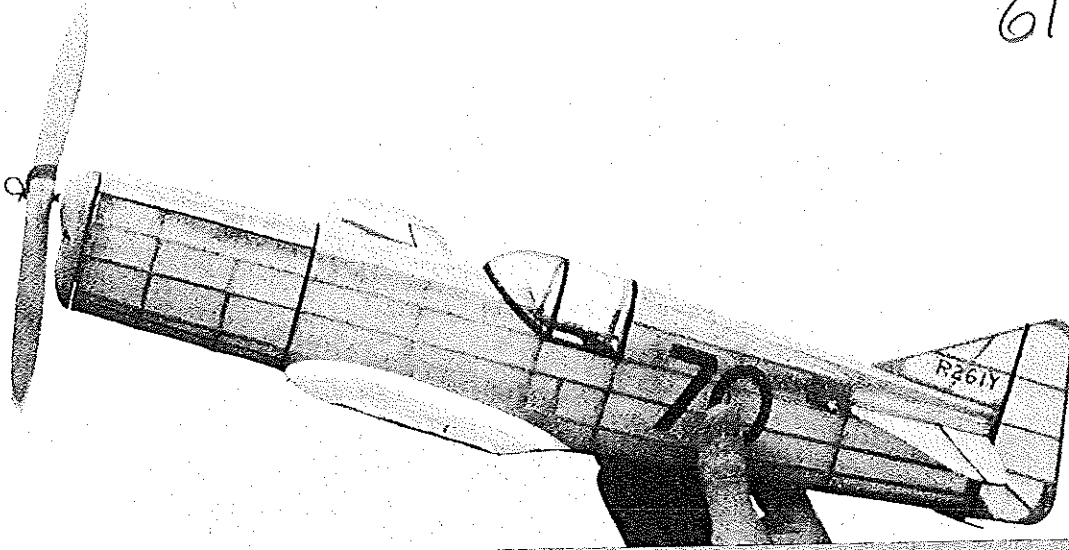
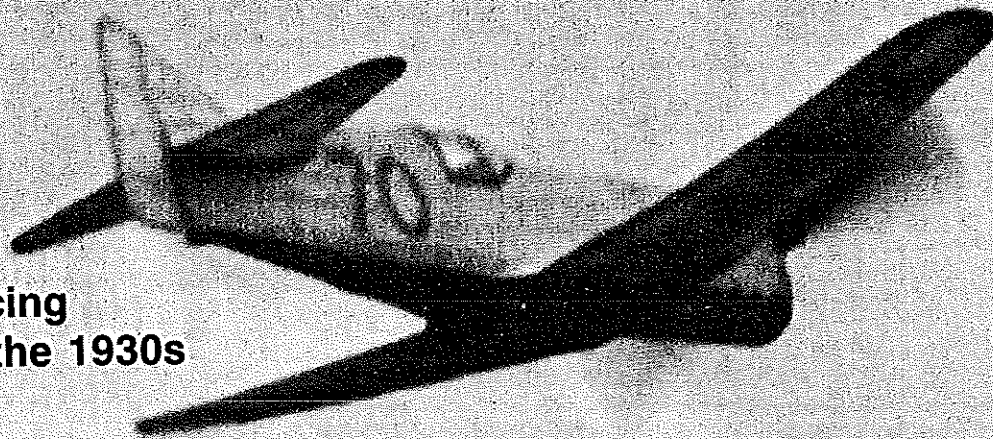


619



Big picture: The R-4, flying steady in its groove, heads for the next "pylon." The 1936 National Air Races were so dominated by the French-built Caudron C-460 that the new Rider design was largely overlooked by the aviation press of the era. Above: Keith Rider's R-4 design was typical of the little Menasco-powered speedsters that contended for the Greve Trophy at the National Air Races of the 1930s. The airplane's fine proportions allow for a long, powerful rubber motor and offer a proven winning potential for the Flying Aces Club racing events.

Keith Rider R-4



The air racing planes of the 1930s

have always captured modelers' attentions. In addition to their classic good looks, these airplanes have force moments and proportions that make them great subjects for Rubber power.

■ Tom Nallen

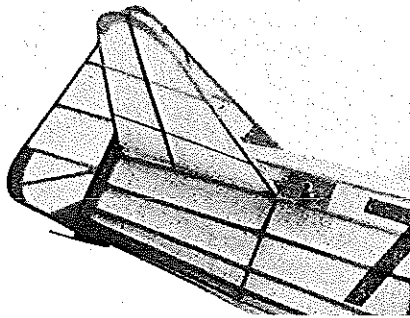
FOR THOSE OF US who build and fly rubber-powered Scale model airplanes, few events are as much fun to fly in or to watch as the mass launch elimination event popularized by the Flying Aces Club chapters. Particularly thrilling for me are those contests featuring the race planes of the 1930s in colorful eyeball-to-eyeball matchups. FAC rules offer two such race categories for rubber-powered models, the Greve Trophy race and the Thompson Trophy race. Entries must be replicas of full-size ships that participated in, or were intended to participate in, the National Air Races of the 1930s.

The airplane detailed here was originally designed to compete for the Greve Trophy. The Greve race differed from the Thompson Trophy one in that the planes were limited to a maximum engine displacement of

550 cu. in., while the Thompson allowed unlimited engine size. Planes with the smaller engines were not prevented from racing in the Thompson event, however. At the time, Menasco engines were the favorite power plant for Greve racers

Among the most prolific designers of the era was the brilliant Keith Rider of California. His small, clean R-4 of 1936, presented here, was one of his finest. She weighed 950 lb. dry and a mere 1,325 lb. ready to race.

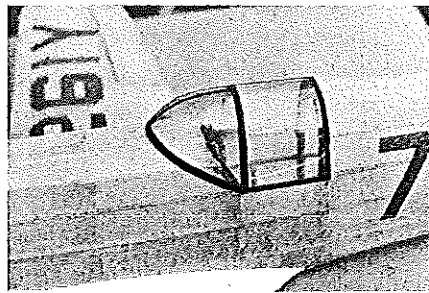
In her racing debut at the 1936 Nationals, the prototype R-4 fared poorly in the chase for the Greve Trophy, finishing dead last. It didn't take long, though, for pilot Roger Don Rae and his crew to get things ironed out. In the main event, the Thompson Trophy race, Rae pushed the tiny speedster to a creditable third-place finish behind the big



The stabilizer is fitted into a slot built into the fuselage. This arrangement allows the use of shims to fine adjust the model's glide trim. A length of aluminum tubing serves as a peg to anchor the rubber motor at the rear.

R-3 powered by a Pratt & Whitney Wasp. He then went on to finish the Nationals in style, beating a host of hot competitors to the checkered flag in winning the Shell Cup.

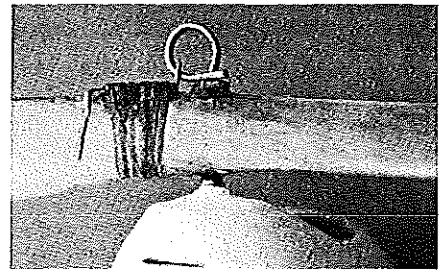
I selected the slick little R-4 as a building project because of its fine proportions and suitability as a Greve Trophy mass launch entry in FAC get-togethers. The ship has more than lived up to my expectations. It's



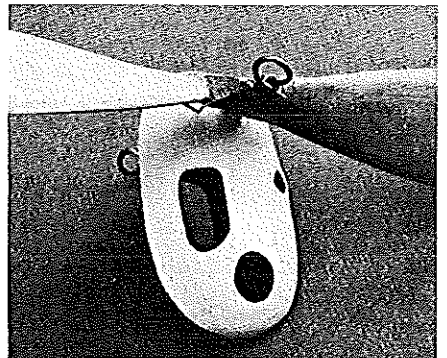
The forward portion of the canopy is formed by drawing thin, heated celluloid/plastic over a form carved from balsa. Vacuum forming would be an alternative method. The canopy outline is done with black tissue strips.

perfect for those seeking a low-wing plane with lots of zip and great contest potential.

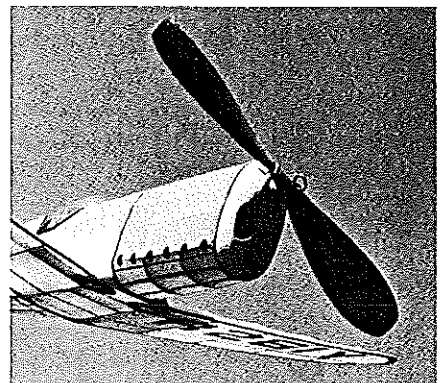
While my own Rider has been forced to struggle to overcome the mediocrity of my launches, a couple of other FAC race pilots who have built this ship have proven her mettle on the course. At an FAC Nats at Dayton, OH, Glenn Rakow of Silver Spring, MD finished second in the Greve—unfortunately unable to retrieve his far-flying R-4 within the time allowed to make



The business end of the Rider illustrates the simple device that allows the prop to free-wheel after the motor winds down. A short length of brass tubing, bound to the prop with thread and cemented in place, contains music wire bent as seen here to form a latch.



Noseblock openings are drilled out and brought to final shape using sandpaper-wrapped dowels of suitable diameter. The openings also are a handy place to pack clay during the initial glide testing and trimming.



Engine exhaust stack openings, control surface and panel outlines, and the tucked up landing gear are simulated with black tissue. Use of 3M Spraymount allows repositioning of tissue trim before the adhesive sets up.

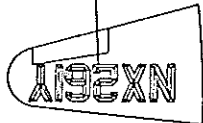
the final lap. At the latest FAC Nats at Geneseo, NY, that ol' throttle-bender, Don Srull, won the Greve in literal going-away fashion with a sensational out-of-sight flight on the last lap!

Glenn and Don have demonstrated that the performance of the model is enhanced by increasing the dihedral and adding slightly more stabilizer area than as originally drawn. With a tip of the T-square to them, the plan incorporates their changes. Earlier, Srull lost an R-4 built from the original plan when it went OOS. His second R-4, the FAC Nats winner, was a blown-up 23-in.-wingspan version.

At Geneseo, I managed to qualify my R-4 for the finals of the Greve Trophy Race.

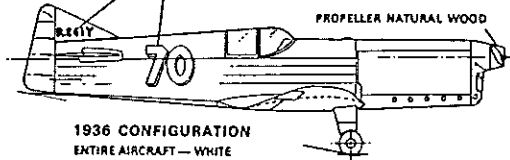
Drawing reproduced courtesy of:
American Aviation Historical Society

RED WITH DARK RED SHADING, AS MANY AS THREE SHADES OF BOTH COLORS USED. NUMBERS WERE OUTFITTED IN VERY DARK RED.



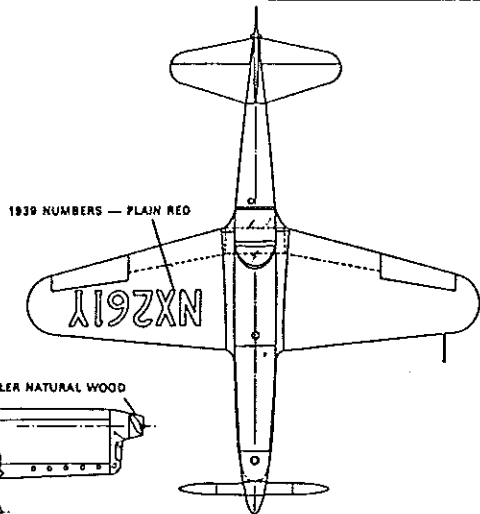
1937 & 1938 WING

ALL NUMBERS PURPLE WITH LIGHT BLUE/MEDIUM BLUE SHADOWING.



1936 CONFIGURATION
ENTIRE AIRCRAFT — WHITE

PROPELLER NATURAL WOOD

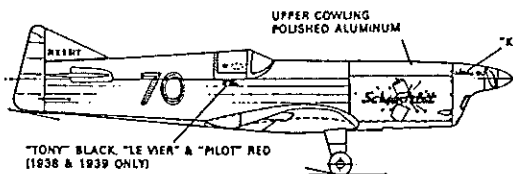
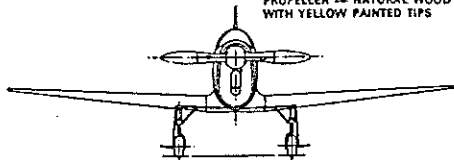


1939 NUMBERS — PLAIN RED

PROPELLER — NATURAL WOOD WITH YELLOW PAINTED TIPS

NOTE:

IN 1937 & 1938 RACE NO. 70 WAS CARRIED ON UPPER LEFT WING TIP AND LOWER RIGHT WING TIP WITH THE BASE OF BOTH NUMBERS FACING THE LEFT WING TIP.



UPPER COWLING
POLISHED ALUMINUM

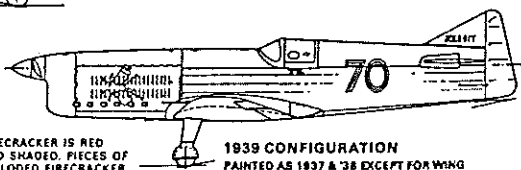
"KENDALL OIL" — PLAIN RED

12 0 1 2 3 4 5
SCALE IN FEET

"TONY" BLACK, "LE VIER" & "PILOT" RED
(1936 & 1939 ONLY)

1937 & 1938 CONFIGURATION

ENTIRE AIRCRAFT — BRIGHT YELLOW
ALL NUMBERS ON WING, TAIL, SIDE AND
"SCHOENFELDT" HAVE SHADED RED LETTERING
AS NOTED FOR 1937 & '38 WING.



FIRECRACKER IS RED AND SHADED. PIECES OF EXPLODED FIRECRACKER ARE RED & BURST LINES ARE WHITE.

1939 CONFIGURATION
PAINTED AS 1937 & '38 EXCEPT FOR WING

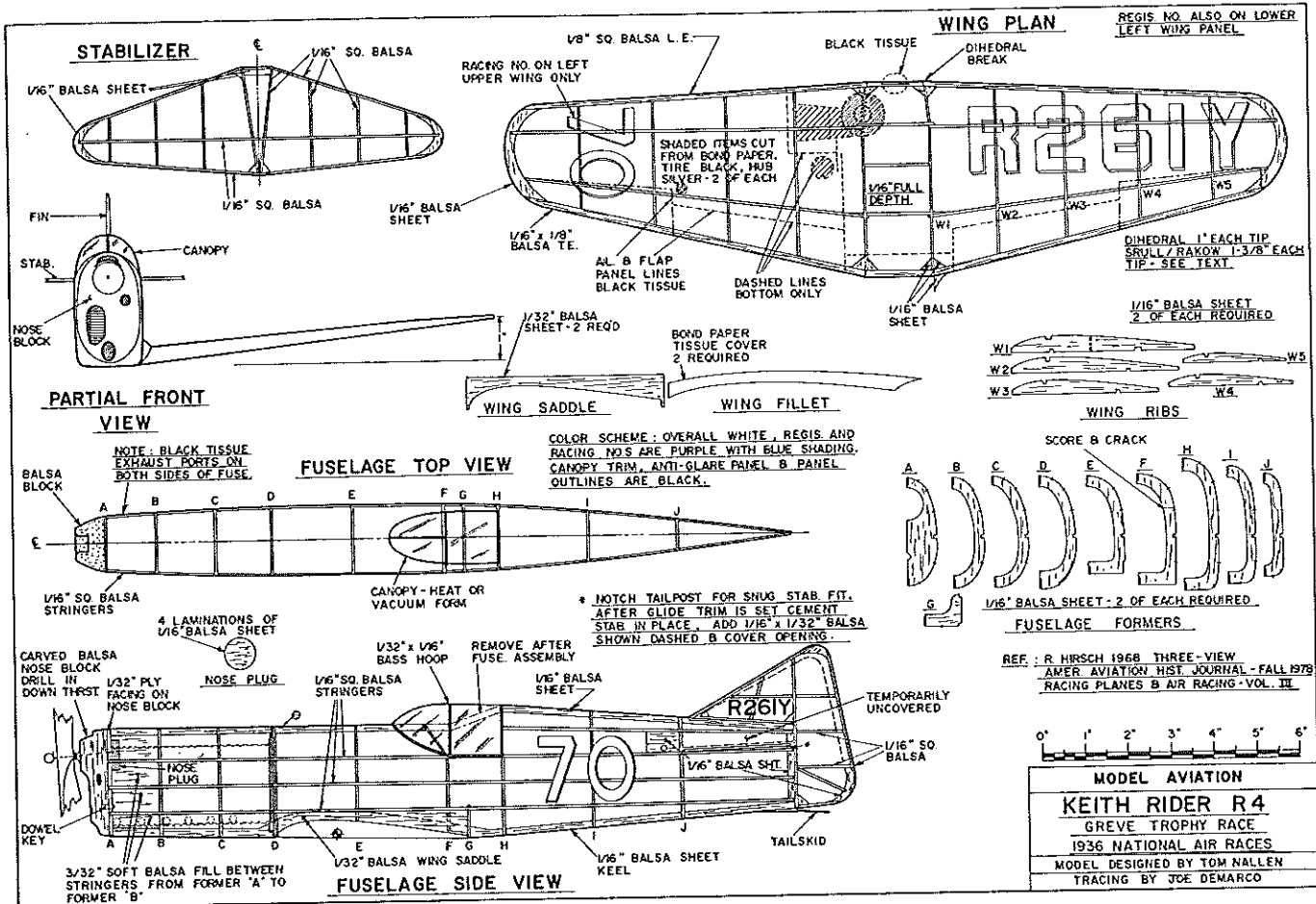
RIDER R-4 RACER

DESIGNED BY KEITH RIDER
FLOWN BY:

ROGER DON RAE 1936
GUS GOTCH 1937
TONY LE VIER 1938 & '39

DRAWN BY DUSTIN W. CARTER 6-78

DATA FROM DRAWINGS BY ART HALL, PHOTOS AND PERSONAL OBSERVATIONS OF ORIGINAL AIRCRAFT



Alas, my model was subjected to a hauntingly miserable launch at the drop of the starter's flag and was eliminated forthwith. An advantage, though, of dropping out early was the opportunity to observe the balance of the Greve competition from a more casual viewpoint. It was a beauty. A virtuoso performance by Don Srull will long be remembered and reshaped around the FAC cracker barrels.

Because the prototype was active on the race scene from 1936 to 1939, undergoing many modifications and some repainting along the way, I had some uncertainty regarding the correct color scheme for this particular model. These were resolved when I saw the R-4 drawings by Mr. Dustin Carter in the *American Aviation Historical Society Journal*, Fall 1978. Only minor changes are necessary to convert my 1936 R-4 model to any of the succeeding "Fire-cracker" variants. Those interested in digging into the evolution of the R-4 will discover that the 1939 version, flown by Tony LeVier, must be ranked high on any list of truly great racing aircraft.

Construction of the model is straightforward and relatively simple. The airframe is light yet rugged if care is used in selecting the wood and other materials. The fuselage is built using the familiar keel-and-former method. In building the fuselage care should be taken to maintain good fore-and-aft alignment.

Add stringers alternately side to side, checking continually that everything re-

mains symmetrical. Use very light, 1/8-in. sheeting to fill in between the stringers on the forward fuselage where indicated on the plan. When finished, shave and sand the sheet fill flush with the stringers, exercising care to avoid scalloping the surface and adjacent stringers.

Flight surfaces are built from balsa selected for good strength and straight grain.

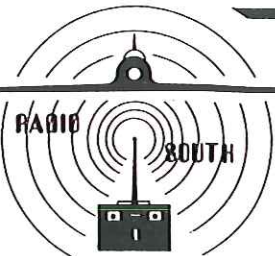
Avoid soft wood. The goal is very strong, warp-free structures of light to moderate weight.

When the airframe is completed, sand the entire structure lightly, and apply two coats of dope to all wood surfaces that will come in contact with tissue. Sand lightly between applications.

Continued on page 159



Don Srull (R) and Adrian Moulton between rounds during the Greve Trophy Race at Geneseo. Don had promised this model to Adrian for his help in retrieving for him, but on the last flight, it flew away. Don compensated by giving Adrian his Heinkel 112. Photo by Tom Schmitt.



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Support racing, and keep in tune with what is going on. Join the NMPRA, your voice in Pylon Racing. This organization is responsible for where we are today and where we will be in the future. For more information write to Ron Schorr, 5224 Teesdale, North Hollywood, CA 91607.

See you next month.

MARCS/Seaborg

Continued from page 56

prevent frequency interference. All other areas are marked off either with fences or white lines. Professionally lettered signs designate each area and spell out the rules.

For maintenance, the golf course crews mow the grass and zap the weeds.

Even though the new field is surrounded mainly by the landfill and woods, the club is diligent about enforcing silencer rules. The nearest houses are almost a mile away, but club officers made a point of visiting residents within potential earshot. They told the flying field neighbors about the MARCS and showed them their model airplanes. After the first full season of flying, there have been no noise complaints.

Incidentally, there are no foul odors or unsightly views presented by the landfill. Bulldozers constantly bury the trash and garbage, and it's all done beyond a hill—out of sight of the field. There is an added security bonus in that the entire area is fenced. Club

members have keys to the landfill gate and lock up after the last flight each evening. That locked gate has ended the shenanigans of vandals who on occasion carved up the old unprotected field with their vehicles.

The field was named several years ago in honor of the late Roger W. Kettle. He was a top RC flier and club member who had a special gift for instructing new pilots.

Getting this great new flying site has been a major effort on the part of MARCS members, officers, and the field committee. Lazar says the club realized right away that cooperation with city engineers and elected officials was the only way for the project to succeed.

"We couldn't have done it without constant communication among all concerned," Lazar says. "We kept our members informed, and they guided us every step of the way. Our club leaders met regularly with the city engineers. We did our best to inform our neighbors. You can't miss when you have this kind of cooperation."

Pistachio/Kruse

Continued from page 60

plans by Don Mace of Mace Model Airplane Co., as well as three booklets by Bill Hannan. Bill's books are appropriately entitled *Peanuts and Pistachios*, Vols. I, II, and III. Walt Mooney has also jumped on the Pistachio wagon by shrinking some 36 of his plans, originally published as *Peanuts*, to the diminutive 8-in.-wingspan size and offering them as an economical plan package.

In all fairness, it should also be pointed out that Pistachio models do have some drawbacks. To begin with, their flight performance depends on their weight—they must be built very light to perform well. Such lightness entails some exceedingly tedious building with wood sizes that may be difficult to see and quite fragile to handle. Similarly, flight trimming can be a real headache,

since many Pistachios seem to have their own ideas about how they should be adjusted to fly.

Nonetheless, as Doc Martin says, "We plan to continue to promote these neat little planes." They do possess an indefinable quality that makes trying at least one a challenging and fascinating exercise in modeling. To overcome the problems associated with building and flying such miniscule craft and see them perform in a crowd-stopping fashion can be one of the real triumphs of patience and persistence in the life of a modeler.

More information, plans, and inspiration can be obtained from the addresses below if you feel the urge to join the Pistachio parade. As the MIAMA members say, "Pistachio isn't for everyone." But, it may be for you.

Pistachio Plan and Information Sources:

- Hannan's Runway, P.O. Box A, Escondido, CA 92025; publishers of *Peanuts and Pistachios*, Vols. I, II, and III, and purveyors of Walt Mooney's Pistachio plans.
- Mace Model Airplane Co., 359 S. 119th East Ave., Tulsa, OK 74128.
- *The Hangar Pilot*, 2180 Tigertail Ave., Miami, FL 33133; the newsletter of the Miami Indoor Aircraft Model Association (MIAMA).

Keith Rider/Nallen

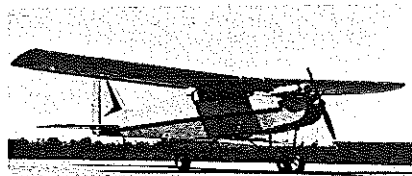
Continued from page 63

Cover the Rider with white Japanese tissue. Nitrate dope thinned sparingly (20-30%) may be used as the adhesive. Wing, tail surfaces, and fuselage are sprayed with a fine water mist to shrink the tissue. When dry, four coats of thin (70%) nitrate dope are brushed onto all tissue-covered areas except the tail surfaces, where three coats will do the trick. Between coats, skim lightly



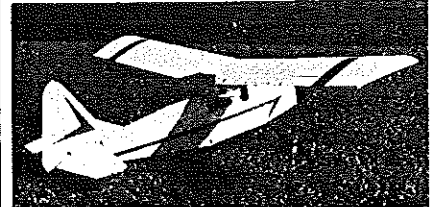
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over the fuselage and the flight surface leading and trailing edges with a piece of worn-out, fine sandpaper.

Registration and race numbers as well as control surface and panel outlines (including canopy trim) are cut from tissue. The trim is easy to apply using Spra-Mount, a 3M product. An advantage of the spray adhesive is that it permits easy repositioning of the tissue trim after the initial placement if required. Consider covering the cockpit opening under the canopy with black tissue or light construction paper to prevent rubber lube spatter (looks like sick pilot, n'est ce pas?) on the thin celluloid overhead. Use sandpaper and a sharp knife blade to trim fit the finished wing into the saddle and to the fuselage proper. Be certain that the wing is fixed in place at the incidence angle as per the plan and is perfectly trued up.

The stabilizer slides into a section temporarily left uncovered and open at the rear of the fuselage. This arrangement allows shimming of the stab to achieve the desired glide trim. Ready the assembled airplane, less prop and rubber, for glide tests. Add clay to the nose block to bring the balance point of the model to that indicated on the plan. Hand launch the model a few times, and shim the stabilizer and add or remove small increments of clay as needed to optimize the glide. Note this balance point.

Install the prop and rubber. Wind the rubber motor until lightly tensioned, then pin the prop to prevent rotation. Using bits of lead or clay tucked away securely inside the nose, rebalance the model at the point noted

during the glide test.

Flying. My R-4 likes to fly turning leftward. Circle diameter is touched up with tweaks of left rudder and/or small amounts of side thrust or downthrust as required. Make adjustments one at a time (per flight) to avoid confusion and delays in the trimming process. Work up slowly on rubber motor turns, fine tuning as you go. Take your time! When final trim is reached, cover and finish the portion of the stabilizer slot which has been left open.

You have a lot of latitude in selecting a rubber/prop combination. Use what works best for you, but a good starting point is two loops of 1/4-in. rubber 24 to 28 in. long, spinning a freewheeling 8-in. prop. I carved my prop from hardwood, but balsa or plastic will work well, too.

After working her into trim, the first fully wound flight of my R-4 was 64 seconds in nice, light evening air. The model is very steady in the air, flying as if in a groove. It has been a good airplane, lots of fun to build and fly. Now, if I can just get the hang of rounding those pylons!

FF Scale/Warner

Continued from page 65

looked rather sad, as most kids quit carving and sanding long before they should have, a situation which produced some pretty ugly-looking caricatures. In any case neither of these groups includes "fliers," and they are therefore of less interest to us.

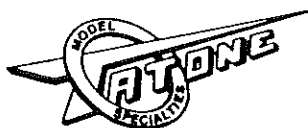
After these statuette models come the stick-and-tissue Flying Scale models, often so poorly designed as to render them unflyable even if built by an expert. Then come ones that *could* be flown if the manufacturer would only put some lighter materials in the kit. These make acceptable ceiling ornaments, as they are larger and more impressive than plastic or solid models.

Following these are the models that have a degree of complexity which makes them delightful to build and look at, but which require such an investment of time that many builders would not dream of trying to fly them. Many of the old Cleveland designs fall into this category.

Finally there are the museum superscalars which follow the originals stick for stick and require much research on the part of the builder to get everything "just right." One big advantage of the exhibit-type model is that its weight is no problem, and one can make a model that will last almost indefinitely. Maybe there is one special model in your future which fits into this category. Why not give it a go?

Rubber Powered Model Airplanes is the title of Don Ross' book which has just hit the stands. Don has a lot of Rubber experience to share and can answer many of your questions. It would take a new modeler many years to pick up all the information so freely (Wait! Is \$14.95 really free?) dispensed in this book.

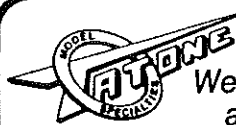
Don starts out with how to build and fly a couple of simple ROG (*rise-off-ground—Ed.*) models and goes on to simple competition, sport, and Scale models. There is a section on prop theory and construction. Another part deals with how to design your own model. Many of the methods he discusses are traditional, and many are quite innovative, such as the use of Tyvek (a tough, plastic-fiber sheet used for kites and indestructible mailing envelopes), Scale tires rolled



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