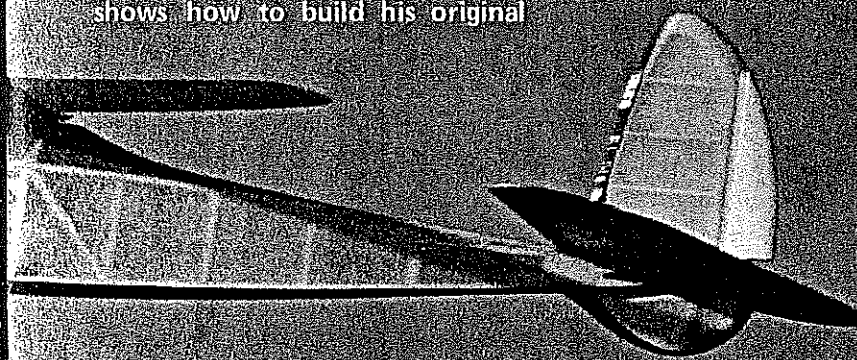
high-performance rubber-powered Sparky design, and discusses some of the changes made by the Comet people when they kitted it back in 1940.

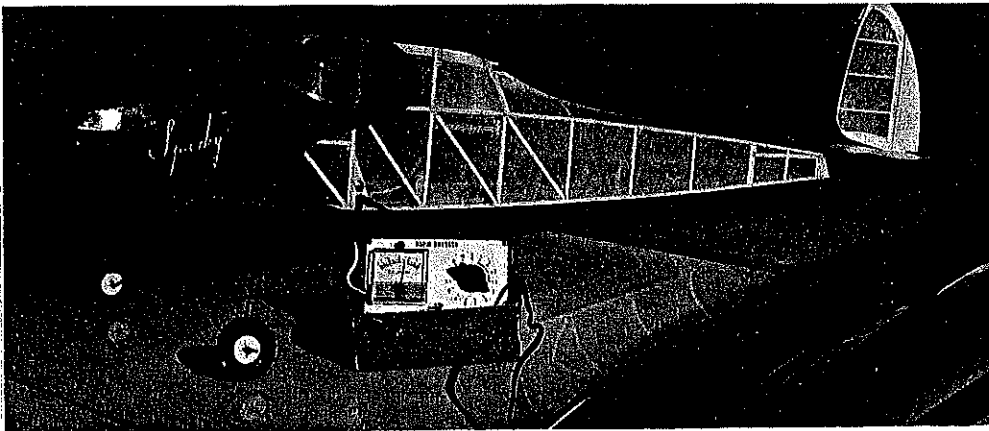
I remember the Sparky from years ago as one of the "big" Comet kits that, to a young kid, seemed like the ultimate in Rubber models. I finally got one as a Christmas present. After struggling through the construction, I even got it to fly a little. I have always had a fond remembrance of that model. Since the kit can still be found (after over 40 years of production!), I planned to build one if and when time permitted.

Recently, while looking for a model to try out a Leisure geared



Model makes a gliding fly-by before going back for more thermal fun. The translucent Micafilm looks just like the original Sparky's doped tissue—and it's real tough.

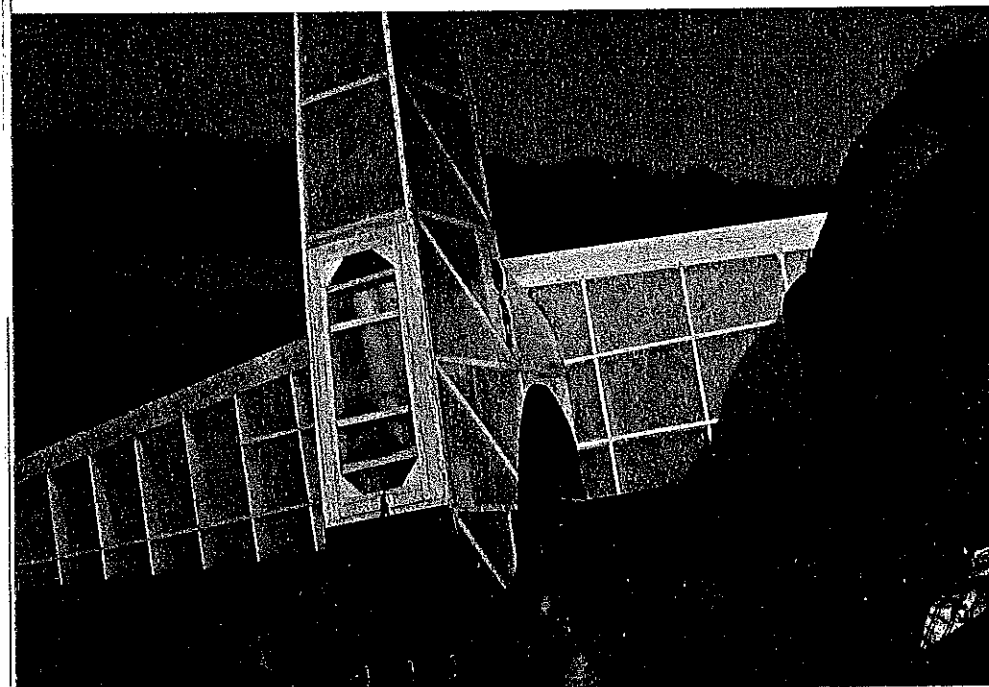




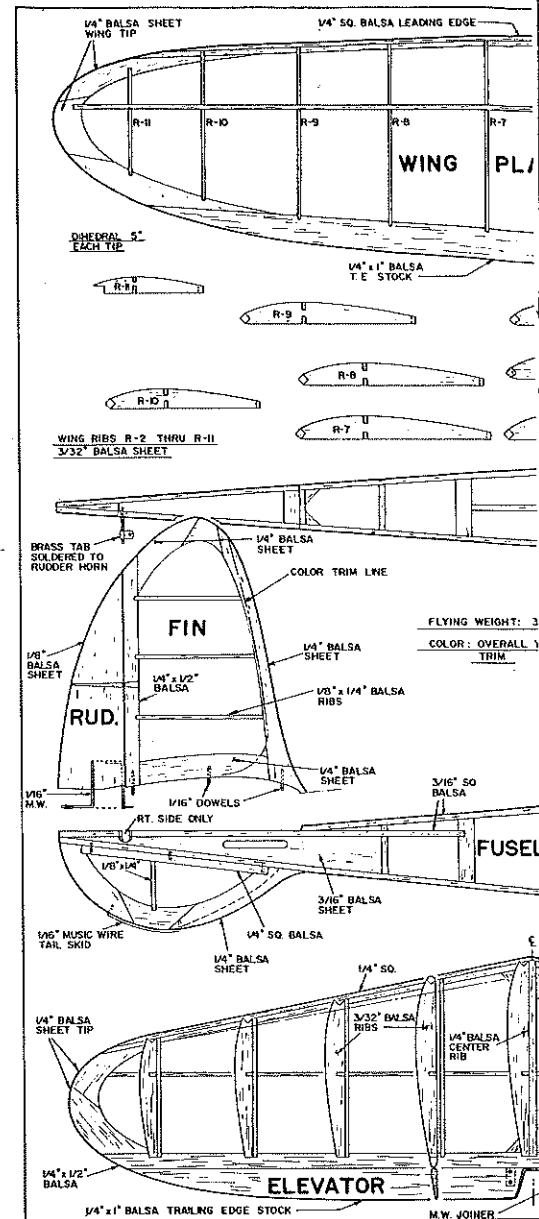
Getting "juiced-up" between flights with an Astro Flight charger. About 15 minutes at four amperes will bring the six-cell battery pack to full capacity.



Small balsa scoop provides cooling air over the 2½:1 geared 05 Leisure motor. An 11-7 prop is shown, but 11-8 and 12-6 props also work well. Experiment with props to find the best.



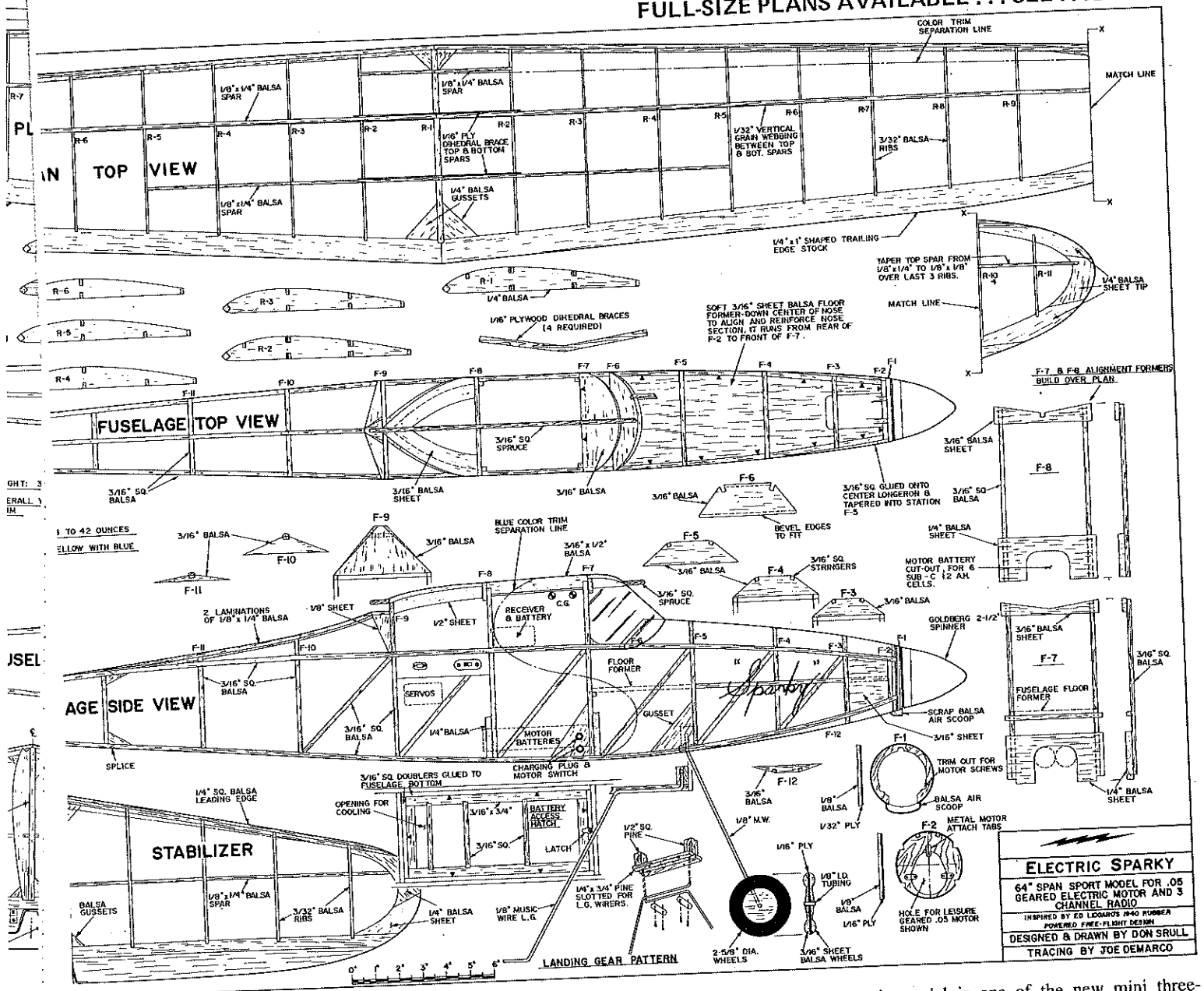
Motor-battery access hatch on the fuselage bottom also has an outlet hole for cooling air. Easy battery replacement means you can fly almost continuously with two sets of batteries.



05 electric motor, a rather obvious connection was made—and with a name like Sparky, there really wasn't any other choice!

Since the rubber-powered original is only 32 in. span and 115 sq. in. area, it had to be enlarged somewhat to carry a radio and the 1-lb.-plus power package. Doubling the size was relatively easy to do, and this seemed to yield about the right area for the 05 motor—64 in. span and about 460 sq. in. wing area. It was estimated that, if built rather lightly, the all-up weight should be in the vicinity of 2½ lb., giving a wing loading of about 12½ oz. per sq. ft. My model came out at 43 oz., and it seems to match the propulsion system perfectly.

By the way, there are a large number of Old-Timer Rubber models, in addition to the Sparky, that seem ideally suited to the geared electric motors—both for Free Flight and RC. Most would need to be enlarged somewhat if using the 05 motor, but some, such as the Lanzo Stick model, are OK as they are. Many would be ideal for the geared 02 or 035 motors at their original sizes.



These beautiful old Rubber designs have been overlooked to a large extent, but with the advent of many practical motors that can turn large diameter props (even folders), they may have something to offer anew. I don't mean to suggest that the pure fun of flying the original, rubber-powered versions can be replaced with electric power, but it can be another way to enjoy the old classics.

Construction. The choice of power plant will determine its mounting position, since the Electric Sparky has a fairly small nose diameter and a spinner. The Leisure geared 05 motor (I used the 2½:1 gear-reduction model) is compact enough to bolt directly onto the forward fuselage bulkhead. Three aluminum tabs bolted to the front case assembly can be used to screw the motor onto the plywood nose bulkhead. The Astro 05 system uses a belt-and-pully reduction system; it needs to be mounted a little to the rear of the nose along with an extension shaft. For either installation, a small cooling air scoop directly behind the spinner is required to provide some cooling air flow directly

into the motor.

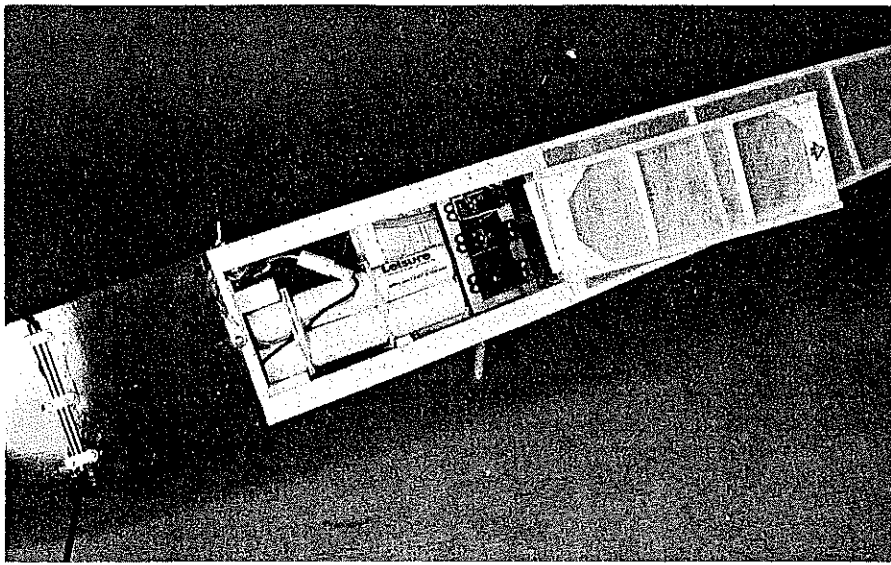
The standard battery pack for the geared 05s is a six-pack of 1.2 ampere-hour sub-C cells. The motor can be used with seven-cell packs for more zip, but I have not tried that combination yet. Since the flight batteries are a fair chunk of weight (about 11 oz. for the six cells), special provision has to be made to hold them securely in the model's interior.

In the Electric Sparky I use two ¼-in. formers near the bottom of the fuselage which have large notches cut out to accept the batteries. Small hooks and two small rubberbands secure the batteries in place. They are held firmly enough to take any normal flight or landing loads, but in the event of a crash or very hard landing, the heavy pack should pivot down and out of the bottom access hatch. The hope is that damage from the massive batteries would be much less by giving them a way out than from trying to contain them within the fuselage. Luckily, we haven't yet had an actual test of this theory.

The correct radio system for any 05 elec-

tric model is one of the new mini three-channel (or more) radios. For safety's sake, and to protect your motor system, do not fly without a servo-controlled on-off motor switch. I know there are ways to jury-rig switches to elevator or rudder controls, but they can get you into trouble and they should not be used.

By *mini* radio, I mean one with an airborne weight of 4 to 6 oz. (no more than 7 oz.) for three channels of control. There are many such radios on the market that meet these specs. Most will use a 225 mAh airborne battery, and some will use a 100 mAh battery to save another ounce of weight. The 100 mAh packs are OK, provided you don't plan any extended thermal flights—and you make provisions to top off your radio battery between flights. For the Electric Sparky I feel a lot more secure with the larger-capacity pack and would recommend you pay that extra ounce of insurance. The three servos, of course, are used to control rudder, elevator, and motor on-off control via a small micro-switch taped to the throttle serve. Follow the manufacturer's instructions for wir-



Open access hatch reveals the six-cell 1.2 Ah Ni-Cd battery pack and three mini servos. Sharp eyes will detect that the cooling hole hasn't yet been cut in the hatch.

ing up your particular system.

The Electric Sparky airframe uses standard stick-and-tissue construction techniques. As designed, the model will come out between 38 and 42 oz., ready to fly. Since it is particularly important to keep weight to a minimum for electric models, don't beef-up the structure, and use only the best, lightweight balsa you can find.

The fuselage is primarily built of $\frac{3}{16}$ sq. balsa strips and $\frac{3}{16}$ sheet. The longerons should be of fairly firm and straight stock; the remainder should be very lightweight balsa. Access to the motor batteries is through the hatch on the fuselage bottom behind the landing gear. Build the hatch into the fuselage structure, and cut it free prior to covering.

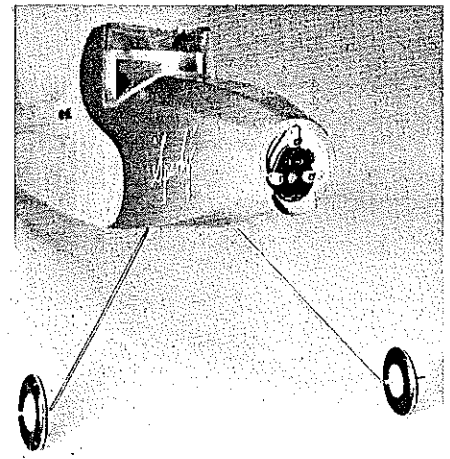
The long landing gear legs are bent from individual pieces of $\frac{1}{8}$ -in. piano wire and attached to the fuselage bottom with three small metal clips and wood screws, a la standard RC practice. (The landing gear is much heavier than I would like, but any smaller wire would be much too flexible.) One advantage with this mounting method is that the gear can be removed for flying from

thick grass fields to keep the long legs from tripping the model on landing. With the gear removed, the decrease in weight and drag will add noticeably to the model's performance, and nice smooth landings on grass are a cinch.

I couldn't find any suitable "scale" wheels, so the ply-and-balsa-laminated wheels shown on the plans were constructed. They are lightweight, sturdy, and are large enough to allow takeoffs and landings on short grass or hard-surfaced flying fields.

Before covering, install your lightweight servos in the rear of the cabin area. The receiver and radio batteries can be located on a $\frac{1}{8}$ balsa shelf in the same area. Small pieces of Velcro tape contact-cemented to the receiver, batteries, and the shelf will hold these components in place nicely; they stick securely but can also be easily peeled off and removed if necessary. Access to the radio equipment is through both the open cabin top and through the motor battery hatch. Make lightweight elevator and rudder pushrods from hard $\frac{3}{16}$ sq. balsa with $\frac{1}{2}$ -in. piano wire ends.

Attach the motor with small metal clips, making sure you have no side thrust and



Three small aluminum tabs bolted to the motor gear case and screwed to the nose bulkhead hold the 05 motor in place. Chin airscoop shows better with the spinner removed.

about 1° to 2° downthrust.

Wing and tail surfaces are conventional. Build them on a straight, flat board. Use very lightweight balsa except for the wing spars. The spars should be hard, straight-grained balsa.

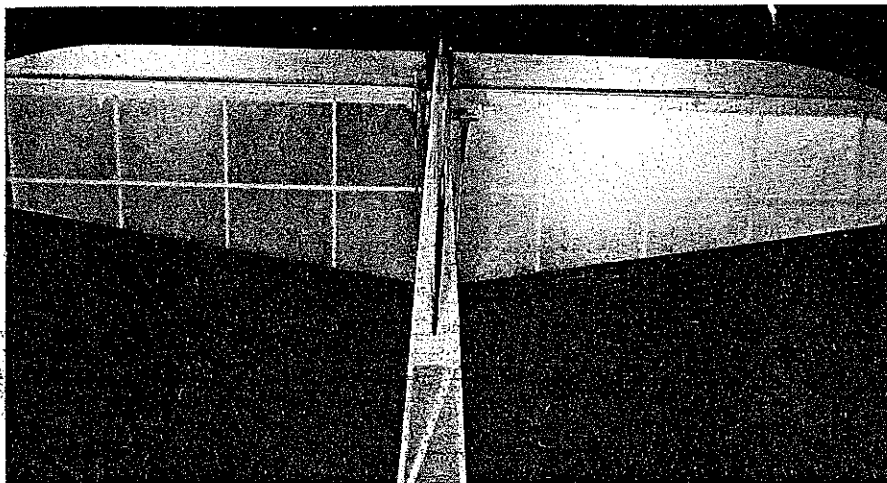
Covering and finishing: You have several good choices. Traditionalists will want to use lightweight yellow silk and a clear dope finish. Transparent yellow Super MonoKote or Solarfilm can also be used to save a little time and weight. A third choice, and the one I used on my model, is Micafilm by Coverite. Yellow Micafilm looks exactly like yellow Japanese tissue or silkspan with about 8 or 10 coats of clear dope. It is incredibly strong and tear resistant; to top that off, it is a little bit lighter than the other covering materials. It seems to be a little less willing to negotiate tough compound curves than other plastic films, but its weight, strength and great looks for Old-Timer models make it a covering worth looking into.

The Electric Sparky has one area I found impossible to cover with film. (As a kid, this was an area I couldn't cover with tissue, either.) The fuselage panels immediately under the wing trailing edge have tremendous compound curvature, and this frustrated my best attempts to cover with any of the plastic films. I was finally rescued by the queen of covering materials—silk! I found a couple of small pieces of old yellow silk, and the silk covered the troublesome areas easily—and drum tight. Luckily, the silk is very close to the color of the Micafilm, and it is hardly noticeable.

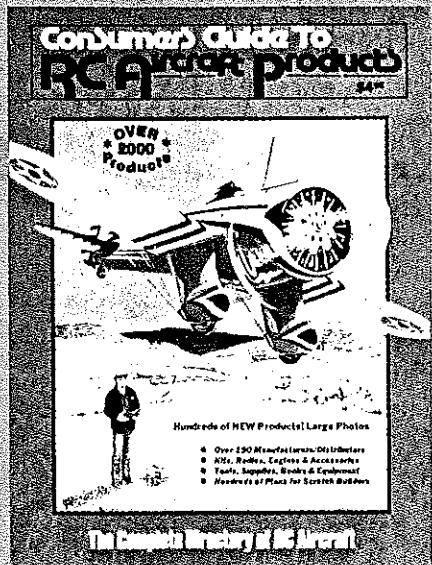
The light blue trim of the original Sparky was doped on. Since dope will not adhere well to the slick Micafilm surface, I used a spray-can of Rustoleum enamel. It holds much better than dope, but it is still somewhat prone to chipping and scratching. The Sparky logo on the side of the nose was painted with a small brush and yellow enamel.

A $2\frac{1}{2}$ -in.-dia. Goldberg nylon spinner is about the right shape. A thin coat of the blue

Continued on page 168



Large tail surfaces help to make the Electric Sparky a fine flier. Rudder and elevator pushrods hook up unobtrusively beneath the stabilizer.



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MA

Ever since curing this problem, the model has behaved beautifully. With the good trials weather and this airplane, he managed 14 flights that would all have been worth five minutes. For Australia, Ken is building "conventional"—but high-aspect-ratio (over 80-in. span)—models. He would like to try metal-foil covering, but hasn't gotten the material yet.

While on the subject of FIC models, here in the U.S.A. Glider fliers Juan Livotto, Hector Diez, Jose Dona, and Craig Cusick are currently working diligently on Power models for 1983. Should be quite a season. See you downwind.

Thank you, Bill Hartill. We hope that you'll

have an enjoyable and successful flying season, this year. In the meantime, photos, news, correspondence, and such things should continue to be sent to:

Bob Meuser, 4200 Gregory St., Oakland, CA 94619.

Sparky/Srull

Continued from page 80

enamel will match the spinner color to the fuselage trim. To make the spinner easier to assemble and disassemble, you will find it necessary to shave or sand the three pegs that hold it together. Since these spinners are made to take the pounding of a 1-hp glow engine, they are much too tight for our pur-

poses. Shave the pegs down just enough so you don't have to bash and pry at the spinner to change a prop.

Flying. Pick up a few 11-7 wood props, and you're almost ready to go flying.

Balance the model at the indicated point by moving the batteries or adding ballast. Make sure that all flying surfaces are straight and true. Remove any warps in the wing and tail that may have resulted from heat-shrinking the film covering. Check to see that you have at least 1/2-in. of rudder movement to each side and at least 1/4-in. of elevator throw—both up and down. The throttle servo should turn the motor micro-switch on and off at about the mid-point of the transmitter throttle lever.

A day or two before going to fly, it is highly recommended that you trickle-charge (at about 100 milliamperes) the motor battery pack for at least 12 to 14 hours. This will bring all six cells up to the same fully-charged state and reduce the chances of damaging the batteries when you fast-charge them. Whatever motor system you use, and whatever fast charger you use, be sure to read and follow the manufacturer's instructions. (By the way, to keep plugged into the latest information and practical tips on the care and feeding of Electric systems, I recommend that you join the Society of Electric Aircraft Modelers (SEAM). For 10 bucks a year, you will get their great newsletter and be able to keep up with the latest in Electrics. Write to: SEAM, 11632 Flamingo Drive, Garden Grove, CA 92644.)

With the flight batteries fully charged, make a range check of your radio, and make sure that all controls function properly with the motor off and on. If you are flying from a short grass or hard-surfaced runway, let the Sparky make wheeled takeoffs on the initial flights. If not, ask a friend to give you a running hand launch while you man the transmitter.

Keep the model in a long, shallow climb-out until you are up about 100 feet or so. At that point, feel out the controls with power both on and off. It should be very groovy and responsive. The glide should be pretty good, too. When the power begins to fall off noticeably, get in the landing pattern and cut the motor off. You may be surprised how easy the landings are with the Electric Sparky. If you are a little short on the approach, a few blips of power will stretch the final nicely. If you miss completely, turn on the power and go around for another try.

Experiment with different props to find the best for your particular model and flying tastes. Sizes of 11-7, 11-7 1/2, 11-7 3/4, and 12-6 can all be used. I am currently working on a folding-blade prop built from a Top Flite 11-7 Super-M prop. It should improve the glide enormously and also eliminate prop breakage which sometimes occurs, espe-

Continued on page 170

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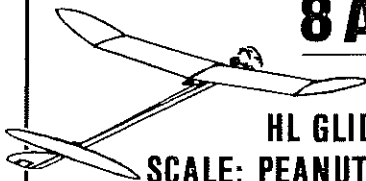
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cially when flying sans the landing gear from grassy fields.

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Monarch/Dyal

Continued from page 83

The servos are installed at the extreme rear of the body, the battery and receiver at the front, and 2 oz. of lead was placed in the head. The balance point is 5 in. aft of the center of the wing's leading edge.

The body length (less head and tail tube) is 11 in. to provide room for the future electric power battery pack and switch servo.

The wing dihedral break is strengthened with a 3-in. width of foam-core board that has been sanded to fit. The wing is attached with two 4-40 nylon screws through 1/8 ply blocks in the wing and body. For skin strength, Hobbyoxy II was squeegeed onto both sides of the foam-core board. Monarch was painted with epoxy from an aerosol can (Coverite's Black Baron should be great). The paint scheme was derived from a full-scale monarch butterfly, of course.

Music wire legs would make the model look better, but if they were functional, it would be too heavy.

Some guy said the airfoil was a flat plate. I prefer to think it is a scientifically-designed

symmetrical airfoil that just happens to be flat on both sides!

I saw dragonflies migrating yesterday, "Someday, I gotta . . ."

Show Teams/Hux

Continued from page 95

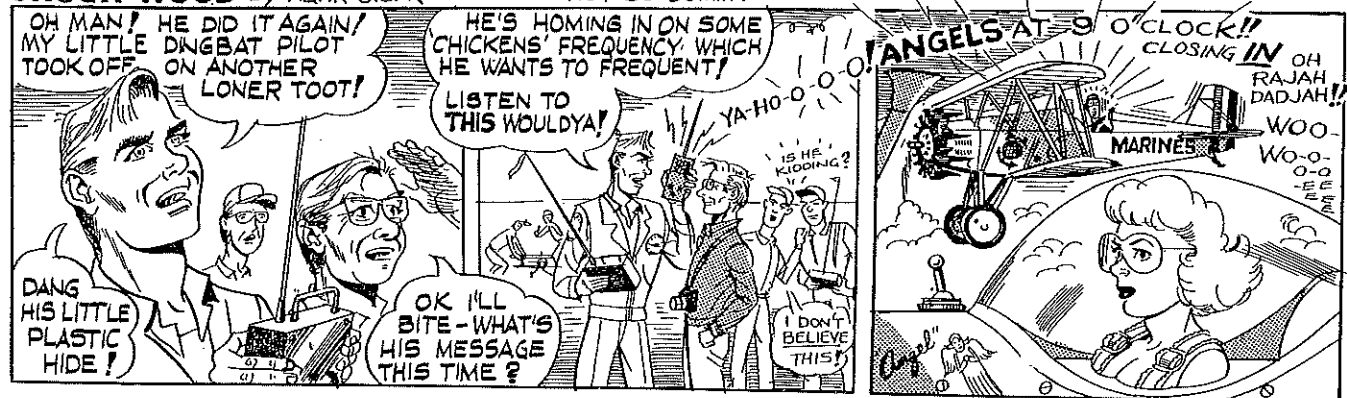
on cue. When attacked by the Allied models, the outhouse appears to have been bombed by the models, leaving an angry Black Baron.

Another popular show character is the novice (or clown) act. The routine varies greatly between teams, but the clown is often dressed as a slightly out-of-date pilot.

Continued on page 172

CHUCK WOOD by Hank Clark

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