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OCTOBER 1969 60c (7/-)

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RADIO CONTROL SCALE

World War I Halberstadt DII

O.S.

ENGINES R/C SYSTEMS

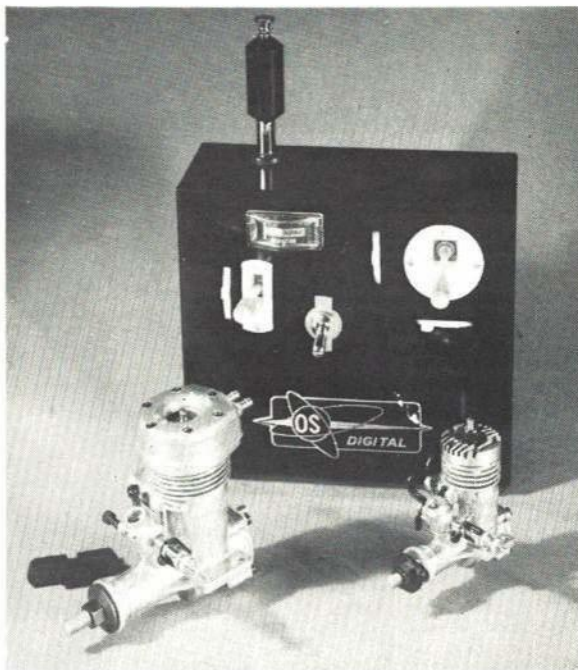
MUFFLER STOCK—OS ENGINE

The top picture shows an assortment of OS engines and mufflers. The small engine, No. 4, is the OS 10 R/C. This engine retails for \$12.98 and the muffler for \$2.98. Incidentally, this same muffler also fits the OS Max 15 and the OS Max 19. This series OS muffler is unique in that it has an exhaust baffle built into the back end of the muffler tube. The OS catalog number on the small muffler for the 10, 15, and 19 is A1602.

The next size OS muffler (catalog number A1601) fits the OS 30, 35, 40, 50, and 58—\$3.98 retail. This muffler also has a built in baffle. In addition to these mufflers, OS offers the A1603 which fits the OS 60—both front and rear valve—and the A1604 which fits the OS 80. We might add here that the only difference between the last two mufflers is in the length of the straps. Also, these larger mufflers do not include any restricting movable baffle. The price of the last two mufflers for the 60 and for the 80 are \$6.98. These large OS mufflers are good in that they do not slow down the larger engine or rob them of too much power, also they are quite effective in reducing the sharp bark that the engine makes which our non-model building friends find so annoying.

Engine No. 1 is the new OS 60 front intake series GP. This is an outstanding piece of workmanship. \$42.95.

Number 2 shows an OS 30 R/C retail \$21.98. This OS 30 R/C is an excellent sport engine for models such as the Little Stick, DuBro Cherokee, and the ARF DuBro Commander.



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We are looking for model builders who are exceptionally good craftsmen to work with us here in Cincinnati, Ohio. We need electronics people and we find that a man coming out of the Navy who has completed basic Navy "A" School electronic courses works out well. We also can use some people who have high quality drafting ability—the type of draftsman capable of doing model airplane plans for magazine articles—and for tool makers for small sheet metal working dies and nylon molds. We are also interested in interviewing pattern makers for vacuum form and fiberglass molds and dies. If you send in your resume, please tell us the kind of money you would have to have to make a change.

Space in this advertisement prohibits covering these accessories in any great detail. OS manufactures mufflers for the Max Series engines, from the 10 all the way through the Max H60 Series. All of these mufflers have R/C baffles in them except for the 60. Spinners — there are two small needle nose type. The smaller fits the 15-19 range and the larger fits the 29 to 58 range. The larger has the 1/4-28 thread and can be used on other engines. They also make a new streamlined spinner that fits the 1/4" prop shaft.

Max 10-19 R/C Muffler	\$ 2.98
Max 30-58 R/C Muffler	3.98
Max 60 Muffler	6.98
Marine Universal — 09	1.00
Marine Universal — 15-19	1.25
Marine Universal — 29-40	1.75
Marine Universal — 50-58-60	1.95
OS AMA Prop Nut — 1/4-28	.79
OS AMA Prop Nut — Max 15-19	.69



R/C Engineers from Controlaire have been working steadily with OS to try to build some interchangeability and compatibility to the two systems. Because of the difference in component that are available to OS in Japan, the systems are not identical but resemble each other in many ways and, therefore, our Service Engineers can fix most anything that is wrong with an OS set. The single stick 4 Channel Proportional should be of exceptional interest to the many single stick flyers about the nation. OS also makes the conventional 2 stick version in 4 channel. Their 3 channel gear is extremely popular as the price is very low for the quality that is inside. Also, single channel flyers do not overlook the single channel superhet combo that is ready to go for \$49.98.

OS 4 Ch. 1 Stick	335.00
OS 4 Channel Propo	319.98
OS 3 Channel Propo	199.98
OS Tx Stick Kit	14.98
1 Channel Pixie S/Het Combo, Tx, Rx, Servo, Batt. Bx., Switch, Wired	49.98
1 Ch. Pixie Tx	19.98
1 Ch. Pixie Rx Regen.	13.98
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1 Ch. Rudder Servo S103	13.98
1 Ch. Motor Servo S104M	12.98
1 Ch. Pulse Servo S101W	11.98
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OS 4 Pin Connector	.98
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OS 100 Ohm Relay	2.98
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american aircraft MODELER

VOLUME 69, NUMBER 4

October 1969

COVER PHOTO: Lovers of World War I scale jobs will delight in this R/C German Halberstadt D-II by Bob Snyder. A great flyer on its 60 engine — and its real life counterpart was quite a machine, too. Photo by Monty Groves.

WILLIAM J. WINTER — PUBLISHER

Edward C. Sweeney, Jr., Editor

Sally Barry, Managing Editor

Articles:

SKYRIDA, Ray Malmstrom	- - - - -	12
IT HAPPENED IN D/C	- - - - -	16
HALBERSTADT, Bob Snyder	- - - - -	20
SLO-POKE, Gabriel Bedish	- - - - -	26
TWELFTH ANNUAL DC/RC TECHNICAL SYMPOSIUM	- - - - -	33, 40
HOOPTEE TOO, John F. Kilsdonk	- - - - -	36

Features:

RADIO CONTROL WORLD, Howard McEntee	- - - - -	30
SCALE TECHNIQUES FOR THE PLASTIC MODELER, Dick Brant	- - - - -	38
1918 FOKKER D. VII — CENTERSPREAD	- - - - -	38B, 38C
GETTING STARTED IN R/C, Howard McEntee	- - - - -	38D

Academy of Model Aeronautics:

AMA HELPS INITIATE FIRST HALL OF FAME	- - - - -	41
RECORD REVIEWS	- - - - -	43
INTERNATIONAL R/C SCALE MEET REPORT	- - - - -	44
R/C SAILPLANE RACING	- - - - -	45
ASSOCIATE VP EXPERIMENT UNDERWAY	- - - - -	46
AMA NEWS EXTRA	- - - - -	47
CONTEST CALENDAR, OFFICER DIRECTORY	- - - - -	48

Departments:

EDITORIAL — STRAIGHT AND LEVEL, William J. Winter	6
YOU SAID IT — LETTERS TO THE EDITOR	8
NEW PRODUCTS CHECK LIST	28
CLASSIFIED ADVERTISING	74
QUALITY HOBBY SHOPS	74

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Engines: .45 to .60
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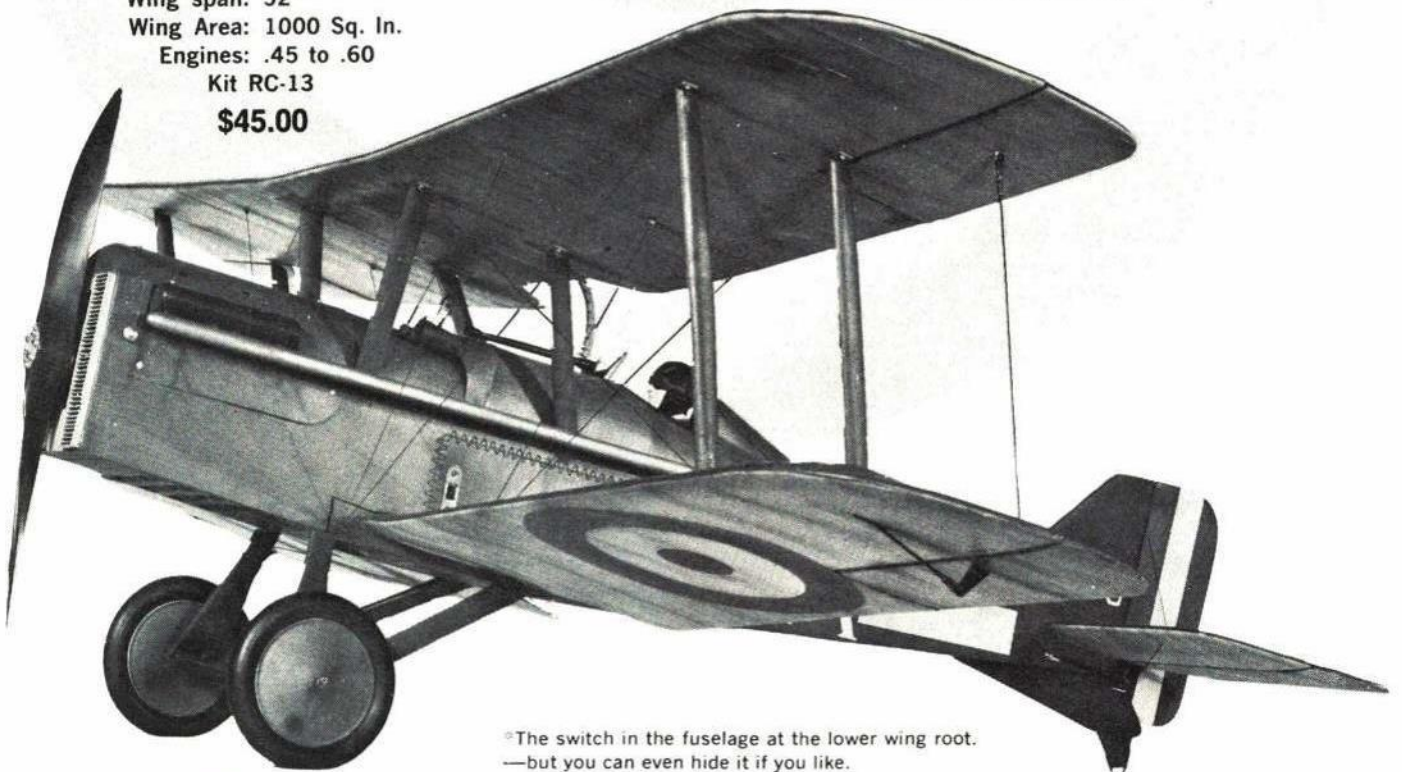
CONTACT! That's the command Captain "Mick" Mannoek of the British Royal Flying Corps gave as he revved up the engine of his S.E.5a and led his squadron into battle against Germany's best, the Flying Circus.

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©The switch in the fuselage at the lower wing root.
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American Aircraft Modeler



STRAIGHT AND LEVEL



Whatever happened to original design? And whatever happened to originality in flying itself?

WHATEVER happened to originality of design? Is creativity a thing of the past? Will we ever grow weary of flying look-alike models? It has been said that the age of the rugged individual is over. If this means that no one is running around inventing light bulbs and talking machines, or being hit on the head with an apple, this is just another oversimplification. By golly, modelers have always been stalwart individualists, cooking up helicopters, flying saucers, wheel brakes, deltas—you name it. In thousands of workshops they were forever gluing together some dream ship. Many still do. But you can hear the thunder of the hooves of the do-the-same-thing herds at any Sunday flying field. Are you fed up with this state of affairs?

It's the kind of flying that does it. Radio has gone through years of tremendously exciting development. It's reached the ultimate? Ultimate? Back and forth. Loop it. Roll it. Forever and ever. Free-flight is now always the same. Bore into the sky like a hard-flung javelin, chop the motor, glide, chase. Is it that we cannot accept anything that flies differently from the "norm"? Or "fails" to achieve some stereotyped notion of how a given type of aircraft "must" fly?

What is really important is whether or not an airplane flies the way its type and configuration requires. For example, when Paul Sherlock lifts off that massive Boeing jet, the most crowded flying field comes to an awed, silent halt. You've never seen anything like it. The same thing happens if a flying-wing glider goes up steeply on its towline, cutting loose into an endless tight-circling glide. A good ducted-fan job is a sure crowd-stopper. Even just a really pretty ship. Everyone watches a biplane. Scale jobs enthrall us—mainly to watch.

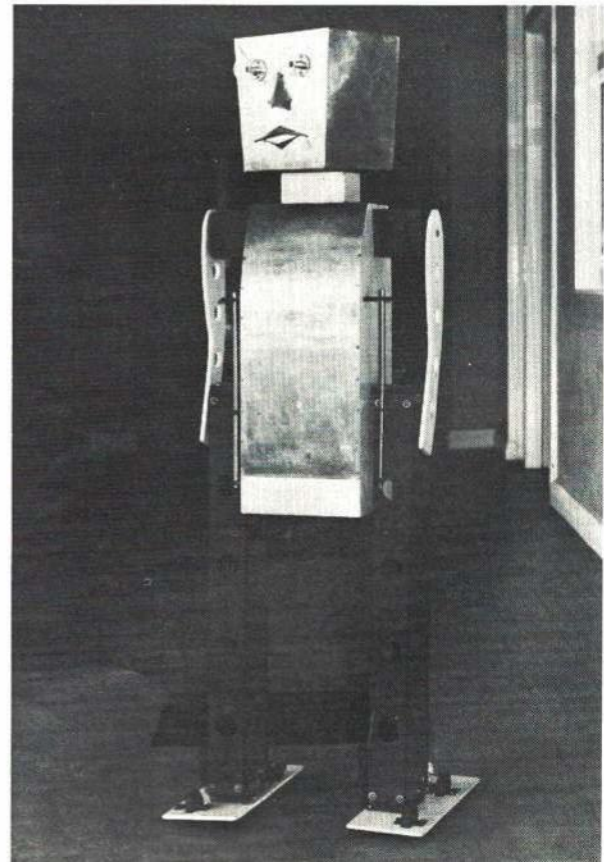
If a ship is supposed to fly slowly and realistically like a Cessna should—and who in the heck ever saw a Cessna fly like a Sabrejet?—what in the world is the matter with that? It is a show to watch when a four-engine Lancaster rumbles around the flying perimeter, settles into the approach after a lifelike pattern, then sweeps in for a graceful landing. The crowd claps! But then it is back to the rolls and loops, everybody doing the same thing, trying to impress his neighbors who couldn't care less.

The air world is full of opportunities for originals, the unorthodox. Of real types in endless varieties, and the great art is in flying them the way they should be flown. Do it right and you have something to crow about. If we ever escape this contest slavery—and by that we mean only that, outside of contests, everyone everlastingly thinks in terms of contest types—we shall see new life at the old flying sessions. Sport types could be the rebirth of free-flight. You have to try them before you can pass any judgment.

DID Gustav Whitehead fly before the Wrights? This magazine published last November a full-length article about this controversy and, in a more recent issue, a lengthy editorial. It is quite evident that, if the situation is permitted to slide, the Whitehead matter will never receive the attention it deserves. Nay, demands! The negative fixation which constantly seeks to discredit Whitehead, from his contemporaries down to the present day, cannot be explained.

Did he, or did he not, construct flyable aircraft? Why can't the question be faced? Why should the argument perpetually be: should we fairly evaluate his case, or consign him, and everyone who wants the matter openly confronted, to a Limbo of supposed incompetents.

SINCE these editorials require the deepest thinking (?), here's your chance to fight back. Just write the missing caption, offathetopyourheadlike, and mail it to . . . well, mail it. We are resolute! The best caption gets a prize of \$5. A 15-word maximum. (We ain't kiddin'!) Our business manager authorizes us to say that it is a reasonable facsimile of himself—a wildly over-confident statement obviously. We do note that this mysterious intruder appears to be radio controlled. Maybe he's watching us?





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Semi-Scale Beauty in A Great Flying Model!

DELUXE — Includes New Fittings



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SPAN 62" AREA 540 sq. in.
LENGTH 50" WEIGHT 4½-5 lbs.
FOR ENGINES FROM .19 to .35

1/2A SKYLANE \$8⁹⁵

For Single Channel — Escapement, Servo or Pulse
Span 42" Area 244 sq. in.
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For .049 Engines

The Design That Makes The Simplest, Sound, Attractive Airplane

THE FAMOUS FALCON



Sr. Falcon Shown

SR. FALCON \$29⁹⁵

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Span 69" Area 810 Sq. in.
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For .35 to .45 Engines

FALCON 56 \$16⁵⁰

DELUXE — Includes New Fittings. Takes Single to 10 Channels or Proportional
Rudder-Only or Multi-Training
Span 56" Area 558 sq. in.
Length 43" Weight 3½ lbs.
For .09-.15-.19 Engines

Junior FALCON \$5⁹⁵

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For .049 Engines

The Goodyear Racer with Enough Wing Area and Stability so YOU Can Fly It!

\$24⁹⁵

DELUXE — Includes New Fittings

FOR 6, 8, 10 CHANNELS OR PROPORTIONAL

SPAN 54" AREA 540 Sq. in.
LENGTH 44" WEIGHT 4½-5 Lbs.

FOR .19-.40 ENGINES



Most Beautiful R/C Ever Kitted!

World's FIRST Single or Twin Engine R/C Models

SKYLARK

DELUXE — Includes New Fittings

Skylark 56 Shown

SKYLARK 56 \$18⁹⁵

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Span 56" Area 528 sq. in.
Length 44" Weight 3½-4½ lbs.
For Single Eng. .09, .15, or .19
For Twin Eng. Use Two .09's or .15's

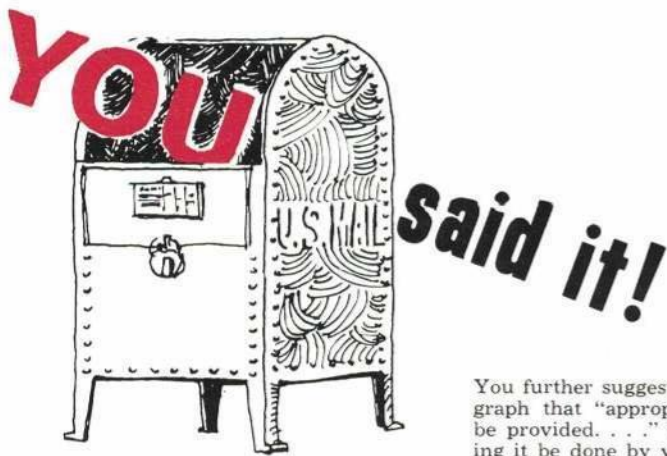
JR. SKYLARK \$6⁹⁵

For Single Channel — Escapement, Servo or Pulse
Span 37" Area 235 sq. in.
Length 29" Weight 18 oz.
For Single Engine Use .049
For Twin Eng. Use Two .01's or .02's

• P.S. For best service, see your dealer for kits you want. If not available, write direct; add 35c per kit in U.S., 75c outside U.S. Minimum order \$1.

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Possible confusion

In order to prevent any misunderstandings arising over the authenticity of either your SE5a centerfold or our R/C SE5a kit, we would like to point out that although Captain (actually Major) Mick Mannock's name is mentioned in each case, there are two different aircraft involved.

The possibilities of confusion are compounded by the close similarity of color and especially markings. While our kit depicts D'278, your painting is of D'276 which had the "A" marking applied to the wings as you show, while D'278 did not. Additionally, D'276 had the white bar painted on the rear fuselage upper stringers, D'278 had only the side white bars.

Your readers may be assured that both schemes are correct and that Mannock did fly both aircraft.

The only point upon which we can take issue with you (and this is only for true addicts) is that your painting shows the wing riblets supporting the upper covering only; actually the riblets did run full depth, and thus support the bottom covering too. This latter was confirmed by examination of a full-size SE5a.

Dave Platt, Top Flite Models, Inc., Chicago, Ill.

From a monastery

Just to prove the old adage, "modeling is where you find it"; I am 22 years old, a Benedictine monk and have been an avid modeler for the past ten years. Most folks wouldn't expect to find this hobby in a monastery but the times have changed.

Recently, I built a Jetex 50 assisted glider of original design. Called Lil' Driftwood, she sports all 1/16" wood construction and has a 22" cambered, cathehedraled wing and black tissue trim. The model looks promising, but as yet is untried in the air. Although Driftwood was a ball to build, scale control-line is my forte and this fall I hope to do some work in this area. However, time is at a premium for me and building must be done primarily on weekends.

In closing I think *American Aircraft Modeler* is the best hobby magazine on the market. Your staff is top flight and you excellently cover many aspects of modeling.

Bro. John Pakiz, O.S.B., Latrobe, Pa.

Oversimplified?

I've read your editorial in the March '69 issue, and you sound like Ralph Nader. There's no doubt that more juniors want to get into R/C. Your hypothesis, however, places the blame on all adult R/C'ers, high costs, and the manufacturers; yet, you as a publisher, weakly and lastly suggest that "... magazines can share the burden. ..."

You further suggest, in the same last paragraph that "appropriate advertising could be provided. . . ." Yet you avoid suggesting it be done by you at your cost, as you suggest so readily for the manufacturers.

I began amateur radio with desire at the age of 13, studied, researched and "piddled" in the hobby with junk parts, and was counseled by an adult amateur—even taught and drilled by him in the basics of electronics. That was in 1938. Since then I've been licensed and for no less than 20 years have dreamed of R/C flying. As for modeling, I've built every known variety: pure "stick," scale rubber, contest, the Korda series, flown Goldberg's with Browns, and now, finally, R/C.

Congratulations to the "piddlers," the George Trammels, the Walt Goods, the Bonners, the McEntees, and many others. Finally in this respect, though not as you refer to it, a "well-off family man," but one who in his own architectural practice, enjoying fluctuating affluence and much hard work, I do manage to keep in touch with our beloved hobby.

This brings me to the crux of criticism, referring to the "give" program. You're dreaming! The kit and stick manufacturers, the electronics manufacturers, and certainly the hobby shop dealer, are not getting rich—quite the contrary and you, close as you are to the industry, should darn well know it. Further, the kids have more money to "blow" than most adults. Your own referenced who "... struggle with paper routes and etc., etc., ..." How many paper carriers do you see on bicycles? I see them on expensive motor bikes, motorcycles, and—get this—in cars. I see them in the pizza houses where they drop five bucks for a tear and a sip. I see them plugging music boxes and ball machines with no thought of the money dropped. So don't sadden me with this approach.

Another thing, in your magazine immediately following your editorial, there are a dozen radio systems, and at least that many planes and engines of all sizes advertised in the low-cost categories. Within three pages I see several each and find that a complete, flyable airplane, single-channel digital electronics, R/C engine, glue, sticks, tape, screws and all, ready to go for no more than \$49; and, you get paid for the ads by those suppliers. Now who's sacrificing?

I don't doubt there are, everyday, many cases of kids being run off the flying fields and otherwise poohed away by the "big men." However, I've seen it, and I've heard it said by youngsters within their teens: "Boy! I'd like to have one of those." And yet upon conversation as to how the rig works, the engine runs, the fuel it uses, a reference or two about air flow, they suddenly lose all interest. The point being that maybe one out of 100 is sincerely interested to the extent that he's willing to study the situation, learn aerodynamics, learn basic electronics, and possess the patience to build a plane or boat. To me this is alarmingly becoming the attitude of the adults. Everybody wants it "out of a box" and straight to the field.

And expense! Gee whiz—profile R/C costing \$35, mickey mouse foam and plastic costing from \$20 to \$50 and they barely resemble airplanes. Yet, these, if the cost were fair would be fine beginners' models, or as back up to "the" machine when it fails, but the wholesale flourish, and the adult acceptance of this type mortifies me.

You aren't proposing advancement and the help for the juniors. In your dreaming, the finale will manifest itself into further degeneration of the arts of modeling and fill the "adults'" closets with lots of slabs, flimsy plastic fuselages, epoxy, and low-cost radio goodies with no appreciable help to the junior, and netting huge deficits to the manufacturers, suppliers and hobby dealers.

Your issue of my criticism contains some real good things: Jim Davis's Musketeer, Sunburst rocket project, Fred Marks' Versapro, and Kit Bay's glider project. The other magazines have also done well in these areas. We should encourage, help and even financially assist people like Fred Marks. They are well versed, expert and freely give of their efforts, and they are the ones who pioneer toward better and cheaper electronics.

Finally, each R/C'er should carry to flying site, a simply built Guillow or Sterling, rubber-powered scale, and fly it. These things instill enthusiasm in the juniors and they'll soon follow suit.

Forgive my onslaught toward you, personally, but you opened the "box."

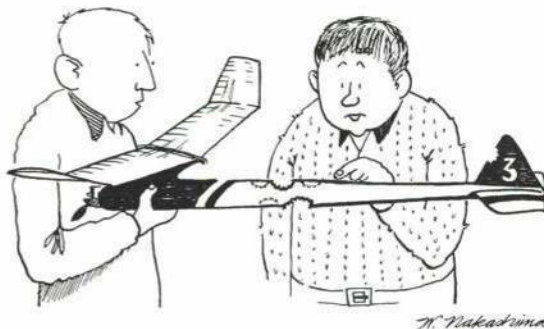
Charles L. Proffer, Architect, Gulfport, Miss.

If the industry cooperated on a basic no-profit project as was described in the editorial mentioned, AAM considers itself part of that industry. And many kids don't have money as letters prove. Viewpoints vary, but we are all substantially in agreement. Ed.

An exchange to Korea

I am writing in reply to Cadet Qutae Park, Seoul, Korea. His letter appeared in "You Said It" March '69.

I am interested in writing to you on the subject of model airplanes, as it is, and has been my hobby for some years. At present I am secretary of our "Bath Area Modelairs, Inc." We have 28 senior members, and 12 juniors. Our main purpose is to help the juniors.



"Say Hal, how old is that boy of yours now?"

We have just about every type of model plane represented. There are about five of us who are active contest flyers.

If there is anything I can help you or your friends with, I'd be more than happy to help, or get the answers to your problems. There are many plans available through the magazines of which we have quite a few. At any time, feel free to ask about anything.

We had our monthly meeting last night and are taking this as a club project, so you have our whole club behind you and your friends.

Clay Ott, Bath, Pa.

A need to fly

For the past year I have been building model rockets because it was easier to get started; the literature available from the major companies gave everything you need to actively engage in the hobby.

I used to fly small rubber jobs and a small C/L. As compared to model rocketry there is no help for a single individual wanting to fly. It becomes frustrating to try to get a plane into the air, and after consulting all the books you can get, to fail. One of the reasons I came back to aircraft modeling was the feeling you get when you do get an original model into the air. There is a need to fly.

In my area I have met many kids genuinely interested in modeling, but because of lack of help, dropped out. If the big model companies distributed pamphlets and aids to those who requested them, they would bring many new kids into the hobby as well as creating a bigger market for themselves.

Also, your magazine is terrific, but how about more C/L?

Paul Rothenberg, Douglaston, N. Y.

More C/L? We are trying.

Ed.

Likes jets, but . . .

I have read letters in "You Said It," and I admire the jets like other modelers, but I still love to hear the buzz of a propeller and see it on a plane.

I am 16 years old and have wanted an R/C plane ever since I saw a picture about eight years ago. I now have an Orbit 10-channel reed set I bought from Mr. Hicks who owns the local hobby shop. I hope to build an airplane soon; probably a Piper Tri-Pacer for my first plane.

Someday I hope to get a proportional set and a Fox 60 R/C motor. I'm one junior who's "sold on R/C."

Billy Billings, Kannapolis, N. C.

Build me that one!

I should cancel my subscription! Here I am six kits and 18 scratch-built behind and you come out with the Tenderfoot series. I've been building and sometimes flying ever since the ten-cent Hi-Flyer kits, so they hold no appeal for me. Yeah! But my six-year-old son says "Daddy, build me that one. Daddy, is this one going to be mine?"

So, Sunday, I turned him and his seven-year-old chum loose with the 049 control-line trainer. Neither one quite understood about "up elevator," but man did they have a ball with that trainer and QZ zipping around that parking lot.

Well, they're inexpensive, quick and durable. Maybe if I build, say six or eight, find a bigger parking lot and recruit a few other kids for ground crew, maybe I can slip off and get in a few laps of my own.

Now, on a more serious vein. Around here, we have a junior problem where Dad buys his son a plane for Christmas, flies it for junior "just to be sure it'll work," gets hooked and from then on junior can't get a flying circle because Dad is flying. You got an answer for that one?



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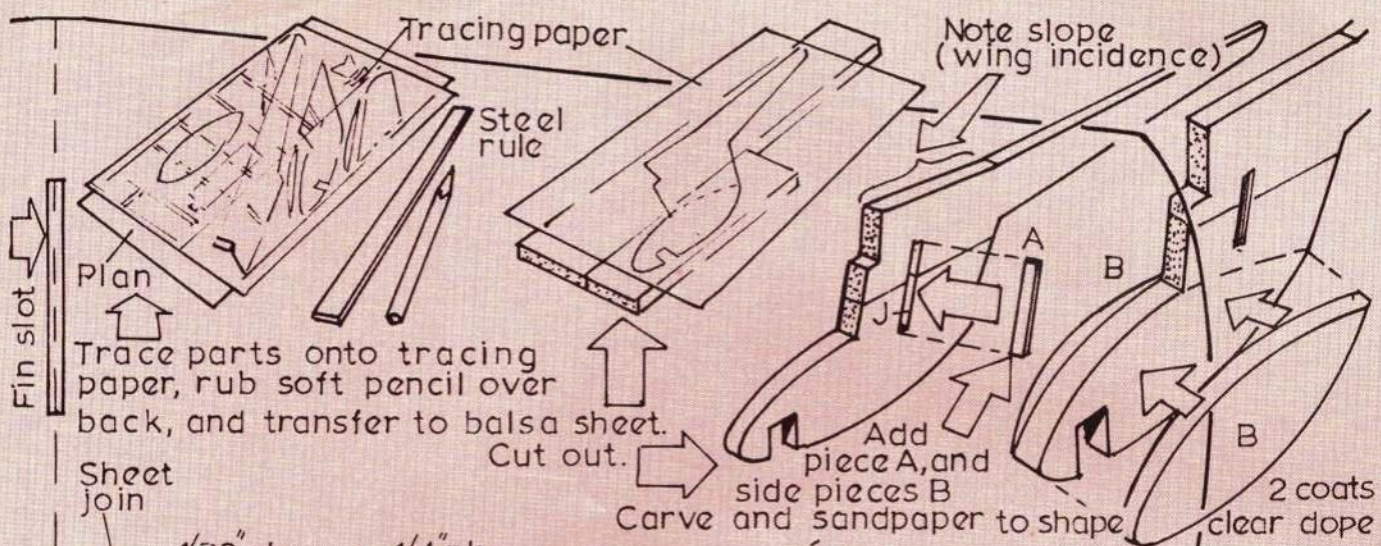
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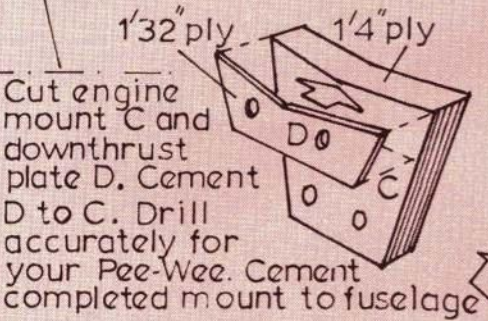
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Trace parts onto tracing paper, rub soft pencil over back, and transfer to balsa sheet. Cut out.

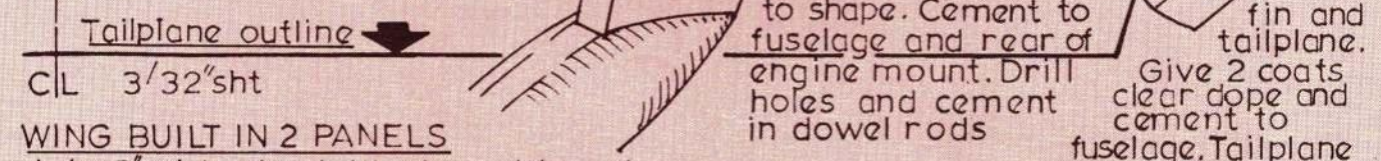
Sheet join



Cut engine mount C and downthrust plate D. Cement D to C. Drill accurately for your Pee-Wee. Cement completed mount to fuselage

Add piece A, and side pieces B. Carve and sandpaper to shape.

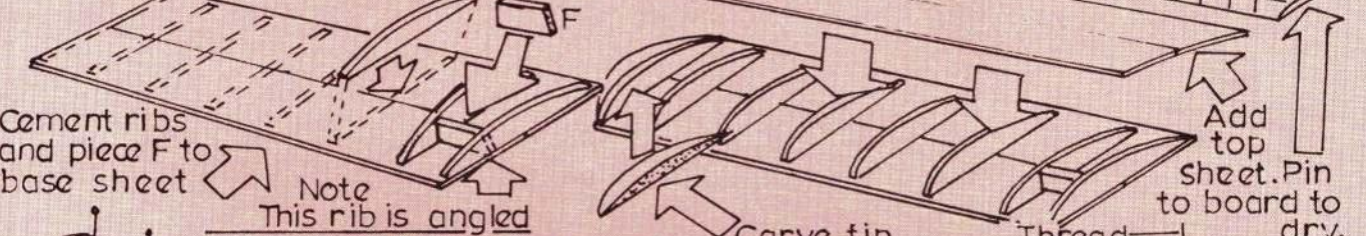
2 coats clear dope



CL 3/32" sht

WING BUILT IN 2 PANELS

Join 3" wide sheet. Mark position of ribs and piece F. Cut out ribs and F.



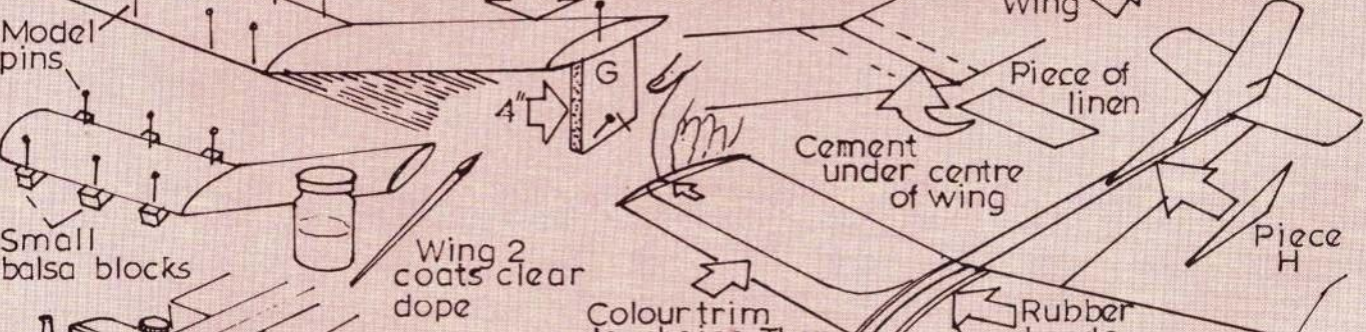
Cement ribs and piece F to base sheet

Note This rib is angled

Join panels. Raise one panel 4" using piece G

Carve tip and cement in place

Add top sheet. Pin to board to dry.



Model pins

Small balsa blocks

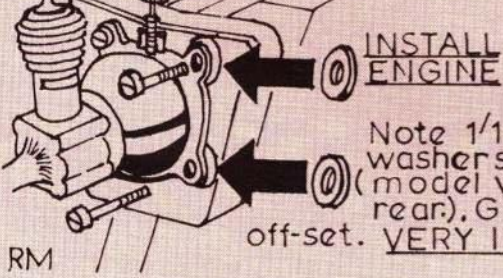
Wing 2 coats clear dope

Cement under centre of wing

Colour trim to choice. Then entire model 1 coat fuelproof dope

Paint black

Model **MUST** balance level when supported under balance points

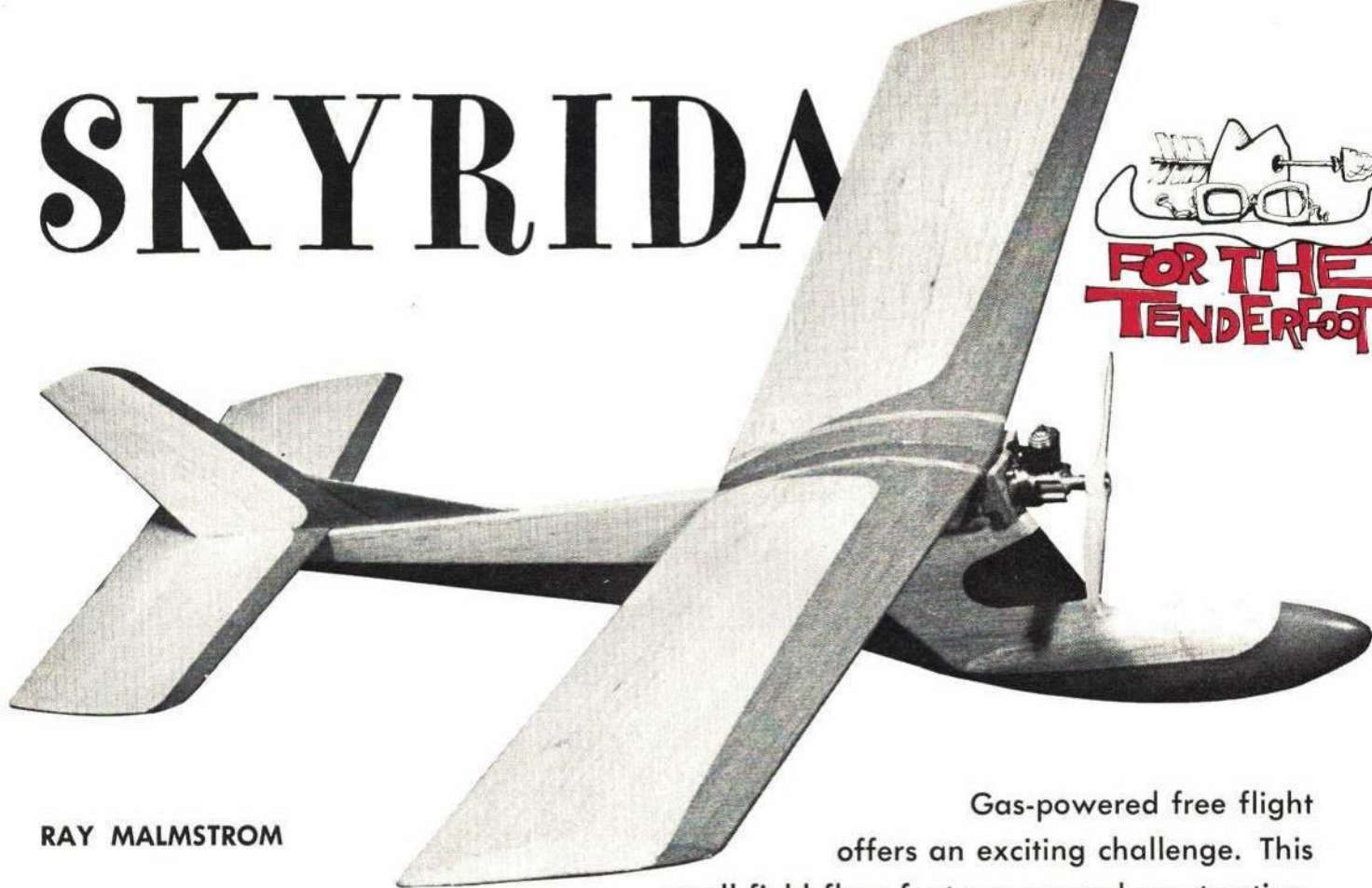


INSTALL ENGINE

Note 1/16" ply or metal washers on LEFT side (model viewed from rear). Gives engine off-set. **VERY IMPORTANT**

RM

SKYRIDA



RAY MALMSTROM

Gas-powered free flight offers an exciting challenge. This small-field flyer features rugged construction.

SOMETHING different always catches the eye and this old saying is as true for the novice, as for the old-timer. As model aircrafts go, "Skyrida" certainly possesses that excitingly different look, and when we tell you that you will find it easy to build, and to fly, then our guess is that you are already reaching for that balsa knife. So let's go!

You will find the "easy-build" sketches

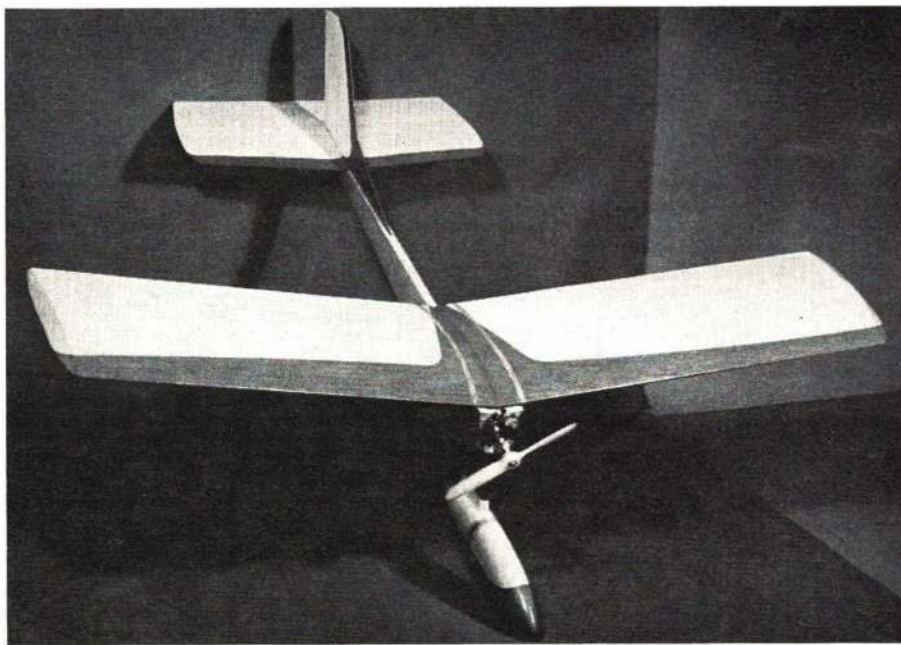
will give you all the info you need to build yourself a Skyrida quickly and easily. Work on a flat board (white pine, plywood, etc., are all suitable). Use a sharp knife (we prefer a really sharp single-edge razor blade) and a medium and a fine grade of sandpaper for shaping and finishing the parts. Remember to sandpaper all surfaces lightly between coats of dope. Only one side of the

wing and stabilizer are shown, so simply reverse your tracing for the opposite side. Easy! Check when you cement the stabilizer in position that it is at right angles to the fuselage, and the fin is truly upright. A carpenter's square or small T-square comes in real handy here.

When bolting in your Pee-Wee 020 engine, make sure you offset it to the right (model viewed from the rear) with either two $\frac{1}{16}$ " ply or $\frac{1}{16}$ "-thick metal washers. This is most important. By the way, if a Pee-Wee 020 is a new engine to you, be sure and run it on a test bench first, and familiarize yourself with the starting procedures and fuel setting.

A word or two on "balancing." Because sheet balsa varies a great deal in weight from sheet to sheet, when you have built your wing, it is a good idea to balance it. Suspend it upside down as shown in the sketches and see that the wing hangs level. If one side is heavier than the other, add a very small amount of clay to the tip of the light side. And now for the second and equal-

Continued on page 52



Left: Not only is construction sequence shown but also outlines for tailplane right half. Reverse the outline for left half. Above: Fuel-proofing with several coats of clear dope is required for powered models. Easily started Pee Wee 02 engine is recommended.

MATERIALS LIST

4 sheets $\frac{1}{16}$ x 3 x 36" medium balsa
 2 sheets $\frac{3}{8}$ x 3 x 36" medium balsa
 1 sheet $\frac{3}{16}$ x 3 x 36" medium balsa
 2" sq. piece $\frac{1}{4}$ " ply
 1 x 3" piece $\frac{3}{32}$ " ply
 1" sq. piece $\frac{1}{16}$ " ply (or $2\frac{1}{16}$ " thick metal washers)
 1 x 2" piece $\frac{3}{32}$ " ply
 4" length $\frac{1}{8}$ diam. dowel rod
 1 piece linen or gauze 3 x 5 $\frac{1}{2}$ "
 1 tube balsa cement
 1 bottle clear dope
 1 small bottle fuel-proof dope
 $\frac{1}{2}$ " brush for doping
 1 small jar — color dope
 1 small brush for color trim
 4 nuts and bolts (for Pee Wee)
 Small piece of lead for nose weight
 1 sheet tracing paper
 modeling pins

Piece F
3/32" sht

Side pieces B
From block.
3/8" and 3/32"
laminated

Piece F

Sheet
join

Centre rib,
angled
for
dihedral

Linen or
nylon
piece
reinforce-
ment under
centre
section.

Cut-outs for access
to engine mounting
bolts

Pieces E From block.
Two 3/8" sht. laminations

1/8" diam.
dowel.

ALL PARTS
FULL SIZE

PIECE F

Position of Piece E

Fuselage
3/8" sht.

Pieces B either
side

1/16" ply
or
metal
off-set
washers

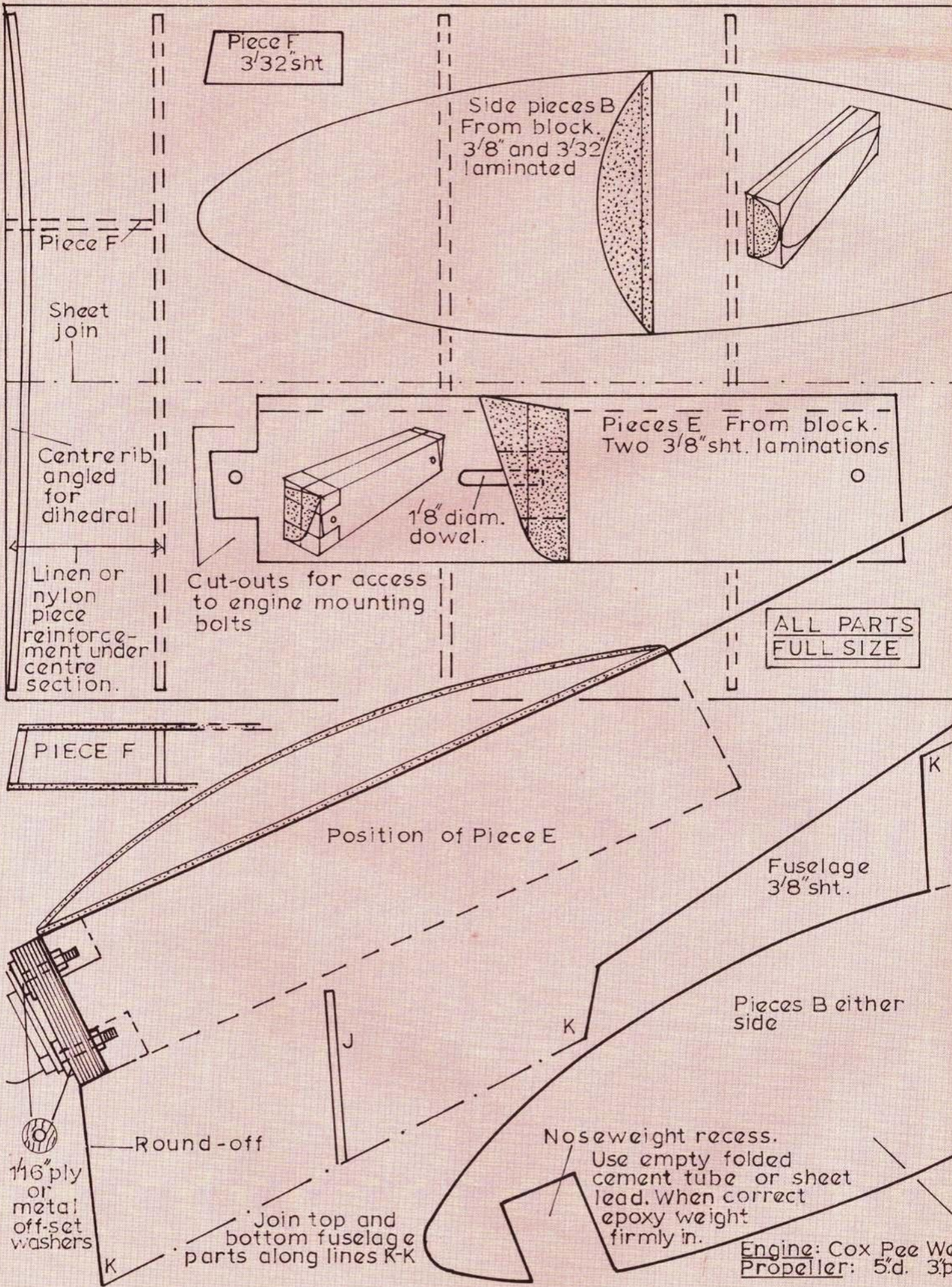
Round-off

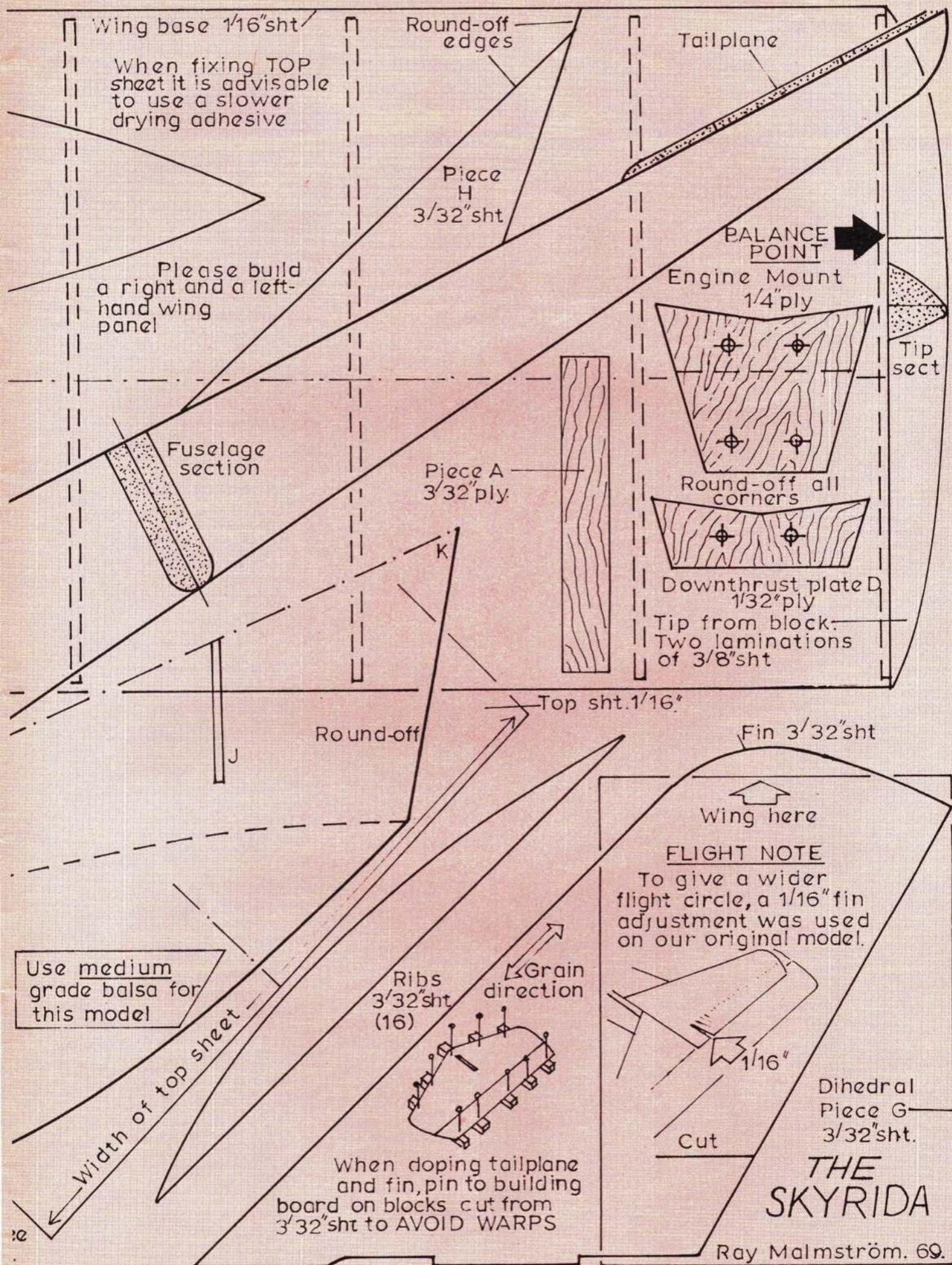
Join top and
bottom fuselage
parts along lines K-K

Noseweight recess.

Use empty folded
cement tube or sheet
lead. When correct
epoxy weight
firmly in.

Engine: Cox Pee Wee
Propeller: 5" d. 3" p





Wing base 1/16" sht

When fixing TOP sheet it is advisable to use a slower drying adhesive

Round-off edges

Tailplane

Piece H
3/32" sht

BALANCE POINT

Please build a right and a left-hand wing panel

Engine Mount
1/4" ply

Tip sect

Fuselage section

Piece A
3/32" ply

Round-off all corners

Downthrust plate D
1/32" ply

Tip from block:
Two laminations of 3/8" sht

Top sht. 1/16"

Round-off

Fin 3/32" sht

Wing here

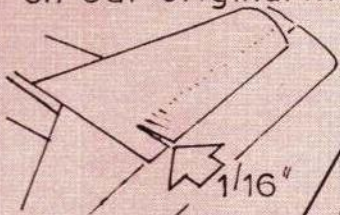
FLIGHT NOTE

To give a wider flight circle, a 1/16" fin adjustment was used on our original model.

Use medium grade balsa for this model

Ribs
3/32" sht
(16)

Grain direction



Dihedral Piece G
3/32" sht.

Cut

THE SKYRIDA

When doping tailplane and fin, pin to building board on blocks cut from 3/32" sht to AVOID WARPS



It Happened in D.C.

The spirit of the Wright Brothers, Charles Lindbergh and Neil Armstrong prevailed as youngsters tried their wings in the shadow of the nation's Capital.

Photos courtesy of the Aero Club of Washington

AVIATION came to life at the Smithsonian Institution last June. The thrill of flight and some learning of what makes a plane fly were introduced to over 150 youngsters. They built and flew their first model airplanes in a special meet directed by the Academy of Model Aeronautics. Hundreds of flights were made by boys and girls from six to 16. The flying site was the Smithsonian Mall, directly in front of the Arts and Industries building, with the U. S. Capitol in the background to the East and the Washington Monument to the West. It was a spectacular setting, never before used for model plane flying; only a short walk from some of the world's most famous airplanes on display: the original Wright Brothers' Flyer, Lindbergh's Spirit of St. Louis, NASA's X-15 (previously piloted by moon pilot Arm-

strong), and the Navy's NC-4 flying boat. Side by side with these museum pieces were some famous model aircraft, in a special display.

The major sponsor was the Aero Club of Washington, providing trophies, free AMA Cub model airplane kits (more than 3500!), and many meet supplies and services. The meet was billed as the National Capitol Airplane Championships, in recognition of over 20 years of annual model airplane contests sponsored by the Aero Club. It was also part of a national program of model plane contests promoted by the U. S. Navy and the Hobby Industry Association of America. Through their joint support, the meet champion was offered a day's cruise at sea aboard an aircraft carrier and a trip to AMA's Navy-hosted National Model Airplane Championships.



Left: Youngsters and officials in the midst of competition. The Capitol Dome provided historical atmosphere for the model aviation portion of the Smithsonian Institution's first annual aerospace aeromodeling program during the 1969 summer season. Although kites have been flown before at Smithsonian events this was the first time for model airplanes. The outstanding success of the event has been praised by museum officials who are now looking toward

a similar event for 1970. This year's meet enjoyed perfect weather and over 500 official flights were recorded. Scene at above right was typical: youngsters flew their airplanes with the help of timers from AMA chartered clubs. The D. C. Maxcutters Club provided most of the meet officials, assisted by the Baltimore Aero-Craftsmen. The DC/RC Club contributed several hundred free AMA Cub kits.



Above: A study in concentration shows above as a young D. C. lad launches his first model airplane, near the Washington Monument. The plane is the AMA Cub, an updated version of the Delta-Dart, the plans of which were published in *American Aircraft Modeler* in 1967. Designed by Frank Ehling, Technical Director of the Academy of Model Aeronautics, the model features extremely simple construction, excellent flight characteristics, and extremely low cost. Almost any youngster can build the Cub within an hour and be practically guaranteed an "instant success" first flight. Many flights of over one-minute duration were scored; the highest was over three minutes! Sponsors can get kits cheaply; \$160 buys a thousand.

Right: The lobby of the Smithsonian's Arts and Industries building provided a rare setting for a model airplane workshop. The original Wright Brothers airplane hung overhead as did the Spirit of St. Louis, while the X-15 provided a backdrop. The Smithsonian provided work-tables and AMA members acted as instructors. Many dads and mothers were also recruited to help the youngsters. There was no dust gathering in the Smithsonian museum lobby this day, but balsa scraps, paper and glue littered the normally staid building. Nobody complained about the mess — it was a happy occasion with action to spice the nostalgia.



Above: It actually happened — AMA's Executive Director John Worth had one of the AMA Cubs land right on his hat! The sky was full of models at all times during the contest — at least a dozen timers and as many others, who wound the rubber motors for youngsters, kept the contest moving rapidly.

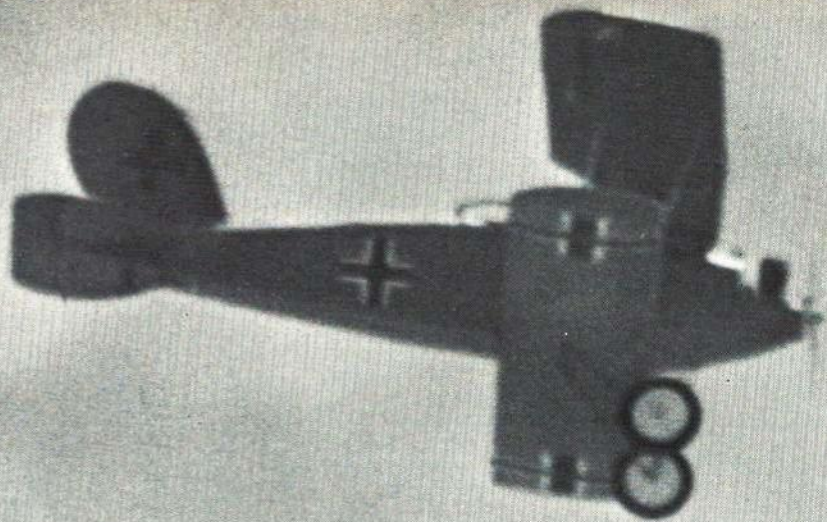




Above: Helping in the contest were wives of AMA officials. They registered contestants, assigned aircraft numbers and tabulated scores. There were no entry fees or requirements, other than age category. Despite hundreds of flights the tabulation of results was completed and all awards presented within an hour after the contest ended. It was a grand finish to a great day in the District of Columbia.

Left: Dr. Walter Zaharevitz, Executive Director of The National Aerospace Education Council, acted as official award presenter for the Aero Club of Washington. The Aero Club of Washington provided 36 trophies, thousands of free AMA Cub kits, and most of the meet support other than personnel. The contest was one of many in a program of regional meets promoted by the U. S. Navy and the Hobby Industry Association of America, and the AMA.

MODEL ON THE COVER



Semi-scale rendition of very tough World War One fighter is 60-powered, stunts like crazy and looks real.

BOB SNYDER

THE German branch of the Bristol and Colonial Aeroplane Co., of Bristol, Deutsche Bristol Werke, Halberstadt was renamed Halberstadter Flugzeugwerke when the "Great War" broke out. Carl Theiss, chief designer for Halberstadt, marked all his designs with some degree of resemblance to each other.

History: Explanation of the German-type designations may simplify understanding of the CL II evolution: A types were unarmed monoplanes such as the Taube or Dove, or the Eindecker; B types were unarmed two-seat biplanes; C types were armed two-seat biplanes, recon and photo; CL types were lightened C types for escort; D types were single seaters; J types were armored C types used in ground support; G types were twin- and occasionally four-engine bombers; R types were "Riesenflugzeug" or "Giant Aeroplane" bombers.

The first Halberstadt, the AI was a Taube type; AII, a license-built Fokker M.8 (M was a Fokker designation of a series, E and V being his other series). The other types are as follows: B-I, 80 hp trainer, one or two built; B-II, 120 hp recon, 1915; C-I, a smaller, refined BI with armament — not produced; CLII (the model) was a lightened new design, 1917; CIII was a 200-hp long-range recon, 1917; CLIV, an improved CLII (not as pretty); CV, refined CIII; CVI, CVII, a CV with 245 hp, one built, 1918; CVIII, another engine mod, one built, 1918; CIX, a CV with 230 hp, 1918; CLS, replacement for CLII and CLIV smaller, lighter, faster, 1918; D-I, first fighter, 100 hp Mercedes, 1916; D-II, refinement of D-I; D-III, more of the same; D-IV, a 150 hp DIII; D-V, 120 hp ultimate fighter, 1917; G-I, a twin-engine bomber, 1916.

The Halb. CLII was designed in response to the lightened C-type specification in 1917, which required an aircraft to equip the Schutzstaffeln (protection flights) for protection of the C-types used in photos and recon flights. However, the German High Command changed the Schutzstaffeln to Schlachtstaffeln (battle flights) and the Halbs

were used for ground-support duties and, as time permitted, in escort duties. The battle of Cambrai in November 1917 verified the suitability of Halbs as ground-support aircraft. In fact, a British Court of Inquiry was convened in January 1918, to examine the cause of the defeat in this battle.

The Halb was a strong (though lightly built) small two-seater. Power was by the ubiquitous 160 hp Mercedes DIII. The fuselage was plywood covered with metal nose cowling. The fixed tail surfaces were wooden framed and fabric covered, the movable surfaces welded tube and fabric. Wings were wooden construction, two spruce main spars, plywood leading edges, and were set at an unusually high incidence angle. Ailerons were welded tube and fabric, and operated through torque tubes into the center section and through cranks and pushrods into the fuselage.

Struts were steel tube with bracing cables. The high ring-mount and cutout wing allowed the gunner 360-degree firing. The center section of the wing housed the radiator and gravity fuel tank. The under carriage was steel tube spring with multiple spiral springs. Tail skid was of ash and was internally sprung, the pivot center being in line with the rudder post.

Dimensions were: Span, 35' 4"; length, 23' 11 $\frac{3}{8}$ "; Wing area, 297 ft.²; Weight empty, 1,701 to 1,751 lbs.

Armament was one or two fixed Spandau machine guns forward, and one manually operated Parabellum machine gun rear. The rear cockpit also had a rack for four or five, 22-lb. bombs or anti-personnel grenades. (Model note: the details shown for Spandau and Parabellum were roughly scaled from photos to a looks-about-right scale and probably are not accurate.)

The model is scaled 2" to the foot, 70.66 in. span top wing, 69.3 in. span bottom, 47.9 long, weighs 10.9 oz. Mod. No. 1, 9 lbs. 12 oz., mod. No. 2 still has 12 oz. lead up front. The Super-tigre 60 RV must be thirsty because that 10-oz. tank doesn't allow time for the shake to leave the knees.

Spinner in the photos is balsa (!) and will be replaced as soon as some manufacturing company will let it be replaced. (Hint.)

Wheels are 5" Williams Bros. Radio is a Kraft KP6.

Color scheme: In 1917 prior to the Lozenge pattern, various shades of purples and grays were used, every batch varying slightly in hue so almost anything is scale. The cross design shown was finalized in 1918 when the German insignia changed from Cross PATEE to the Greek cross which was easier to identify in the air. The model was doped with gallons of this and that, and a sort of Wehrmacht gray appeared. The crosses are MonoKote, easy but too glossy. Mod. No. 2 of the model was "scale" egg-plant purple. The color scheme and markings on the prototype were modeled after aircraft serial 6214/17, taken from a black-and-white photograph, so the color is only generally accurate. Note that the serial number and weight data appear on the left side.

Scale: If you're a real scale nut you're gonna have to dig up some airfoils, 2"/ft. 6-cyl. engine, and a batch of obscure facts. As shown, the plans are scale except 2312 airfoils are shown in an attempt to get some maneuverability, and to ease construction. The incidence on the actual CLII was ridiculous, being in the vicinity of eight degrees. The 12% airfoil makes the balanced ailerons act as speed brakes, unless the bottom surface is warped slightly as shown on the plans. The plans show a few scale notes which can be incorporated or ignored.

After building the prototype, the final-version plans were drawn with modifications which have not been proven, but which appear to be reasonable. They are: 1) The prototype had a 16% airfoil, a rather blunt L/E, and looked clumsy — so the plans have a 12%; 2) Reduced horizontal stab to scale size — it just looks small; 3) Built-up tail surfaces is an attempt to get 2 oz. out of the tail, for 12 oz. out of the nose; 4) Revised cabane mounting; 5) No wheel collars (they are too easy).

Fuselage: Everything is typical and only a few suggestions are required. Build the sides, make the box, install top formers and stop. Install cabanes, pushrods, servos, engine, tank, and then proceed to plank the top.

Wing: Normal construction. The only

Halberstadt CL III

Returning safely to the old airdrome, Bob's model is lifelike. Trusty Supertigre 60 pulls it along.

problem is aligning the wings, struts, and cabanes to each other and the fuselage; takes patience. Put in the blocks for struts and cabane attach-points, or use your favorite method. Same for wing attach. Might as well make the servo mount here too before you cover; you must make a hatch into that servo anyway — the proto was hidden under the radiator.

Tail: Keep it as light as you can. Williams Bros. small C-type aileron hinges make beautiful elevator and rudder horns.

L/G and cabanes: The proto used $\frac{3}{16}$ " piano wire. As a suggestion, use $\frac{5}{32}$ max. If you can find a better attach method, try it. Struts and flying wires aren't required for flying but look nice. Take some field time.

Exhaust stack: Chrome-plated $\frac{1}{2}$ " brass tube (plumbing shop), silver-soldered to a mounting flange. You have to use something to get the goo out of the fuselage.

Pilot: A Williams-type pilot and some G.E. rubber stuff make for good German pilots.

Spinner: The balsa spinner in the photos is not too practical, but until some manufacturer makes a nice blunt WWI type, either build it or have a radar-dome nose spinner. I tried a plastic spinner and it looked terrible.

Equipment installation: Servo mounting, pushrods, etc. are not shown — nobody follows instructions anyway. The proto used Nylink attached to fuselage, which allows pussy cats and small dogs to be carried in the cockpit without pushrod interference. The aileron servo plug has to get to the receiver some way, so keep the receiver close to the fuselage top. Keep servos and battery pack as far forward as possible to help the CG position. Actually, the Halb configuration is not inherently nose-heavy and, with reasonable care, no ballast will be required.

Flying: After the six first flights mit motor mit Krappen outen, I was wondering about the German Italian Alliance, but discovered a ST 60 RV doesn't like 14-6 props at all, especially when mixed with a different fuel diet — on 12-8, and cleaned out, everything is fine.

It's similar to an Antic in flight, rolls smoother, and can carry almost anything

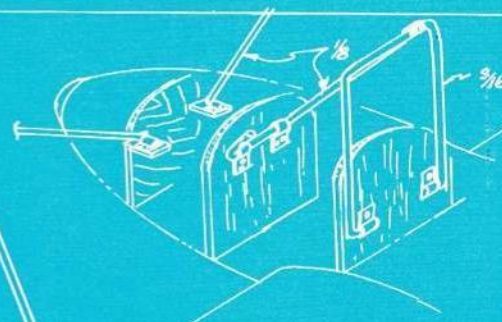
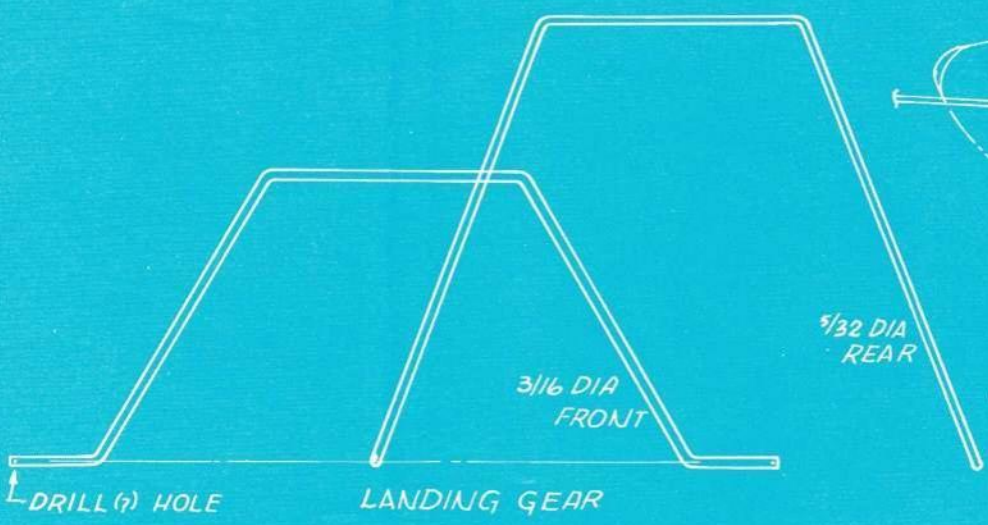
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Jaunty, mustached Baron von Wurst waits a flip of the prop. Fairly thin wings on model avoid high drag so typical of many scale biplanes. Rear cockpit gun mount shows clearly.

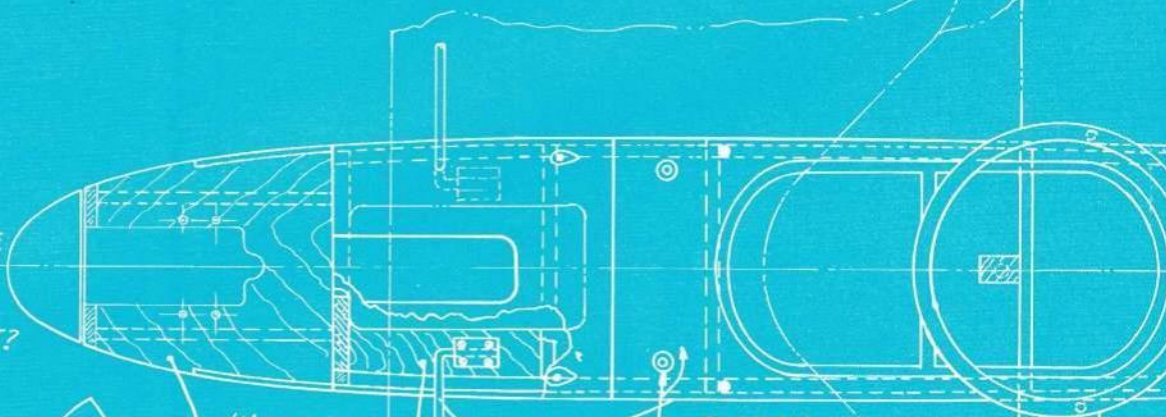


Many pleasant variations in configuration of flying surfaces make the model interesting to build. The simple egg-shell blue color theme is authentic — so is camouflage on cover.



CABANE DATA.
SET WING AT 0°
AND BLOCK TO
HEIGHT-CUT CAB-
ANES TO FIT &
SOLDER FIRM

ENGINE THRUST
LINE, NO UP, SIDE,
DOWN OR SLAUNCH
FOR .60'S, 3°-5°
DOWN .71'S & UP
DYNAJETS - WHAT?



1/4 PLY MOUNT
CAMEL HUMP
(SOPWITH)
SCALE

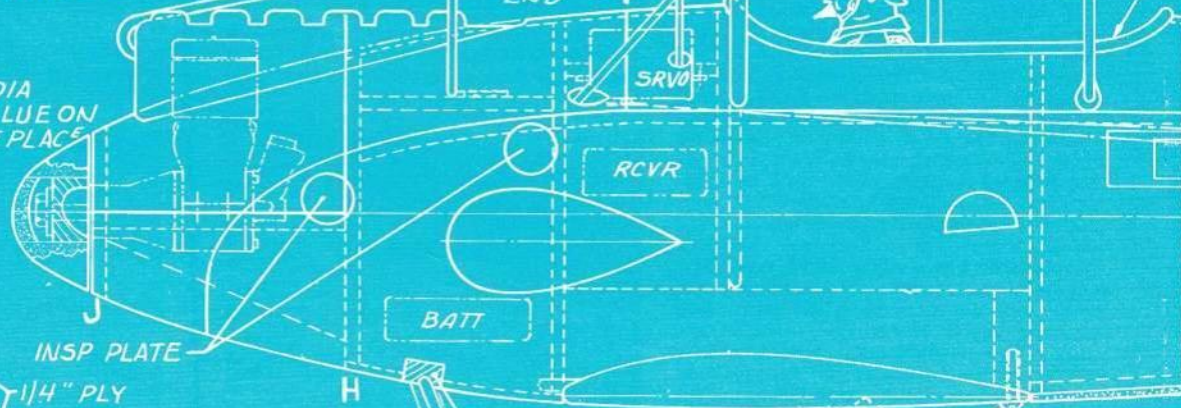
COOLANT
TUBE

EXHAUST

SCALE COWL
END

AILERON
CONTROL TUBES
(& SERVO WIRE)

SPINNER: 1 1/4 DIA
HDWD CORE - GLUE ON
BALSA CAP - RE PLAC
AS REQD



INSP PLATE

1/4" PLY

BATT

RCVR

SRVO

H

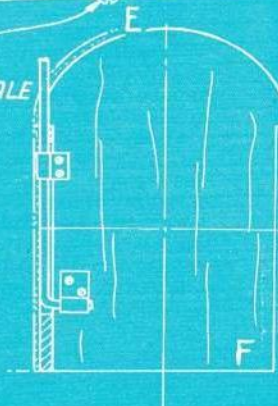
SCALE

1/2 x 3/4 LIG
HARD WOOD

NON-SCALE

COTTER KEY
& WASHER
(GOTTA DRILL
A HOLE!)

5 1/4"
DIA

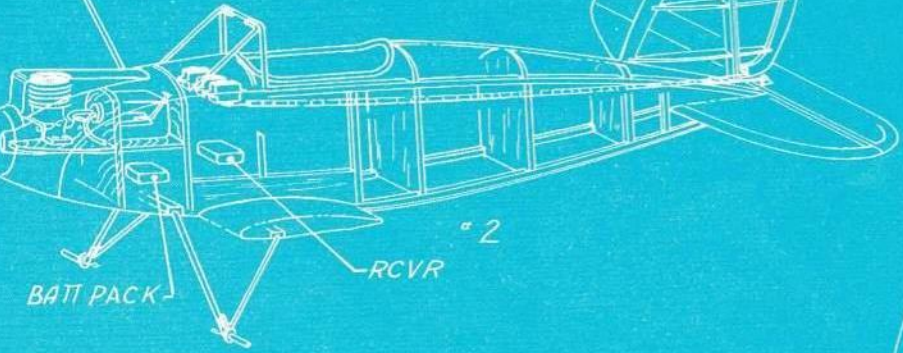


1/4 SQ SPRUCE LONGERONS



*1 1/8 SH SIDES

- SERVOS

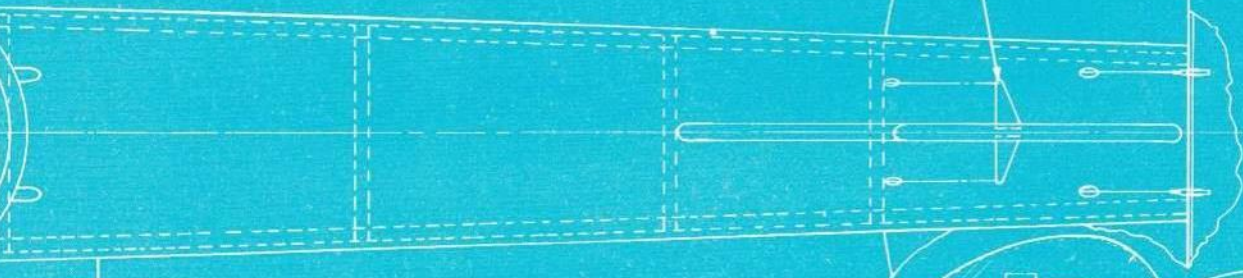


BATT PACK

RCVR

- FUSELAGE NOTES:
1. INSTALL ALL LINKAGES BEFORE PLANKING TOP
 2. PLANK TOP WITH 3/16, 3/8 STRIP
 3. PUSH RODS ARE 1/4 SPRUCE OR NY-ROD (FOR HIDDEN)
 4. ALL BULK HEADS 1/4 Balsa
 5. WINGS & TAIL 0°-0°-0°

CSK BASES

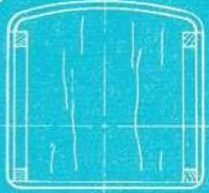


COCKPIT COMBING- 1/4" DIA TUBE
GUN MOUNT 1/32 PLY RINGS
1/8 DIA SUPPORT MEMBERS

1/4 SHEET OUTLINE
1/8 RIBS
SILK COVERED

ROUGHLY - EMPTY WT 1750 LBS
USEFUL 820 LB PLANKING LINES NOT SHOWN

BOMB RACK



SECTION A



1/8 PLY
1/4 HARDWD

Leerrgewicht 790 Kg
Abschliessstellung
Einschl. Vollen Tank 870 Kg

C.6304

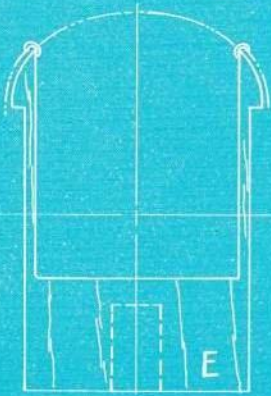
Hold CLG 1/4" DIA

WILLIAMS BROS
SMALL 'C' TYPE
ALERON HINGE
(RUDDER TOO)

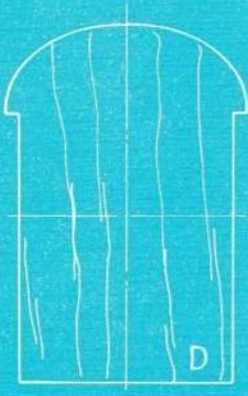
HARD WOOD, EPOXY,
WIRE, GLUE & REPLACE
AS REQ'D

STEPS

BOTTOM- 1/8 SH



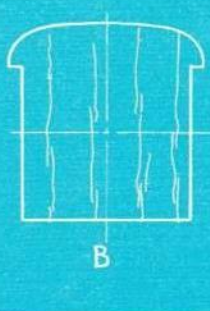
E



D



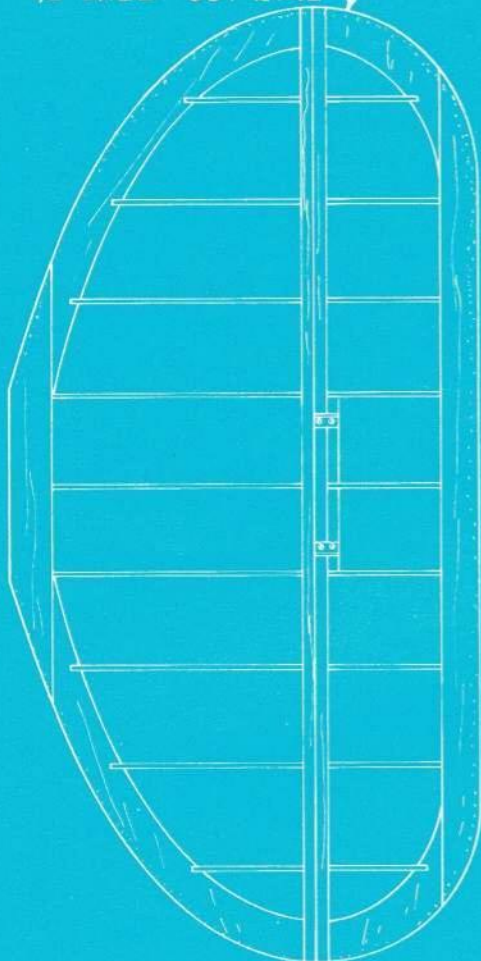
C



B

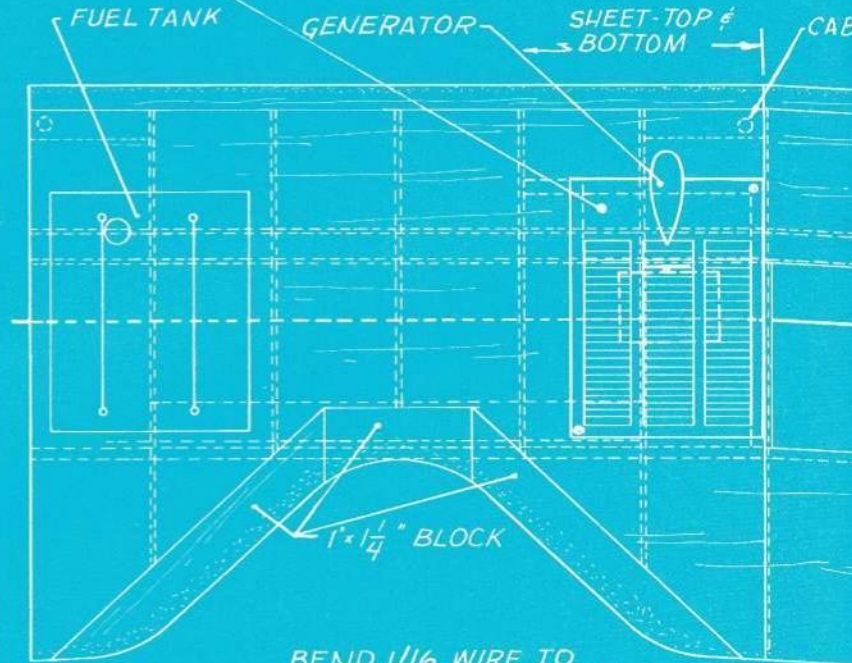
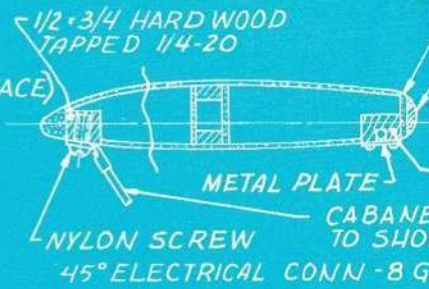
HALBERSTADT CL II	
SPAN	70.66 IN
LENGTH	47.91 IN
SCALE	2IN. = 1FT
DESIGNER: CARL THIESS - 1916	
SCALED & DRAWN: BOB SNYDER 1969	
SH 10F2	

3/8" SHEET OUT LINE



SPARS - 1/4 x 3/8 SPRUCE
RIBS - 3/32 Balsa
HORNS - SEE FUS
HINGE - PREFERENCE

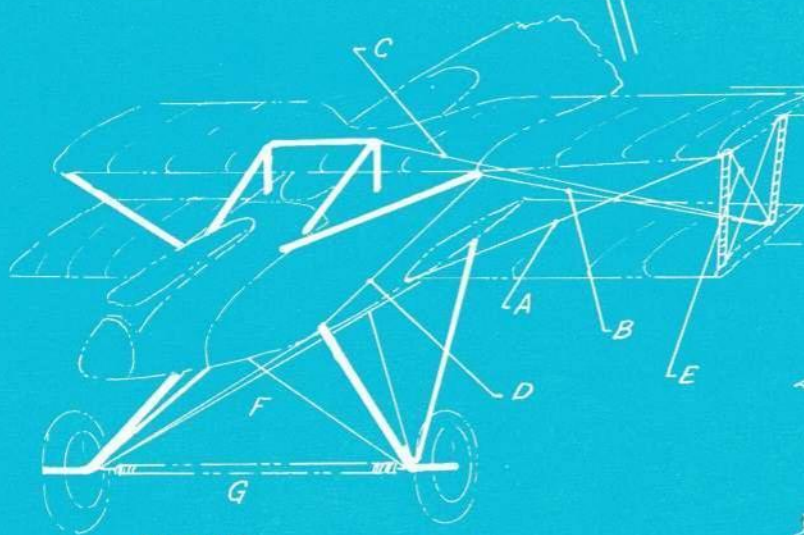
RADIATOR: (--- SURFACE)
ACCESS HATCH TO
AL SERVO. ATTACH
WITH SCREWS.
1/16 WIRE PUSH RODS



BEND 1/16 WIRE TO
SNUG FIT 1/4 AL TUBE.
BIND & GLUE TO WING STRUCTURE
CUT STRUTS TO ENTER WING.
LIGHT RUBBER BAND SECURE STRUTS

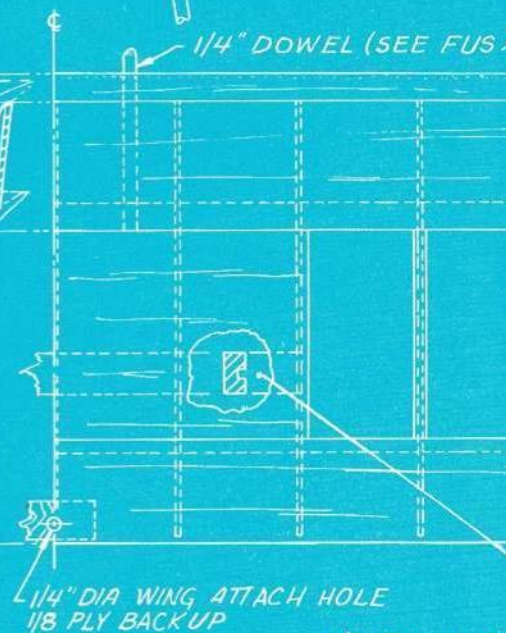


NOTE: STRUTS ARE
NON STRUCTURAL
ie. NOT REQD



RIGGING

WIRE A - WING ROOT LWR FRONT TO TOP FRONT STRUT
B TOP FRONT CABANE TO LWR REAR STRUT
C TOP REAR CABANE TO LWR REAR STRUT
D TOP FWD CABANE TO FWD L/G
E "X" IN STRUTS
F "X" IN L/G, FRONT & REAR
G SPRING

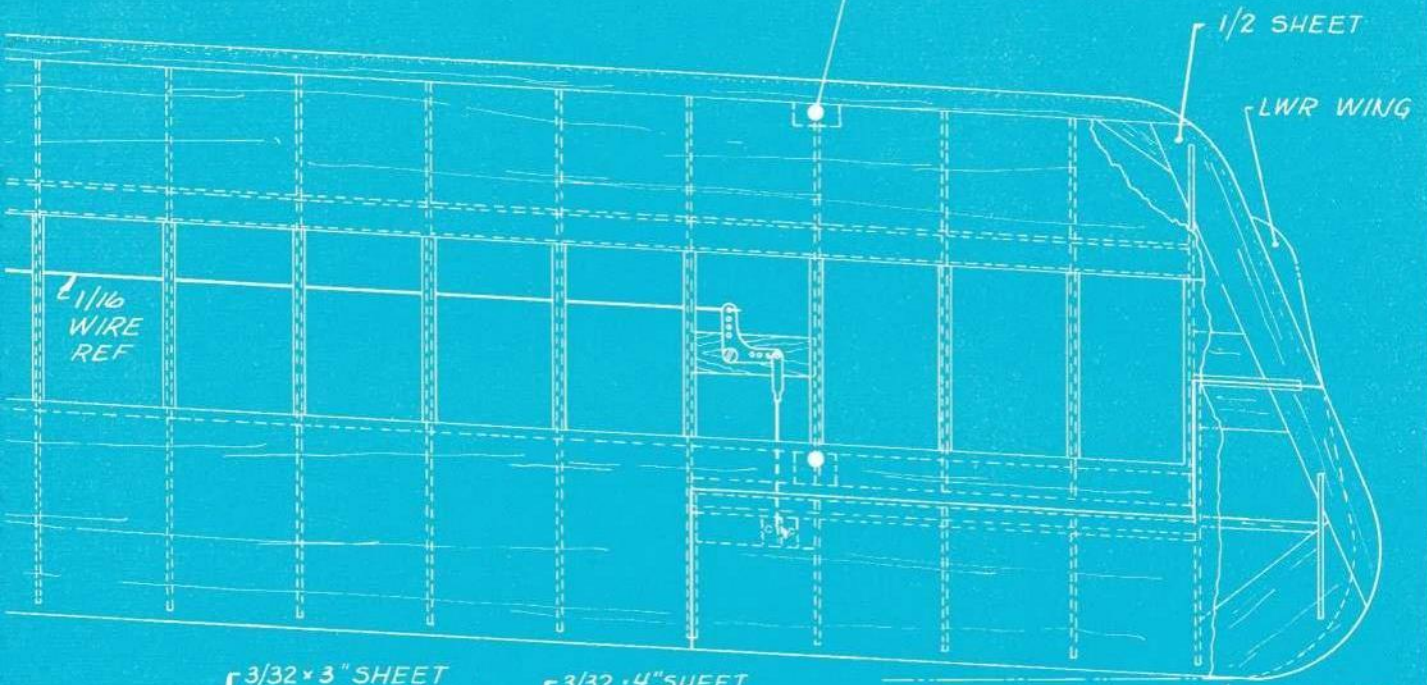


1/2 x 3/4 HARD
L/G ATTACH L

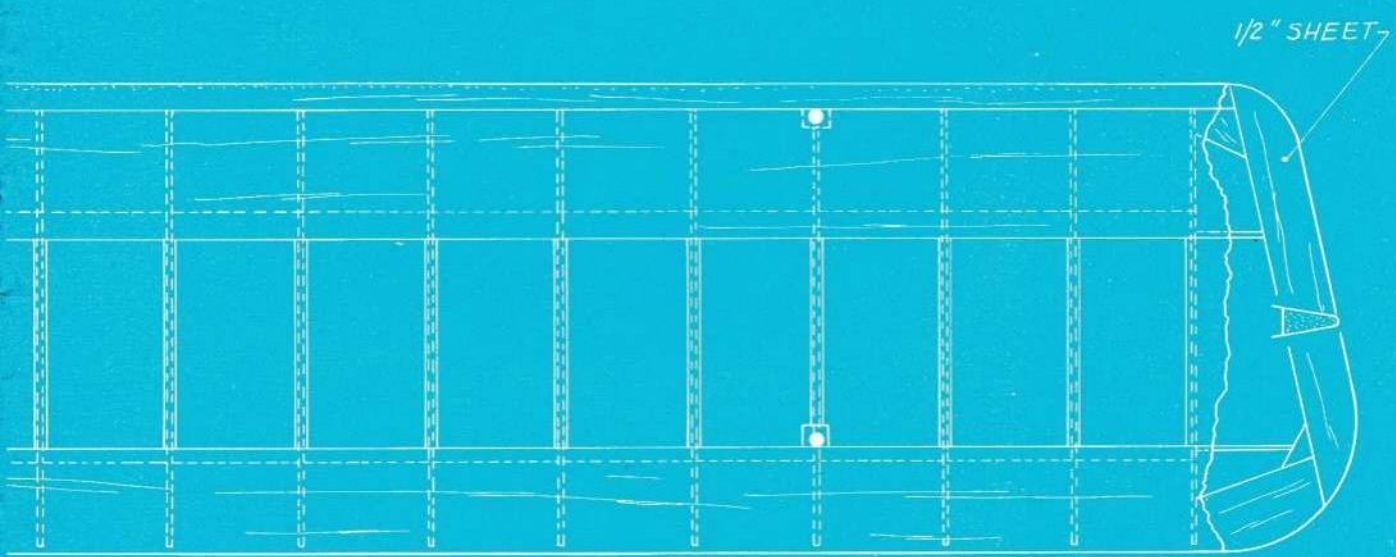
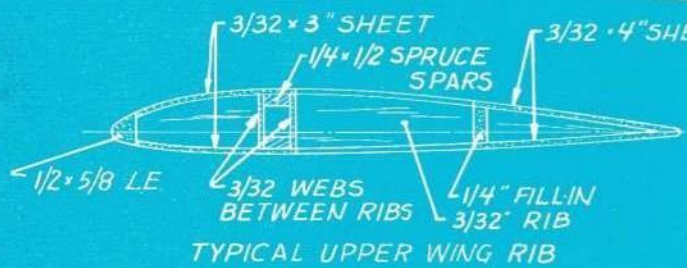
- FILL IN
- SPAR LAMINATE
- 1/2 x 1/4 SPRUCE THRU CTR
- 1/2 x 3/4 HARDWOOD
- ROTATED
- N ATTACH
- 4 - SILVER SOLD.



PLANE ATTACH



2 1/16 WIRE REF



- WING NOTES:
1. SILK COVERED.
 2. NO DIHEDRAL, EITHER WING.
 3. BUILD WINGS IN ONE PIECE.

HALBERSTADT CLII

Right: If you've got a they-went-thataway feeling, this is a canard tow-liner with a wing in the rear, stabilizer in the front.

Center: Off into the wild-blue yonder! The wing is front now, and the tail group suggests a moon-landing vehicle. Versatile!

Bottom: If you must have an engine to push it up the easy way, well, here is the Cox pylon-mounted 02 Pee Wee — pusher, natch!



SLO-POKE

A study in slow-motion flight in various forms: powered job or glider with tail first or tail last.

GABRIEL BEDISH

IF you've wanted to build a sure-fire, out-of-the-ordinary addition to that roster of fine performers for weekend get-togethers, Slo-Poke fills the bill for both novice or sport flying enthusiast. The design also is intended for transition by the beginner to high-performance without having to start with a Nordic model. Our model is close to Nordic specifications for learning to fly models of Nordic size.

Slo-Poke is a simple model which performs well above average in several roles. It is relaxing to fly. Powered versions are ideally suited to the Cox 020 Pee Wee, which takes the model well up in a smooth turning climb.

Cost of building Slo-Poke is about \$3. The original model is still flying after years of fun, with no repairs beyond a few punctures in the covering.

Construction: Medium-hard balsa is used with exception of hard balsa for fuselage longerons. The framework is light but rugged. Conventional construction is used in a manner to enhance efficient streamlining.

Use enough cement in assembling the framework if you want a long-lasting model. Fuselage construction is begun by assembling two sides directly over the plan. Wet the balsa longerons where curved before pinning them down. Allow the glue to dry thoroughly before removing from plan.

Insert the top and bottom crosspieces, working from rear to front. Upper and lower sheet-balsa keel-type stringers, taken directly from plan side view, are put in place. Notch out keel stringers for fitting over crosspieces. Add the numbered formers. Put in wing and stabilizer mounting dowels, the mount rests and sheet balsa fill-in around the mounting dowels. Add attachment receiving pieces for engine as well as dethermalizer. Tow control is optional. If utilized, follow the plan drawing for installing parts.

A landing wheel can be located into the front underside, or you might prefer a soft copper-wire skid, added after covering the

model. Both are easy running for ROG flights. Streamline the wheel "well" with a carved balsa fairing. Plank in the nose section. Carve and hollow the nose block for snug fit over the retainer piece mounted to the front of the fuselage frame.

The wing is a fairly standard form construction, with medium-hard quarter-grain sheet balsa planking along the upper forward surface. After separately assembling the two panels, plank both. Dihedral is added and the wing center-section soft-balsa block shaped and affixed to secure the dihedral. The block adds strength. Attach carved tips at the outer extremities of the panels, as well as those pieces next to the center section.

Construct rudder and vertical fin by laying out outlining pieces and vertical inner brace over plan. After the unit is dry, remove from plan and fit the horizontally cambered braces by bending the lengths around the vertical inner brace. Cement them. Rudder tabs are carved from balsa and set in position. Soft sheet metal is used for the

trim tab. The tow control tab is mounted on celluloid, while a small music wire (.040) horn is placed as shown.

Of streamline cross section, the sub rudder is formed from sheet balsa, to which is attached a soft copper-wire skid. A length of wooden dowel is placed as indicated to limit dethermalizer travel.

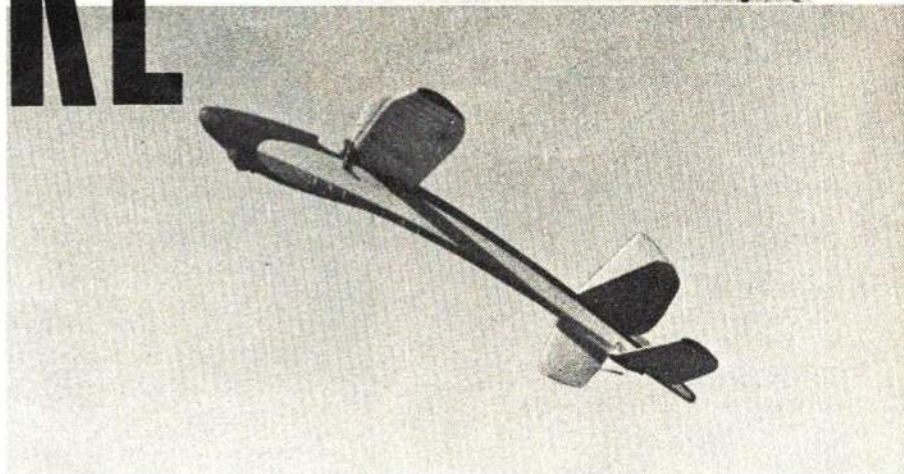
Stabilizer construction is similar to the wing. Our unit is hefty to withstand striking objects, also because it has generous area.

The balsa engine pod is put together as illustrated in the schematic drawing. Nuts for the engine mount bolts are cemented to the rear of the firewall. Recesses in the balsa pod permit room for bolts and nuts. Fit of the pod to fuselage mounting should be snug.

There is no timer for our model. To add one, install either an eye-dropper variety behind the engine firewall, or measure the fuel placed into the engine tank. (Be sure it is empty first! — Ed.)

Prior to covering the model, round out the construction by streamlining the airfoil sec-

Continued on page 73



NEW PRODUCTS CHECK LIST

Write the manufacturers for more data; tell them, "I saw it in American Aircraft Modeler."

Top Flite Models, Inc./ S. E. 5a. Ultra-realistic R/C scale. Model of famed WW I scout features realism, quality construction.

Some unique and unusual features: stamped and punched metal cowlings, 1/4" phenolic engine mounting plate, pre-formed airfoil shaped struts, matte-finish fuel-proof decals. Plans are tinted easy-viewing green, pre-waxed for easier construction.

Rigging, difficult on biplane, is simplified by nylon strut fasteners. Included is manual by Dave Platt, kit designer, with data on aircraft, flying and rigging tips. Flies well on engines as small as 40. Scale 2" to 1'. **TOP FLITE MODELS, INC., 2635-45 South Wabash Ave., Chicago, Ill. 60616.**

Precision Marine Products / 100" Soaring Glider. Kit provides finished fiberglass fuselage in choice of ten eye-arresting candy-flake colors, molded canopy and all balsa needed to finish wings. Complete kit, \$39.95; fuselage only, \$29.95. Write **PRECISION MARINE PRODUCTS, Box 10233, Denver, Colo. 80210.**

Lanier Industries / Aero 600. All-plastic, almost-ready-to-fly kit features new wing tips and fin configuration which materially aid ability to fly new pattern maneuvers. Aerobatic capability plus knife-edge flight for prolonged distances. Span 48". Write **LANIER INDUSTRIES, INC., Briarwood Rd., Oakwood, Ga. 30566.**

Guilow, Inc. / Two Scale WWII Aircraft. WWII favorites, Junkers JU87B Stuka and Republic P47D are lead items for new "1000-series" kits. 3/4"-scale models available for rubber or gas-powered free-flight, U-control or single-channel R/C.

Wingspans 34" and 31", respectively. Recommended power for F/F, 049; C/L, 07 to 09; R/C, 049 to 07.

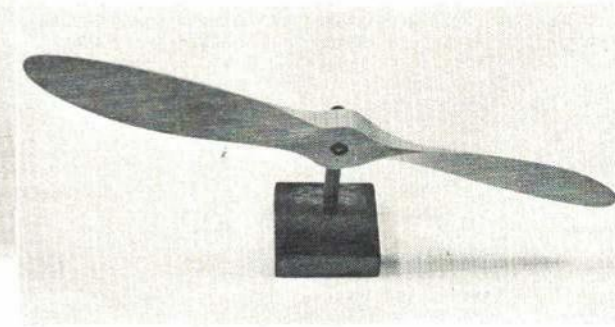
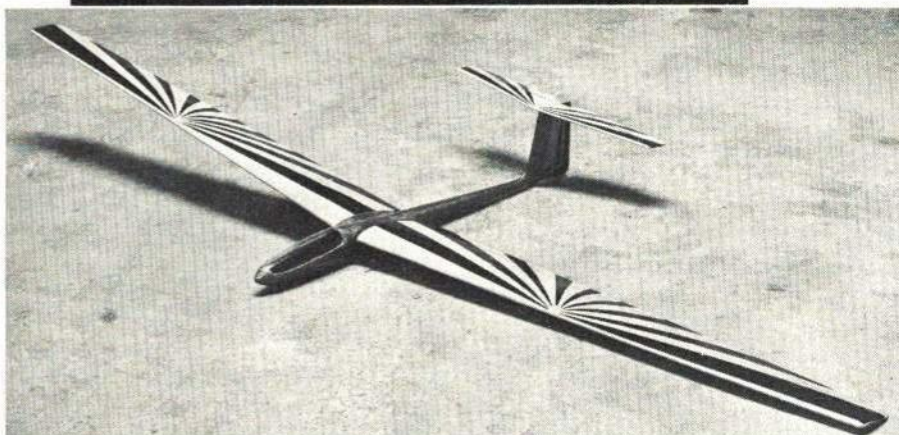
Kits well-detailed, feature movable flying surfaces and canopies, scale plastic wheels, two-color plastic interiors. Stuka has operational bomb release, P47D, retractable gear. Necessary hardware included for C/L operation and engine mounting. Price per kit, \$10.00. Write: **PAUL K. GUILLOW, INC., Box 229, Wakefield, Mass. 01180.**

Heath Electronics / Thumb Tach. Compact tachometer provides easy, accurate measurement of engine revs. Using photocell as a sensor, tach measures frequency of light interruptions by prop, converts to analog voltage for read-out on dial. Battery-powered circuit provides two ranges: 200 to 5000 rpm on low-speed, 1000 to 25,000 on high. On-off-range switch, attractive blue finish. **HEATH ELECTRONICS, Benton Harbor, Mich. 49022.**

Model Engineering / Prop Balancer. Enabling simple but accurate static balance of plastic or wood props, low-friction bearing on shaft is secret. Propeller moves to horizontal when both blades are of equal weight. Price \$2.75.

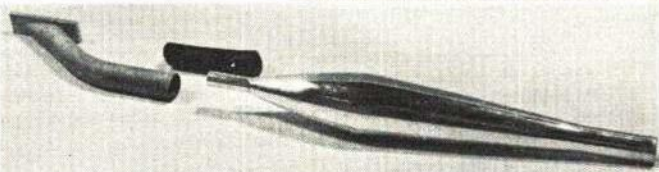
Also available, smoke generator for use with 45 to 61 engines. Eight- to 15-minute capacity, controlled by throttle or throttle trim. Price \$14.50.

Also, high-volume fuel pump, powered from 6v lantern battery. Transfers 12 oz. fuel per minute, more with 12v. Write **MODEL ENGINEERING, 3655 Calumet Rd., Decatur, Ga. 30034.**



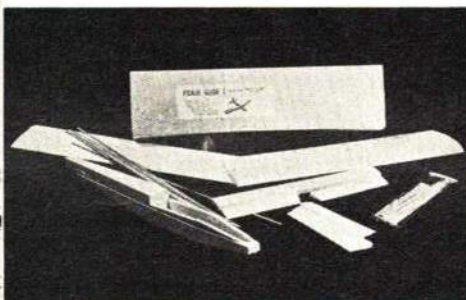


Kaiser Models/Li'l Sparrow. Easy-to-build, easy-to-fly kit, ideal trainer. Conventional all-balsa construction. Wingspan, 39", 049 to 099 engines. Ideal for single-channel, features unusual mid-wing configuration, elevator below wing line. Kit contains many pre-cut and shaped balsa components, coil-spring nose wheel, steel knock-off main gear, easy-to-read full-size plans. Detailed instruction book. Write KAISER MODELS, 1216 Juneau, Billings, Mont. 59102.

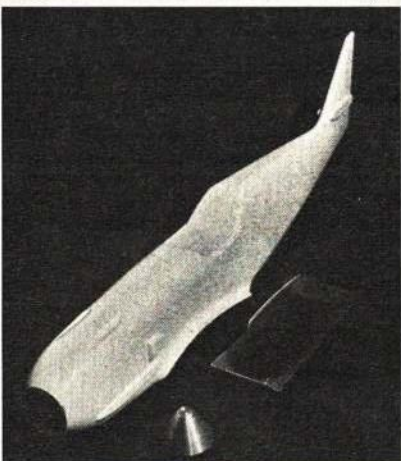


F & D Hobby/E.D. Power Pipe Size 3. Increased power with no strong tendency to "peak" at one narrow rev band, easily attached to exhaust of almost any 40 to 60. One step beyond conventional tuned-pipe exhaust pipes which tend to be sensitive to atmospheric pressure, temperature gradients, etc., and operate efficiently only at narrow-range engine speed.

Typical increases in engine performance: 11,300 rpm with conventional silencer, 13,700 with pipe installed. Write F & D HOBBY SUPPLIES, 46 West Walk, West Haven, Conn. 06516.



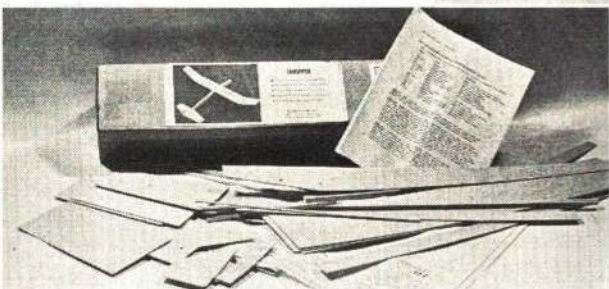
Monogram/U.S. Space Missiles. Almost complete inventory of U.S. offensive, defensive missiles. Text gives data on each of 36 missiles and rockets in kit. Attractive blue base provides secure display for completed set. Price, approximately \$3.00. Write MONOGRAM MODELS, 8601 Waukegan Rd., Morton Grove, Ill. 60053.



Puget Sound RC Electronics/ME 109 E. Follow-on to company's P51, Messerschmitt features fiberglass fuselage, spun aluminum spinner, vacuum-formed butyrate canopy. Kit near-scale, consideration for excellent flying qualities. Included: foam cores for wing, stabilizer, fiberglass cloth, resin, etc.

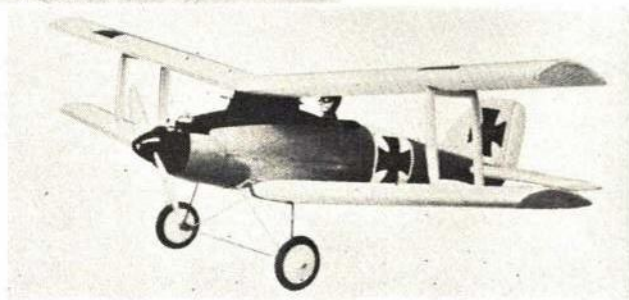
Span 62", weight approximately 8 lbs., recommended for 60 to 80 engines. Wing, stab, covered with balsa planking for added realism. Write PUGET SOUND R/C ELECTRONICS, 1547 Hoff Rd., Bellingham, Wash. 98225.

Phillips Custom Models/Foam Glide I. PCM makes getting in the air with an R/C glider painless job. All-foam construction, needs no painting or finishing to make handsome model. Span 71", length 40", weight minus R/C equipment, 12 oz. Write PHILLIPS CUSTOM MODELS, P. O. Box 4554, Saticoy Branch, Ventura, Calif. 93003.



E. K. Products, Inc./Pro-Series radio-control system; top-of-the-line from this Texas manufacturer, features two-wire battery system, especially selected components, one-hour burn-in time, and six-month warranty. Control sticks adjustable for feel. Five-channel set with four servos, \$470. At your hobby dealer or from E. K. PRODUCTS, INC., 3233 Euless Blvd., Hurst, Tex. 76053.

Astro Flight/Sandpiper. Tow-line Sandpiper well-thought-out 36"-span thermal glider, conventional balsa and tissue construction techniques. Many pre-cut and -formed parts. Instruction book gives much valuable general information on construction and clear step-by-step procedures. Write ASTRO FLIGHT, INC., 2301 Cheryl Place, Los Angeles, Cal. 90049.



Airtrol of Adrian/plastic kits. Four new semi-scale R/C models, based on Morane Saulnier, Albatros, ME 109, Cessna. Vacuum-formed parts, molded Styrofoam wings and tail surfaces. Operate on single or multi-channel R/C with 049 to 19 engines. AIRTROL OF ADRIAN, Box 392, 360 Michigan Ave., Adrian, Mich. 49221.



HOWARD McENTEE

Technical Notes

More selective receiver: Feeling that some modelers in high-interference areas might need a more selective receiver than the tiny unit we featured in our May 1968 issue, Bill Albin (110 S. Adeline, Addison, Ill. 60101) developed the circuit shown here. Since the circuitry of Q1 is exactly the same as that in the earlier article, we won't repeat it. The big changes are in the circuits around Q2, which has been modified to act as a "bridged-T" filter. With the values given, an audio tone of about 1.5 kHz is required.

Many low-cost single channel transmitters, such as the Controlaire Mule, can be modified for this higher AF output. It's best to put a variable control in the transmitter

AF circuit, so you can "tune" it exactly to the receiver, as the filter is quite sharp. Q3 and Q4 are the same as we had originally, but Q5 has been modified to drive a center-tapped actuator. For this purpose an extra transistor has been added at lower right. The resistor just above it is 100 ohms.

We must emphasize that this is simply an experimental circuit. Bill had it working well on the bench but has never flown it. He found that a Mule transmitter (on its standard AF, which is around 800 Hz or so) would not trigger the receiver, even when only a few feet away! For those who wish to utilize the Bentert actuator, simply connect Q5 per original circuit in the May is-

sue, omit extra transistor and 100 ohm.

Shorter transmitter antenna: We mean shorter when the antenna is collapsed. Our transmitter manufacturers have done a remarkable job of shrinking the size of their transmitters, both multi and simpler types. But many still use antennas that are over a foot long when collapsed, and which might be more suitable on an auto than a compact R/C transmitter. Of course, the antenna is a vital element, and these big heavy jobs are doubtless used because they are rugged and will last.

Some flyers have adapted antennas whose larger number of sections will afford the desired extended length, but which are much shorter when collapsed. Ed Sweeney



An editorial 'Does anyone have a really foolproof system to prevent accidental shoot-downs?'

HOW many crashes or near-disasters have occurred at your club field, caused by someone turning on a transmitter while a plane on the same frequency was in the air? Judging from comments we read in club newsletters, this is getting to be a common occurrence. This is about the most disheartening way of losing a plane we can think of—it's bad enough to crash your pride and joy due to pilot error (or equipment failure, control surface flutter, even CB phone interference) but to have a crash due to stupidity of one of your own fellow R/Cers is just about the limit! To be honest—it might even be your own fault—if you don't have the proper color flag or ribbons on your own transmitter antenna, or have neglected to follow procedures set up to prevent such mishaps at your field.

The cardinal rule here is to use the AMA-suggested flags (or ribbons) on your transmitter antenna—use good bright colors and put them at the top. Use only the AMA-suggested spot frequencies on the 50-Mhz band. If you are in doubt as to flag colors, see list below. Be sure your colors are true, and can't be confused. Some flags we've seen could be taken for either of two colors (yellow and green have given trouble, as have brown and red).

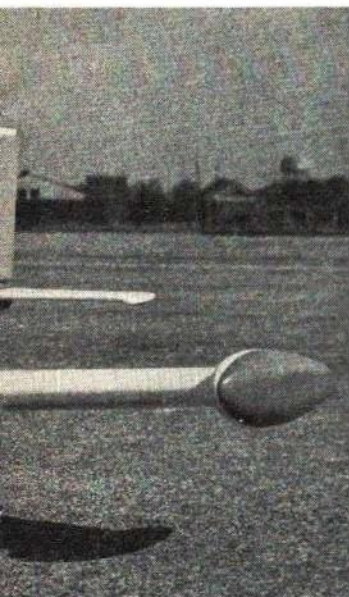
While the colors are normally only displayed on the transmitter antenna, we feel it worthwhile to put them in a prominent position on the model too. The fin or rudder are good spots. Only problem here—such colors would be harder to change if you should shift frequency. Frequency-color hats are used in some groups. We've also

seen frequency-color bandoleers, belts, even sweaters! All these are fine—if you remember to shift colors when you change frequency or transmitters. Put your colors on the transmitter antenna in any case.

Some clubs give frequency flags and ribbons to members. We note in their newsletter "Pulse," that the St. Paul (Minn.) Model Radio Controllers give a free flag to each member, sell extras for 75 cents each. This group also requires that club membership card be attached to transmitter.

The most widely used method of frequency control at club fields is by some version of "the clothespin system." Pins are clipped to a holder, and any member wishing to turn on his transmitter for any reason whatever must have proper color pin clipped to his antenna. The DC/RC (Wash., D. C., area) has a colorful board with all official 27-, 50- and 72-MHz frequencies listed, with colors of each; pins are clipped on righthand edge of board adjacent to indicated colors. The clothespin system is simple, low in cost, works well if all members adhere to it rigidly. However, pins are easily lost, forgotten, left at home, etc. Can anyone describe to us a foolproof system of this type?

The Imperial Aces (Pueblo, Colo.) set up a pilot's frequency board at their field, after several planes had been shot down. The large white board has spaces for pilot's name, frequency, and flag (or ribbon) color. Board is faced with frosted glass, and writing on it is by grease pencils, which are provided. As each flier arrives, he puts down



Left: Telling the difference between full-scale and model aircraft, takes a sharp eye. This side-by-side Waco Meteor is really a stuntable 60-powered kit from Harco. Photograph good example for ambitious contributors.



Fabulous finish, on a fabulous model, of a fabulous crate, the ever-popular Little Toot. As kitted by Don Yocky, it's a spectacular flying machine and quite fast. Piloting it himself, Don has placed high in formula II. Pic: Bill Acker.

fastened a multi-section antenna to a microphone connector dust cap, per sketch herewith. These caps fit the antenna fittings on most transmitters; they can be had at most any electronics or hi-fi shop, come with a length of chain riveted to the top.

You drill a bolt hole as shown, which automatically removes the chain and its rivet. The new antenna is then fastened with a bolt or a nut, whichever is required. For an extra sturdy job, sand the lower end of the antenna to remove plating, and run

a bead of solder around the joint. Suitable antennas may be had from such concerns as Lafayette Radio, are sold as replacements for CB radios. Pick an antenna as close in extended length as your original.

The Lafayette No. 99T3037 has 11 sections, is about 1/2" dia. at the base, is 6 1/4" long collapsed and 54 1/2" long extended, costs \$1.95. If your antenna has a threaded stud on the bottom cut it just long enough to hold a nut, so that the cap will screw well down onto the transmitter fitting.

Simple control horn: For very small planes, a simple horn may be made from a piece of 1/16"-thick phenolic (or scrap PC board with the copper removed), as our sketch shows. Ed Gerhardt (Box 365, Basking Ridge, N. J.) mentions that Fran McElwee has used horns like this on .020 jobs. Ed suggests that to stiffen tail surfaces made from soft sheet balsa, 1/16 to 1/4" thick, you can give them a coat of epoxy by the Hobbyoxy "Easy-Does-It" method. This renders the wood nick and warp re-

his name, frequency (or frequencies) he will use, flag or ribbon colors. Fliers are also required to have colors on transmitter antennas.

In "Birds Eye Views" (the B.I.R.D.S., Long Beach, Calif.) we find description of still another system. Each member is required to provide a 3'-long dowel with flags or ribbons of proper colors attached. He keeps this with him at all times. When he goes out to fly, he sticks the dowel in holes provided in logs that separate the flying field from the pit area. A quick glance at the flags displayed in one spot will show what frequencies are in use. We assume antenna colors are required here, too.

One of the most elaborate frequency control systems seems to be in use by the Hawaii R/C Club, whose main flying field is on Fords Island near Honolulu. From photo in their club paper we note a pole perhaps 15' high, with a 6'-wide crosspiece near the top, and a similar crosspiece

about 3' above the ground. Between these two pieces run loops of cord on pulleys—one for each frequency in use at the field. A large colored flag is on each rope. When a flier is ready to go up he checks the flags. If his color isn't up, he gets his transmitter from impound, raises the flag and fires up his plane. The reverse action takes place when he comes down.

Possibly topping all these systems was that set up for one of their annual fun-flies by the RC/NC (No. Carolina "Rick-Nicks," for those who haven't heard of this famed statewide group). Operating at the time (several years ago) only on the 27-MHz spots, there was a superhet receiver in constant operation on each of the six frequencies during flying periods. Each receiver controlled a large colored light, clearly observable from the flying area. The instant any transmitter was turned on the appropriate colored light would glow, remaining on until that transmitter was turned off. A flight controller called pilots to the line according to placement of their signatures on the flight list. This system, though complex, was about as automatic as you could get, showing also interference outside the field.

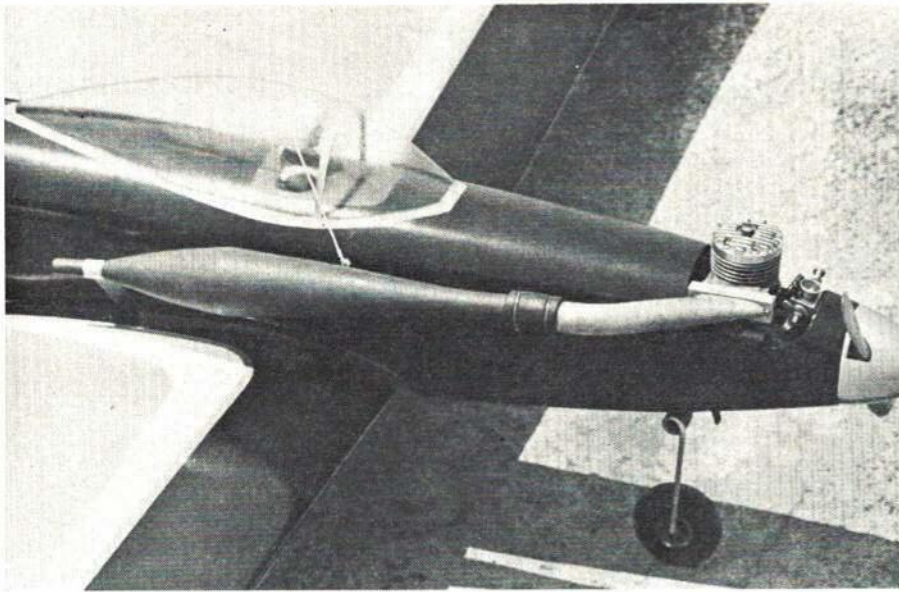
We've given only a few of the many frequency control systems in use at club fields. All have one main flaw. It's up to each individual flier to check clothespins, flags, lights or whatever, before he turns on his transmitter. One careless individual wrecks any of the systems. In the hubbub of roaring engines at most flying fields today it's not always easy to call out to your fellow fliers to check frequencies in use. If all hands utilize the frequency control means provided, and all hands check such means before turning on transmitters, life at the flying fields can be a lot less frustrating. An aid here is mandatory transmitter impound, which many clubs require even for evening or weekend sport flying sessions. But again we ask—does anyone have a *really foolproof* system to prevent accidental "shoot-downs"?

Flag and Ribbon colors suggested by AMA: flags triangular in shape, about 2 1/2 x 5" in size; ribbons each about 1 by 12"; both attached to upper end of antenna.

Ribbon or flag color	Frequency: (use triangular flag)	Frequency: (use black ribbon, plus color ribbon indicated below)	Frequency: (use white ribbon, plus color ribbon indicated below)
Brown	26.995 Mhz	53.10 Mhz	72.08 MHz
Red	27.045	53.20	72.24
Orange	27.095	53.30	72.40
Yellow	27.145	53.40	72.96
Green	27.195	51.20*	75.64
Blue	27.255**	52.04*	-----
Purple	-----	-----	-----

*Exclusively for super-regen receivers.

**It has been suggested that any super-regen on this band be used with a blue flag on transmitter, but this is unofficial.



When Glen Lee's E. D. Power-Pipe Veco 61 taxis it sounds more like a Honda than a model aircraft. An rpm increase, but needle adjustment is sensitive and changeable — at least on his machine. Pipe is 18-20' long, weighs 3 to 4 oz. Pic: Nate Rambo.

sistent to maintain a decent finish.

Cutting MonoKote roundels: Sticky MonoKote (the original kind) is fine for making roundels for WWI planes, and an easy way to cut the required circles was found in the club paper of the BARONS (Boats, Airplanes & caRs Of North Spokane — Wash.). Cut a square of about the right size to make the circle needed, put a piece of adhesive tape at the center, then stick a pin through the tape into your building board. Now push a sharp razor blade through the MonoKote at the required distance from the pin, then rotate the material against the blade edge, maintaining even pressure, and you'll have a perfect circle. This scheme originated by Dick Toennis, who produced beautiful roundels for a scale Morane Saulnier.

Versapro SS-1 corrections: Some errors

have been found in illustrations for this article, page 30, Mar. '69 issue. On Fig. B, transistors Q4 and Q5 should be reversed; Q4 is a PNP (MPS3638) while Q5 is an NPN (MPS3646). On Fig. D, the transistor directly below the 2N2431 should be an MPS3646. Also on Fig. D, righthand drawing, left edge of the PC board, the wording "Battery C.T." actually refers to the land to which one end of all three electrolytic capacitors is connected (these capacitors marked by asterisks) and is, of course, separate from the wording "-2.4V." There has been some confusion as to battery markings in this article of the Versapro series, and in all later articles battery terminals are marked OV, +2.4V (which is actually the centertap) and +4.8V; this marking is used on Fig. B of the March issue. On Fig. F, same issue, there should be no connection between the righthand end of the three series resistors (which is the signal input to the servo) and the battery centertap.

Nickel-cad service: Interesting table taken from NASA Report SP-5004 shows varia-

tion in life of nickel-cad cells at different temperatures, and at different depths of discharge. Test was made on 12 AH cells. At 0 degrees F. cells discharged only 25% of total capacity gave 400 cycles before failure; at 50% discharge, cycles dropped to only 50, and it was down to a little over 30 at 100% discharge. These particular cells gave best results at about 50° F. Here the cycles to failure was around 30,000 for 25% discharge; at 50% discharge, it was about 2500, and at 100% it was about 280. At 100° F. the three figures were: 4,200, 800, and 200.

We don't know make or type of cells, but these tests were undoubtedly run under "perfect" conditions. While modelers seldom discharge their cells anywhere near 100%, and probably seldom as low as 50%, the figures give some idea of the differences. The curves dropped off rather steeply on the cold side of 50 degrees, more gently on the hot side. Thus summertime use of the cells isn't as bad as winter use. Thanks to Walt Good for this info.

Marvelous oil: Back in April we read in the Birmingham R/C News (Ala.) of a remarkable new synthetic oil that could be used in alky fuels in place of castor. Said to burn almost completely, so no sticky goo left on the plane. Also could be used in ratios of as little as one part oil to nine of alky. Only hitch — it was only available on the West Coast — used there exclusively by motorcycle racers.

Unable to get any info, we preferred not to print this info and get our readers all excited for naught. Local queries led nowhere until we talked to Ed Abbott of DC/R/C. His son races Karts, said they used an oil that runs very clean, mixes with alky or gasoline, boosts power, etc. Is it the same stuff? We don't know, but bought some for tests that are just starting.

Ours came from a shop specializing in racing Karts. They had two makes, which they thought were about the same. One is called Special Formula Products "Chemical Lubricant"; the other is "Nitro Joe's" Super Chemical Lubricant. Either make costs \$2 per quart. We found that Maynard Hill had gotten some of the SFP oil, ran it in block tests in a mixture of about 25% oil. His brief test showed that it will lubricate all right, does run quite clean. Flight tests are the real proof, of course. Engines appear to run well and safely on even a 5% oil mix. We'll keep you posted.

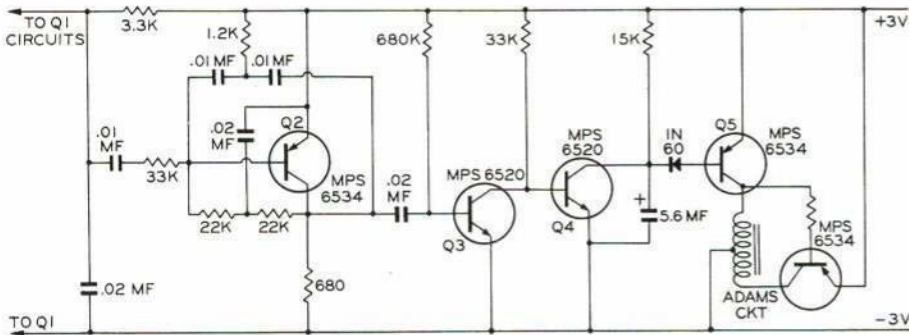
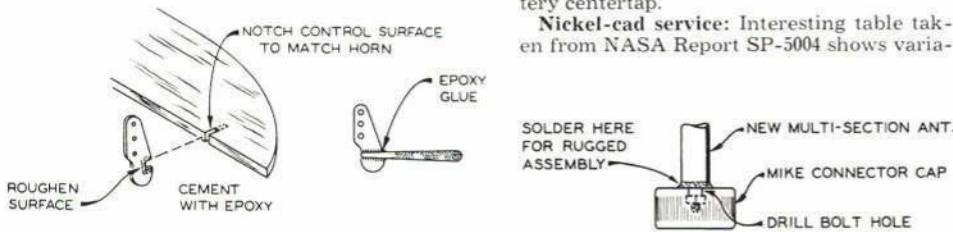
Spreading the gospel: Avid single-channel flier Dr. Harold Secor (2100 N. Fulton St., Wharton, Texas 77488), member of the Houston R/C Club, had a request from an electronics instructor at nearby Wharton Co. Junior College to give a talk on R/C and demo to members of the college Radio Club, most of whom had never seen an R/C plane. The plane in photo is a Junior Falcon, Cox engine, pulse rudder with Southwest actuator and Ace superhet. (Dr. Secor wears the bow tie.) The show was a real hit, and very likely some R/C beginners will enter our ranks due to this recruiting effort.

Competition

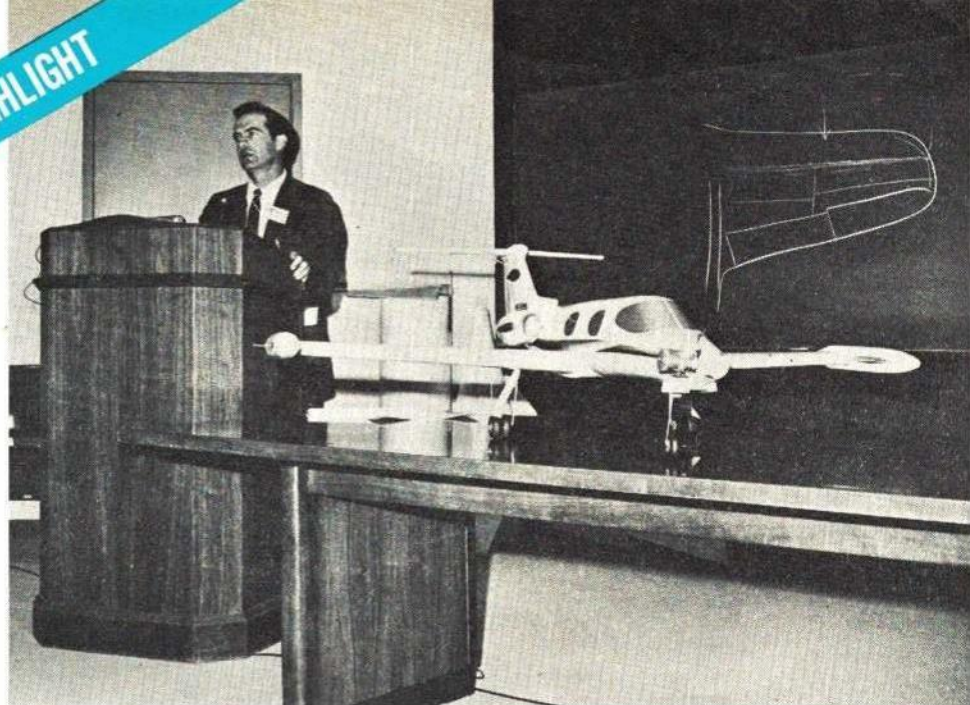
Roll around a point. In this space (p. 81, Jan. '69 issue) we had comments from Bill Aaker, Dallas RCC, about learning model R/C stunt flying. Bill's advice was to read the book by Duane Cole entitled "Roll Around a Point," study the lessons given therein most carefully, then practice, practice, practice the AMA maneuvers. The issue was hardly out before we received several queries as to where this book could be had!

It has taken quite a few months to locate the author. Duane Cole is a top stunt pilot, started flying competitively in 1949, has been on the U.S. Stunt Team, has won many U.S. stunt competitions. He now runs the Duane Cole School of Aerobatics at Oak

Continued on page 66



Paul Sherlock, famed for "impossible" models like the big Boeing jet, held rapt audience with his philosophy of jet-type craft. Learjet on table is a good example. Models are not exact scale, but look real, make wide use of foam construction techniques. He detailed step-by-step procedure.



Twelfth Annual DC/RC Technical Symposium

HOWARD McENTEE

THIS notable technical gathering took place on May 17-18 at Johns Hopkins Applied Physics Lab (Howard Co., Md.). Flying demos were at the DC/RC club field some nine miles north of the Labs. Weather was generally good, but rather heavy winds on Sunday prevented demo flights of some very interesting craft, and really spoiled the helicopter duration record tries — though a World Record time claim has been sent to FAI.

There were about 300 registrants for the meetings, and over 200 attended the Saturday night banquet.

There were no manufacturers exhibits as such, but several special groups of manufacturers were invited to set up displays. All suppliers of heat-shrink coverings were asked to run a covering clinic, while all makers of digital equipment kits also had a clinic. Fran Mitchell (Hampshire Co. RCC and NERCM) conducted a very popular engine clinic. The DC/RC had set up quite a historical display of R/C planes, and much space was devoted to unusual planes brought by hobbyists.

A brief rundown of the papers presented follows. "Adding Realism to R/C Scale Models"; Dave Platt used his famed Dauntless to show how a builder can add real character to what could otherwise just be a shiny "pretty" model. He broke down the elements

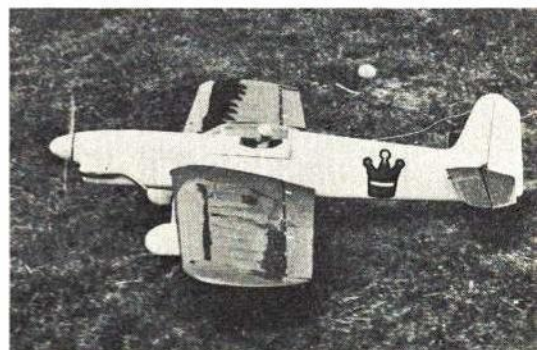
of this work into Color Perspective, Usage, Mechanical and Weather, discussed each element as it applies to making a model look like a full-sized plane, concluding with a few notes on tools that make this work easier.

"Construction of a Modern Jet Type R/C Plane"; here Paul Sherlock (who flew the huge 747 model at the 1968 Symposium) used his simulated Learjet as an example. It's obvious that Paul strongly favors modern jet models over oldtimers, but his approach is to duplicate these recent craft in a practical way; he uses foam wherever possible, and his models look good, but are not exact scale copies. Glow engines and propellers are used, of course, and radio gear is mounted in the easiest possible way.

The Learjet was flown many times in the wind on Sunday by Paul and other pilots, and performed well. Besides covering design philosophy and aerodynamics, Paul's article gives a step-by-step rundown of how you go about duplicating the jet plane (if you follow the Sherlock preference) of your choice. Several pages of illustrations are included.

"A Radio Controlled Helicopter"; John Burkham showed several of these complex craft, flew a simple rubber-powered design in the auditorium. He had with him

Continued on page 40



Radio Control Nobler — to be Top Flite kit — demonstrated by Ed Sweeney. Advance is (Marks/Sweeney) coupled-flap configurations, with several flight regimes.



Helicopter expert John Burkham discussed tiny, ultra-simple rubber-powered chopper which was flown in auditorium. Showed film on stability aspects of these rotorwings.

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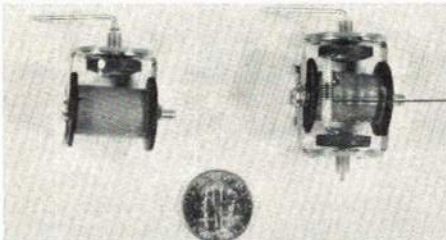
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Uses the same frame and is the same size as the regular Baby, but the secret of the weight saving is in current consumption. Weight of the AR is 17 grams.

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For the modelers who have the regular Baby and want to convert to lower drain coil, it is available separately. Conversion is simple and takes only a few minutes with hand tools.
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TWO NEW BABY TWIN ACTUATORS

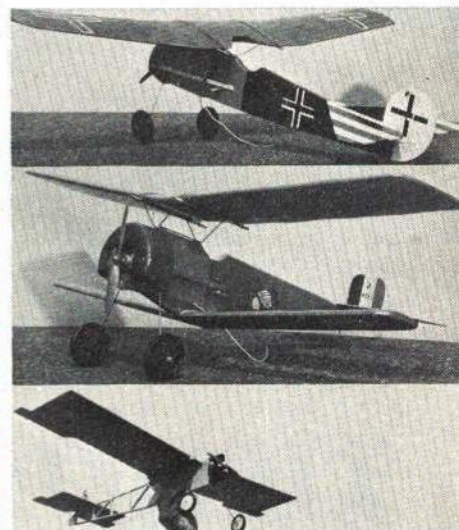
The Baby Actuator by Adams is now available as a Twin in either the regular or AR version. The twin magnets provide approximately 2 1/2 to 3 times the torque of the single units and increase weight only slightly. The regular and AR Baby weigh approximately 17 grams, while the Twins weigh 22 grams.

The regular Baby Twin has the most torque and pulls around 110 mah on 2.4 volts, while the AR version pulls 40 to 50 mah at 2.4 to 3 v. The AR is designed for the Micro and Mini series of planes where weight is important and smaller batteries are used to keep overall weight as low as possible.
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PROFILE R/C PLANS AVAILABLE

Full size plans for the Mini Profile R/C Planes are available now for the Fokker D-VIII and the Nieuport 17, and the Mini-ot—the Mini-ot is a profile version of the Bleriot. This spans 32 inches. The others average about 25 inches. Plans are by Chris Soenksen.

The Mini Planes were the hit of the Toledo R/C show. They are offset printed and are 17 x 22, and include a "how to" sheet of information. Price includes FIRST-CLASS MAILING.

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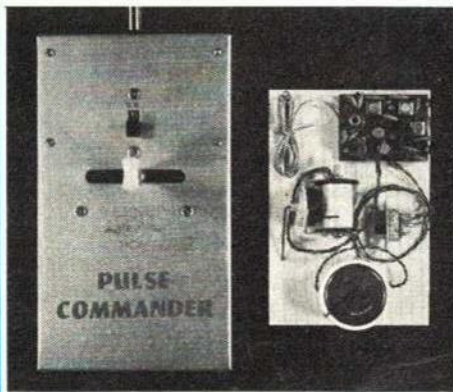
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**WATCH THIS PAGE NEXT MONTH—
MORE PULSE PROPO IS ON THE WAY!**

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(Charging equipment extra)

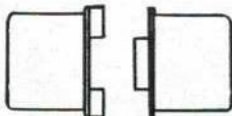
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R/C MULTITESTER

A Multitester designer for RC. This Multitester is distributed by Graupner for the European countries and is made especially for them in Japan. It was selected over all others by Graupner as a top RC meter. This gives an indication of the quality and preciseness. This identical meter now is made for Ace R/C for distribution in the United States.

DC milliammeter ranges of 100 and 500 MA; DC volts of 3.5, 7, 14, and 250 volts. Measures resistance in 2000 ohms and 200,000 ohms. 2,000 ohms per volt.

Handy pocket size. Measures 3 3/8 by 5 by 1 1/2 inches. Complete with test leads.

No. 22K5—Ace Multitester.....\$13.98

A rat racer used to be a hot engine bolted to a rail with wings. Competition has forced development of this kind of lean, clean racing machine. This is an expert's competition event.



All photos Pat Flinn

Hooptee Too

Rat racing requires highly refined model, dependable engine, and team work. Here's a winning combination.

JOHN F. KILSDONK

DEPENDABILITY is the prime requisite of any racing machine. Hooptee Too was developed around this fundamental requirement. No fancy frills or "tricky-wickets." Everything is strictly functional.

Hooptee Too is the latest refinement in Rat Racers for me. It has evolved out of six years of competition in the event. Hooptee

Too has been the most successful airplane that I have ever built. In two years of competition, it has placed in 16 of the 18 contests entered, placing first eight times. It currently holds the Michigan State Record of 5:22 minutes for 140 laps.

There are three elements in Rat Racing: the airplane, the engine, and the team.

Hooptee Too will more than fit the bill for the airplane.

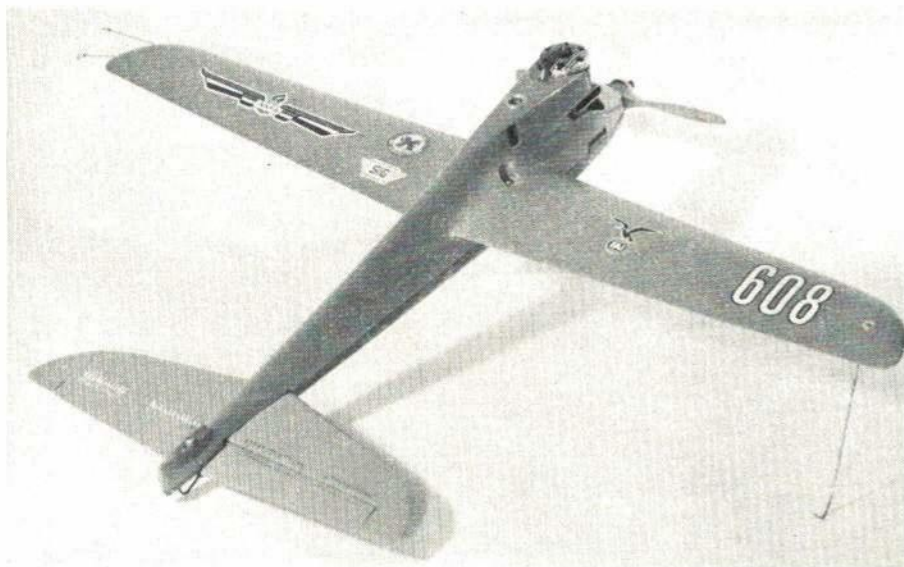
The airplane must be durable enough to withstand many hours of practice and still be ready to go to the contest on Sunday. Yet, the performance cannot be sacrificed for durability, so a compromise must be decided upon. Shoot for a final weight of 28 to 30 ounces, including the engine, and the plane will perform quite satisfactorily.

The wing is carved from a good straight piece of basswood. A small block plane and a good sanding block are all that is necessary to carve the wing. The recesses for the lead-out tubes are cut using a small Xacto gouge or a circular table saw. Gouge out the areas for the bellcrank and the outboard wing weight. Add the aluminum tubing lead-out guides and the lead for the wing-tip weight.

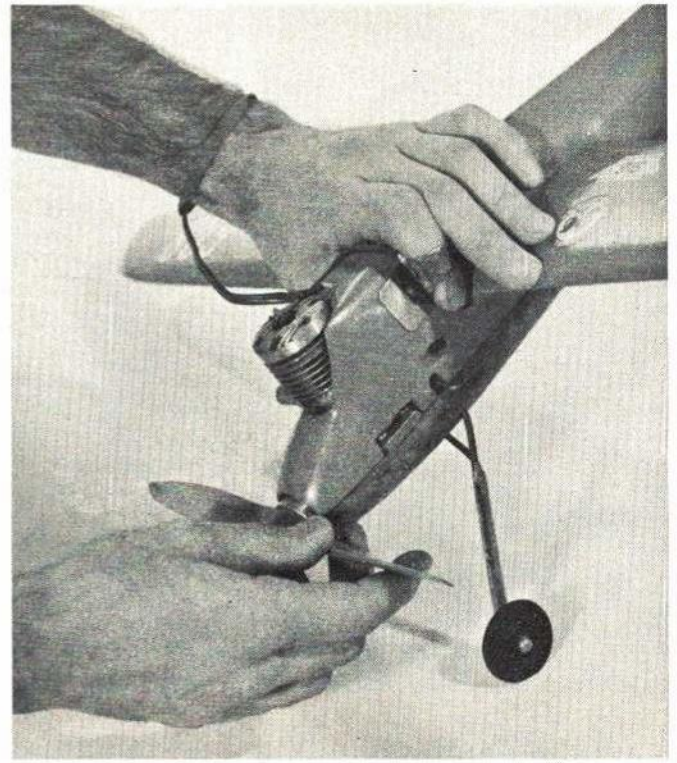
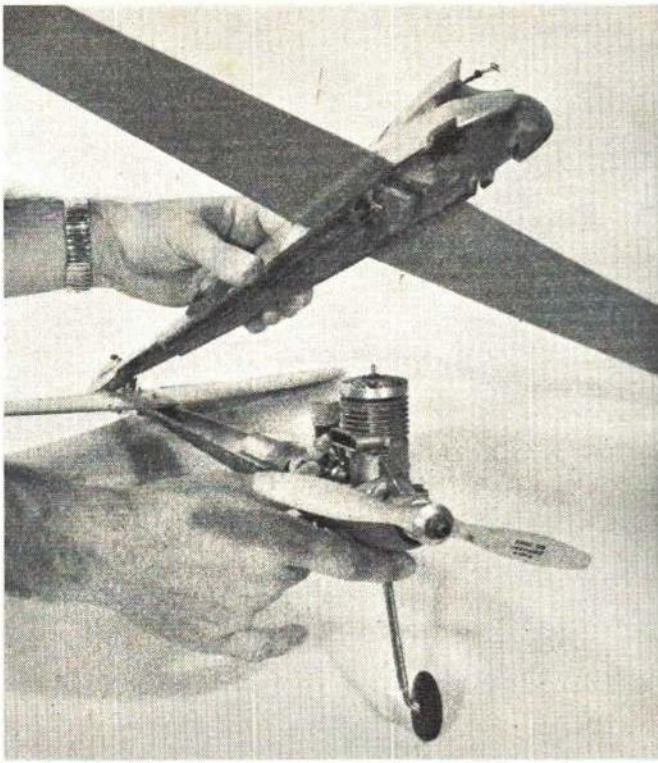
The fuselage crutch is cut from $\frac{3}{4}$ " basswood. Use the pattern on the plans for a good compromise of strength and weight. Tap and drill the pan for the engine. A number 43 drill should be used as a pilot for the 4-40 tap and a number 36 drill for the 6-32 tap.

The stabilizer is carved from $\frac{3}{16}$ " basswood, employing the same technique used on the wing. The landing gear shown is easier to do than it looks. A good pair of vise-grips and a good pair of pliers are all that is required. A torch is not necessary and should be used as little as possible to avoid removing the temper from the wire. After the wire is bent and pushed through the pan, cut a $2\frac{1}{4}$ " piece of $\frac{1}{4}$ " I.D. brass tubing and flatten it to a $\frac{1}{2}$ "-wide cross section. Slide the tubing over the wires

Continued on page 54

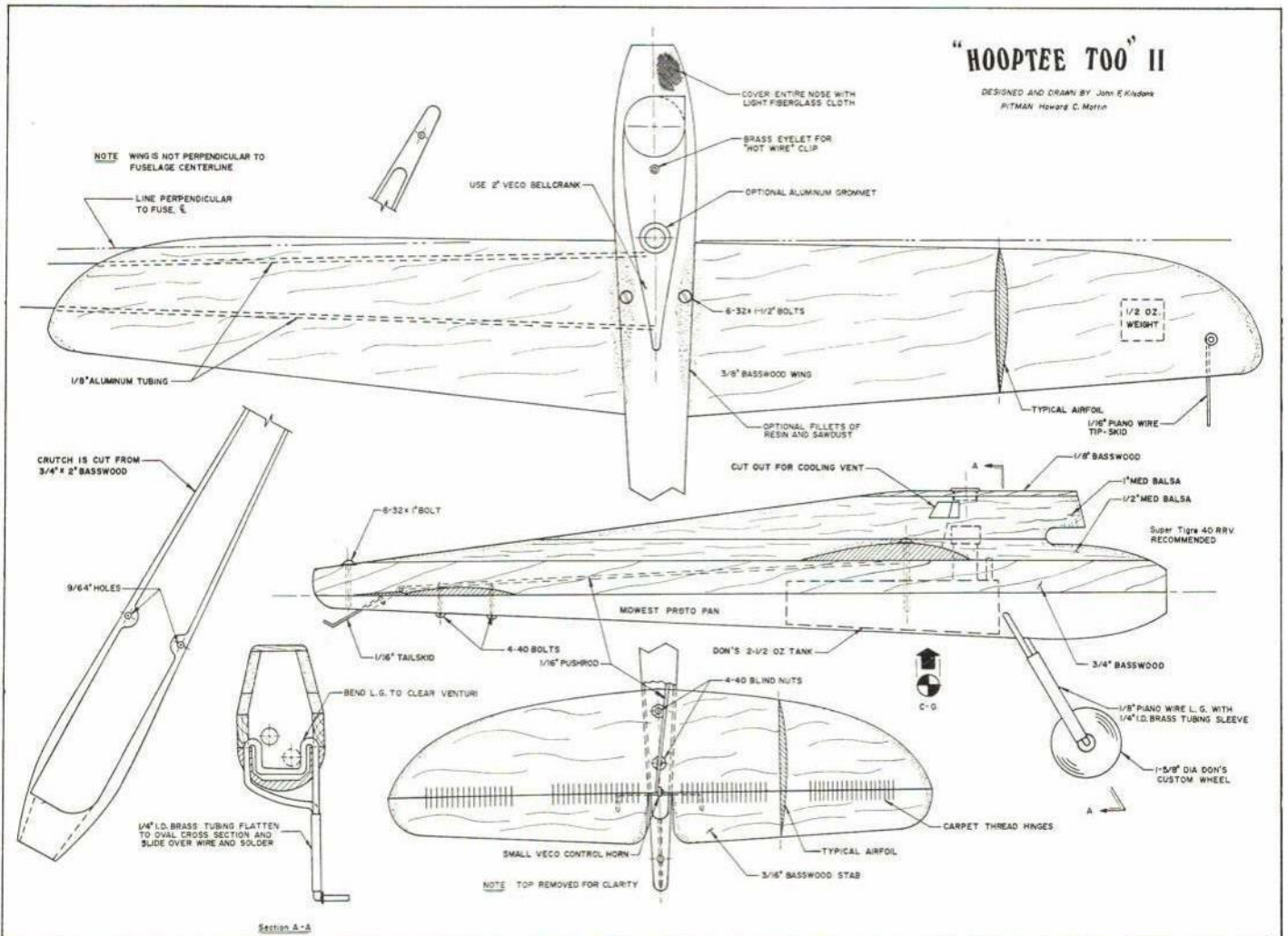


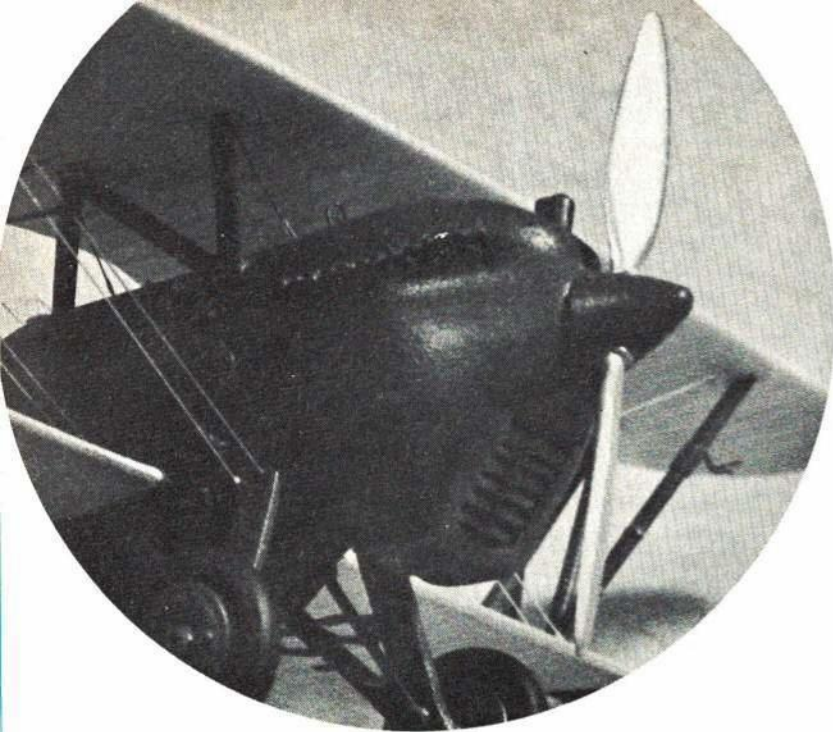
Slim fuselage causes little drag. Model is finished in highly fuel-proof Hobbypoxy paint which is compounded to shiny, smooth, low-drag surface. Racing fuel melts dope finishes.



Engine, tank, and stabilizer are bolted to Midwest Proto Pan with LockTite on all bolts. As shown, this unit is easily serviced by unbolting upper unit, carrying wings and controls.

Prime feature of fast re-starts at pit-stops is glow-plug lighting system. Grab and flip. Current flows from rings on fingers to plates on fuselage, to glow plug and engine casing.





DICK BRANT

THE availability of Monogram's P-6E and Goshawk kits opens up a number of possibilities for conversion to the many Curtiss Hawk biplanes of the 1920's and 1930's.

As a predecessor of the famous and beautiful P-6E Hawk, the P-1C seems to be a reasonable choice for such a conversion. Reference material on both the P-1C and P-6E can be found in Harborough's "United States Army and Air Force Fighters 1916-1961" and the Bowers/Swanborough volume "United States Military Aircraft Since 1909."

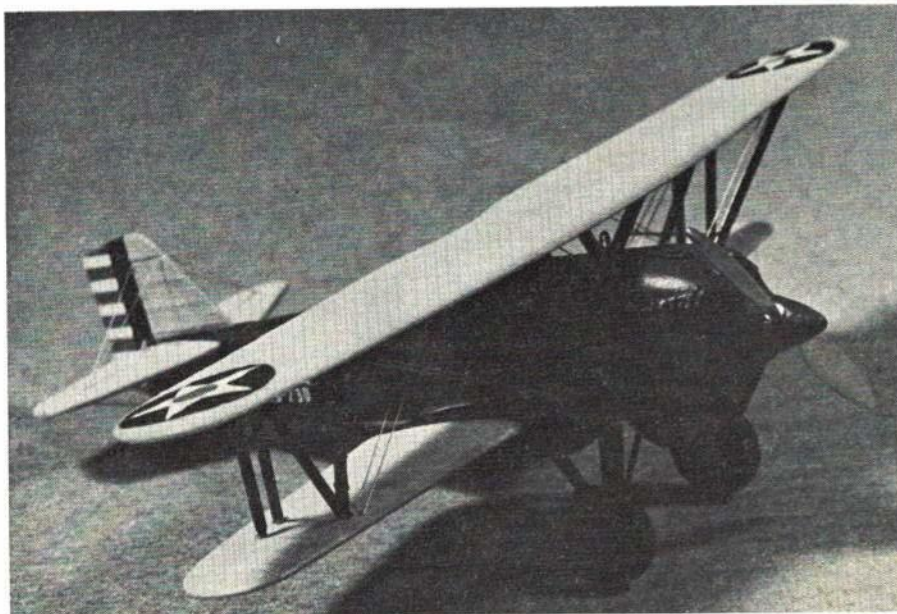
Most of the conversion work required to convert the P-6E kit to a P-1C involves modifications to the P-6E fuselage. First, remove the landing gear and nose from the fuselage halves as indicated in Fig. 1, then cement the fuselage halves together. Cement the

upper cowl into place and cut it as shown in Fig. 1. Remove the headrest and fill the hole that is caused by cutting off the headrest.

The cockpit opening on the P-6E goes farther back than the opening on the P-1C. This is changed by making a former from .07" styrene sheet and cementing the former at the back of the cockpit opening. The cockpit opening should be reshaped. Refer to the P-1C drawings (Fig. 2).

Cut a bulkhead from sheet styrene that will fit the opening in the front of the fuselage, and cement it securely in place. The new nose section will be attached to this bulkhead, so be sure that it is solidly in place.

The fuselage details on the P-6E are significantly different from those on the P-1C; therefore, all fuselage details should be removed with wet sandpaper.



Photos by Bob LeVan.

A rather homely biplane became a great classic after face-lifting development. Bulging chin was radiator unit for liquid-cooled V-12 engine. P-1C nose was different from P-6E kit, so new nose was shaped from hard balsa and grafted in place. Use lots of primer or putty at the joint of balsa to plastic.

Curtiss

By modifying a P-6E Hawk kit one can back-date to the plane from which the design was developed.

Cut the auxiliary fuel tank from the lower wing. Either a razor saw or jewelers saw will do the job nicely. Cut a piece of sheet styrene to fill the hole left in the lower wing section, and cement the piece of styrene in place. Cement the lower wing to the fuselage and set the lower wing and fuselage assembly aside.

The P-1C nose on my model was fashioned from basswood, but a good grade of balsa should work just as well. The P-1C drawings (Fig. 2) give the proper shape of the P-1C nose. The pinched effect that appears under the exhaust pipes (refer to photographs of the model) can be achieved by using a small round file. When the desired shape has been obtained, seal the wood and sand with 400 or 500 grade wet sandpaper. Repeat this operation until a smooth finish is obtained. Cement the nose to the fuselage and allow it to dry thoroughly before you work on it.

After the nose is firmly in place, fill all remaining seams and sand smooth. Cover the wings with masking tape to preserve the wing detail and then spray the entire model with Testor's Flat Black. When this has dried, go over the model with 000-grade steel wool. Repeat the painting and steel-wool rubbing process as often as necessary to get a smooth surface.

If you have access to a Vac-U-Form, remove the radiator cowling and use the wooden cowling as a Vac-U-Form master. An opening should be made in the front of the cowling and small shutters (thin strips of plastic or paper) cemented in the back of the opening. The rear portion of the cowling is cut away, as can be seen in the photograph of the underside of the model. Cement the cowling in place, fill all seams, and sand smooth.

In the absence of a Vac-U-Form, the same effects can be achieved by carefully cutting out the front and rear cowl openings. Another possibility would be to build the cowl out of sheet styrene.

Make a new auxiliary fuel tank from wood. Apply sealer and sandpaper until a smooth finish is obtained. Refer to Fig. 2 and photographs of the model for details on the auxiliary fuel tank.

Exhaust pipes are fabricated from .02"-diameter brass rod. Holes (12 on each side) should be drilled into the nose with a No. 74 drill bit. The rearmost hole is $1\frac{3}{64}$ " in front of the leading edge of the lower wing. The exhaust pipes should be $\frac{3}{64}$ " apart and should point downward at a 45-degree angle. Glue the exhaust pipes in place.

Attach the horizontal stabilizer and fill and sand the seam between the stabilizer and the fuselage.

The spinner can be fabricated from wood dowel, or the spinner from another kit (I used the Heller Caudron 714) can be used

P-1C

as a Vac-U-Form master. In either case, enough of the spinner must be cut away to allow the spinner to fit over the propeller from the Goshawk kit.

Locate the machine gun ports on the plan view of the P-1C (see Fig. 2) and drill corresponding openings in the model's nose.

Drill a hole in the nose that is just large enough to receive the shaft of the Goshawk propeller. It would be best to start first with a drill bit that is too small and then slowly enlarge the hole. "Small holes can be made larger, but large holes . . . etc."

The P-1C landing gear is made from .035" sheet styrene. The main struts are $\frac{7}{16} \times \frac{3}{32} \times .035$ " styrene; the rear support struts are $\frac{3}{8} \times \frac{3}{64} \times .035$ " styrene. Construct the left and right sides of the landing gear from the main and rear struts.



Wing and tail surfaces of P-1C are exactly as on P-6E. Level rear decking and reshaped cockpit opening are made with pieces of scrap styrene. Tail skid replaces wheel.

SCALE TECHNIQUES FOR THE PLASTIC MODELER

Fabricate two streamlined fairings from sprue and attach the fairings to the landing gear components where the main and rear struts are joined. When all parts are dry, glue the landing gear into place. Fill and sand all seams and joints as required. The wheels from the Goshawk kit are used on the P-1C model, but are not attached until after the model is painted.

The landing gear braces on the P-1C are both in the same plane. This was accomplished on the real aircraft by building one of the braces with a ring in it and allowing the other brace to pass through the ring. This is modeled as follows:

Cut a notch on the end of a piece of $\frac{1}{16}$ " brass tubing. Cut a 1" length of .02"-diameter brass rod. Lay the length of rod in the notched tubing and solder in place. Dip the whole assembly in water to cool it before proceeding. Cut the tubing flush with the brass rod. A jewelers saw is the best tool for this job. To drill the hole out, start with a No. 73 drill bit and enlarge the hole by using progressively larger bits, ending with a No. 63 bit. The second brace is made from .02"-diameter brass rod. Carefully trim

Continued on page 53

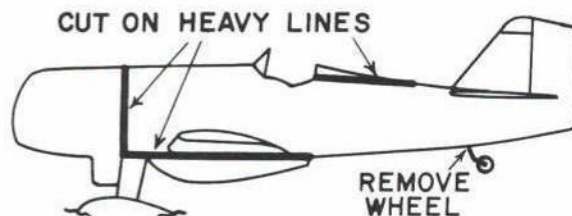


FIGURE 1 CURTISS P-6E

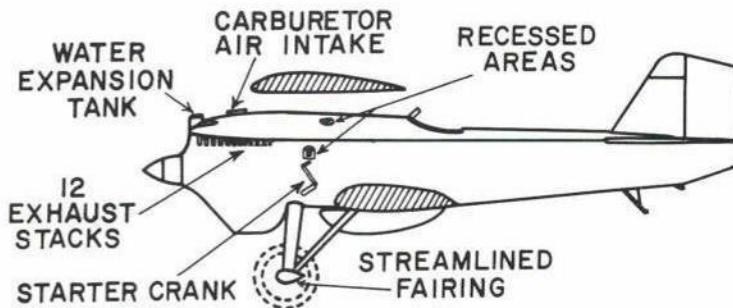
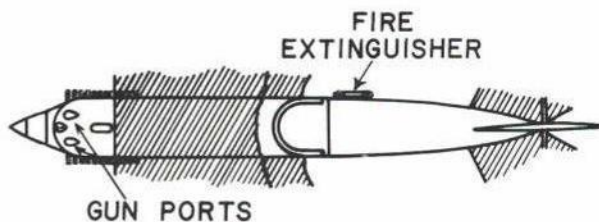
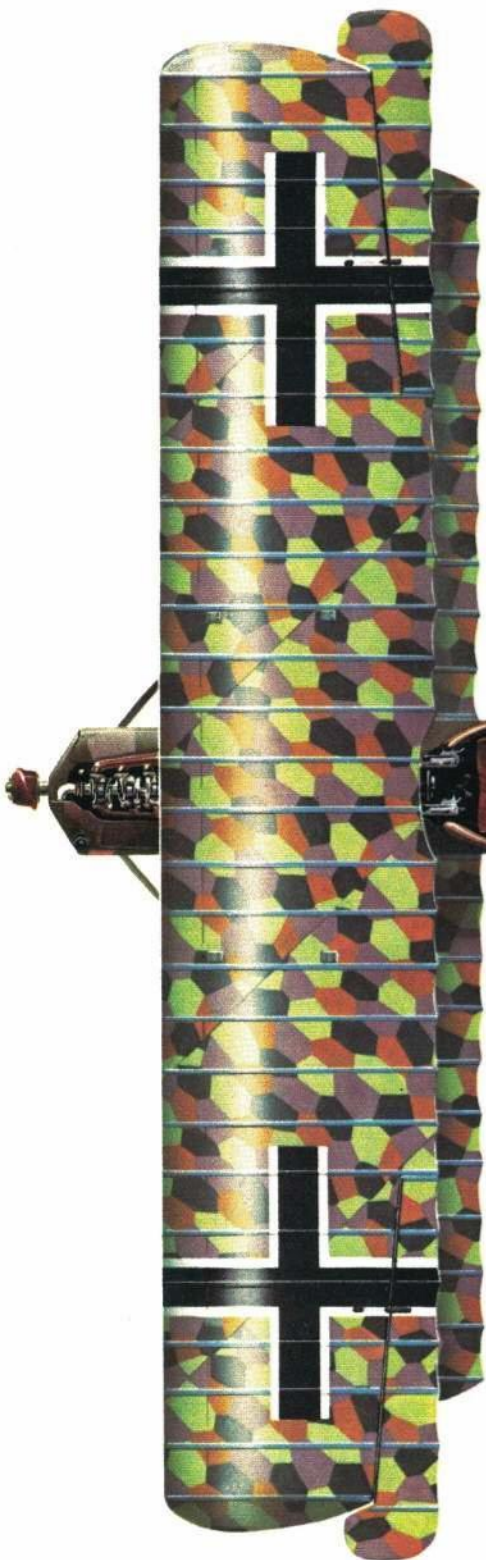


FIGURE 2 CURTISS P-1C





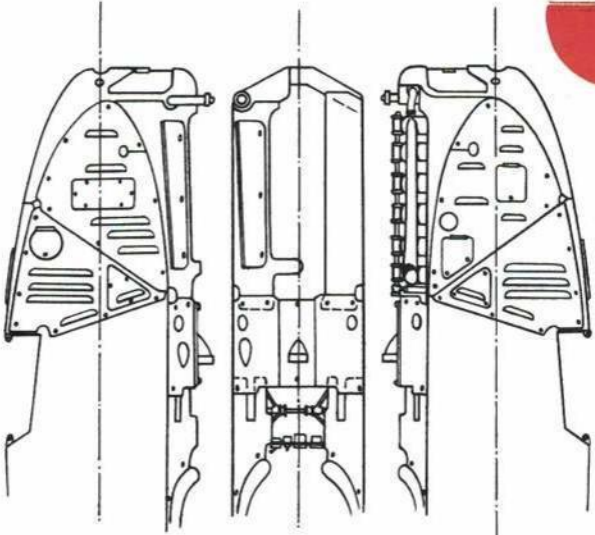
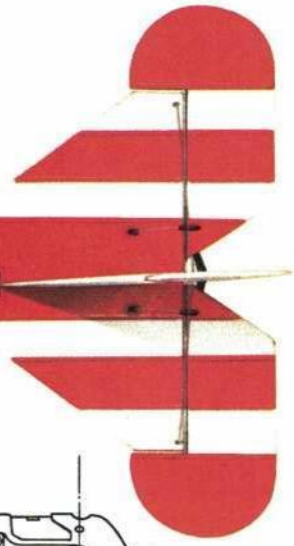
TOP WING



WING ROOT



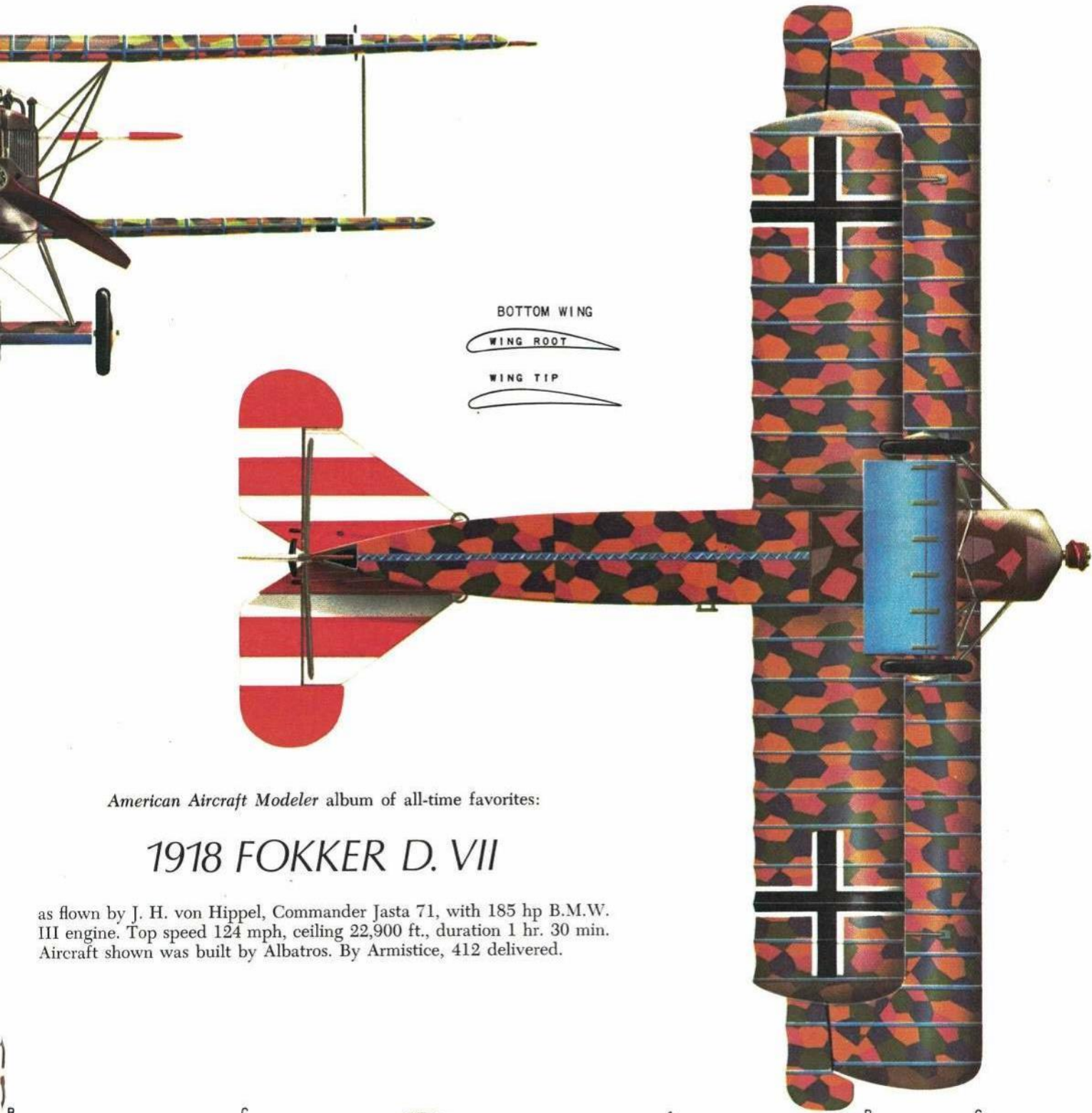
WING TIP



MOTOR COWLING DETAILS



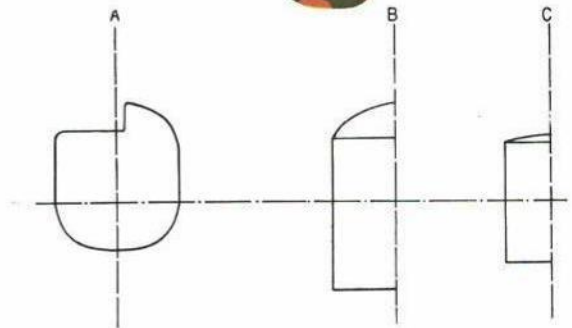
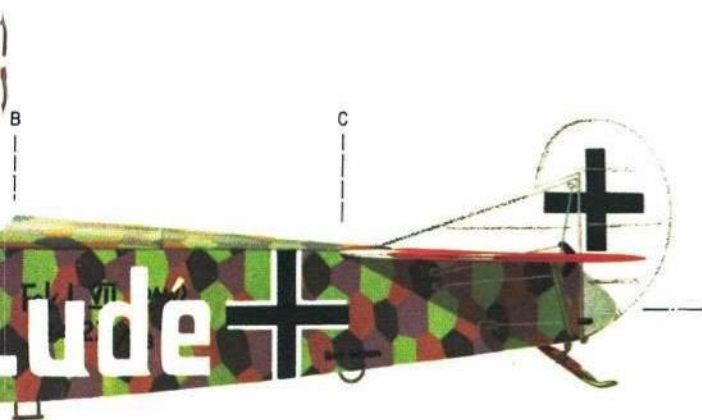
A



American Aircraft Modeler album of all-time favorites:

1918 FOKKER D. VII

as flown by J. H. von Hippel, Commander Jasta 71, with 185 hp B.M.W. III engine. Top speed 124 mph, ceiling 22,900 ft., duration 1 hr. 30 min. Aircraft shown was built by Albatros. By Armistice, 412 delivered.



ESSEN
KARLSTADT

GETTING STARTED IN R/C

What to look for when purchasing useful test equipment.

HOWARD McENTEE

OPERATING R/C equipment without means for testing it is akin to driving your car without meters or gauges. Of course, our generous auto makers have provided us with "idiot lights" which serve to tell us when something has already gone wrong! But even these are better than nothing at all—which is what most R/C flyers have in the way of test equipment. Let's see what we need, and what can be had at reasonable cost.

Undoubtedly, the most useful instrument is a VOM—that is, a volt-ohm-milliammeter. Very suitable and compact Japanese units are widely available. They are low in cost, accurate and rugged enough for our purposes. Try to get one with low-scale readings. In these days of all-transistor equipment, you will seldom want to read voltages higher than 50, and usually much less. Most small VOM's have top ranges up around 500 or 1,000V—of little use to us. AC ranges are also of little use, though they might be helpful to the modeler to check shop equipment. Quite a few well-equipped R/Cers have a good VOM in their shop, but carry a low-cost Jap instrument in their field box. A unit sold by Aristo-Craft for around \$15 has scales best suited to R/C needs.

With nickel-cads widely used today even in the simplest pulse-rudder systems, a meter to check these cells is very worthwhile. A VOM will give you worthwhile readings, but for best utility, a special type of meter is needed. Nickel-cads should properly be tested cell by cell (so should dry batteries), so you can spot a weak cell before it collapses completely. The voltage range from fully charged (and still being charged) to rather low—and under full load—runs from perhaps 1V to 1.5V. This means much of the scale range of a standard DC voltmeter is not used, or needed.

What we really need for our cells (both nickel-cad and dry) is a meter with "suppressed zero" (means the pointer will not start to move until the voltage rises above perhaps 0.9). Such a meter, with a top-scale reading of around 1.6V, will allow really close monitoring of both nickel-cads and dry cells. Two different approaches to this need were described in past issues of this magazine and its Annual; check 1966 *Air Trails Model Annual*, page 43, and *American Aircraft Modeler*, Sept. '67, page 27. We are looking into an even simpler (and lower cost) meter than either of these, which will be described in a future issue.

As noted above, you should be able to check each cell individually. This means opening battery packs, to tap on to the connections between cells. All leads are then brought out to a two-pole non-shorting rotary switch, which will allow rapid check of all cells. The '66 Annual meter noted above shows how this is done. Extra connectors must be added to transmitter and to plane equipment to allow attachment of such a meter. And don't forget, battery tests are valid only if the cell or battery is under load.

You can build a variable load into the meter case (the '66 Annual unit has this feature), or simply turn on the switch of transmitter or model, so you test the batteries under their normal load.

A simple Field Strength Meter (or FSM) is a very useful gadget. It won't give you an absolute reading of transmitter output, but it can definitely show when output is lower than normal, or nonexistent. Such circuits have been shown in past issues, or you can purchase a kit or finished unit (Ace R/C, Lafayette Radio, etc.) for under \$10. Some transmitters have them built-in, but while very useful, these are often not as trustworthy as an entirely separate unit.

One must make checks with the FSM when the transmitter is new, batteries are fully charged, etc., and note down meter readings. Later tests should always be done under exactly the same conditions: same distance between transmitter and FSM antennas, same placement of both units, same surroundings. If these precautions are observed, FSM readings will be meaningful, and may be closely duplicated. If not, the readings will mean very little.

All FSM's include a low-range milliammeter. You can use the meter in your VOM, by having the other FSM components arranged to plug into the proper VOM terminals.

Tunable FSM's are much more sensitive, but untuned units are very useful, especially if they have a very sensitive meter. Transistor amplifiers can boost the reading of less-sensitive milliammeters.

Monitors are used to listen in to your own transmitter while it is working, either in the shop or in the field. FSM's often have a jack into which you can plug an earphone to listen to your transmitter, but such units are very insensitive; must be used right next to the transmitter. An old super-regen receiver can be modified to drive a small loud-speaker, to make a very sensitive monitor (or you can purchase such units at reason-

able cost, from MRC and others). These more sensitive monitors are also capable of checking interference coming from other transmitters not at the flying field—CB phone units, for example.

With all the transmitters, R/C and otherwise, now in use at most locations, super-regen monitors are of less and less utility. Tunable superhet monitors are what we really want. They can even be accurately calibrated to indicate actual frequency of signals picked up. There isn't much in this line available on the market yet, but one can adapt single-channel R/C superhets for such use, or modify commercial transistor portable receivers. See March '69 AAM for notes on 27 and 50 MHz R/C bands. Check page 34, y '69 AAM, for notes on a low-cost superhet that could be useful for R/C monitoring purposes.

Though not used for the R/C equipment, more and more radio flyers are getting interested in checking engine rpm; this is a vital matter to Pylon flyers, and very helpful to competition stunt pilots. Audio tachometers are available from Ace R/C and others. Mechanical tachs are much more accurate, but also much more costly. Good ones cost \$50 and up.

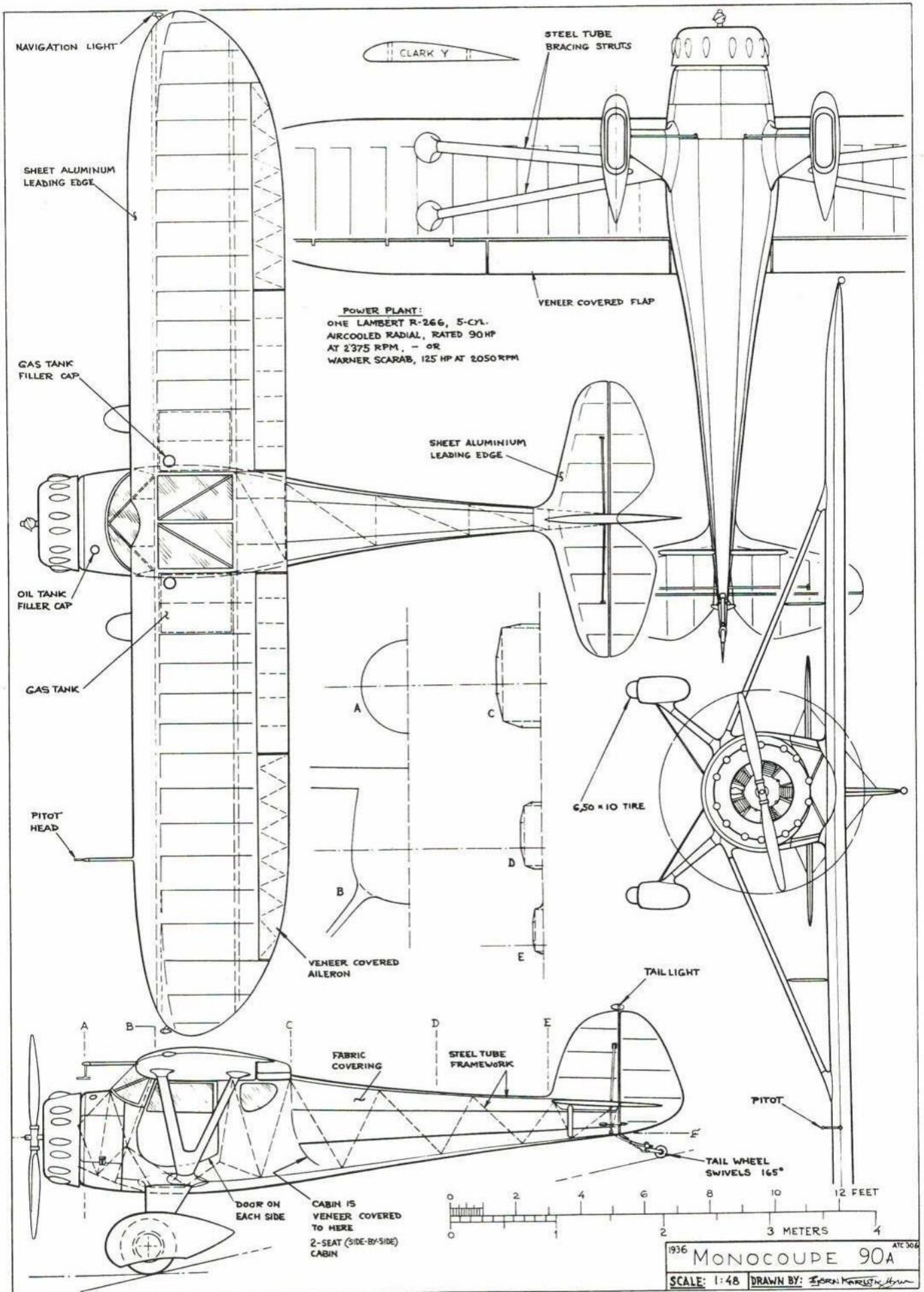
A new idea in this field is the recently introduced Heathkit optical tach. At \$19.95 for the kit, this "Thumb Tach" is a best buy. It's easy to assemble and calibrate, quite accurate (within 2½% from 0-25,000 rpm), useful for checking many other rotating mechanisms besides props—model boat and auto engines, for example.

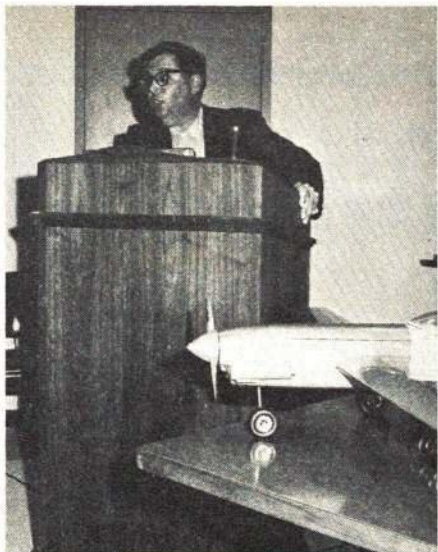
We haven't even touched upon such test instruments as scopes, signal generators, servo and transistor checkers. However, when you feel the need for these, you are probably getting beyond the scope of this series!

(Editor's Note—1966 *Air Trails Model Annual* available from *American Aircraft Modeler* for \$1.)



Test gear, left to right: Simpson VOM; inexpensive Aristo VOM; cheap, handy VOM; MRC regen monitor; ACE kit FSM; Eico kit oscilloscope. Center: AM radio required per FCC during Citizen's Band operations. This one also monitors modeling frequencies.





And there always has to be a comedian! Harold Goldplank made a hilarious pitch for system to hoodwink judges at Nats, and other nefarious hockus-pocus.



Graupner-supplied Wankel engine revealed equivalent 40 power in Veco White Cloud, prepared for demonstration by Dave Burt and Bill Nesbitt. "Demo" day is big deal.



World helicopter duration record of 5 seconds plus was set by John Burkham — no record was on books. Much interest in R/C choppers, but they are tough.

Twelfth Annual DC/RC Technical Symposium

Continued from page 33

examples of a free-flight heli with a 25" rotor diameter, and a somewhat larger R/C heli, with 35" dia. rotor. Being a helicopter engineer, John went through the design problems in a systematic manner, covering such matters as Aerodynamics, Transmissions, Structure, Torque Counteraction, Stability, Reliability and Long Life, Flying.

Having built, rebuilt and test flown a number of these craft, John gives some extremely valuable practical info. Though he is considered an expert in the model heli field, he confesses that he still can't put one of these craft into the air and steer it as he wishes. Model helis have minds of their own! He showed movies of some of his training sessions, where the model is "flown" attached to a long counterbalanced rod, which is pivoted to allow circular and up-and-down movement. Many illustrations accompany this paper.

"The Wankel Engine for R/C"; this paper was supplied upon request by the Johannes Graupner concern, which also provided photos and an example of the production engine. The engine was attached to a White Cloud model plane by Bert Belt and flown by Bill Nesbitt quite a few times, giving us a chance to see and hear this smooth-running powerplant in flight. It appears to have plenty of pep, has a "different" exhaust note (but mufflers will be available from the maker) and seems to handle nicely. It was flown on regular U. S. sport fuel (high-nitro content offers no advantages). The information is in the bound volume of papers, for those who are interested.

"Tiny R/C Planes"; Dave Robelen is best known for very small R/C craft, many of them scale types. He displayed a group. His paper covers: Engines, Radio Equipment, Receivers, Actuators, Batteries, Transmitters, choice of Aircraft, description of models on display. Latter ranged from a 13" span Sperry Messenger up to a 36" span semi-scale glider weighing only 1.7 oz.! Dave also showed an 18" span converted Sweepette, a competition hand-launched glider and an 18" flying boat. Many photos, a table of equipment weights and much

practical info make this paper a must for any modeler interested in the smallest practical R/C planes, for both indoor and outdoor.

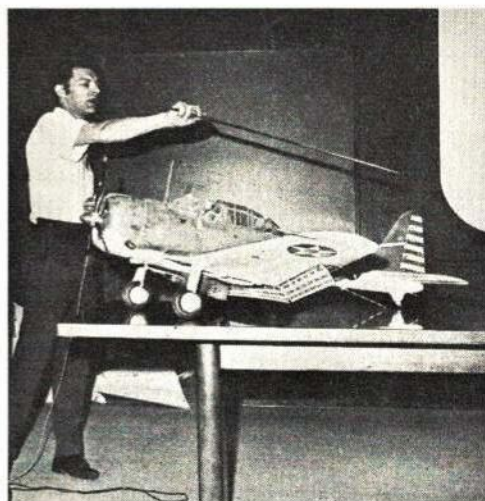
"Direct Lift Control with Coupled Elevators and Flaps"; Ed Sweeney's paper starts out by showing that coupled flaps aren't just something dreamed up by ukie stunt flyers — they have been used most successfully on quite a few full-sized planes, notably on several highly maneuverable Japanese WW2 fighters. A recent top-performance sailplane also utilizes them. And some top R/C stunt flyers including Phil Kraft (some of whose comments on this subject are included in the paper) are trying them.

Fred Marks co-authored this paper and helped Ed with the experimental work. Main topics covered are: Theory, Flight Characteristics with Coupled Flaps, Mechanization and Operation of Coupled Flaps and Elevators. The point of the paper is that with these flaps the wing can do more work. Model will be more stable, faster turning, smoother in maneuvers, and slower landing. To illustrate the case for coupled flaps and elevators, Ed and Fred flew demo planes at the Sunday session. This paper is profusely illustrated, includes mechanical linkage drawings, circuit and transmitter modifications for electronic coupling of elevator channel, and an auxiliary or fifth channel.

"The R/C Glider: Experiments and Recent Developments"; author Ray Smith is the glider sparkplug in DC/RC, which is certainly the most active club in R/C gliders, outside of the West Coast. Ray's paper covers many of his recent planes and experiments, latest ideas in constructions, airfoils, getting the craft aloft when you don't have slope lift, aerodynamic angles of model gliders, differences between slope and thermal soaring designs and needs, much more very worthwhile info to the budding R/C "glider-glider." Ray also mentions some worthwhile R/C glider kits. This paper is really loaded with good info on what appears to be one of the fastest growing branches of R/C modeling.

"Snoopy's R/C Doghouse"; this rather unbelievable "model airplane" dreamed up by Al Signorino has been seen in flight at quite a few meets and exhibitions. In this paper Al gives some of the design and flying info, to prove the doghouse is for real. Since Al was unable to attend the Symposium, Bernie Murphy delivered the paper and had his own copy of the doghouse on hand to illustrate the pertinent points. Several perspective sketches of the "aircraft" are included in the paper.

"Critical Mechanical Aspects of the R/C
Continued on page 69



Dave Platt uses his Dauntless to explain how to duplicate in-service appearance.



INTERESTED IN JOINING A.M.A.? Over 25,000 did in 1968. Membership details may be had by requesting FREE BROCHURE from above address.

AMA Helps Initiate First Hall of Fame

Seven pioneers of model aviation were honored on May 31, 1969, at a special ceremony in Spokane, Washington. Three hundred people gathered at the invitation of Washington's governor, the **Honorable Daniel J. Evans**, to pay tribute to these pioneers. The occasion was a banquet at the posh Spokane Club, sponsored by the Washington State Academy of Aerospace Science and Modeling and the Academy of Model Aeronautics.

The official proclamation named the pioneers and stated the importance of the event:

"Know ye, that by the authority of the Governor of the State of Washington and the President of the Academy of Model Aeronautics

Walter Billett Willis C. Brown
Carl Goldberg Dr. Walter A. Good
Charles H. Grant N. E. "Jim" Walker
and Frank Zaic

are hereby selected for membership in the **MODEL AVIATION HALL OF FAME**. Such high honor is being accorded them in due recognition of their distinguished achievement and meritorious service of outstanding significance, which have furthered the interests of model aviation."

AMA President John Patton made the award presentations during the special program which was arranged under the direction of **Major General Howard S. McGee**, the Adjutant General of the Washington National Guard. Representing a highly professional team of Guardsmen who had carefully planned the program, **Master of Ceremonies Major Dale G. Bailey** skillfully guided an evening which began with a tribute to the international status of the event by singing both the United States and Canadian Anthems. Colors of both countries were posted by a crack Air Guard color unit from the 142nd Air Defense Wing and set the stage for an official welcome from Spokane and the keynote address. Following **General McGee's** keynote speech which emphasized the state's interest in establishing the academy project as a means of encouraging the introduction of youth to aerospace careers, **Patton** initiated the awards with the following address:

"When the Academy for Aerospace Science and Modeling was first conceived by **Brigadier General Robert F. King**, the Assistant Adjutant General for Air, and his men of the Washington Air National Guard, it became obvious that a number of pioneers were responsible for the development of aeromodelling as an educational and beneficial youth activity through the years from the early 30's to the beginnings of the space age in the late 50's.

"It seemed fitting, therefore, as we entered this new era with new programs to stimulate youth, that we recognize the contributions of those whose earlier efforts had inspired the Academy concept as developed

by the Air National Guard staff.

"As in other endeavors with a historical background, it seemed that a Hall of Fame would be an appropriate means of honoring these pioneers. To assist in the selection of those who would be honored initially the AMA, along with others, was invited to participate by contributing information from its historical records.

"Seven names were finally selected, and **General King** invited the Academy of Model Aeronautics, representing over 26,000 active aeromodellers, to make these awards."

The presentations to each recipient were prefaced with brief sketches of biographical information:

Willis C. Brown. His first model, built before World War I, was a copy of the famous Bleriot monoplane using a framework of chestnut wood strips glued together and tied with thread and covered with silk from an old umbrella. He was a leader of model aircraft activities in the Boston area during the 30's, specializing in the design and flying of indoor models. He has devoted over 40 years to teaching and supervising in the field of industrial arts and vocational education. He was the first president of the AMA, in 1936, and leader in the growth of AMA as a part of the family of the National Aeronautic association. In 1955, he was awarded the **Frank G. Brewer** trophy for outstanding service in the field of youth aviation education. When he retired from U. S. Government service in 1960 he was a specialist for aerospace education. Prior to and since that time he has been the official

historian of the AMA.

Charles H. Grant. Built his first model in 1908, with ten foot straw covered wings for a bike. He flew a thirteen foot glider from a house roof and later made many flights with a twenty-five foot biplane. His duties, during World War I, included designing for military planes. He was editor of *Model Airplane News* from 1932 until 1945. He wrote *Model Airplane Design and Theory of Flight*, a book which is now a collector's item. He holds patents on multi-segment wing flap designs used on **Martin 404** and **Boeing 707** aircraft. He was the greatest single contributor to the development of model science and technology as applied to the design and performance of free flight model aircraft. He was also co-founder of the International Gas Model Association of America (IGMAA) in the mid-30's. Often referred to as "Father of Model Aeronautics," he is now retired and living in New England.

Accepting the award for **Mr. Grant** who was unable to attend was **Walter Schroder**, present editor of *M.A.N.*

Walter Billett, "Mr. 8-Ball" (Deceased). As a pioneer model aviation promoter since the early 30's, he sponsored many meets, operated a hobby shop, was a leader in the hobby industry. He was also a great patriot, encouraging youth and public participation in observing national historical holidays. He promoted support of the annual National Model Airplane Championships jointly sponsored by AMA, the hobby industry and the United States Navy. He was the first 6-star



Col. Lyle Scott, Commander of the Air National Guard Base at Spokane International Airport, chats about modeling past and present with three members of the Model Aviation Hall of Fame: (L to R) **Willis C. Brown**, **Dr. Walter A. Good** and **Carl Goldberg**. This was during the two-day Spokane (Wash.) International RC Model Airplane Championships. Also selected for MA Hall of Fame membership were **Charles H. Grant**, **Frank Zaic**, **Walt Billett** (deceased) and **Jim Walker** (deceased).

admiral and commander-in-chief of the Flying 8-Ball Club, which was a booster organization for model aviation. Despite a long illness he was the driving force behind the production of the history of the AMA which was completed just prior to his death, at age 88, in February 1969.

John Worth, Executive Director of AMA, accepted the award on behalf of the Billett family.

Frank Zaic. Has been flying model aircraft since the early 30's. He was a member of the first Executive Committee of AMA. Together with Lt. H. W. Alden, he produced the first issues of *Model Aviation*, the official Academy of Model Aeronautics publication, in 1936. He operated the Junior Aeronautical Supply Co., known all over the world as "JASCO." He was and still is editor and publisher of the *Junior Aeronautics Yearbooks*, starting in 1934; still being produced regularly as *Model Aircraft Yearbooks*. In 1956 he became first American in model aviation to receive the award of the Federation Aeronautique Internationale, known as the Paul Tissandier diploma, for "Outstanding accomplishment and service to sporting aviation." For many years since World War II he has been an outstanding designer of instruments and unusual devices in the aerospace field. More recently he has resumed model business in California under the famed JASCO name.

Jim Walker (Deceased). He was the originator of the U-Control system for flying model aircraft and the first producer of control line model kits, the most famous of which was the world-renowned "Fireball." He was the foremost leader in the promotion of model aviation activities, first in the great Northwest then all across the country. He was an outstanding showman who demonstrated seemingly impossible feats with model aircraft, such as flying three control line models simultaneously. He was also pioneer in the development of radio control systems and equipment. He won many post-war radio control competitions, including the National Model Airplane Championships. His sudden death in the mid-50's, at the peak of his career, has been mourned since by all who knew and benefited from his contributions to model aviation.

Accepting on behalf of Jim Walker was his daughter, **Joan Walker Anderson**.

Carl Goldberg, "Mr. Modeling." His first model airplane, at age 15, flew about 65 feet. He won a certificate at the 1928 National Model Airplane Championships, flying a twin-pusher. He won first place in the Indoor event at the 1934 National Meet with a flight of 23 minutes, 29 seconds and held many model flying records during his career. He opened a hobby shop in Chicago in 1935, then became chief designer of Comet Models, producing the famed "Clipper" and "Zipper" designs which revolutionized free flight competition model flying. He started his own company, Carl Goldberg Models, in 1955, which now is a major producer of fine model kits of all types. He is famous for having participated in every National Model Airplane Championships since his first in 1928; an achievement not known to have been accomplished by anyone else.

Dr. Walter A. Good. He is world recognized as a pioneer in radio control model flying. He flew his first radio control model aircraft in 1936; a team project with his brother Bill. They won the Nationals Radio Control Event in 1938, 1939, 1940 and 1947, using their famous "Guff" model which is now in the Smithsonian. He won the Nationals event again in 1949, by himself with a new model — the famed "Rudderbug." He was co-designer of the first commercially available RC equipment, produced in 1947. He was chairman of AMA Radio Control Committee and led an effort in the 50's which resulted in the granting of Citizens Band

Whit Stockwell, an outstanding youngster from Encino, Calif., garnered 3rd place in Form. I Pylon Racing and 2nd in Class C Novice Pattern to take the top prize in the Spokane International RC Championships, the Governor's Cup.



frequencies for radio control of model aircraft. He has continued on the committee and was instrumental in another special effort which in 1966 resulted in the granting of additional frequencies for radio control flying of model aircraft. He was the eleventh president of AMA. He was also a past president and is now an honorary president of FAI's Committee for International Aeromodelling (C.I.A.M.). In his fulltime profession since the early 40's, he has made many contributions in the guidance and control systems field and is a key staff physicist at the Johns Hopkins University's Applied Physics Lab.

Following the Hall of Fame presentations, **Willis Brown** also received the **AMA Distinguished Service Award** for his many years of dedicated service as the official AMA Historian; an activity which was acknowledged to be instrumental in providing data for the Hall of Fame ceremony.

The Model Aviation Hall of Fame was the result of the efforts of many individuals serving on a special Honorary Committee, under the head of Governor Evans:

Hon. Robert F. Goldsworthy
Dr. Ralph C. Brooke
Richard W. Carson
Brig. Gen. Robert F. King
John E. Patton
Col. Lyle W. Scott
Maj. Gen. Howard S. McGee
Brig. Gen. Lyle E. Buchanan
Roy R. Duncan
Philip O. Kraft
Walter L. Schroder
William J. Winter

June was Modeling Month in Washington State. In addition to the Model Aviation Hall of Fame there were other modeling events promoted and supported by the Washington Air National Guard. A major effort was the two-day Spokane International Radio Controlled Model Airplane Championships on May 31 - June 1. It was a joint effort under the leadership of **Col. Lyle Scott**, Commander of the Air National Guard Base at Spokane International Airport, and **Dick Carson**, Contest Director for the **AMA chartered Barons Model Club** of Spokane.

The AMA sanctioned meet was the first major contest effort in the eastern Washington state area and came off extremely well. Precision F-102 flyers by the host 116th Fighter Squadron of the Washington Air Guard rivaled the Air Force Thunderbirds and the Navy's Blue Angels. Those same

fighter pilots then served as judges during the pattern and pylon events, a good indication of the total involvement and interest on the part of the National Guard.

A large hangar housed displays by NASA, manufacturers and individual exhibitors. Just outside on the ramp was a rare opportunity to compare real vintage aircraft, like the 1917 Thomas Morse Scout owned by Skeeter Carlson, with the modern Air Guard F-102 and the Canadian F-104. The excellent weather, demonstrations, displays and special exhibits drew over fifteen thousand spectators during the weekend. Meet organization was outstanding, with many exceptional performances by both military and civilian personnel — the air guard men and members of the Barons Club worked very well together.

Top name flyers, such as World Champions **Phil Kraft** and **Ralph Brooke**, National Champ **Cliff Weirick**, and many others came from all over the west coast and even some eastern states, to give this first of a hoped-for series of annual meets a big sendoff. Also present as guests of the Air National Guard were AMA executive officers **John Patton**, **John Worth** and **Art Schroeder**; also major model magazine representatives **Ed Sweeney**, **Ed Shippe**, **Walt Schroder**, **Pat Crews** and **Kathy Action**.

Highlighting the contest results were youngsters **Larry Leonard**, who won first place in Class C Expert and **Whit Stockwell, Jr.**, who won the Best Overall Performance Award for high scores in both Pattern and Pylon Racing events and was awarded the Governor's Trophy. Also noteworthy was a special award to the youngest RC contestant, **Jon Stramm**, a ten year old AMA member from Seattle.

The meet, which was exceptionally well organized and operated, climaxed an outstanding weekend in the great Pacific Northwest.

It's really difficult to describe the overwhelming support by the National Guard and the people of Spokane. Spokane businessmen and local citizens donated \$2,000 in trophies, prizes, and merchandise. Air Guardsmen were everywhere, making sure that every detail was perfect. Men like **Lt. Colonel Robert Hepker**, project officer who found time to personally paint an artist's conception of the proposed academy building; **Major Mitchell Lundquist**, who made every guest feel welcome and personally saw to the needs of everyone; and **Captain Stan Witter**, one of the finest Public Information Officers any modeling meet could hope for, with constant radio, television and newspaper coverage of the events.

The weekend spotlighted the Air National Guard effort in that area to promote aviation and the Washington State Academy of Aerospace Science and Modeling. Details of the Academy project were described in the June and March 1969 issues of *American Aircraft Modeler*. A further step is scheduled — a 1969 summer aerospace workshop. The Washington National Guard and Central Washington State College are collaborating on this workshop designed to give teachers a complete program of general education concerning the challenges and problems of the aerospace age. Model building will be emphasized.

In the space of a year the State of Washington through the efforts of Governor Daniel Evans has become the leader in aerospace educational activities which feature model aviation. And indications are that this is only the beginning — current planning is aimed at maintaining the leadership as an inspiration to groups in other parts of the country. **The key to the progress achieved to date has been teamwork: The Washington National Guard and the Academy of Model Aeronautics, with state and local governments working together with AMA members, officers and clubs.**

Record Reviews

A report of selected recent record holders highlighting the designs and equipment used.

CL 1/2A Proto Speed national AMA record, Senior age class: 85.37 mph, established by Dan Wakerley, Napa, Calif., on February 22, 1969.



Wakerley's model was built from a Little Hustler kit of Latshaw design. It was powered by a stock Cox .049 TD swinging a Rev Up prop of 5" diameter, 5" pitch. Model weighed 7 ounces, used Hobby Poxy finish, balloon fuel tank. H & R model control and control handle was used as was H & R Heet fuel.

FF Unlimited Rubber national AMA record, Open age class: 68 minutes, 54 seconds, established by George Batiuk, Brea, Calif., on May 4, 1969.

The original design model has a wingspan of 51 1/2", 5 1/2" chord, rectangular planform, multi-spars and undercambered airfoil with sharp-pointed leading edge. Rectangular stab is 17" x 5", flat-bottomed foil. Fuselage, of Warren truss construction, is 51" in length, has low pylon for wing mount, and vertical fin mounted atop fuselage ahead of stab. Prop is of 24" diameter by 24" pitch. Rubber used for the record flights was 18 strands of Pirelli 1/4" x 37" length, lubed by a boiled mixture of green soap and glycerin. Model was built from Sig balsa, covered with Jap tissue and finished with nitrate dope.

The record consists of a series of 10 flights, the 9th of which was 11 minutes, the 10th 2 minutes, 54 seconds. Batiuk reports that a buzzard was trying to get friendly with his model on one flight, but when the buzzard got no response it dove at the model several times — coming so close to the model twice that it actually rocked it.

CL 1/2A Speed national AMA record, Open age class: 91.80 mph, established by Henry M. Nixon, E. Orange, N. J., on February 16, 1969.

Nixon's original design model of 5 ounce weight has a wing of 13" span, 1 7/8" center chord tapering to 1 5/16" tip chord, mounted at shoulder position. Stab has a span of

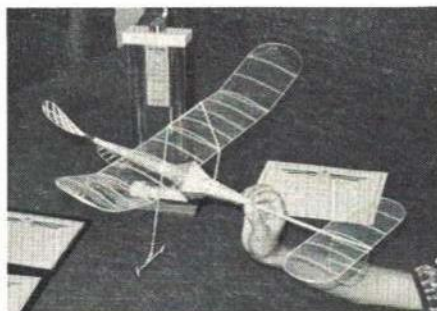
6 1/2", 1 1/2" center chord tapering to 1 1/8" tip chord. Overall fuselage length of the rudderless model is 10 1/4". A full Tatone pan was used.

Engine was a Cox TD which was not cowed, but it had a streamlined fairing behind the cylinder head. Prop was a TMHK of 4 1/4"D x 7"P. Control was by Nixon's own torsion bar single line unit in the model in conjunction with a Stanzel Monoline handle.

Model was constructed of bass wood, assembled with Ambroid cement, and was finished with Pactra Aero Gloss dope. Perfect wheels were used for the takeoff dolly.

Nixon describes his model as a conventional trainer, says prop was out of balance on record flight resulting in a lower than normal speed.

Indoor B Cabin national AMA record ceiling category II, Junior age class: 11 minutes, 58.4 seconds, established by Robert J. Dunham II, Tulsa, Okla., on August 4, 1968.



This model was designed by Bob's father, has 24" wingspan, 3 7/8" chord, semi-circular tips, undercambered airfoil of 6% arc. The stab of similar planform and airfoil is 9 3/4" by 3 3/8". The wing is mounted off-center by one-half inch onto 2 1/2" high wing posts.

The fuselage is comprised of a rolled balsa tube motor stick of 11 7/8" length, onto which a condenser paper-covered cabin, is constructed, and a tail boom of 8" length. The other surfaces are covered with Micro-Dyne Microfilm, formula B. Weight of model, complete with rubber, was .103 ounce.

The prop is a single spar type of 13 1/2"D x 26"P. Two strands of Micro-Dyne Pirelli .065" x 15", lubed with green soap and glycerin, powered the model.

The model was built from Micro-Dyne and Micro-X balsa, Micro-Dyne fittings. Dacron wing bracing was used.

On the record flight during the 1968 Nats, the model landed almost dead stick after having reached only about 60' altitude, conditions seeming to indicate a much better time could have been posted with more turns in the rubber.

This same model, or at least the same design, set the Cat. I Jr. B Cabin record on October 25, 1968, with a time of 5 minutes, 26 seconds. Robert Dunham II also set the Cat. I Jr. C Cabin record of 5 minutes, 14.2 seconds, on November 30, 1965, with another model of similar design, but with the wing chord increased to 4".

CL 1/2A Speed national AMA record, Junior age class: 91.80 mph, established by Harold Nash, Jr., High Point, N. C., on May 4, 1969.

The model used was the design of the Nash-Pardue team called "Tigre I." Its wing has a span of 13" and chord of 1 1/2" at center tapering to 1" at tips, and was mounted

at top of fuselage. The model has neither rudder nor cylinder cowling. A full Tatone speed pan was used for the 5 ounce model.

Power was supplied by a Cox TD which was modified by grinding and polishing the crankshaft, raising the cylinder .010", cutting the backplate to allow stuffing the crankcase, and by boring the intake. A Cox prop of 5"D x 3"P was used, pen bladder tank.

The single line control was by H & R unit in the model and a Stanzel unit in a Speed Master handle. Model was built of Sig bass wood and finished with clear Hobbypoxy.

FF FAI Power national AMA record, Junior age class: 16 minutes, 42 seconds, established by Gerry Geraghty, San Jose, Calif., on April 20, 1969.



Gerry's model was modified by him from a design of Tom Hutchinson which was published in the December 1967 issue of *Free Flight*, the National Free Flight Society paper. It has a wingspan of 60", 7 3/4" chord, polydihedral, flat bottom airfoil, multi spars. Stab is 24" x 5 1/2".

The model was powered by a Fox .15 which was substituted at the last minute for another make engine which failed to run properly. The Fox used a K & B glow plug and Tatone tank mount, Tornado 8"D x 4"P prop.

At 27.5 ounces weight, the model was built from Sig balsa and spruce, covered with Sig bamboo paper, and finished with nitrate dope. For timers he used the Tatone 1/2A Flood Off and Acada dethermalizer.

FF 1/2A Gas national AMA record, Junior age class: 38 minutes, 46 seconds, established by Terry Buddingh, Livermore, Calif., on April 20, 1969.

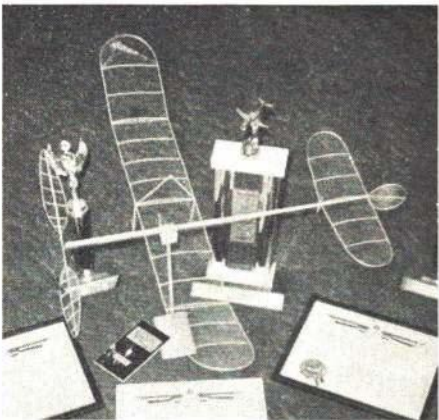


Model was built from kit plans of the Starduster 350 of Competition Models. The high thrust line model has a wingspan of 51 1/2", 7 1/4" chord. It was covered with Sig Super Fine Jap tissue and finished with four coats of Aero Gloss. Sig Contest Balsa was used in construction, together with Elmers white glue. Model weighed 7 1/2 ounces.

Power was supplied by a Cox TD .049 which used a Cox high performance plug and swung a Tornado nylon prop of 5 1/2"D x 3"P. Engine cut-off was done by means of a Tatone pinch-off timer; dethermalizing

by Tatone D.T. During the record flights, the weather was reported as being slightly cloudy, low ground thermals, 5 mph wind.

Indoor B Stick national AMA record, ceiling category II, Junior age class: 15 minutes, 58.2 seconds, established by Robert Dunham II, Tulsa, Okla., on November 2, 1968.



This model, designed by Robert's father, is similar in many characteristics to the model he used in establishing cabin records reported elsewhere; of course this model did not have a cabin or landing gear. Additionally, the rubber motor hung beneath the motor stick which was length-

ened to 12", and the tail boom was lengthened to 8½". Also, the stick model has a circular rudder affixed to the end of the tail boom instead of being underslung as on the cabin model. The stick model stab configuration is different by having a tapered leading edge, although area is unchanged.

Weight of the stick model, including a loop of .045" x 16" Pirelli rubber, is .067 ounce.

This model, or one of similar design, also established a record for Robert Dunham II in Jr. B Stick, Cat. I, of 9 minutes, 44 seconds, and in Jr. FAI Stick, Cat. I, of 9 minutes, 15.6 seconds—both on October 25, 1968.

CL ½A Speed national AMA record, Open age class: 102.23 mph, established by Eugene Vernachio, Perth Amboy, N. J., on May 4, 1969.

Vernachio's own design model was powered by a Cox .049 swinging a Rev Up prop of 4½" diameter, 7½" pitch. He reports that he cleaned up the engine and retimed it. A home-built brass "suction" tank was used.

The wing of the model has a span of 12½" and center chord of 2½" tapering to 1" at tips. Stab has 7" span, 1½" center chord. Except for the very top of the cylinder head being exposed, the model has a full helmet cowl, full Tatone ½A speed pan, no vertical fin. Control was by Stanzel Monoline.

The model, at 4¼ ounces, was built from Sig bass wood, finished with fiberglass resin and DuPont auto enamel.

extremely hard time.

Having learned this sad news, I naturally assumed that it would be impossible to get the models from Calais to Metz as it is an eight hour drive each way. Early Saturday morning I called Mr. Reggiori and explained the situation. He told us not to worry—that he would try to work something out. By noon he had the French Ministry of War involved (they used a twin engine Dassault 312 to fly the model boxes to Metz) and further involved Les Ailes Mosellanes, a full-sized flying club as well as a model club (by flying us to Calais and return in a light plane).

But the problems of the customs were by no means over. In fact we had problems both at the port of Calais and at the airport of Calais, and three times upon arrival at Metz! I do not believe this will occur again as I understand Mr. Reggiori has met with the head customs officials, and they will certainly sort out this problem. On the brighter side, the courtesy which the French army and the Ailes Mosellanes showed us was absolutely incredible, if not unheard of. In addition to Mr. Reggiori, I am especially indebted to Mr. Mondon, Minister of Transport, General Sabry and Colonel Sirgard.

My entry was a ½th size Sopwith Triplane which I test-flew early Sunday morning to find out what it would do. It certainly had a mind of its own, although I found I could get five decent maneuvers out of it and at a very realistic airspeed. After three test flights, I started my first attempt about a half hour later.

Flabbergasted, I sat there flipping the engine's prop for six minutes without success, thereby losing the attempt—when a half hour previously, the engine started on the first flip! As it turned out, head screws had become loose, and I lost compression.

On the second flight things went no better as I had taxied out and was just about to take off when the engine cut. Before I had time to start it again, my three minutes for an attempt were up.

Prior to my last attempt I took the cowl off and got the engine 100% tuned, or so I thought. I managed to take off, but once more the airplane had a mind of its own: the engine was too rich, and I had to land immediately.

Naturally, when I gave the demonstration flight after the contest, everything went perfectly without the slightest bit of trouble. As the Triplane was quite good, and flew beautifully to say the least, I was extremely aggravated with it for not performing during the contest.

After flying on Sunday there was a prize-giving ceremony which was in itself incredible as every single competitor received a very pleasant surprise—everybody got something! Cups were awarded from 6th place on, together with a very nice medal for 6th place to a gold watch for 4th place—not to mention the money awarded for 1st, 2nd and 3rd—\$300, \$200 and \$100. Top winners were:

1. Roy Yates, England, Percival Provost
2. N. Butcher, England, Fokker Triplane
3. Walter Reger, Germany, Piper Comanche
4. Roy Scott, England, Spitfire VB
5. Jean Shefer, France, Sky Raider
6. Peter Neate, England, Newport 17

Finally, the banquet Sunday evening was something which had to be seen to be believed. They had eight lambs for eating, roasted over a spit all day Sunday, a band for dancing, plenty of wine and, above all, a most incredible amiable atmosphere. Without a doubt—and this is the opinion of all the competitors—this model competition was the most enjoyable that anyone had ever attended, and if the Scale World Championships are held at Metz next year, it will be a most unforgettable and enjoyable experience.

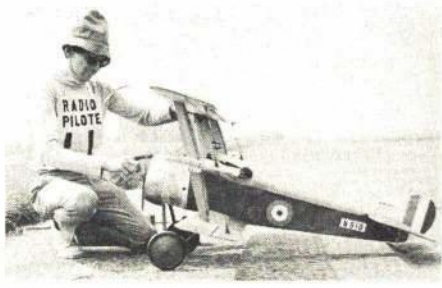
British Take International RC Scale Meet in France

By R. O. Lehman

HQ note: The author is the sole AMA member (who resides at present in London) who participated in the FAI International RC Scale Contest at Metz, France, June 14-15. His report, interesting in itself, may prove to be of later value inasmuch as the organizers of this contest are the same who propose to host a Scale World Championship in 1970—subject to authorization by the Federation Aeronautique Internationale (FAI) Committee for International Aero Modeling (CIAM) in November.

There were 19 scale models which competed. Flying took place on Saturday and Sunday only. The scale judges and flying judges were all from other countries (France, England and Germany) and were very fair. The crowd control was excellent, and on landing and taking off there was never any problem or worry about hitting the crowd; also, the commentary about each airplane was most amusing (it was in French).

The strip itself consisted of a circle of tarmac so that takeoff could be in any direction. The takeoff run was about 50 yards which, with no wind at all, proved to be a little short for one or two of the models.



R. O. Lehman is shown with his Sopwith Triplane entry in the International RC Scale Contest. Despite customs problems, he praises contest operation, especially social aspects.

I understand that next year, if all goes well, they may be able to get the use of an entire airfield which would solve this problem. However, all of the planes did manage to take off from this strip, but there were a few of them which used every inch with nothing to spare.

There were a few problems now and then which caused short delays, such as when the wrong transmitters were handed out, but I have no doubt that these problems will be solved if they do hold the World Championship at Metz next year. Furthermore, it is most likely (if not certain) that all information connected with the event will be translated into English so that everybody will be able to read for themselves all the rules and regulations.

The transmitters were impounded at the beginning of the day as is the usual practice. There were some slight differences of opinion as to what certain maneuvers were and how to grade them, (such as taxiing on the ground, etc.) but on the second day the judges and competitors got together and ironed out all of these problems. By next year I have no doubt that there will be a very clear set of standards laid down so that the scores will be more uniform. No serious problem arose on the technical side, and I am certain that things will be even better next year.

Now for my own personal experiences which, to say the least, were extraordinary. I arrived on Thursday and was amazed to be met at the airplane by Mr. Reggiori who, I understand, was responsible for most of the administrative work. I was immediately struck by a friendly atmosphere which is indeed rare. As there was no flying on Friday I saw the town which is well worth visiting in its own right, and the cathedral is a must—even for aeromodellers!

On Friday night my airplanes were supposed to arrive with two of my friends, but it wasn't until 4:00 am Saturday morning that they showed up by car—without models! The customs officials (at Calais, on the Northern coast) had refused to let the models into France and gave the boys an

RC Sailplane Racing Big in West

The third running of the AMA sanctioned **Glider Pylon Races** on a course overlooking Monterey Bay at Sunset Beach State Park, Watsonville, Calif., shows by the number of entries—thirty-six—just how well the event has attracted a following. Many powered RC Pylon Race events and Pattern events do not obtain as many entries. There must be something here!

Sponsored by the **AMA chartered Radio Control Bees club**, the race was a two day event, May 3-4. Semi-final races were run on Saturday and on Sunday morning from which the top ten each day qualified for the finals Sunday afternoon.

The contest operation is patterned after the powered Formula I Pylon Race. The main deviation is that the sailplanes are not flown around the pylons—instead they are flown past the pylons as the lift to keep the sailplanes airborne is out in front of the race course. Race starts are different, also, as the sailplanes are launched prior to the race and then, as in sailboat starts, they are required to stay outside the race course and come across the start/finish line on a ten-second countdown.

Many of the sailplane entries were scratch-built models of six to eight foot wingspan, 600 to 900 square inches. Kitted gliders were in more prominence this year, there being many of the large Jerry Nelson KA6 types which did very well as did the Phebus from Fliteglas.

A new product this year, very airworthy and attractive in appearance, was the Schweizer 2-32 by Fliteglas. Another newcomer on the RC sailplane kit scene is a combination stunt and racing glider by Francis Products; Bob Francis' experience in racing powered Formula I models is evident in the low-drag profile of this ship.

The semi-final race on Saturday was flown in near gale force winds, up to 40 knots. The Nelson KA6 was in its glory as with its size and weight it was not bothered by the high winds, while lighter models were blown about by the rough air.

The heats on Sunday were favored with better air, 12 to 15 knots, which satisfied all the contenders. Due to the larger Sunday entry, four planes were flown at once while only three had raced together on Saturday.

The larger the group, the greater the hazard of collision—and collisions there were. On one occasion a KA6 cut through a small ship from San Diego flown by **Herbert Mills**, resulting in a shower of debris while the KA6 flew on. On another occasion, just to keep a balance, a smaller, lighter ship rattled wings with a KA6 on the near pylon turn, sending the KA6 into the ground.

With twenty semi-finalists making the dash for the **R/C Modeler Perpetual Trophy**, five planes were flown together on the course.

It is a bit awe inspiring to see five sailplanes racing silently together, the sunlight coming through the wing, the power struggle as positions are lost and won in the pylon turn, and just the sound of the wind. As the last turn is made for home stretch, the shouts of the spectators is mingled with "Get 'em, Tom; Dive, dive, Bill; Come on, Greg; Cut to the inside now, now!"

On the last start/finish turn, the lap counters and copilots have a time sorting out the positions what with five planes turning and diving past. A short group meeting was held with pilots and copilots following each of the final race heats to make sure everyone agreed with the race results; with five planes so tightly spaced it is not hard to err on a finishing position. This quick group agreement dispelled any contesting of race results.

After three heats per finalist there remained two contenders for first place:

Jerry Arana of the R.C. Bees, flying a fiberglass Foka, and **Robert Seigelkoff** (Sig) of East Bay R.C., with the potent Nelson KA6.

Their flyoff race was the topper of the day. They were closely matched; first one ship would be in the lead, then the other. On the fourth lap Sig cut inside the Foka at the start/finish pylon, and a shout went up as most spectators thought the race was over and that Sig had won. But the pilots knew better and raced on, diving for the far pylon. As the two planes rounded the far pylon, Sig was in the lead with Arana's Foka in hot pursuit. At the very last second, on the near pylon, the Foka cut to the inside and dived by the KA6 making a large turn to win by a very narrow margin. In fourth place was **Gary Wolfrom** (Wave-masters Club) flying a KA6 who lost out to

Kenneth Empson, third place, who flew a scratch-built British Blivit.

In reflecting on the often heard comments about the absence of teenagers in RC, the cost of equipment and the lack of adult guidance, **Contest Director Whitey Pritchard**, who supplied information for this report and the accompanying photos, said, "I was pleased to note that there were several teenagers in our glider contest, and in particular **Rick Walters** was doing well until he had trouble with his reed rig. Yes, reeds! Sailplanes work fine on the older reed equipment, and the sailplane is more easily mastered than power, making it ideal for the teenager.

"**Greg Brackett**, another teenager, was outstanding in his performance and completely calm under pressure as he flew his Phoebus to sixth position on Saturday out of a field of 26, and placed fifth in the finals from a field of 36 adults. That's flying in any man's book."



Seldom seen outside of Europe is a conglomeration of sailplanes like this—just the middle view of the Sunday morning contestant lineup during the RC Bee's Glider Pylon Races, May 3-4.



L: John Carlson of the RC Bees Club assembles his scratch-built foam wing canard design; Scott Christenson of the League of Silent Flight lends a hand. R: Bob Francis with his newcomer to the RC slope soaring field; word is that Francis Products will soon provide this model in kit form.



L: That's Jerry Nelson guiding his well known KA6 to the race start. R: The winners (L to R)—Ken Empson, third, original design; Jerry Arana, first, Foka; Bob Seigelkoff, second, KA6.

Associate VP Experiment Underway

AMA's Executive Council at its winter meeting last March authorized a new approach to area membership representation. The idea came about because of a need to better represent smaller sections of the country than has been possible with the eleven district regional system to date.

Several years ago the need prompted the formation of a redistricting study committee. At the time it seemed that merely changing the boundaries and perhaps the number of districts would solve the problem. But this approach ran into many snags and conflicts.

Some officers felt that the council was already as large as effective operation would permit, so that increasing the number of representatives would result in the council being bogged down by too many viewpoints. Those who felt this way tended to favor fewer districts and thus fewer council representatives, but it was acknowledged that a move in this direction would aggravate the basic problem of how to better represent local areas.

Those who favored increasing the number of districts found that there were many geographic problems of how to establish boundaries within states. In fact no satisfactory system of dividing states by counties or natural boundaries was found; even division by zip codes was abandoned as impractical. The only promising system that evolved was one which used telephone area code separation. But the final recommendation of the special study committee was against redistricting—there were too many differing problems from one district to another and the complications seemed to outweigh the advantages.

One of the big conclusions to come out of all this was that each district had special problems, each of which was best handled by that district's officers. Out of this thinking came the associate VP idea—a more flexible approach which could allow each area vice-president to provide special representation where needed.

As approved by the council the idea allows each VP to make up to four Associate VP appointments. The AVP's would have delegated to them all the VP responsibilities for a given area except for voting in the council. The latter point was to keep

the council meetings and votes from becoming unwieldy. But the council members are expected to seek out and vote the consensus of district thinking.

Furthermore, the AVP's were to be included in the Executive Council communications pipeline; receiving copies of all council correspondence, reports, votes and decisions. They would also be welcome to submit opinions and comments for council consideration. By being directly informed on all council business each AVP would then be able to serve effectively as an authoritative AMA representative in his immediate area.

If carried to the maximum expansion authorized, the council structure will effectively be five times larger than before: eleven VP's, plus forty-four AVP's. However, the AVP appointments are proceeding slowly and may not reach the maximum permitted—at least not immediately. There is a problem of finding good representatives and defining the areas of jurisdiction. Council members are proceeding cautiously, weighing carefully the factors of district problem areas and competent people who are willing and able to serve—as with the VP's, AVP positions are voluntary and require much time and dedication.

At press time a number of AVP appointments had been made. Significantly, one area with a history of past representation problems—District III—got almost immediate AVP action. District III has a great number of AMA members in a relatively small geographic area, with some specific divisions according to location and interest. It was natural, therefore, for the district VP (Eva Biddle) to appoint one AVP to serve the Ohio area, another to serve western Pennsylvania, while she retained jurisdiction on her side of the mountains to the East.

Other special situations are being looked into. For example, Hawaii is a part of district X, but the council member has always been from California, more than a thousand miles away. An AVP appointment for Hawaii is, therefore, a natural means of obtaining better representation. Similarly, other districts have special problems and it is expected that AVP appointments will help to solve them.

The Associate VP idea stems from the AMA Contest Coordinator network which has operated extremely well for many years. It provides fourteen area representatives even though there are only eleven districts. Coordinators are also appointed by VP's

and serve voluntarily. The network works well because it is tailored to regional needs and is flexible to adapt to changing situations. All that is necessary, for example, to change the number of coordinators and their areas of jurisdiction is for adjacent area VP's to agree on any changes.

In a similar fashion VP's are expected to adjust AVP appointments to suit the need. They are not tied to by-law requirements or restrictions. This flexibility should compensate for many of the differing needs from one area to another.

To make the expanded representation system work, however, it is necessary that there be regular contact between AVP's and local groups. Hopefully AVP's will be able to meet regularly with clubs and groups of AMA members. Such meetings would enable AVP's to pass on the latest AMA news and background concerning official decisions, to hear suggestions or complaints, and to generally serve as the official AMA spokesman in the area.

If the idea works, many false rumors and confusion about AMA decisions and operations (which pop up regularly) can be brought to light and clarified. Also many good ideas which otherwise might never get past local discussion may get passed on to the Executive Council. Or what may be even more important can happen: the explanation of reasons why seemingly good ideas are not put into practice; usually because they won't work due to problems or factors which are not obvious to the general membership.

The AVP appointments are an attempt to get better understanding between individual members and the officers responsible for running the organization. It's part of a sincere effort by the Executive Council to be more responsive to local needs. It's admittedly an experiment and it may take some time to prove out. In the meantime, to help VP's determine where AVP's are needed most it would help for local groups to make known their suggestions and recommendations for representation.

The AVP appointments to date:
District III: Albert Seidowski, 21460 Sheldon Road, Brookpark, Ohio 44113; **Ralph Pennetti**, 3918 Brandon Rd., Pittsburgh, Pa. 15212. **District VI:** John Blum, 2417 Glen Place, Granite City, Ill. 62040. **District VII:** Frank Morrissey, 14100 W. Park Ave., New Berlin, Wisc. 53151. **District VIII:** Bob Kurtz, 6127 Henderson Ave., Shreveport, La. 71106. **District IX:** John Kelly, 7020 E. Colfax, Denver, Colo. 80220.



Murry Frank photo

Left: Eddie Thomas, Jr., Abilene, Tex., has his arms loaded with trophies he took home from the Dallas Cloud Climbers meet on June 15. A Junior, he outdid Seniors and Opens in 1/2A FF Gas and at the same time captured the 1/2A High Time Perpetual Trophy. Center: Maynard Hill, Silver Spring, Md., is about to start the spark ignition modified Merco 49

Murry Frank photo

in the model used to set a new RC Duration World Record of 11 hours, 32 minutes, 30 seconds. The spark ignition system being generator powered, engine required electric starter. Kraft RC gear was used. Right: Top CL stunt flyer turned speed merchant is George Aldrich, San Antonio, Tex. Piped A Speed shot taken at June 21-22 Ft. Worth meet.

AMA News Extra

1969 NATIONALS CONTEST WINNERS

The National Model Airplane Championships for 1969, the 38th running of the world's largest model air meet, was held July 14-20 at Willow Grove Naval Air Station, Pa., just north of Philadelphia. With the U.S. Navy as host for the 22nd year, the National Contest is conducted by members of the Academy of Model Aeronautics and events are sponsored by members of the hobby industry. The principal winners are listed here; a full report is planned for American Aircraft Modeler in a future issue.

Grand and Open National Champion--Buck Servaites
Senior National Champion--Gary Myers
Junior National Champion--Mark Kerr

Club Team Champion--Golden Eagles
Nats Team Champion--U. S. Air Force
RC Champion--Larry Leonard

INDOOR

Stick	Time	Paper Stick	Time	Cabin	Time	HL Glider	Sec.
J-R. Ganser	22:55.6	J-R. Ganser	10:20.1	J-R. Ganser	15:37.2	J-M. Kerr	105.0
S-D. Hacker	16:15.1	S-D. Domina	14:49.4	S-D. Domina	9:43.0	S-M. Thompson	123.6
O-R. Plotzke	42:53.0	O-J. Richmond	26:56.0	O-J. Richmond	22:43.2	O-R. Kluiber	152.2

OUTDOOR FREE FLIGHT

HL Glider	Time	A-1 Towline	Sec.	A-2 Towline	Sec.	Unlim. Rub.	Time
J-G. Pione	5:06	J-E. Hatscheck	808	J-M. Kerr	671	J-M. Bailey	33:00
S-K. Fitch, Jr.	4:55	S-R. Hallum	11:06	S-B. Schultz	751	S-G. MacKenzie	24:00
O-P. Klintworth	7:47	O-H. Grogan	19:34	O-P. Allnutt	900	O-R. Pione	17:52
Wakefield	Sec.	1/4 Gas	Time	A Gas	Time	B Gas	Time
J-G. Heeb	830	J-M. Kerr	19:19	J-J. Petchler	15:15	J-M. Taibi	18:00
S-J. Servaites	637	S-R. Hallum	11:06	S-N. Pickel	17:56	S-G. Myers	13:27
O-D. Reed	855	O-H. Grogan	19:34	O-G. Comp	19:13	O-J. Pfeifer	24:00
C Gas	Time	FAI Power	Sec.	Helicopter	Points	Rocket	Time
J-M. Kerr	15:00	J-M. Kerr	779	JSO-G. Lee	163.25	J-R. Lyons	3:55
S-G. Myers	8:16	S-D. Dock	803			S-D. Dock	5:39
O-G. Versaw	20:49	O-R. Sifleet	1028			O-H. Murphy, Jr.	7:52

CONTROL LINE

1/4 A Speed	MPH	A Speed	MPH	B Speed	MPH	C Speed	MPH
J-B. Pardue	98.32	J-D. Bartley	140.37	J-D. Bartley	154.40	J-D. Bartley	177.97
S-B. Van Hoozen	98.86	S-G. Brown	136.33	S-J. Albritton	162.13	S-R. Mohr	177.97
O-C. Legg	109.71	O-Baltes/Beatty	154.60	O-Frye/Roselle	167.40	O-Frye/Roselle	193.68
Jet Speed	MPH	FAI Speed	KPH	1/4 A Proto	MPH	1/4 A Profile Proto	MPH
JS-D. Bartley	157.28	J-B. Pardue	164.05	J-R. Legg	85.49	J-D. Bartley	80.33
O-H. Latshaw	167.37	S-G. Brown	190.84	S-T. Hartvigsen	84.08		
		O-L. Jackson	189.53	O-Anaston/Bussell	92.13		
B. Proto	MPH	Stunt	Points	FAI Team Race	Time	Combat	
J-D. Bartley	140.02	J-D. Adamisin	459	JSO-Kelly/Parent	10:12.0	J-J. Hayes	
S-G. Brown	120.76	S-M. Stott	471			S-F. Imbriaco	
O-Aldrich/MacKenzie/ Satterwhite	141.68	O-R. Lampione	598			O-W. Rogers	
Rat Race	Time	Profile Carrier	Points	Carrier I	Points	Carrier II	Points
J-C. Bankemper	6:05.8	J-R. Sawicki	521.31	J-J. Gerber	501.47	J-J. Gerber	479.10
S-J. Haupt	5:51.7	S-M. Bedard	314.63	S-E. Gross, Jr.	470.24	S-E. Gross, Jr.	507.77
O-J. Ballard	5:40.0	O-D. Hay	304.62	O-M. Sawicki	553.62	O-E. Willmann	587.43

RADIO CONTROL

Pattern Finals	Points	Pattern Qualifying	Points	Pylon Form. I	Points	Pylon Form. II	Points
JSO-L. Leonard	319 3/5	J-W. Stockwell	156 2/3	JSO-L. Leonard	35	JSO-H. deBolt	27
		S-B. Smith	165 1/3				
		O-Nov.-G. Kane	147				
		O-Exp.-J. Whitley	187 2/3				

SCALE

Radio Control	Points	Indoor	Points	Control Line	Points	Free Flight	Points
JSO-M. Hester	1050.1	J-B. Webster	119.7	J-E. Dickson	425 1/2	JS-B. Webster	394
		S-T. Kuehne	122.5	S-J. Romano	458 1/2	O-F. Stark	515
		O-W. Eggert, Jr.	146.0	O-L. Keith	543		

RC Team News

RADIO CONTROL WORLD CHAMPIONSHIP

Telegraphic results received from the FAI RC Pattern World Championship at Lemwerder, Germany, July 23-28, indicate that Giezendanner of Switzerland took top individual honors while U. S. competitors Phil Kraft placed 2nd, Jim Kirkland 9th and Jim Whitley 10th. Other top placers were Wester (W. Germany) 3rd, Marrot (France) 4th, Schoenfeldt (W. Germany) 5th, Matt (Lichtenstein) 6th. In the Team Championship scoring, West Germany was 1st and U. S. 2nd.

The RC Scale International Contest was held in conjunction with the Pattern World Championship; U. S. entrants Maxey Hester, Joe Bridi and Claude McCullough placed 4th, 5th and 7th, respectively. First was Yates (Great Britain), 2nd Charles (G. B.), 3rd Roger (W. Germany), 6th Godenzi (Italy). Great Britain finished 1st as a team and the United States was 2nd.

By special arrangement with the publisher this page is produced at the very last minute, just before the magazine is printed, to bring you the latest news concerning current Academy of Model Aeronautics events of national significance.

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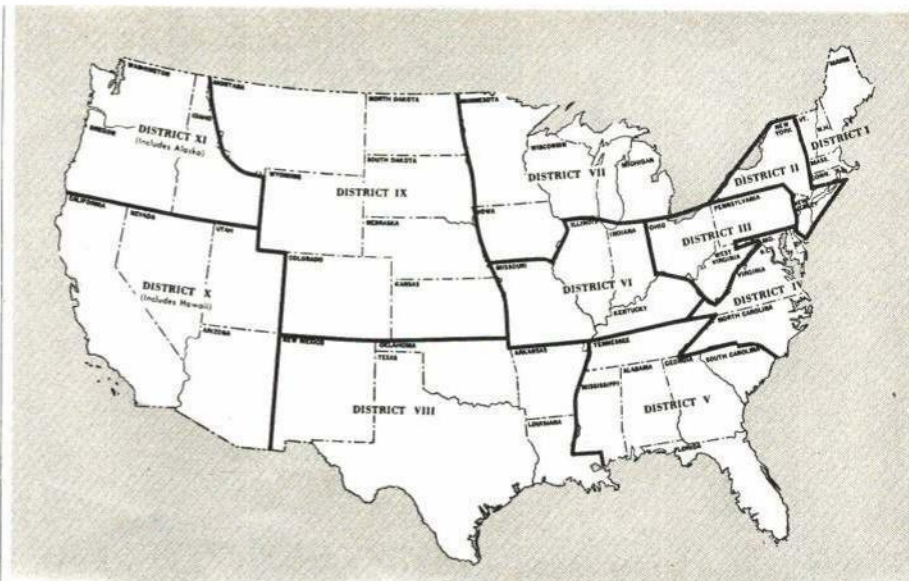
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P. Runge, 1107 Main St., Higginsville, Mo. 64037

CONTEST CALENDAR

Official Sanctioned Contests of the Academy of Model Aeronautics

Sept. 1 — Middlesex, N. J. (AA) MMAC 1st Annual CL Contest. Site: Mountain View Park. A. Koenig CD, 1613 Frase St., So. Plainfield, N. J. 07080.

Sept. 1 — Salem, Ohio RC Short Circuits Club Annual Contest. Site: Quaker City Drag Strip. J. Marshall CD, Rd No. 5, Lisbon, Ohio 44432. Sponsor: RC Short Circuits Club.

Sept. 6-7 — Chesapeake, Va. (AA) TRC 4th Annual RC Meet. Site: Fentress Naval Air Field. M. Woolard CD, 4122 4th St., Chesapeake, Va. 23324. Sponsor: Tidewater RC.

Sept. 6-7 — Amarillo, Tex. (AA) ARKS 9th Annual RC Meet. Site: Club Flying Field. B. Irwin CD, 3302 Lewis Lane, Amarillo, Tex. 79109. Sponsor: Amarillo Radio Control Society.

Sept. 6-7 — Fiskdale, Mass. (AA) 4th Annual N. E. RC Hydro Radio Plane Championships. Site: Brimfield Dam. J. Ross CD, 19 Sterling Dr., Dover, Mass. 02030. Sponsor: New England RC Modellers.

Sept. 6-7 — Nedrow, N. Y. Syracuse RC Fly-O-Rama. E. Izzo CD, 3950 Highland Ave., Skaneateles, N. Y. 13152. Sponsor: Syracuse Ares.

Sept. 6-7 — Dayton, Ohio (AA) Dayton Buzzin Buzzards CL Meet. Site: Municipal Flying Circles. J. Martin CD, 551 Aberdeen, Dayton, Ohio 45419. Sponsor: Dayton Buzzin Buzzards.

Sept. 7 — College Park, Md. (AA) Eastern U. S. Indoor Championships. Site: Cole Field House, Univ. of Md. G. Buck CD, 4215 Howard Rd., Beltsville, Md. 20705. Sponsor: DC Maxcutters.

Sept. 7 — Bond Field, Wisc. (AAA) 26th Annual Midwestern States FF Championships. P. Stotch CD, 3851 W. 62nd Pl., Chicago, Ill. 60629. Sponsor: Chicago Aerofests.

Sept. 7 — Des Moines, Iowa (AA) Your Last Chance CL Contest. Site: Ft. Des Moines Parade Ground. H. Thies CD, 2705 Lynner Dr., Des Moines, Iowa 50310.

Sept. 7 — Parkersburg, W. Va. Skysharks Fun Fly. Site: Club Field. G. Villard CD, 3301 23rd St. N. W., Canton, Ohio 44708. Sponsor: Vienna Skysharks RC.

Sept. 13-14 — Bossier City, La. (AA) SHARKS RC Annual Site: SHARK'S Field. J. Monk CD, 574 Janet Lane, Shreveport, La. 71106. Sponsor: Shreveport Area Radio Controllers.

Sept. 13-14 — Atlanta, Ga. (AA) Southern RC Trade Show. Site: Marriott Motor Hotel. L. Purdy CD, Rte. 1, Oakwood, Ga. 30566. Sponsor: Cobb County RC.

Sept. 13-14 — West Suffield, Conn. (AA) NCRNN 5th Annual RC Contest. Site: NCRRC Field. R. Bernier CD, 761 Mather St., Suffield, Conn. 06078. Sponsor: Northern Conn. RC Club.

Sept. 13-14 — Marietta, Ga. (AA) Masters RC Tournament (Pattern, by invitation) & Air Races. Site: CCRRC Field. L. Purdy CD, Rte. 1, Oakwood, Ga. 30566. Sponsor: Cobb County RC.

Sept. 13-14 — Conklin, Mich. (AA) Grand Rapids & Seaway Annual RC Meet. Site: Den Hoff Farm. J. Wolfkin CD, 3971 Causeway Dr., Lowell, Mich. 49331. Sponsor: Grand Rapids RC Club & Seaway RC Club.

Sept. 13-14 — Boise, Idaho (AA) B.M.A.A. 1st FF, CL Annual. Site: Boise State College. S. Harding CD, 1710 N. 32nd St., Boise, Idaho 83703. Sponsor: Boise Model Airplane Association.

Sept. 13-14 — Tahlequah, Okla. 1st Annual All Oklahoma State RC, FF, CL Meet. Site: Municipal Airport. J. Wingo CD, 2615 Elgin, Muskogee, Okla. 74401.

Sept. 13-14 — Rhinebeck, N. Y. (AA) World War I RC Jamboree. Site: Olde Rhinebeck Aerodrome. B. Blake CD, 12 Shale Dr., Wappinger Falls, N. Y. 12590. Sponsor: IBM RC Model Club.

Sept. 13-14 — Denver, Colo. (AAA) 4th Annual Rocky Mtn. FF Champs. Site: East Colfax Airport. G. Larrabee CD, 3203 W. Saratoga, Englewood, Colo. 80110. Sponsor: Magnificent Mountain Men.

Continued on page 61

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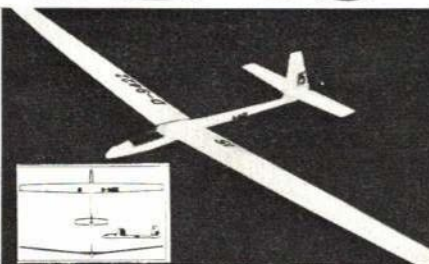
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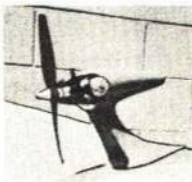
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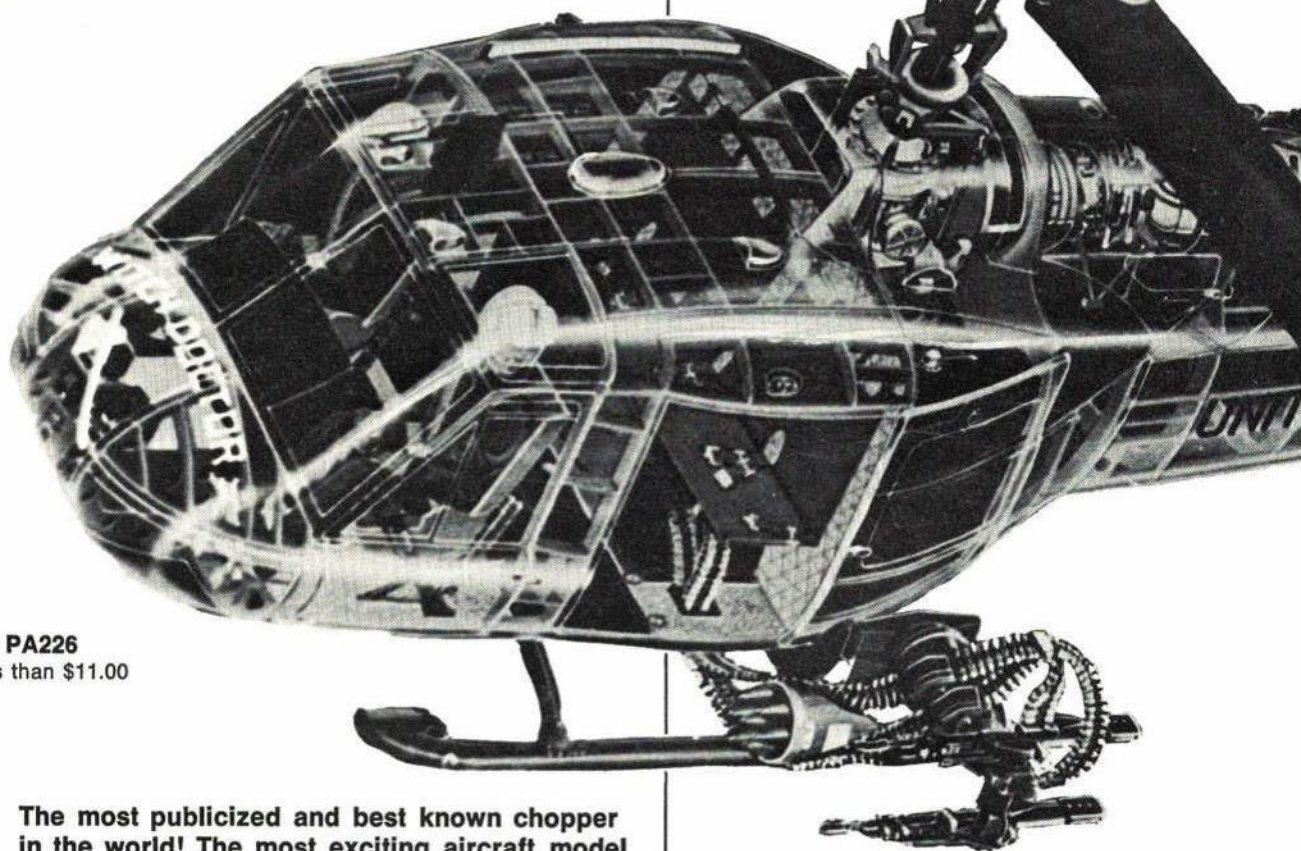
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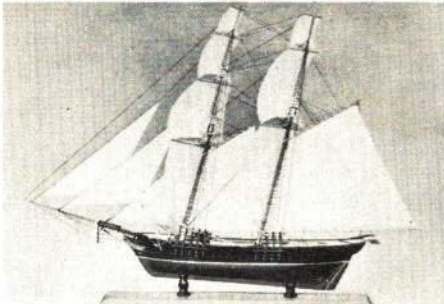
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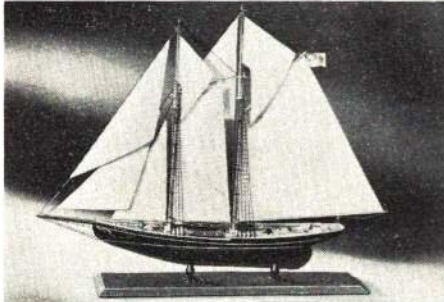
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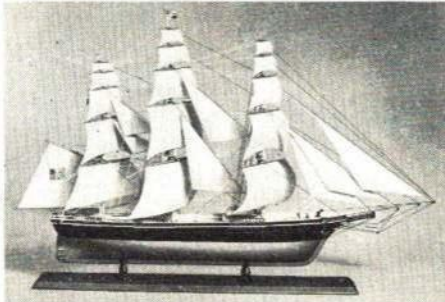
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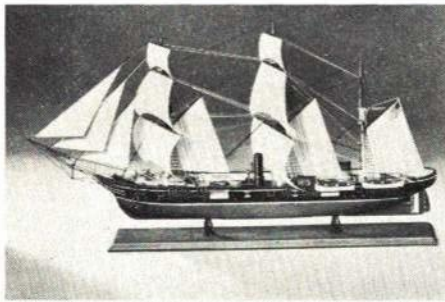
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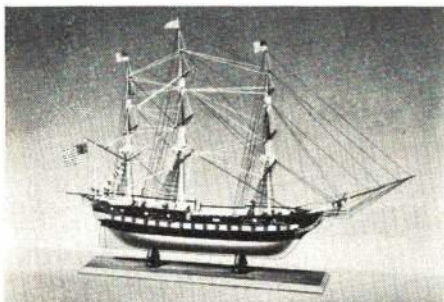
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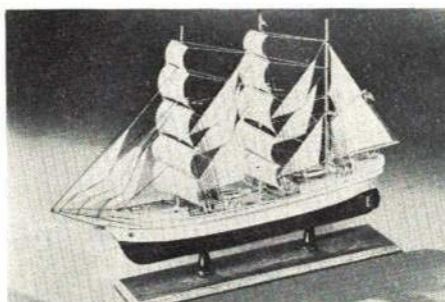
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Skyrida

Continued from page 13

ly important balancing act. When your Skyrida is ready for flying, support it with the tips of your forefinger, under the balance-point marks on the wing tips as shown on the plan, and in the easi-build sketches. Your Skyrida will need a little weight in the nose-weight recess. Add or take away weight until it balances level. Avoid any suspicion of tail-heaviness.

Choose a calm day (or evening) and some long grass for first glide and power tests. From a shoulder-high launch (into any slight breeze there may be) with the nose pointing slightly downward, the plane should touch-down about 15 yards ahead of you. Check to see that the glide is straight. A turn in either direction can be checked by slightly warping the rear edge of the fin in the opposite direction to the turn. If your Skyrida dives, gently warp the trailing edge of the stabilizer up and vice-versa. Make all adjustments no more than 1/32" — 1/16" at a time. The fin and tail surfaces, like any well-designed real aircraft, are quite sensitive; so a little at a time.

Now comes "the moment." A first power-on flight! Start your Pee-Wee and adjust it for smooth running, then face into the breeze, and launch steadily and smoothly. *Never* in your excitement throw the model. The plane should climb steadily away in a left-hand turn, and continue to climb in the same turn until the fuel runs out. It should then settle into a fairly straight, flat glide. We found that by turning the rear edge of the fin just 1/16" to the right (viewed from the rear) as shown on the plan, we got a wide left-hand turn under power, and a sweeping right-hand circle on the glide — a most pleasing flight pattern. Skyrida is happiest when flying to the left under power, so keep her that way. All the best, and high-flying to you.

Halberstadt

Continued from page 21

you can put in the spacious cockpit (Antic with Kodak Instamatic movie camera indicates a need for lots more lens angle than I can afford).

Inverted Lomcevak, in falling snap hammerhead whip spins, are prohibited in this aircraft because the glo plug gets too cool, but other than this slight restriction, all is pleasant and light. Do not know too much about CG range, incidence adjustments, or what it will do with OS 80's, etc., but as shown it's great fun. A word of caution necessary: It has a definite sink rate when the power is pulled off, and has an inflexible guide path. "Stretch the glide" translated into German is "Landen mit Bump in der Ruff."

Afterthoughts: Area computes to be 1,346 sq. in. The big fellas tell me that wing drag accounts for only 10-15% of drag. The wheels, struts, wires and miscellaneous garbage amounts to 50% or so. Angle of attack, fuselage, tail, etc., comprise the rest. So, if you fly no struts, no landing gear (hand launch), no guns, pilots, etc., maybe it would do wild stuff without cooling its plug.

If you build one be prepared for "What Model Phaltz is That?" and "Wasn't Richtig-hofen's Red?", and "Why not use WWI Crosses?" You real scale nuts see:

German Aircraft of the First World War, by Peter Gray and Owen Thetford, Putnam and Co., Ltd.; Reconnaissance Bomber Aircraft of the 1914-1918 War, by Lambertson and Cheesman, Harleyford Publications Ltd.; Fighter Aircraft of the 1914-1918 War, same as above; Fighters 1914-19, The Pocket Encyclopedia of World Aircraft in Color, by Kenneth Munson, The Macmillan Co.

Curtiss P-1C

Continued from page 38A

brass from the ends of the landing gear braces until they fit in place between the landing gear components. During the fabrication and placement of the landing gear braces, refer to the photographs of the model undersides.

The carburetor air intake and radiator overflow reservoir are fashioned from .05" sheet styrene and attached to the nose (refer to Fig. 2).

Make elevator and rudder control horns from thin plastic sheet or paper. Cement the control horns in place as shown in photographs of the model. The tail skid is made by soldering two pieces of brass wire together and cementing in place.

The left side fuselage details consist of the starter crank (use .02"-diameter brass rod), the main fuel tank and auxiliary fuel tank filler tubes, and the oil reservoir filler tube. (Use 1/32"-diameter brass rod.) The filler tubes for the main fuel tank and the oil reservoir are located in recessed areas in the fuselage (see Fig. 2). The filler tube for the auxiliary fuel tank comes up from the auxiliary tank next to the leading edge of the lower left wing.

The N-struts and aileron linkage from the Goshawk kit are used on the P-1C model. Make a pilot tube from No. 34 gauge wire and attach it to the N-strut with simulated bands on the leading member of the strut.

The bead and ring sight are made from No. 34 gauge wire and cemented into the holes that were meant to hold the P-6E telescopic sight. The ring sight is located in front of the bead.

The fire extinguisher is turned down from 1/16"-diameter brass rod. Chuck the rod in an electric drill or hand grinder. Use needle files to shape the fire extinguisher. Cement the fire extinguisher to the right fuselage side, just behind the cockpit opening.

Fabricate a radiator from a 3/16 x 5/15 x .1" piece of styrene. Use nylon stocking to simulate the comb on the radiator core. Do not attach the radiator until painting is completed.

Painting and application of decals should be done before final assembly. Paint as follows:

- 1) Testor's No. 1114 Yellow (+10 drops of No. 27 Orange): wings, horizontal stabilizer, elevators, and vertical stabilizer.
- 2) Testor's No. 42 Green: fuselage, N-struts, all landing gear components, radiator, spinner, auxiliary fuel tank, and aileron linkage.
- 3) Testor's No. 43 Blue: rudder control horns.
- 4) Flat Black: tires.
- 5) Gloss Silver: propeller.

All decals were taken from Micro-Scale sheets. The 1/16"-high lettering on the fuselage is white. The wing walks can be painted on or can be cut from black decal film. Prior to final assembly, but after applying decals, all components (except the propeller) should be sprayed with Testor's Dulcote or Walther's DDV.

Make the pilot's seat from thin sheet plastic, paint flat aluminum, and install. Fabricate a windscreen from acetate and glue in front of the cockpit opening.

When all parts are completely dry, assemble the model. The N-strut, on which the pitot tube is mounted, goes on the right. If the hole for the propeller shaft is the correct size, the propeller shaft does not have to be glued in place.

The P-6E kit box art provides a guide to the rigging (flying and landing wires). To rig my model, I used a No. 34 gauge magnetic wire made by the Alpha Wire Corporation. This wire has a silver-metal appearance and will stay straight when stretched. Pieces of wire are stretched, cut to the desired length, and fixed in place with a water-soluble white glue, such as Elmer's Glue.

When the rigging is finished, your P-1C is ready for display.

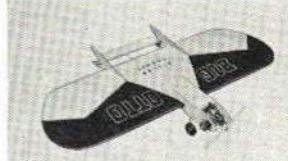
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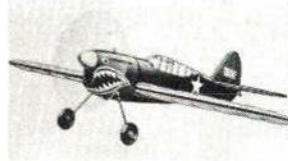
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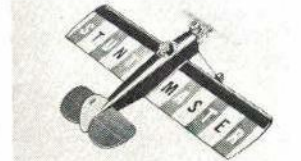
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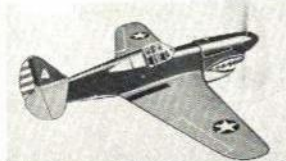
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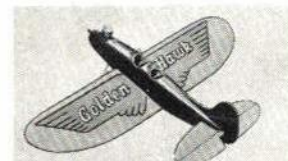
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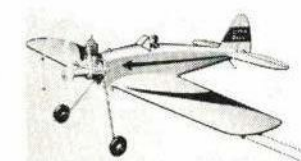
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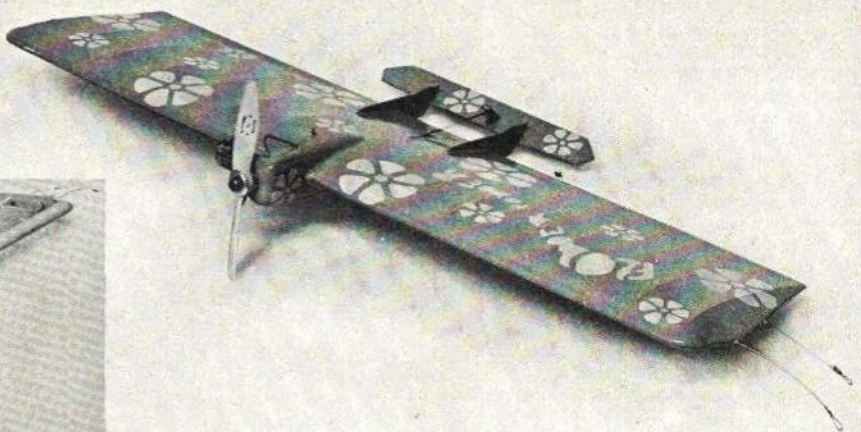
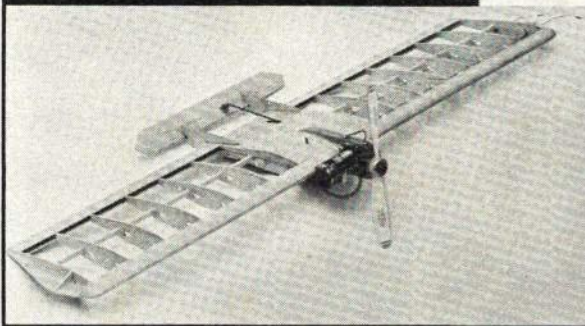


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sacrificing strength or "speed of build-up." There are never any toxic fume problems with Se-Cur-It. And since it's hot fuel proof and high heat resistant, it's a must for use

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It can be used with hardwoods, plywood, balsa, paper, canvas, styrofoam, cloth and other porous materials. Se-Cur-It dries clear—a boon to the use of transparent coverings. **Other Great Features:** Good gap-filling properties. Long open time—fast setting time. Non-flammable and non-toxic.

For the next plane you build—don't risk adhesive failure that can help someone else become an ace. Let Se-Cur-It help you win. Use it for all your model building needs.



Ambroid Company, Inc., 305 Franklin Street, Boston, Massachusetts 02110 • Telephone: 617 426-9390

HOBBY HELPERS FULL SIZE PLANS

Group Plan #563 3 oz. 60¢

"Woodpecker" aerobatic U-control stunt by Frank Warburton, England's stunt champion. Scale-like 58" span beauty based on Italian Procear "Picchio"; length 40"; .40-size engine.

"Turkey Buzzard" remarkable free-flight tailless design by Roy Clough Jr. Spans 32"; 14" long; for .020 motor.

Group Plan #567-B 6 oz. \$1.25

Jetex 150—Bill Schiarman's superb Jetex 150 powered free flight, winner of the Nationals and many other meets.

Thor—Jet-like control-line stunt model for .35's, by Moses Quintana. Considered the plane to beat in the East during '66.

Group Plan #567-A 6 oz. \$1.25

Stits Flat-Bug—Ted Atkinson's radio control scale model, first place winner at the 1966 Nationals. For .45 power.

Plan #264 6 oz. \$1.10

World's Best Free Flight, "Talos II", winner of 1943 International F.A.I. Championships designed and flown by Erno Frigyes. Spans 60"; 45" long.

"Crusader" Retracting-Gear Stunt control line by Harold Price. Spans 55½"; 41" long; .35-size engine.

For Special Handling of Plans only 6¢ per oz. 1st Class 10¢ per oz. AirMail United States and Possessions only Latest Catalog send 15¢ to cover handling

HOBBY HELPERS
1543 STILLWELL AVE. • BRONX, N.Y. 10461

Hooptee Too

Continued from page 36

and solder it in place before making the final bend in the wire to form the axle.

After the landing gear is installed, install the engine and fuel tank on the pan. We have found that a Don's 2½-ounce tank gives the best performance. The larger sizes do not run as consistently and the 2½-ounce size is adequate for 50 to 55 laps per tank.

Position the crutch, wing, and stab on the pan, using rubber bands to hold them in place, then grasp the inboard wing tip between the two lead-out guides and let the airplane hang vertically. Adjust the fore-and-aft position of the wing, and also the angle of the wing, until the fuselage hangs at a two-degree inward angle. This will give you a minimum of line tension, thereby making the plane easier to fly and also slightly faster. Drill the 9/64" holes for the hold-down bolts after the wing location

FROM
STINGER MFG. CORP.
2331 WEST HOLLY STREET
PHOENIX, ARIZONA 85009

TED WHITE'S
EL GRINGO
&
EL GRINGO TOO

Sold in semi-kit form

KIT CONTAINS: Fully assembled molded FIBERGLASS fuselage... with bulkheads installed and drilled where needed. Complete set of wing ribs, pre-cut and sanded to shape, with alignment rod holes pre-drilled for easy assembly. Complete set of easy-to-read construction and assembly plans. Complete list of building materials and accessories, so you, the modeler, can select the wood and hardware of your choice. Dealer Inquiries Invited.

FOAM WING KITS AVAILABLE

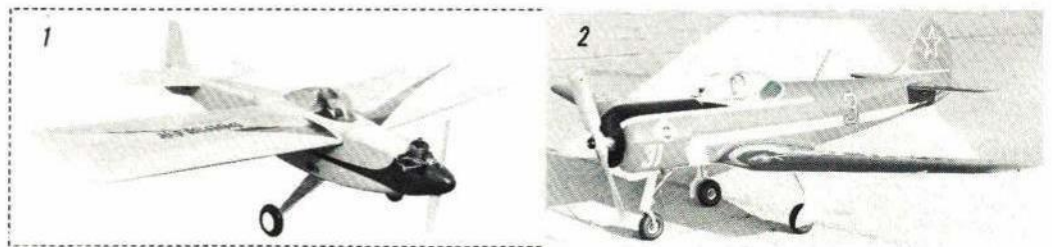
EL GRINGO -	Wing Span: 70" - Suggested Eng.: .49 to .71	\$46.95
EL GRINGO TOO -	Wing Span: 54" - Suggested Eng.: .35 to .45	\$34.95

SIG FIRST IN Balsa AND MODEL SUPPLIES

Two more super SIG Superkits - for your '69 contest and sport flying

DOUBLER Brad Shepherd's hot new R/C Sport design is perfect for either Galloping Ghost or Small Proportional. With minor modifications it makes a fine Quarter Midget Racer. Kit features die-cut Sig grade 'AAA' Balsa and Plywood, Molded Canopy, Color Decals, Formed Landing Gear and Super Detailed Plans. Spanning a compact 37-1/2", this little beauty takes .09 engines. Only \$9.95

YAK-18 Claude McCullough's fabulous exact-scale replica of this world-famous aerobatic plane will compete in the R/C Scale Internats in Germany this year. Sig's superkit of Claude's YAK-18 will be available at dealers soon after this ad appears. Spanning 72-1/2", for .60 engines, the kit features 7" x 9" Alum. Cowl, .040" Molded Canopy, Formed Landing Gears, Color Decals, plus THREE sheets of Highly Detailed Plans (containing ample "scale presentation material" on full-size ship). \$45.95



SIG 'AAA' Balsa - NEW PRICE LIST

SHEETS		STRIPS		BLOCKS	
36" LENGTHS	36" LENGTHS	3" LENGTHS	3" LENGTHS	3" LENGTHS	3" LENGTHS
1/32 x 2	23c	1/16 x 1/8	3c	1/2 x 1/2	6c
1/16 x 2	23c	1/8 x 1/4	3c	1/2 x 1/2	6c
3/32 x 2	26c	1/16 x 1/4	3c	1/2 x 1/2	6c
1/8 x 2	31c	1/16 x 1/4	3c	1/2 x 1/2	6c
3/16 x 2	36c	1/8 x 1/4	3c	1/2 x 1/2	6c
1/4 x 2	46c	1/16 x 1/2	10c	1/2 x 1/2	6c
3/8 x 2	52c	1/16 x 3/4	12c	1/2 x 1/2	6c
1/32 x 3	37c	1/16 x 1	15c	1/2 x 1/2	6c
1/16 x 3	37c	3/32 x 3/8	5c	1/2 x 1/2	6c
3/32 x 3	45c	3/32 x 1/2	6c	1/2 x 1/2	6c
1/8 x 3	45c	3/32 x 3/8	7c	1/2 x 1/2	6c
3/16 x 3	54c	1/8 x 1/2	12c	1/2 x 1/2	6c
1/4 x 3	72c	1/8 x 3/4	16c	1/2 x 1/2	6c
3/8 x 3	85c	3/32 x 3/4	13c	1/2 x 1/2	6c
1/32 x 4	45c	3/32 x 1	17c	1/2 x 1/2	6c
1/16 x 4	45c	1/8 x 3/8	5c	1/2 x 1/2	6c
3/32 x 4	49c	1/8 x 1/2	7c	1/2 x 1/2	6c
1/8 x 4	63c	1/8 x 3/4	7c	1/2 x 1/2	6c
3/16 x 4	72c	1/8 x 1	10c	1/2 x 1/2	6c
1/4 x 4	86c	1/4 x 1/2	12c	1/2 x 1/2	6c
3/8 x 4	108	1/4 x 3/4	16c	1/2 x 1/2	6c
1/32 x 5	98c	3/16 x 1	20c	1/2 x 1/2	6c
1/16 x 5	98c	3/16 x 1/2	10c	1/2 x 1/2	6c
3/32 x 5	112	3/16 x 3/4	12c	1/2 x 1/2	6c
1/8 x 5	112	3/16 x 1	16c	1/2 x 1/2	6c
3/16 x 5	125	1/4 x 1/2	18c	1/2 x 1/2	6c
1/4 x 5	140	1/4 x 3/4	19c	1/2 x 1/2	6c
3/8 x 5	170	1/4 x 1	22c	1/2 x 1/2	6c
1/32 x 6	125	5/16 x 1/2	15c	1/2 x 1/2	6c
1/16 x 6	125	5/16 x 3/4	20c	1/2 x 1/2	6c
3/32 x 6	140	5/16 x 1	24c	1/2 x 1/2	6c
1/8 x 6	140	1/2 x 1/2	28c	1/2 x 1/2	6c
3/16 x 6	155	1/2 x 3/4	32c	1/2 x 1/2	6c
1/4 x 6	175	1/2 x 1	36c	1/2 x 1/2	6c
3/8 x 6	195	3/4 x 1/2	40c	1/2 x 1/2	6c
1/32 x 7	140	3/4 x 3/4	44c	1/2 x 1/2	6c
1/16 x 7	140	3/4 x 1	48c	1/2 x 1/2	6c
3/32 x 7	155	1/2 x 1 1/2	52c	1/2 x 1/2	6c
1/8 x 7	155	1/2 x 2	56c	1/2 x 1/2	6c
3/16 x 7	170	1/2 x 2 1/2	60c	1/2 x 1/2	6c
1/4 x 7	190	1/2 x 3	64c	1/2 x 1/2	6c
3/8 x 7	210	1/2 x 3 1/2	68c	1/2 x 1/2	6c
1/32 x 8	140	1/2 x 4	72c	1/2 x 1/2	6c
1/16 x 8	140	1/2 x 4 1/2	76c	1/2 x 1/2	6c
3/32 x 8	155	1/2 x 5	80c	1/2 x 1/2	6c
1/8 x 8	155	1/2 x 5 1/2	84c	1/2 x 1/2	6c
3/16 x 8	170	1/2 x 6	88c	1/2 x 1/2	6c
1/4 x 8	190	1/2 x 6 1/2	92c	1/2 x 1/2	6c
3/8 x 8	210	1/2 x 7	96c	1/2 x 1/2	6c
1/32 x 9	140	1/2 x 7 1/2	100c	1/2 x 1/2	6c
1/16 x 9	140	1/2 x 8	104c	1/2 x 1/2	6c
3/32 x 9	155	1/2 x 8 1/2	108c	1/2 x 1/2	6c
1/8 x 9	155	1/2 x 9	112c	1/2 x 1/2	6c
3/16 x 9	170	1/2 x 9 1/2	116c	1/2 x 1/2	6c
1/4 x 9	190	1/2 x 10	120c	1/2 x 1/2	6c
3/8 x 9	210	1/2 x 10 1/2	124c	1/2 x 1/2	6c
1/32 x 10	140	1/2 x 11	128c	1/2 x 1/2	6c
1/16 x 10	140	1/2 x 11 1/2	132c	1/2 x 1/2	6c
3/32 x 10	155	1/2 x 12	136c	1/2 x 1/2	6c
1/8 x 10	155	1/2 x 12 1/2	140c	1/2 x 1/2	6c
3/16 x 10	170	1/2 x 13	144c	1/2 x 1/2	6c
1/4 x 10	190	1/2 x 13 1/2	148c	1/2 x 1/2	6c
3/8 x 10	210	1/2 x 14	152c	1/2 x 1/2	6c
1/32 x 11	140	1/2 x 14 1/2	156c	1/2 x 1/2	6c
1/16 x 11	140	1/2 x 15	160c	1/2 x 1/2	6c
3/32 x 11	155	1/2 x 15 1/2	164c	1/2 x 1/2	6c
1/8 x 11	155	1/2 x 16	168c	1/2 x 1/2	6c
3/16 x 11	170	1/2 x 16 1/2	172c	1/2 x 1/2	6c
1/4 x 11	190	1/2 x 17	176c	1/2 x 1/2	6c
3/8 x 11	210	1/2 x 17 1/2	180c	1/2 x 1/2	6c
1/32 x 12	140	1/2 x 18	184c	1/2 x 1/2	6c
1/16 x 12	140	1/2 x 18 1/2	188c	1/2 x 1/2	6c
3/32 x 12	155	1/2 x 19	192c	1/2 x 1/2	6c
1/8 x 12	155	1/2 x 19 1/2	196c	1/2 x 1/2	6c
3/16 x 12	170	1/2 x 20	200c	1/2 x 1/2	6c
1/4 x 12	190	1/2 x 20 1/2	204c	1/2 x 1/2	6c
3/8 x 12	210	1/2 x 21	208c	1/2 x 1/2	6c
1/32 x 13	140	1/2 x 21 1/2	212c	1/2 x 1/2	6c
1/16 x 13	140	1/2 x 22	216c	1/2 x 1/2	6c
3/32 x 13	155	1/2 x 22 1/2	220c	1/2 x 1/2	6c
1/8 x 13	155	1/2 x 23	224c	1/2 x 1/2	6c
3/16 x 13	170	1/2 x 23 1/2	228c	1/2 x 1/2	6c
1/4 x 13	190	1/2 x 24	232c	1/2 x 1/2	6c
3/8 x 13	210	1/2 x 24 1/2	236c	1/2 x 1/2	6c
1/32 x 14	140	1/2 x 25	240c	1/2 x 1/2	6c
1/16 x 14	140	1/2 x 25 1/2	244c	1/2 x 1/2	6c
3/32 x 14	155	1/2 x 26	248c	1/2 x 1/2	6c
1/8 x 14	155	1/2 x 26 1/2	252c	1/2 x 1/2	6c
3/16 x 14	170	1/2 x 27	256c	1/2 x 1/2	6c
1/4 x 14	190	1/2 x 27 1/2	260c	1/2 x 1/2	6c
3/8 x 14	210	1/2 x 28	264c	1/2 x 1/2	6c
1/32 x 15	140	1/2 x 28 1/2	268c	1/2 x 1/2	6c
1/16 x 15	140	1/2 x 29	272c	1/2 x 1/2	6c
3/32 x 15	155	1/2 x 29 1/2	276c	1/2 x 1/2	6c
1/8 x 15	155	1/2 x 30	280c	1/2 x 1/2	6c
3/16 x 15	170	1/2 x 30 1/2	284c	1/2 x 1/2	6c
1/4 x 15	190	1/2 x 31	288c	1/2 x 1/2	6c
3/8 x 15	210	1/2 x 31 1/2	292c	1/2 x 1/2	6c
1/32 x 16	140	1/2 x 32	296c	1/2 x 1/2	6c
1/16 x 16	140	1/2 x 32 1/2	300c	1/2 x 1/2	6c
3/32 x 16	155	1/2 x 33	304c	1/2 x 1/2	6c
1/8 x 16	155	1/2 x 33 1/2	308c	1/2 x 1/2	6c
3/16 x 16	170	1/2 x 34	312c	1/2 x 1/2	6c
1/4 x 16	190	1/2 x 34 1/2	316c	1/2 x 1/2	6c
3/8 x 16	210	1/2 x 35	320c	1/2 x 1/2	6c
1/32 x 17	140	1/2 x 35 1/2	324c	1/2 x 1/2	6c
1/16 x 17	140	1/2 x 36	328c	1/2 x 1/2	6c
3/32 x 17	155	1/2 x 36 1/2	332c	1/2 x 1/2	6c
1/8 x 17	155	1/2 x 37	336c	1/2 x 1/2	6c
3/16 x 17	170	1/2 x 37 1/2	340c	1/2 x 1/2	6c
1/4 x 17	190	1/2 x 38	344c	1/2 x 1/2	6c
3/8 x 17	210	1/2 x 38 1/2	348c	1/2 x 1/2	6c
1/32 x 18	140	1/2 x 39	352c	1/2 x 1/2	6c
1/16 x 18	140	1/2 x 39 1/2	356c	1/2 x 1/2	6c
3/32 x 18	155	1/2 x 40	360c	1/2 x 1/2	6c
1/8 x 18	155	1/2 x 40 1/2	364c	1/2 x 1/2	6c
3/16 x 18	170	1/2 x 41	368c	1/2 x 1/2	6c
1/4 x 18	190	1/2 x 41 1/2	372c	1/2 x 1/2	6c
3/8 x 18	210	1/2 x 42	376c	1/2 x 1/2	6c
1/32 x 19	140	1/2 x 42 1/2	380c	1/2 x 1/2	6c
1/16 x 19	140	1/2 x 43	384c	1/2 x 1/2	6c
3/32 x 19	155	1/2 x 43 1/2	388c	1/2 x 1/2	6c
1/8 x 19	155	1/2 x 44	392c	1/2 x 1/2	6c
3/16 x 19	170	1/2 x 44 1/2	396c	1/2 x 1/2	6c
1/4 x 19	190	1/2 x 45	400c	1/2 x 1/2	6c
3/8 x 19	210	1/2 x 45 1/2	404c	1/2 x 1/2	6c
1/32 x 20	140	1/2 x 46	408c	1/2 x 1/2	6c
1/16 x 20	140	1/2 x 46 1/2	412c	1/2 x 1/2	6c
3/32 x 20	155	1/2 x 47	416c	1/2 x 1/2	6c
1/8 x 20	155	1/2 x 47 1/2	420c	1/2 x 1/2	6c
3/16 x 20	170	1/2 x 48	424c	1/2 x 1/2	6c
1/4 x 20	190	1/2 x 48 1/2	428c	1/2 x 1/2	6c
3/8 x 20	210	1/2 x 49	432c	1/2 x 1/2	6c
1/32 x 21	140	1/2 x 49 1/2	436c	1/2 x 1/2	6c
1/16 x 21	140	1/2 x 50	440c	1/2 x 1/2	6c
3/32 x 21	155	1/2 x 50 1/2	444c	1/2 x 1/2	6c
1/8 x 21	155	1/2 x 51	448c	1/2 x 1/2	6c
3/16 x 21	170	1/2 x 51 1/2	452c	1/2 x 1/2	6c
1/4 x 21	190	1/2 x 52	456c	1/2 x 1/2	6c
3/8 x 21	210	1/2 x 52 1/2	460c	1/2 x 1/2	6c
1/32 x 22	140	1/2 x 53	464c	1/2 x 1/2	6c
1/16 x 22	140	1/2 x 53 1/2	468c	1/2 x 1/2	6c
3/32 x 22	155	1/2 x 54	472c	1/2 x 1/2	6c
1/8 x 22	155	1/2 x 54 1/2	476c	1/2 x 1/2	6c
3/16 x 22	170	1/2 x 55	480c	1/2 x 1/2	6c
1/4 x 22	190	1/2 x 55 1/2	484c	1/2 x 1/2	6c
3/8 x 22	210	1/2 x 56	488c	1/2 x 1/2	6c

NEW Balsa ADDITIONS

SHEET		36" LENGTHS	
1/20x3x36	32c	5/16x3x36	76c
1/4x3x36	74c	1/4x4x36	92c
3/32x1/4x36	LENGTHS	8c EACH	
ROUNDED-EDGE PLANKING			
ROUNDED-EDGE (Allison & Elevator)			
1/4x1x36	40c	1/4x2x36	35c
3/8x1x36	45c	3/8x2x36	45c
WING SKINS - 36" LENGTHS			
1/16x12x36	175	3/32x12x36	195

S

No matter

how you look at 'em...

SCHWEIZER 2-32

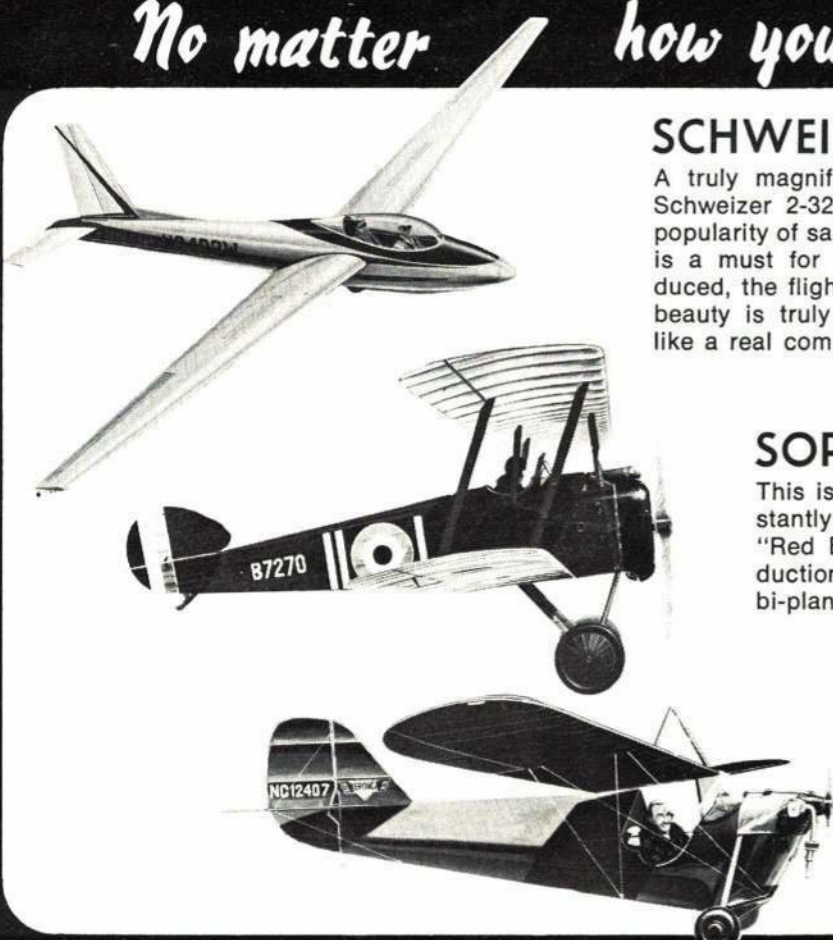
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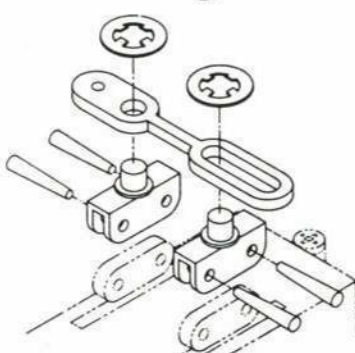
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only 89¢ PER SHEET 5" x 36"

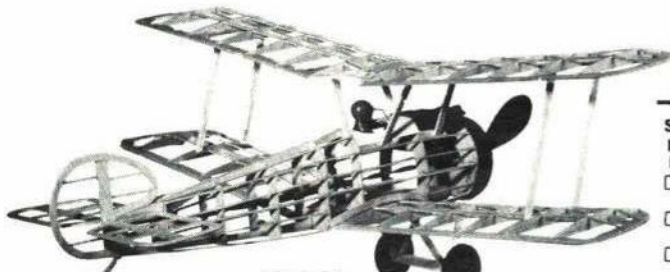
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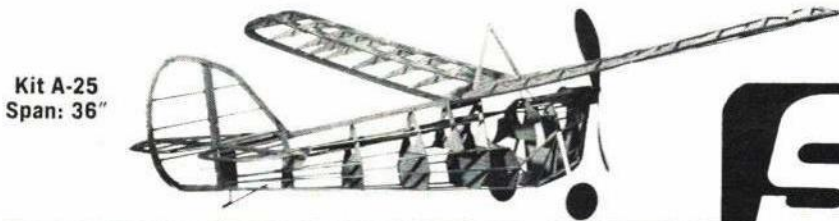
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Span: 42 3/4"



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is fixed. Use a good hardwood glue such as Titebond or white glue for all basswood to basswood joints.

Add the balsa cowling blocks and the top basswood deck. Install the control horn as shown in the elevator and drill the hinge holes in the stab prior to painting.

Cover the entire nose area of the fuselage with light-weight fiberglass cloth. If you want to go to the trouble of putting fillets around the wing-to-fuselage joints, a good mixture can be made using Sig Balsa Powder and polyester (fiberglass) resin. I just use Pactra plastic balsa and, after sanding, paint on the polyester resin for strength. The inside of the fuselage shell should also be coated with resin for strength and fuelproofing.

Before adding the controls, the model should be painted. I prefer the following finish: one to two coats of Hobby epoxy "Stuff" over the bare wood, followed by one to two coats of Hobby epoxy color. Follow this with a little elbow-grease in wet sanding and applying rubbing compound, and a hard paste wax and a very nice finish can be realized.

The stab is then hinged with heavy carpet thread or fish line and is mounted to the pan using 4-40 bolts and blind nuts. Add the controls, the wing-tip skid, and the wheels. The best wheels we have found are manufactured by Don's Model Aeronautics (the same people who make the fuel tanks and fast-fill plugs). These wheels have a positive tire-to-hub bonding and will not come off, even on a hard landing.

We favor the Supertigre 40 RRV (G-21 Series) engine. We have tried every other engine available, but we have had the best results with the S. T. We use no special hop-up, as such, but we do rework the engines. I will attempt to describe the tech-

PLANS & THINGS

"LITTLE JUAN" ↓

.049 power
All-balsa Free-flight
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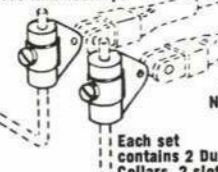
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gas stove, or hot water tank, and tapping the case on a piece of wood.

Start with the cylinder. First, inspect the inside of the bore for "cross-hatch" honing marks, making sure that the cylinder has been completely and evenly honed. The deeper the hone marks, the better. A smooth surface is no good, as it won't allow the piston ring to rotate and seat properly. If the cylinder is not honed properly, you have two choices: to re-hone it yourself using a stone or other abrasive, or else, to buy another one. If you are lucky enough to have a hobby shop that handles a good supply of parts, you can usually pick through enough parts and find a good cylinder liner.

Next, take the piston ring and insert it into the cylinder without the piston. Then measure the ring gap. A gap of .002 to .004" is ideal. If the ring has an excessive gap, you should get another ring. If the gap is too small, you can file it larger with a small needle file. Then put the ring on the piston, making sure that it will rotate freely all around the piston.

Insert the wrist pin in the piston. Make sure that it fits free and can rotate within the piston. Then make sure the wrist pin will rotate easily within the connecting rod. Check the rod to crank-pin clearance. This is hard to measure and is more of a "feel-fit." Actually, the rod should rock slightly in all directions on the crankshaft.

Check both sets of crankshaft bearings. They should rotate smoothly and be free of any roughness. If you desire, the rear bearing can be replaced with a higher quality American-made bearing. The most suitable is a Barden Class 7 bearing with an internal clearance of .001".

The next step is to take a small knife-edged needle file or jewelers saw and cut a slot through the aluminum crank journal

in the crankcase. The slot should be as narrow as possible and only about .002" deep. This will lubricate the crank-seal area and keep the aluminum from galling on the crankshaft when the engine is operated at sustained high speeds and elevated temperatures.

After having checked each part of the engine separately and thoroughly washed each piece, start to reassemble it piece by piece. Make sure each part works freely with its associated parts. The thick aluminum head gasket should be removed and replaced with a .010-inch copper gasket or no gasket at all. Do not settle for anything less than perfect. It is far better to spend a few more hours and, if necessary, a few more dollars and do it right the first time.

I prefer to use a KB venturi because of its larger I.D. and also because the fuel is atomized better through the peripheral spray holes. It can be easily fitted into a S.T. rear cover by just machining down the O.D. about .002 to .004". I also prefer to have the venturi located in the upper right-hand corner rather than in the lower left-hand corner for ease of installation.

Two modifications should be performed on the exterior of the engine. First, the fins on the cylinder head should be turned down to about 1/8" high for easier access to the glow plug with the "hot-wire" clip. Secondly, the front drive washer should be cut down so as to remove the shrouding over the front bearing. This enables the engine to be fit into the pan much easier.

The needle valve should be coated with Lock-Tite to prevent it from loosening due to vibration. Incidentally, this is also a good practice to use on all mounting bolts and hold-down bolts. Your engine will operate more dependably if you locate the pressure fitting in the upper left-hand crank-

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case bolt hole, rather than using the timed pressure fitting supplied with the engine.

Now that you have been very thorough in preparing the engine, it will also require a very thorough break-in. This is a very important step and if it is not done properly, all of your other work may have been done in vain. I use a 10-3½ Top Flite wood prop cut down to 7¼" in diameter for break-in purposes.

Run the engine at a fast four-cycle setting (approximately 16,000 rpm) with sport fuel for about 10 minutes, then gradually lean it out for the next 10 minutes. After about 20 minutes of total running, it should hold a good setting fully peaked out (approximately 21,000 rpm). Run it at this setting for another 15 minutes, total in three-minute intervals, stopping to let it cool a little in between.

When the engine has 35 to 40 minutes total time on it, fill it up with the same fuel that you will fly with. If you use 40% nitro fuel, the speed on the break-in prop should now be up to 22,500 to 23,000 rpm. Run it on the ground like this for another 15 minutes, again in three-minute intervals. Now your engine should be well broken in and you should never have any seizing or overheating problems in the air.

You may wonder why you should run the engine so fast on the ground when it will only run 18,000 to 19,000 rpm in the air. As I said, it is to "break-it-in." The high rpm's on the ground subject the engine to about the same heat it will encounter in a cowled airplane in the air on a slightly lean run. The thing is, that you are controlling the lubrication a little better on the ground.

Now that we've covered the airplane and the engine, the third item is the team (i.e.: pilot and pit crew). Only practice can make a good team. In our case, I fly both my own and Howard Mottin's models. He then pits both. Since both of our airplanes fly similarly and the engines are identical, we use the same techniques on both entries. This type of situation works out pretty well and is a very common practice here in the Midwest. There are perhaps another half dozen or more teams that operate in the same manner. This, I believe, is one of the prime reasons that the competition is so high in our area.

The best fuel that we have found is manufactured by Harry Roe and is sold under various names. We use 40 to 50% nitro and 18-20% Ucon oil and have little trouble with our engines because of the extensive break-in we use. We've found that a 8-9 Rev-up prop (Series 300) cut to 7¼" in diameter gives the best performance.

If you have followed the procedures as outlined above and do a lot of practicing, you will undoubtedly be on the top of the pack at the contests.

Contest Calendar

Continued from page 48

Sept. 14 — Chicago, Ill. (AA) Chicago Scalemasters All-Scale FF. CL. RC Rally. Site: CRCM Field Rtes. 53 & 72. S. Peterson CD, 6416 S. La Porte, Chicago, Ill. 60638. Sponsor: Chicago Scalemasters.

Sept. 14 — Cleveland, Ohio (AA) Cleveland Recreation & Lakewood Flight Masters CL Meet. Site: Cleveland Model Flying Field. A. Montagnino CD, 3911 Daisy Ave., Cleveland, Ohio 44109.

Sept. 14 — Portland, Ore. (AA) Falcon Annual CL Invitational. Site: East Delta Park. V. Matheny CD, 75 N. E. Going St., Portland, Ore. 97211. Sponsor: Falcon MAC.

Sept. 14 — New Castle, Pa. PORKS 10th Annual Open RC Contest. Z. Allerton CD, 124 Richelieu Ave., New Castle, Pa. 16101. Sponsor: PORKS, Inc.

Sept. 14 — Sioux Falls, S. D. (AA) 11th Annual Sioux Falls Gas Model Club RC Meet. D. Lilyquist CD, 1315 S. Norton Ave., Sioux Falls, S. D. 57105.

Sept. 14 — Downers Grove, Ill. (AA) Treetown Modelairs 3rd Annual CL Meet. Site: 39th & Fairview Park. R. Phillips CD, 4431 Stonewall Ave., Downers Grove, Ill. 60515. Sponsor: Treetown Modelairs.

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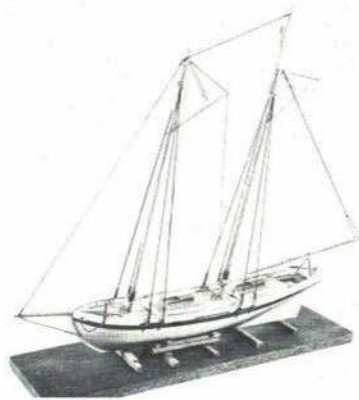


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Sept. 14 — Wayne, Ind. (AA) Flying Circuits 15th Annual RC Contest. Site: Smith Field. J. Smith CD, 2925 Ridgeway Dr., Ft. Wayne, Ind. 46806. Sponsor: Flying Circuits Club.

Sept. 14 — Bong Field, Wis. (AA) 9th Annual I.M.A.C. Invitational FAI FF Contest. P. Sotich CD, 3851 W. 62nd Pl., Chicago, Ill. 60629. Sponsor: Illinois Model Aero Club.

Sept. 14 — Mystic, Conn. (AA) SCAMA FF Sweepstakes. Site: Lantern Hill Field. H. Struck CD, Hamburg Rd., Lyme, Conn. 06371. Sponsor: South Conn. Aero Model Association.

Sept. 14 — Pensacola, Fla. Pensacola Aero Modelers Fly for Fun RC Meet. Site: Corry Field. W. Davison CD, 4422 W. Jackson St., Pensacola, Fla. 32506. Sponsor: Pensacola Aero Modelers.

Sept. 14 — Fountain Valley, Ca. (A) Orange County Thunderbugs CL Monthly. Site: Mile Sq. D. Esslinger CD, 6631 Oxford Dr., Huntington Beach, Ca. 92647. Sponsor: Orange County Thunderbugs.

Sept. 20-21 — Huntsville, Ala. (AA) Rocket City RC 9th Annual Contest. Site: Old Huntsville Airport. C. Scholfield CD, 2709 Briarwood Dr., S. E., Huntsville, Ala. 35801.

Sept. 20-21 — Turlock, Ca. (AA) Western States Pylon RC Championships. Site: Airport. L. DeLateur CD, 2655 Wright Ave., Sunnyvale, Ca. 94087. Sponsor: Pioneer RC Club.

Sept. 20-21 — Flying Aces Annual RC Meet. W. Johnson CD, 62 Widrig Ave., Jamestown, N. Y. 14701.

Sept. 20-21 — Billings, Mont. (AA) Billings Flying Mustangs RC Meet. Site: Mustang Field. A. Darnielle CD, 3043 Barton Blvd., Billings, Mont. 59102.

Sept. 21 — Lafayette, Ind. (AA) Lafayette C. J.'s Annual CL Fall Fly In. Site: Market Square. R. Ramey Jr. CD, 223 Main St., Lafayette, Ind. 47901. Sponsor: Lafayette Cloud Jockeys.

Sept. 21 — Hempstead, L. I., N. Y. (AA) 11th Annual LIDS RC Meet. Site: Mitchell Field. A. Wymersch CD, 1280 Shaw Pl., Seaford, N. Y. 11783. Sponsor: Long Island Drone Society.

Sept. 21 — Taft, Ca. (AA) OT Scale, Unlimited Antique & 30 Second Antique Meet. Site: Gardner Field. G. Wallock CD, 220 LeRoy Ave., Arcadia, Ca. 91006. Sponsor: SCAMPS.

Sept. 21 — Bong Field, Wis. (AA) 7th Annual Chi-

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Chicago Aeronauts Fall FF Old Timer's Contest. P. So-tich CD. 3851 W. 62nd Pl., Chicago, Ill. 60629. Sponsor: Chicago Aeronauts.

Sept. 21—Alliance, Ohio Balsa Bees RC Contest. Site: Rte. 225 N., Club Field. G. Villard CD. 3001 23rd St., N. W., Canton, Ohio 44708. Sponsor: Alliance Balsa Bees.

Sept. 21—St. Charles, Mo. (AA) McDonnell 1st Annual RC WW I Meet. Site: Club Flying Site, A. Signorino CD. 11959 Glen Valley Dr., Bridgeton, Mo. 63942. Sponsor: McDonnell RC Club.

Sept. 21—Tucson, Ariz. Fall Invitational CL Contest. Site: Rodeo Park. C. Dierdorf CD. 2242 E. Monterey Vista, Tucson, Ariz. 85713. Sponsor: Cholla Choppers.

Sept. 27-28—New Orleans, La. (AA) 8th Annual Crescent City RC Contest. Site: Club Flying Field. A. Wiltz CD. 3231 47th St., Metairie, La. 70001.

Sept. 27-28—Fresno, Ca. (AA) Fresno's 29th Annual FF Contest. Site: Near Kerman. F. Gallo CD. 1725 Kenmore Dr., W. Fresno, Ca. 93703. Sponsor: Fresno Gas Model Club.

Sept. 27-28—Tullahoma, Tenn. (AA) 10th Annual RC Meet. Site: Airfoil Flying Field. J. Robinson CD. Rte. 1, Tullahoma, Tenn. 37388. Sponsor: Coffee Airfoilers.

Sept. 28—E. St. Louis, Ill. (AA) McDonnell FF Fall Contest. Site: Parks Air College. J. Gremel CD. 8618 Jo Ct., Berkeley, Mo. 63134. Sponsor: McDonnell Douglas—FF.

Sept. 28—Hastings, Minn. (AA) 10th Annual Upper Midwest FAI FF Champs. Site: Weber's Airport. W. Anderson CD. 300 Park Ave., Elk River, Minn. 55330. Sponsor: Minneapolis, MAC.

Sept. 28—Dallas, Tex. (AA) Annual Fall FF Bash Meet. Site: Great Southwest Site. B. Wilder CD. 2010 Boston St., Irving, Tex. 75060. Sponsor: Dallas Cloud Climbers.

Sept. 28—Brooklyn, N. Y. (AA) East Coast RC Scale Championships. Site: Riis Park. Queens, J. D'Amico CD. 9224 Rost Place, Brooklyn, N. Y. 11236. Sponsor: Penn. Ave. RC Soc.

Sept. 28—New Philadelphia, Ohio (AA) Area III RC Championships. Site: Club Field. G. Villard CD. 3301 23rd N. W., Canton, Ohio 44708.

Oct. 4-5—Houston, Tex. (AA) Houston RC Contest. Site: Mabray Field. J. Locke CD. 9111 Terrydale Dr., Houston, Tex. 77037. Sponsor: Houston RC Club.

Oct. 5—Norfolk, Va. (AA) CL Contest. Site: Industrial Park. R. Swindell CD. 702 Mimosa Rd., Portsmouth, Va. 23701.

Oct. 5—Phoenix, Ariz. (AA) 3rd Annual CL Invitational. Site: Pending. N. Lemak CD. 3810 W. Golden Lane, Phoenix, Ariz. 85021. Sponsor: Arizona Model Airplane Club.

Oct. 5—Pittstown, N. J. (AA) 1969 Eastern States RC Championships. Site: Sky-Manor Airport. L. Shulman CD. 42 Blake Ave., Cranford, N. J. 17016. Sponsor: Central Jersey RC Club.

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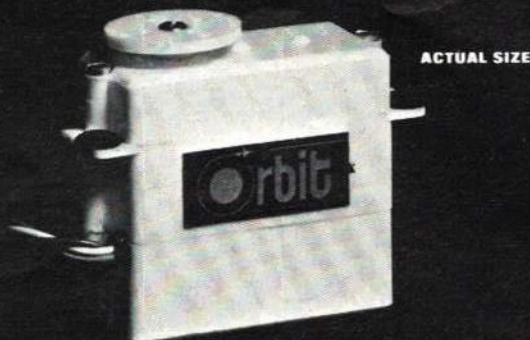
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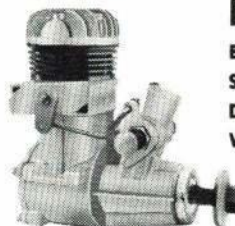
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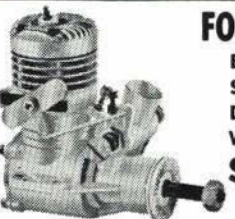
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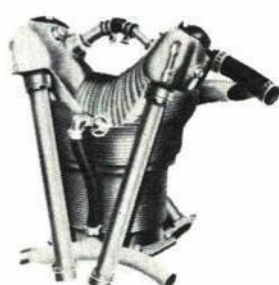
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Oct. 5 — St. Charles, Ill. (A) Flying Fools — FVMAA CL Meet. Site: Model Port. T. Watson CD. 523 Blaine St., Batavia, Ill. 60510.

Oct. 11-12 — Mobile, Ala. (AA) 6th Annual GRC Contest. Site: Plum Forty. J. Sabine CD. 3160 Genevieve Ct., Mobile, Ala. 36606. Sponsor: Gulf Coast RC.

Oct. 11-12 — Sunnyvale, Ca. (AA) Pioneers FAI Scale RC Contest. Site: Pioneer Field. R. Morse CD. 3551 Pruneridge, Santa Clara, Ca. 95050. Sponsor: Pioneer RC Club.

Oct. 11-12 — Albuquerque, N. M. (AA) SWAT 5th Annual FF Meet. Site: Boy's Academy. J. Bicknell CD. 12329 Princess Jean N.E., Albuquerque, N. M. 87112. Sponsor: South West Aero Team.

Oct. 11-12 — Abilene, Tex. (AA) Prop-Twisters Fall FF Contest. Site: Sea Bee Park. E. Thomas CD. 5349 Harwood, Abilene, Tex. 79605. Sponsor: Key City Prop-Twisters.

Oct. 11-12 — Ft. Worth, Tex. (AA) Ft. Worth Thunderbirds RC Club Meet. Site: West Shore, Benbrook Lake. R. Lutker CD. 3105 Cockrell Ave., Ft. Worth, Tex. 76109.

Oct. 12 — Odessa, Tex. Odessa Midland RC Fun Fly. Site: Prop Buster Park. L. Hood CD. P. O. Box 6622, Odessa, Tex. 79760. Sponsor: Prop Busters of Odessa.

Oct. 18-19 — Okla. City, Okla. Okla. Science & Arts Hobbie Fair For FF, CL, RC Contest. Site: State Fair 10 & May Ave. R. McGee CD. 2410 Huntleigh

Ct., Okla. City, Okla. 73120.

Oct. 19 — Taft, Ca. (AA) SCIF's 3rd Annual Texaco Class Event for 4. Site: Gardner Field. B. Chandler CD. 7858 Farralone Ave., Canoga Park, Ca. 91304. Sponsor: So. California Ignition Flyers.

Oct. 19 — Odessa, Tex. Odessa-Midland 13th Annual FF Contest. Site: Ector Airport. L. Hood CD. P. O. Box 6622, Odessa, Tex. 79760. Sponsor: Prop Busters of Odessa.

Oct. 19 — Ft. Wayne, Ind. (A) Flying Circuits Restricted October RC Club Meet. Site: Smith Field. J. Smith CD. 2925 Ridgeway Dr., Ft. Wayne, Ind. 46806. Sponsor: Flying Circuits RC Club.

Oct. 25-26 — S. El Monte, Ca. (AA) RC Contest. Site: Whittier Narrows. J. Garabidian CD. 909 N. 3rd St., Montebello, Ca. 90640. Sponsor: San Gabriel Valley RC.

Oct. 25-26 — Birmingham, Ala. (AA) Birmingham RC 3rd Annual RC Meet. Site: Edgewater Field. E. Riley CD. 1924 2nd Pl., N. W., Birmingham, Ala. 35215. Sponsor: Birmingham RC Association.

Oct. 26 — Sacramento, Ca. (AA) Northern Ca. FF Council 5th Meet. Site: Jackson Rd. & Sunrise Ave. R. Fallon CD. 2667 61st St., Sacramento, Ca. 95817. Sponsor: Capitol Condors.

Oct. 26 — Fresno, Ca. (A) Fresno Monthly FF Meet. Site: Near Kerman. F. Gallo CD. 1725 Kenmore Dr. W., Fresno, Ca. 93703. Sponsor: Fresno Gas Model Club.

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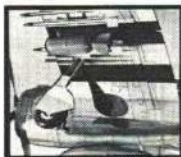


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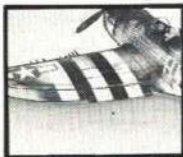
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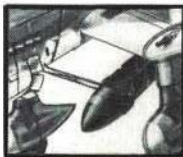
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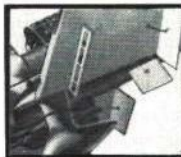
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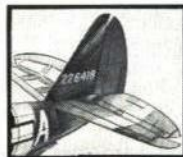
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R/C World

Continued from page 32

Grove Airport, Ft. Worth, Texas. This book not only shows how to accomplish many of the maneuvers that are in our model pattern, but also shows how to tie quite a few of them together to give a smooth presentation. Since it appears that AMA stunt competition may be moving toward this sort of flying, rather than the pilots just following a routine specified in the AMA book, Cole's book should be more than useful to R/C stunters. It costs \$3.25 (write to Duane Cole, 201 Lester St., Burleson, Tex. 76028).

Second soaring meet: The DC/RC again conducted a meet exclusively for R/C gliders, June 7, 8. Fine weather and rather amazing lift conditions made it a huge success. As was the case last year, all gliders flew in a single class. Pilots received one point for each second a plane was in the air (after release from tow hook) and 50 additional points for landing inside a 15'-dia. circle (or 25 points within a 30' circle).

A wide variety of gliders, from a rather small pulse-rudder job to 12' monsters were lofted by the 24 entrants. There were several Hi-Starts of varying strengths available, plus a gas-powered winch. Conditions were variable Saturday, with several flights over 20 minutes, but most were much shorter. About 11 a.m. Sunday, the sky really opened up, with fabulous lift evident. At one point around noon there were 10 gliders up at once—and most of them probably had maxes (maximum flight time had been set at 45 minutes, but all points were forfeited if the glider was not back on the ground within 50 min.). At least 10 maxes were scored during this period. By 2 p.m., we were down to short flights again. Top Winners: 1, Walt Good, 8134½ points (Kurwi);

2, H. McEntee, 7103.4 pts (Kurwi); 3, Maynard Hill, 6337 pts (original); 4, Dick Sarpolus, 5932½ pts (King Kong orig.); 5, Ray Smith, 5530 pts (orig.). Good and Smith used electronic "thermal sniffers," which were very helpful when lift was weak and scattered.

Glider enthusiasts came from Chicago, Detroit, Providence (R. I.) to join in the fun. Bill Nesbitt and Don Rothbaum shared CD duties, and most participants are already looking forward to the 3rd Annual!

Rhinebeck 3rd Annual: We've heard rumors that this famed WWI Scale meet would be only a one-day affair this Fall. 'Tain't so. Official word from sponsoring Poughkeepsie IBM RCC makes clear the meet will be held Sept. 13 and 14, flying to start at 8 a.m. both days. Events will be much the same as last year (AMA Scale, Special WWI Maneuvers, Mission, Combat) but emphasis this year will be even more strongly on exact Scale planes, and upon realistic flight. This means Scale flying speeds. The sponsors point out a Fokker D VII didn't travel at F104 speed, nor was it built of plastic and foam!).

Meet to be held at Old Rhinebeck Aerodrome (Rhinebeck, N. Y.), where full-sized WWI planes will be on display and in action. Further info from Phil Pensiero (All Angels Hill Rd., Wappinger Falls, N. Y. 12590). There will be a Sat. evening banquet again (let him know well ahead of time, if you plan to attend latter).

East Coast Scale Championships: Sept. 28 is date set by the PARCS for an all-Scale meet to be held at Riis Park, Queens, N. Y. Three events are listed: World War I, Post WWI, All Civilian Aircraft. Judging will be per AMA rules, and over \$500 worth of prizes is promised. Joe D'Amico will be CD (9224 Rost Pl., Brooklyn, N. Y. 11236).

Dallas 4th Annual: The Dallas (Texas—where else?) RCC again had a fine turnout for their annual meet. Entry was up considerably this year; a total of 60 fliers accounted for 75 entries in all events. There were 43 in Pattern (15 in Class A), 25 in Pylon. Of 12 Scale entries, eight were WWI types. Every entrant received free a sturdy plastic "hard hat," all of which were "color-coded"; contestants wore red, officials had white, pit crews had yellow. Our informant, Bill Aaker (211 W. Jefferson, Dallas 75208) says the Dallas Park Dept. was so pleased with the turnout at the Northlake field that they promised to furnish a second R/C site with paved runway, south of the city.

Again there was a problem getting in enough Pattern rounds, and Goodyear heats. Bill feels it's almost impossible to run these two events at a meet with large entry, even though it runs two days (this one was May 3, 4). Some changes may have to be made for the 1970 5th Annual! Top winners: Pattern Class A, T. Dodgen (145 pts); Class B, I. Munninghoff (194); Class CN, Sam Fly (274); Class CE, Wm. Thomas (279); Scale, Justin Shumway (Fokker D VII); Formula 1, Bill Anderson (2:14). Carl Summers was meet CD.

NEW IN R/C

Heath Company (Benton Harbor, Mich.) has brought out a much-improved digital 5-control system (details below), and introduced a slick optical tachometer. The **Thumb Tach** is pocket size, weighs only 10 oz., has 3% or better accuracy over both ranges, can be built in a couple of hours, and costs only \$19.95 for the kit. (Photo in Checklist.) Basic calibration is intended for two-blade props, can easily be changed for three-bladers, or for "single impulse" rpm checking. Able to check most any rotating element upon which you can get light, applies no load. Can be used for checking boat engine speed (put white marks on flywheel) or race car rpm (white marks on flywheel or drive tires). Requires a small 9V transistor

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radio battery (not supplied), has Zener diode voltage regulation to maintain accuracy with dropping battery voltage. Will run about 40 hours on one battery. Calibration can be checked on most any powerline lamp bulb, any frequency, fluorescent or incandescent.

The Heathkit GD-19 digital system has many changes from the 1968 system. Price remains at \$219.95, but choice of 27-, 50- or 72-MHz frequencies at no price differential. Through reductions in receiver and battery weight, four-control system now totals 16.6 oz. (1968 system was 27 MHz, airborne equipment totaled 20 oz.) Servos are almost identical to earlier ones, but have different connectors. Block connector can be utilized at receiver; greatly simplifies receiver external wiring—only single set of battery wires to servos needed from receiver.

Receiver features true RF-input amplifier stage. Surprisingly, receiver circuitry is identical for all three R/C bands; to change bands only change crystal and two RF transformers. Receiver frequency stability is somewhat improved; current drain is up a bit, from 6 ma in '68 to 8 ma for '69 shrunken version. The new receiver will work fine with earlier transmitter, and vice-versa. Transmitter RF units are completely wired and tuned; 27- and 50-MHz version use two transistors, 72 version three. 50-MHz transmitter (only) has keying button on top; allows ham-licensed user to send call letters per FCC regs—only digital transmitter made with this feature, to our knowledge.

Outfit we built in 1968 had assembled Bonner control sticks, but Kraft stick units come in pieces (not hard to put together if you follow directions). Receiver battery pack is 500-mAh capacity, as last year, but weight much reduced, due to use of pencils instead of disc cells. Transmitter weight and size is about the same (it's 1/16" thinner); unit now runs at 500 mw input instead of the earlier 600. Power output not specified—undoubtedly quite different for the three bands. Current drain the same. Extremely complete instruction manual has 10 more pages (total of 133), sells separately for \$2. Heath has done a fine updating job on their digital system; only features now missing are single-stick option, and smaller servos... maybe for 1970?

Angel Mini-Flite Co. (Fitchburg, Mass. 01420) Fly Baby, near-scale copy of Pete Bowers' EAA prize-winning homebuilt. Span 53", .29-.45 engines. Constructed of tough ABS plastic, which accepts dope, lacquer, paint. Included in kit are 27"-long floats, and 10 1/4"-long skis. Buyer still has some assembly work to do. Fly Baby is billed as "for the more advanced pilot." If you want a trainer, look into their high wing Citabria. Next in series will be high-wing Pro, intended for violent stunting. All three designs sell at \$39.95.

Sleek full-scale Waco Meteor latest from Harco (290 Thompson Ave., Oceanside, N.Y. 11572). Inverted engine, said to be fully acrobatic. Has simulated wingtip tanks, large scale canopy. Kit includes such Harco features as Slot-Loc Girder construction. Wing has foam core, all sheeting provided. Costs \$59.95.

Foam wing and stab are feature of Gro Industries (1 Joan Terr., Montvale, N.J. 07645) Mistifier F.R.P.-1 kit. This 64" span taperwing stunter kit includes fiberglass fuselage, all necessary wood parts attached (bulkheads, servo rails, etc.) Midwest metal motor mounts, Top Flite main LG blocks, steerable nose gear, removable engine cowl, full-sized plans. Design easy to customize into a recognizable Mustang, Air-cobra, other famed types. Full-house stunter for 56-61 power. Kit, \$49.95. Concern now stocking many items required by R/C builders—engines, radios (authorized Kraft dealer), wood, coverings. Several stock foam wings offered; custom wings cut to your templates. Foam wings can be had fully balsa-sheeted. Send for price list.

Three sizes of flexible exhaust pipes in kit form now may be had from Tatone Products (4719 Mission St., San Francisco, Calif. 94112). Each package has 12" of plastic tubing said to withstand exhaust heat, special grade rubber coupler to attach it to Peace Pipes muffler, plastic clip for rear-most end of tubing. Tubing I.D.'s are 1/4, 3/8 and 1/2"; prices for these sizes are 98c, \$1.25 and \$1.35. Tubing is very stiff, can be bent

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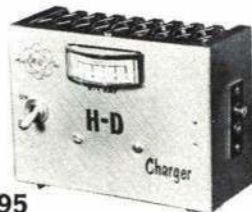


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Five-control digital propo outfit newest addition to line of Model Rectifier Corp. (2500 Woodbridge Ave., Edison, N. J. 08817). Outfit follows U. S. trend to small receiver and servos, has some features not normally seen in our equipment. Transmitter is dual-stick type housed in compact case with slanted edges on top and bottom; upper slanted area carries antenna connector, so antenna will be at much more favorable vertical angle than with conventional transmitters. Also on top edge are on-off switch and charger pilot lamp. Charger is built into transmitter, incorporates transformer for safety. Only one charger cord and plug on transmitter are required; cable to receiver battery is incorporated in AC-line-cord assembly. Control sticks enclosed type; trim lever for four main controls. Receiver case measures 2 1/4 x 1 1/2 x 1 3/8"; weight with attached leads and connectors is 2.7 oz. Main servo connector is a "block" to accommodate plugs from four servos (separate connectors for aileron servo and battery). Battery is round style, apparently has four 500-maH cells; with attached switch harness, weighs 4 1/2 oz. Servos appear to be much like Logictrol III style, measure 2 1/4 x 1 3/4 x 7/8", including mounting lugs and push-pull output lugs. Each weighs 2 oz. Outfit appears to be well-made, nicely-finished throughout. Comes well-packed in foam and heavy cardboard case. Complete system with four servos lists at \$299.95 with four servos. Also comes with three servos at \$269.95. Separate servos, \$30 each.

Precision Marine Products (Box 10233, Denver, Colo. 80210) offers kit for beautiful 100"-span soaring glider called Volant. Included is finished fiberglass fuselage, choice of 10 metal-flake colors; molded canopy, all balsa needed to complete wings. High aspect-ratio design, T-tail configuration. Kit costs \$39.95; fuselage alone, \$29.95.

In boat line, kit for Marblehead racing yacht; 800 sq. in. sail area, 50"-long fiberglass hull with mahogany deck. Deluxe kit includes brass fittings, Dacron sails (shipped less keel) for \$74.95. Completed yachts for R/C operation (less radio gear and ballast) cost \$137. Hull available separately. Concern markets several high-speed racing power boats, in both ski and hydro styles. Also stocks fiberglass resin, and cloth in three grades; metal flake in 10 colors to add to your own resin; Plexiglass sheet in clear or three colors, 1/8" or 1/4" thick. Latter is for covers of radio boxes in boats and R/C seaplanes.

All-plastic copy of Jim Kirkland's Citron II, to be marketed in ARF form by Lanier Industries, Inc. (Briarwood Rd., Oakwood, Ga.). Kirkland was to fly plastic version at the World Championships. Kirkland's Citron appeared in A.A.M. in the July-Aug. '65

issue; both straight- and taper-wing versions detailed. The Lanier version is taper-wing. Lanier was shocked by huge demand for their R/C gliders; stocks ran out, but more should be available by fall.

Most modelers are familiar with Hobbyposy cements No. 1 and No. 2. Concern also offers Quick-Stick, an extra fast-setting epoxy good for field repairs, or fast-action shop jobs. Packaged in little foil envelopes which you squeeze out and mix (work fast—it sets in 5 minutes!). Costs \$1 for a box of five envelopes, each of which has two compartments, one for the catalyst, one for the cement.

In R/C World, June '69 issue, we showed a rudder linkage for Ted Off's 30"-span Kirby Cadet glider. Ted didn't state, but it is possible his glider was built from plans of this size offered by W. C. Hannan, Graphics (Box 1596, Escondido, Calif. 92025). Hannan includes this plan in a group for Obscure Aircraft. Except for Cadet and Westland Widgeon, all are planes of WWI or prior area, priced at \$1 (Cadet plan this price) and \$1.25.

Spans are from 15-24", except for the glider. Most are for rubber power. Hannan also stocks plans for a wide variety of small scale planes, many suitable for sub-miniature R/C models. Also valuable for reference and scale proof, if you build larger sizes for R/C scale competition. Catalog, postpaid 25c.

Fliteglas Laminates, Inc. (1211 Thompson Ave., Santa Cruz, Calif. 95060) has kit for a near-scale Boelkow Phoebus, 102" span, 668 sq. in. of wing area, weighing 3 lb. T-tail design. Kit includes finished fiberglass fuselage with clear canopy, all necessary wood for wings and tail, metal parts for wing attachment, full-sized plans. Kit, \$39.95.

Galloping Ghost in complete kit form offered by World Engines (8960 Rossash Ave., Cincinnati, Ohio 45236). Their Controlaire outfit includes parts for GG transmitter with slick enclosed-type control stick, Ghost actuator and mounting board, switch and battery box, for \$59.98; either SH-112 (relay style) or SH-114 (relayless) superhet receiver, at same price—specify choice. SH-112 het receiver kit alone, \$19.98. Special deal on G.E. 250-maH nickel-cad battery pack in square configuration—\$7 retail. Ideal for boats or R/C gliders, are OS 2-channel digital outfits at \$139.98. Includes transmitter, receiver, two servos, nickel-cad pack for use in model, charger for same, ready to operate. Transmitter has two control sticks, lefthand one intended for throttle control.

Line of scale plans from Bob Holman (Box 741, San Bernardino, Calif. 92402) is rapidly expanding. Many are from Complete-A-Pac of England, latest being Douglas Dauntless, \$5 pp. Bob also stocks a number of C.A.P. kits, including semi-scale Mosquito Bomber (\$69 plus postage, or plans postpaid for \$5). Spitfire

plans from C.A.P. are 1 1/2" scale, giving 56" span, cost \$4.50; kits expected shortly.

Micro-Avionics now has three new service centers. Bill Northrop is running the show in the East; Ray Davis, in the South; and Tom Evans in Canada. Westerners will continue to be served from the factory in Ontario, Calif. New 1969 XL-10 systems are available from all Micro-Avionics Service Centers.

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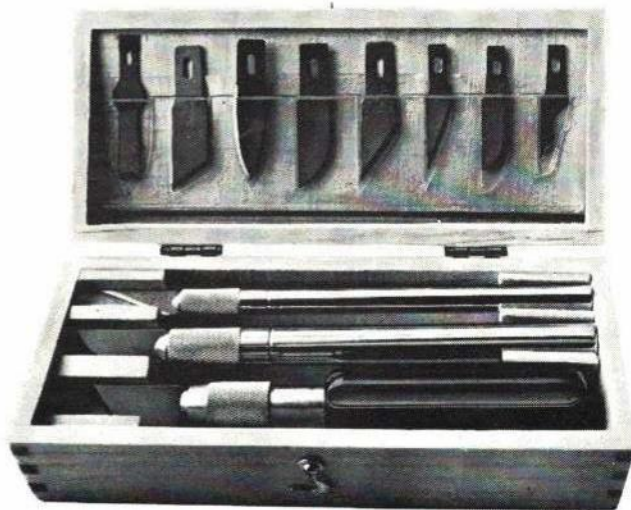
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DC/RC

Continued from page 40

Engine": though not on hand to deliver his paper, author Dick Hall has included some very interesting design and practical aspects of model engine design. Main headings in the paper are: Crankshaft Ball Bearings, Connecting Rod Bearings, Piston Rings; within the scope of these broad guidelines, however, is a wealth of info on fuels, lubrication, proper use of ball and needle bearings, useful modifications of engines for better bearing lubrications. Dick feels the vital aspects of bearings and rings are often neglected, so has confined his paper to these and closely related matters. Very worthwhile info for those who wish to understand what goes on in our little mills.

Copies of the bound volume of papers are available from AMA Headquarters for \$2.50 each. Not included in the volume (because it was never received!) is a paper purported to cover "The Underlying Psychology of R/C", by The Professor. Fortunately the Prof showed up in person, and delivered his paper, which covered mainly his methods of winning model R/C meets: since the Prof is said to be the *only* R/C Nats entrant ever to make a complete flight of some 18 maneuvers, for which he received a flat zero—he is certainly well-qualified on this subject! Professor Harold Goldklank's address was a hilarious respite from more serious matters. We understand that the AMA still has bound volumes of Symposium papers for 1963, '66, '67 and '68.

Though many planes were flown, the Sunday winds kept quite a few grounded, among them Platt's Dauntless, Snoopy's Doghouse,

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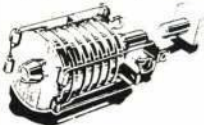
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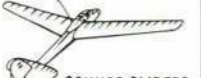


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Robelen's tiny R/C craft. Dave did fly his "Square Shooter" small stunt plane, however. Dick Sarpoulos lofted his huge "King Kong" glider; Rawlings and Jacobson gave a piggyback glider demo (a Bergfalke carried aloft by an Antic); H. Walker demonstrated a hot retractable-gear stunter; G. Hill flew a Wing Mfg. Jap Zero, also with retract gear; Vince Bonnema flew the latest version of the Jester stunt biplane (which was featured several years ago in A.A.M. as a Class 2 contest winner). It had been hoped to try for an R/C helicopter World Record, with John Burkam and Ray Jaworski (photo of Ray's model taken at Toledo appears on p. 34, July '69 issue) both on hand: in view of the wind, no one thought they would try it. But both did!

John went up first, and the result of several tries was only 5.65 sec. Since there are

no FAI records for R/C helicopter duration, this time has been sent to the FAI in Paris. Ray also made several tries, but while his craft did get off the ground, his times were lower: the wind simply didn't give either of these tricky craft a chance. Both have flown much longer under more favorable conditions. Still another successful demonstration was a simultaneous launch of five R/C gliders, all pulled aloft by a single gas-powered winch built by DC/RC Pres. Tom Rankin.

This 12th Annual Symposium was the largest ever held, in number of attendees, and its smooth progress was a tribute to long hours put in by Symposium Chairman Walt Good (who originally had been asked only to gather the technical papers!) and countless DC/RC members — and many of their wives. May all succeeding Symposiums be as successful!

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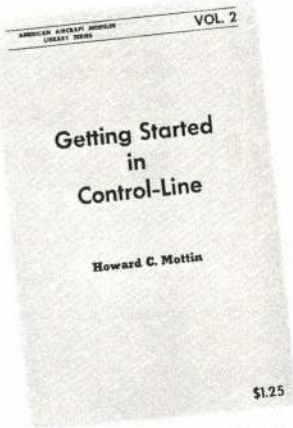
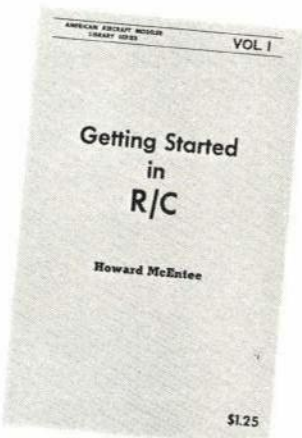
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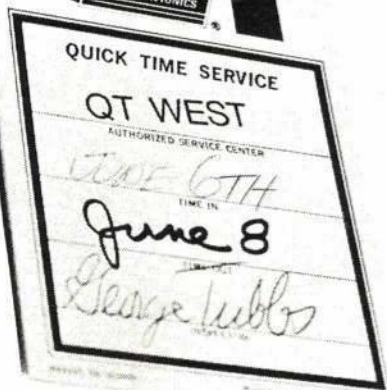


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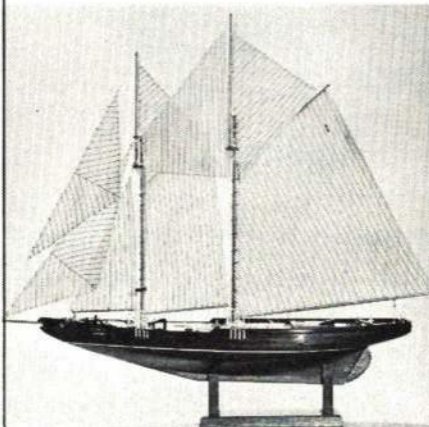
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INDEX TO ADVERTISERS

ADVERTISER	PAGE
Academy Products Limited	59
ACE Radio Control	34, 35
Airtrol of Adrian	49
Ambroid Co., Inc.	54
America's Hobby Center	10, 11
Associated Hobby Manufacturers	69
Astro Flight, Inc.	49
Badger Air Brush Co.	56, 57
Binks Manufacturing Co.	59
Boyd Models	61
Burns Industries	61
Centuri Engineering Co.	59
Classified	74
Du-Bro Products, Inc.	58
Dumas Products	73
Dynamic Models	67
E. K. Products, Inc.	3
Estes Industries	72
F.A.I. Model Supply	68
Finishing Touch Decals	71
Fox Manufacturing Co.	64
G.E.M. Models	71
Carl Goldberg Models	7
Grish Brothers	73
Paul K. Guillow, Inc.	65
W. C. Hannan, Graphics	57
John Hathaway	72
Heath Co.	9
Hobby Helpers	54
Hobbypoxy Products	62
Bob Holman Plans	71
Integrated Designs	58
Kaybro Sales Co.	67
Kayeff, Inc.	72
Micro-Avionics	72
Midwest Products Co.	71
Model Aero Pubn.	68
Model Rectifier Corp.	4th Cover
Model Shipways	61
Monogram Models, Inc.	51
Nelson Model Products, Inc.	50
Octura Models	67
Orbit Electronics	62, 63
Polk's Hobby Department Store	70
Quality Hobby Shops	74
Ra/Car Developments	58
Rocket City R/C Specialties	56
Royal Electronics	3rd Cover
Scientific Models, Inc.	52, 53
Sealine Corp.	61
Sherlock Aircraft Models	66
Sig Manufacturing Co.	55
Stanton Hobby Shop	68
Sterling Models	56, 57
Stinger Mfg. Co.	54
Su-Pr-Line Products	71
Tatone Products	67
Top Flite Models, Inc.	5, 56
Verdell Instrument Sales Co.	72
Warner Industries, Inc.	58
Williams Brothers	64
World Engines	2nd Cover
X-acto, Inc.	69

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