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OCTOBER 1968

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**Cry of the Tin Goose —
the Saga of the
Ford Trimotor
... page 18**

**R/C Stits Playboy
... page 22**

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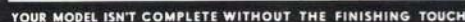


**This is Goodyear —
Control-line racing
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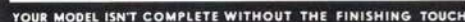
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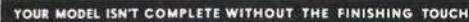
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american aircraft MODELER

VOLUME 67, NUMBER 4

OCTOBER 1968

COVER PHOTO: Paul Sherlock's 10-ft. Boeing 747 Jumbo Jet flies like a dream. Power is two Supertigre 60 engines. It is equipped with a Bonner Digimite 8, but uses only four channels. The photograph is by Frank Pierce.

WILLIAM J. WINTER — EDITOR AND PUBLISHER

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Published monthly by Potomac Aviation Publications, Inc., 1012 Fourteenth Street, N.W., Washington, D. C. 20005. William J. Winter, Publisher; Gordon G. Crowder, Vice President and Treasurer; Edward C. Sweeney, Jr., Secretary; American Aircraft Modeler Business Manager, Norman J. Ward.

ADVERTISING MANAGER: NORMAN J. WARD

1012 14th St., N. W., Washington, D. C. 20005 (202) 737-4288

Harvey E. Cantrell, Assistant Business Manager — Marsha A. Rubin, Administrative Assistant

Midwest Advertising Representative: G. S. Anderson & Associates, 4621 Grand Ave., Western Springs, Illinois 60558. Tel: (312) 246-0837

Western Advertising Representative: Aaron D. Viller & Associates, 5311 Venice Blvd., Los Angeles, California 90019. Tel: (213) 939-1161

Subscription Rates: In U. S., Possessions and Canada, 1 Year, \$6.00; 2 Years, \$11.00; 3 Years, \$15.00. Elsewhere, \$8 for one year. Payable in advance. Single copies, 60 cents. Six weeks are required for change of address. In ordering a change, write to American Aircraft Modeler, 1012 Fourteenth Street, N. W., Washington, D. C. 20005. Give both new and old address as printed on last label.

We cannot accept responsibility for unsolicited manuscripts or artwork. Any material submitted must include return postage. When writing the editors address letters: Editorial Office, American Aircraft Modeler, 1012 Fourteenth Street, N. W., Washington, D. C. 20005.

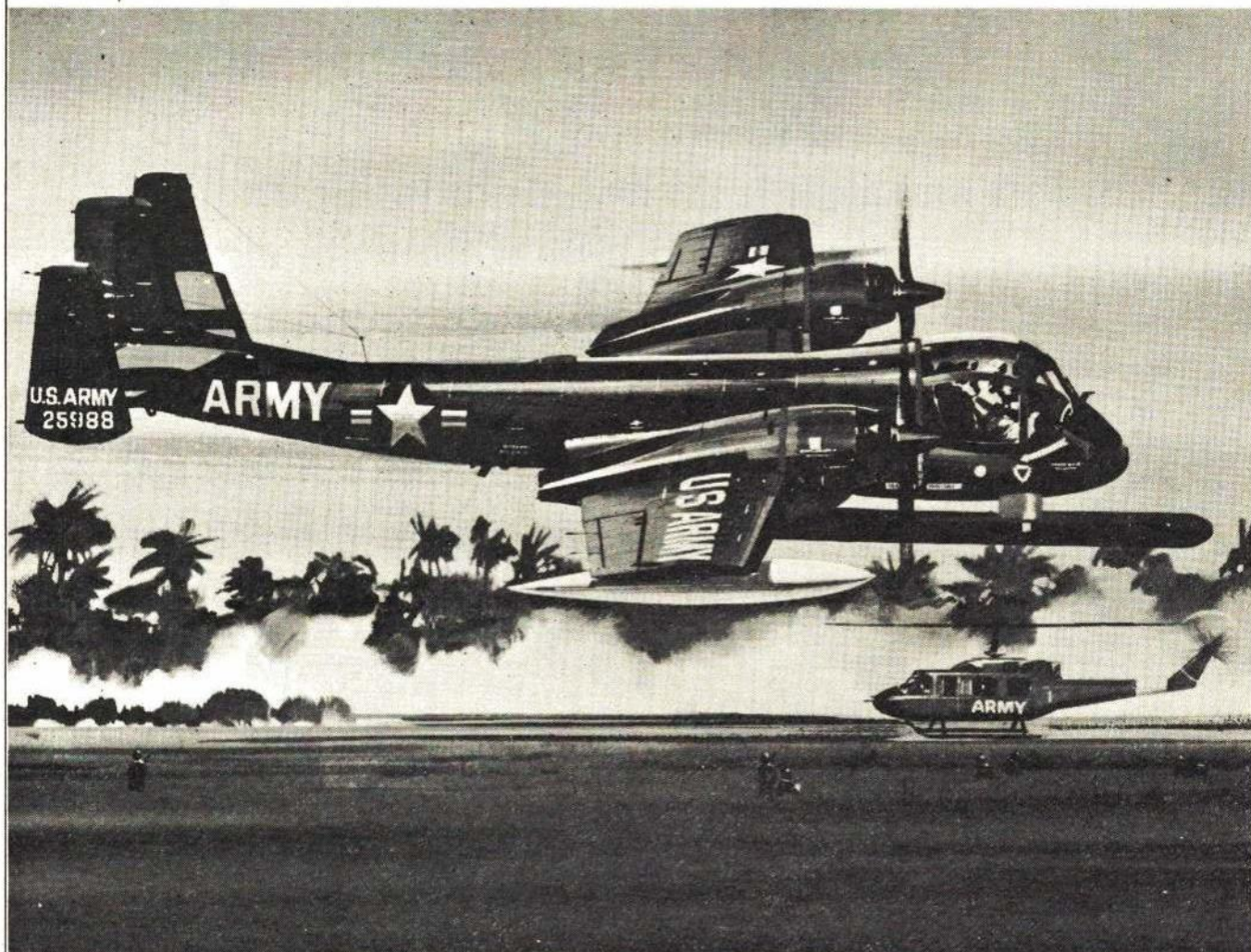
Second class postage paid at Washington, D. C. and at additional mailing offices.

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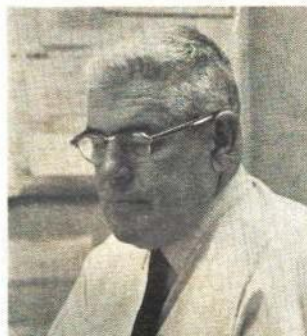
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From dime glider to the ready-to-fly radio-control model, the hobby offers much to those who will take it.

IN the comic strip called "B.C.," there's a guy in a MonoKote breechcloth who rides a stone wheel, a bare foot on each end of the axle. He reminds us, though we were not there, of the beginning of model airplanes. Sixty-odd years ago, building model planes was a rugged, fundamental business—split bamboo, drive chains, banana oil, bamboo paper, brads, ye olde style glue. Just as our B.C. friend will learn to put two wheels together and sit in the middle while a dinosaur pulls the thing along, so the "package" from which early models were concocted, evolved into a box which a farmer's son could order through the mail.

He was "ruined" by the going to the devil invention of the printed wing rib. Prefabrication—that is, die-cut wing ribs, bulkheads, and sawed-out blocks, shaped edges and carved fuselages—would kill the hobby! Then it was plastic models which would spoil everything. And who would have guessed that the plastic models would fly—but Wen Mac put engines on them. Finally, came the ready-to-fly radio-control model, which one can guide about the sky better than the world's best stunt pilot can steer his aerobatic air-show machine.

Now the end, yet again, is at hand—if you listen to the untiring pessimists. If you think we are kidding, consider one major manufacturer of these machines who is scared out of his wits that he is going along with another "slot car" debacle. He hopes for the best, yet fears the worst. Perhaps we all need to understand better this hobby of ours, from indoor "mike" job to ready-to-fly R/C.

We have many different needs. The average age of the customer who buys a RTF radio job is nearly 40. He has no time to build, and he has money. His interest—and his need—is to fly. To get out on a nice weekend; and, fortunately, he does not turn to golf. He may once have been a stick-and-paper builder, or he may not have been a modeler at all. Perhaps he passed a flying site one day, stopped to watch, asked a few questions—and was hooked. Hurrah!

For all we know, the average age of the dedicated free-flyer may even be higher. And that goes for the veteran indoor builder and the rubber-powered contest modeler. Judging by the names which head the lists, and make the teams, these boys are not chickens either. Part of their need is to fly, but their cup of tea is a pre-programmed flight, the hardest kind of all, and not a random pushbutton-varied flight pattern. Most of them love to build. Some weigh every piece of wood, every cross piece on a Wakefield. The indoor builder weighs everything on his delicate scale, but the cigarette smoke. And they must design. Draftsman's scales, triangles and squares are extensions of their minds. Their's is a rewarding, deep-rooted, many-faceted thing. Their "bit" is something we all might envy.

Twenty-five years ago, Jim Walker's U-control Fire-

ball supposedly sounded the death-knell of the hobby! During a nationals consisting of 1700 free-flyers, he was isolated with his demonstrations like some kind of a nut. Who would fly a "brick on a string?" Who indeed! Man, we fly speed, stunt, carrier, combat, scale. No type of modeling offers more variety, and more outlets for individual needs. Rat race, team, race, Goodyear.

The hobby shops are filled with kits and things of all kinds, many for no more specific purpose than merely to build and see something fly. Dime stores, drug stores, supermarkets sell by the millions gliders and ROG's. Kids from six to 60—or seven to 70 if you will—buy kits and planes which cost anything from 10 cents to the better part of a thousand dollars (in the fully equipped R/C ready-to-go).

Just as there are needs—to build, design, fly—so there are arts, each with its own appeal. The flight technique acquired in piloting a ready-to-fly is a skill, an art. And a darned hard one to acquire—if you are good at it. Adjusting any free-flight—be it the blending of thrust offsets, tilted tail, wash-in or wash-out of the contest ship, or just the shifting of the wing on a cheap glider by a kid—it is an art. Sanding, cutting, and gluing of good white wood into a cleanly made, accurate structure is a rewarding art. So is the launching technique for a good hand-launched glider—try it if you think it is child's play. Covering, finishing, are arts. People put in untold hours, sanding, rubbing, polishing.

No matter what we build—or fly if we don't build—the hobby holds out to us unending varieties of entertainment, things to try, odds and ends of new knowledge, the satisfying pleasure of making something or, better yet, designing and making it, provided we hold a cosmopolitan, not provincial, viewpoint of each other's interests. Anything which flies is beautiful in flight. Anything that must be built, offers a surprisingly good feeling, when time and mood are right. The simplest glider can be a delight for anyone.

Those who start with R/C ready-to-fly may never get to know these pleasures. How can they know? Those who started out with rubber or gas, or control-line, before the affluent days of radio for everyone, can never forget the other building and flying pleasures they knew. And, in between, is the mass of people who know something of both worlds.

Each year new kids come along. Of the millions who have tossed some cheap glider, which they bought on a whim like a rubber ball, a few thousand find an air modeling ambition to carry them onward. Most, obviously, turn to other things, since coincidence and chance must substitute for necessary, yet almost non-existent exposure, which would fire their ambitions.

On page 12 appears the first of a new series. The model is the Oily Bird, a unique .02-powered devel-

Continued on page 53

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Fighter Planes, by Edward J. Farley, 176 pages, \$4.50. Published by Aero Publishers, Inc., 329 Aviation Rd., Fallbrook, Calif.

Modelers will find handy, this collection of detailed "original" paintings, and three-view line drawings of practically all of the U.S. military fighter aircraft since 1925. This highly accurate artwork is depicted in sepia tones. A limited number of "collector's volumes" have been printed in the rotogravure color on special textured paper, for \$7.50. Artist, Richard Groh's paintings are detailed, authentic and suitable for framing.

Farley covers each fighter plane numerically, starting with P-1, the original Curtiss Hawk pursuit biplane of 1925, and goes through to North American Aviation's multisonic F-107, that was cancelled before production. The only numbers excluded are those that were almost identical in appearance and dimensions to other models appearing in the volume. Also, some designs never existed or got beyond the planning stage, but were given numerical designations.

Airport, by Arthur Hailey, 440 pages, \$5.95. Published by Doubleday and Co. Inc., Garden City, N. Y.

Airport is a fictional story of the behind-the-scenes goings-on of seven airport hours during a mid-winter snow storm. Although the multiplot involves a number of men and women with problems and personal pressures, the main character is the airport itself. During seven hectic hours, the airport is beset by a disabled aircraft which is blocking an urgently needed runway; a conscience-stricken Air Traffic Controller, a homemade bomb carried aboard the plane by a psychotic; a crusading lawyer leading a group of homeowners incensed by airport noise; and an aerial stowaway.

Besides giving an interesting insight to the normal hectic routine of an airport, the author includes bits of little-known and useful information that makes for enjoy-

able reading. There's a realistic feeling.

Arthur Hailey writes a fast-paced and exciting story on the style of his previous successful novel Hotel.

Helicopters and VTOL Aircraft, by John W. R. Taylor, 91 pages, \$3.95. Published by Doubleday and Co. Inc., Garden City, N. Y.

Here is small, but important book. It gives the details—the significant statistical data and photographs—of all the types of vertical takeoff aircraft and helicopters under development, in production, and in service today.

Pointing out that the VTOL is still in the infancy stage, that we are, in a sense "only in the Wright brothers era of VTOL flight," the author declares that one day almost all aircraft will have the ability to take off and land vertically. By eliminating the need for long runways and by its ability to fly slowly, or even hover motionlessly, the helicopter-type overcomes the worst shortcomings of the fixed airplane. With the advancement and improvement of the VTOL, no longer will pilots have to grope their way in bad weather at racing-car speed toward a sometimes invisible runway.

The types of helicopters, VTOL aircraft and autogyros from all over the world are dealt with alphabetically under the makers' names. The photographs are clear and all the important statistical information is included.

The book is a valuable reference.



Fighters 1914-19 by Kenneth Munson, 183 pages; and **Bombers 1914-19** by Kenneth Munson, 180 pages—\$2.95 each volume. Published by The Macmillan Co., 866 Third Ave., New York; distributed by Aeronautica John W. Caler, 7506 Clybourn, Sun Valley, Calif.

The latest in the excellent series of The Pocket Encyclopedia of World Aircraft in Color, these two pocket-sized handbooks present the principal World War I aircraft in full color along with brief, but comprehensive descriptions of each type. The color plates are exceptionally well done; the authenticity of the color is the result of extensive research by Mr. Ian Huntley of the Royal Aeronautical Society, and the color printing, produced in the Netherlands, is

Combining visual appeal and the essential details of construction, these color plates show the aircraft in the split plan-view, giving the upper and lower surface markings in a single plan outline. Captions below each color plate specify the statistical data such as engine construction, wing span, length, height, takeoff weight, maximum speed, operational ceiling and endurance. Also other important details, such as the date of each plane's first appearance, and the pilots and campaigns with which it is most strongly identified. The text describes each aircraft's development and service career.

Fighters 1914-19 presents the principal fighter, attack and training aircraft developed and flown in the First World War. The 80 color plates are arranged on a visual basis within the broad sequence: pusher biplanes, tractor biplanes, tractor triplanes, tractor monoplanes, flying boats and seaplanes. The text describes these early fighters and shows how they developed and improved in design structure and armaments as the war in the air progressed.

Bombers 1914-19 covers the bomber, patrol and reconnaissance aircraft of World War I. The 60 color plates arranged in the same visual sequence as the Fighters, present these early bombers of the Allied and Central Power forces — of France, Germany, the United Kingdom, Italy, Austria-Hungary, Russia and the United States. The text describes the early types of the bomber — which antedated the fighter by several years — and details their development and use during the war.



The Personal Diary of
'MICK' MANNOCK
V.C., D.S.O. (2 bars), M.C. (2 bars)
Introduced and annotated by Frederick Manning

The Personal Diary of Major Edward 'Mick' Mannoek, introduced and annotated by Frederick Oughton, 221 pages, \$4.95. Published by Neville Spearman Ltd.; distributed by Aeronautica John W. Caler, 7506 Clybourn, Sun Valley, Calif.

Major Mannock, top scoring British ace and winner of a posthumous Victoria Cross, was the half-blind fighter pilot who rose from the dire poverty of an Irish family to command the famous R.F.C. No. 85 Squadron in WW II. Officially credited with 73 victories, but actually accounting for more than 100 enemy aircraft, he also distinguished himself by formulating and then demonstrating the possibilities of the early fighter aircraft.

Presented is the authentic facsimile text of Mick Mannock's personal diary reproduced from the original, with transcriptions of each page, explanatory notes, and a biographical sketch. The biographer is Frederick Oughton, aviation historian, and formerly with the RAF Fighter Command, who found the diary in 1963 after it had disappeared 44 years before.

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by RAND Model HR 1 FOR RUDDER ELEVATOR & AILERONS WEIGHT 1.00Z SIZE 1/16x1/4 1595 WITH FREE 500 MAH NICAD BATTERY	by RAND Model HR 2 FOR RUDDER THROTTLE & FAIL SAFER WITH NO SIGNAL FREE 500 MAH NICAD BATTERY	by RAND Model LR 3 FOR ELEVATOR RUDDER & THROTTLE FAIL SAFE ON SIGNAL OFF FREE 500 MAH NICAD BATTERY
CITIZENSHIP COMPOUND SE-2 RIGHT OF LEFT SINGLE CHAN. 7.95	CITIZENSHIP SE-2 M TRANSISTORIZED COMPOUND ESC. QUICK RELEASE MOTOR CONT. ESC.	CITIZENSHIP PSN-2 EXTRA SENSITIVE FOR RIGHT LEFT

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RECHARGEABLE GLO PLUG BATTERY 795 DELIVERS UP TO 8 AMPS. 1.5 V.	24 BRUSHES 100 SALE ASSORTED SIZE BRUSHES A REG. IN \$1.00 VALUE...	K&B R/C PLUGS SPECIFY LONG or SHORT 1/3" 289 SHORT LONG \$1.29 EACH
SALE GLO 3 For 100 REG. 45¢ EA. AN AND SUPER VALUE PLEASE SPECIFY LONG OR SHORT THREAD (V or V3)	PENCIL BATTERY BOX 25¢ ALUMINUM 2 CELL HOUSING VOLTS POSITIVE CONTACT	FUEL FILTERS 95¢ EACH
SOLID DECALS 19¢ EACH SOLID COLORS WHITE, BLACK, RED, GOLD, YELLOW, ORANGE & SILVER	VIBRA-TAC 495 WITH HANDY CARRY CASE	SCALE PLANS 15 for 49¢ SOLID MODEL PLANS, PS1- P-24 & P-25, P-26, P-27, P-28, P-29, P-30, P-31, P-32, P-33, P-34, P-35, P-36, P-37, P-38, P-39, P-40, P-41, P-42, P-43, P-44, P-45, P-46, P-47, P-48, P-49, P-50, P-51, P-52, P-53, P-54, P-55, P-56, P-57, P-58, P-59, P-60, P-61, P-62, P-63, P-64, P-65, P-66, P-67, P-68, P-69, P-70, P-71, P-72, P-73, P-74, P-75, P-76, P-77, P-78, P-79, P-80, P-81, P-82, P-83, P-84, P-85, P-86, P-87, P-88, P-89, P-90, P-91, P-92, P-93, P-94, P-95, P-96, P-97, P-98, P-99, P-100, P-101, P-102, P-103, P-104, P-105, P-106, P-107, P-108, P-109, P-110, P-111, P-112, P-113, P-114, P-115, P-116, P-117, P-118, P-119, P-120, P-121, P-122, P-123, P-124, P-125, P-126, P-127, P-128, P-129, P-130, P-131, P-132, P-133, P-134, P-135, P-136, P-137, P-138, P-139, P-140, P-141, P-142, P-143, P-144, P-145, P-146, P-147, P-148, P-149, P-150, P-151, P-152, 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None of these are my "bag," but I can look into them and appreciate the special requirements each demands.

I study the models and read the magazines from cover to cover looking for ideas which I can apply to my own needs.

The R/C'er on the other hand, looking down from his lofty perch, poo-poo's our efforts; accepts our assistance when it furthers his interests, ignores us when it doesn't; takes over our clubs and organizations and diverts them to purely his goals; demands much while offering little in the promotion of our hobby; and excludes us run-of-the-mill modelers from his exclusive (i.e. country club), R/C status class. He puts together his plastic toy airplane in an evening and scorns any pride of craftsmanship, by demanding rules changes to allow him to compete. He scornfully asks when are we going to "graduate" to R/C.

I graduated from R/C. All this thinking has shown me that I don't hate R/C, just some of the people who fly it. There are many R/C'ers that don't fall into the above mentioned categories, but they are a definite minority. The majority seem only interested in destroying my favorite hobby, and after 35 years of building and flying model airplanes, I resent their intrusion. The all-too-recent slot-car debacle points out the route these types are leading us on. . . .

James Kloth, St. Petersburg, Fla.

Without taking sides on this issue, we will be pleased to publish considered rebuttals. Any statements made in this "forum" are not necessarily the opinions of the magazine. May we point out that Kloth is annoyed by some of R/C's practitioners, not R/C itself. And, of course, there are "types" in any event—as you know, if you ever fouled up a Nordic launch for an ardent free-flighter (your editor still has "scars"), or stepped on misplaced control-lines. Ed.



Grabs the kids

I wanted to show you some photos of my Manhattan, which was inspired by Ed Whitten's article in the April '68 issue.

The thing is fun to fly, and will even fly in an office. In the Kennedy high school gym, it will do 30-second ROG flights and nice landings with a taxi afterwards. Really grabs the kids.

John Thornhill, Mt. Rainer, Md.

Keep the fire burning

Having read with interest your recent editorials dealing with the necessity of active development of youth (Juniors and Seniors) in model aviation, I felt motivated to write you this letter.

Recently, I was asked to initiate a model airplane club at the Maryland Training School For Boys. The boy's ages range from eight to 18 years, and their social

Continued on page 74

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16 x 4 x 36	12.00	6.00
16 x 6 x 36	12.00	6.00
8 x 3 x 36	10.00	5.00
8 x 4 x 36	10.00	5.00
8 x 6 x 36	10.00	5.00
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Oily Bird

A natural follow-up to the AMA's popular Delta Dart design, Oily Bird is an ideal, first-time power model.

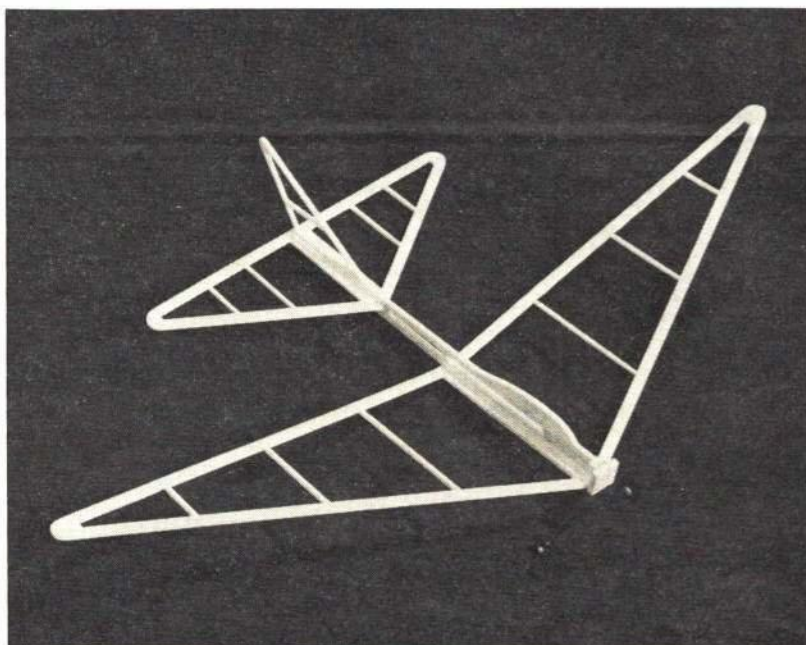
HARRY E. HARPS

WHETHER young, old, a novice or just inexperienced, you will discover that Oily Bird is easy to build and fun to fly. What is meant by beginner or novice? Maybe you've made a hand-launch glider or two,

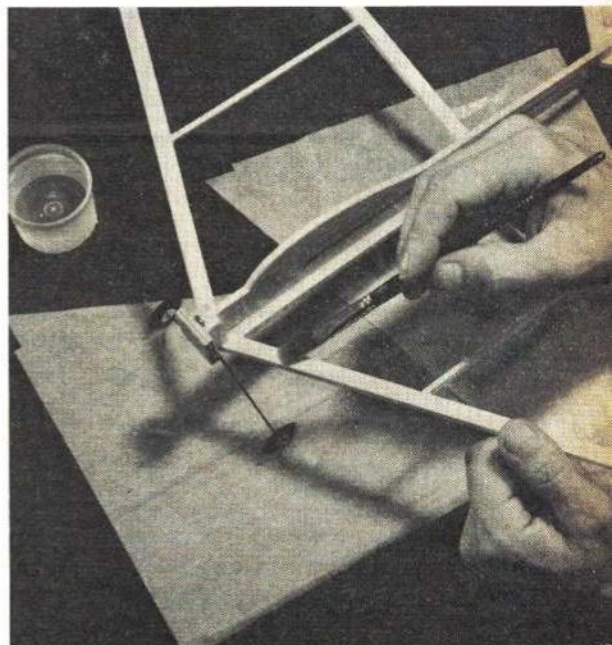
or perhaps you have built some rubber-powered models like the Delta Dart (see A.A.M.'s April '67 issue) and flown them successfully. That qualifies you as a novice. Little experience is really needed to get this bird in the air. Make Oily Bird your first, flyable power model. You'll be thrilled by its wild performance. Your

contribution is small—just a little time and effort.

Where to start? Buy the building supplies and the necessary hardware first (a material list gives the quantities). During your second hobby shop visit, get the Cox .020 Pee Wee engine, starting battery and connecting cord, a couple of props and fuel.



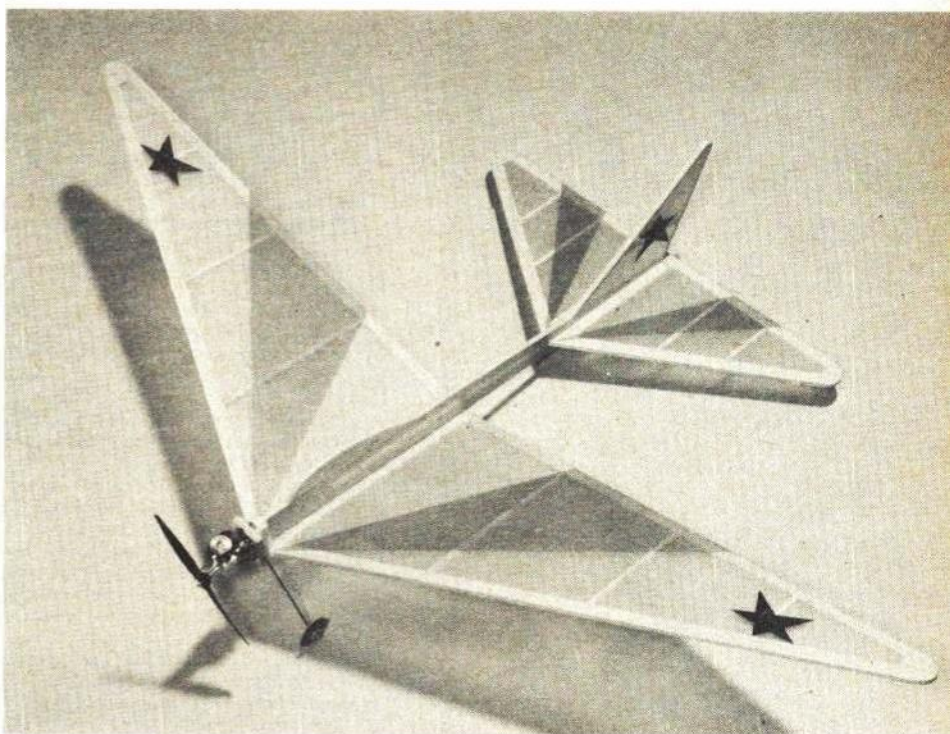
The balsa structure is completely assembled—landing gear and all—before the covering is applied. Now seal the frame with dope.



With tissue ready (corners are notched to clear the firewall's reinforcing strips), dope the frame out to the first crosspiece.



Each flight is a three-part tale — snarling engine gets the battery unclipped; a smooth launch is a must; retrieval and application of a wiping rag to remove oily, fuel residue. Oily Bird was so-named because it gets that way from countless pleasurable flights.



Simple, uncomplicated and uncluttered, Oily Bird's layout and structure makes it so easy to fly. Given a wild, colorful finish, it definitely has eye-appeal.

Now, about the materials you'll be using. Balsa wood is strange stuff. It can vary in weight probably more than any other wood. Generally, the heaviest pieces are the strongest and stiffest. For Oily Bird, ask the hobby dealer for medium-weight or medium-hard wood. If you make the selection, avoid pieces that are flimsy, but don't pick those suitable for yard-sticks either! And don't leave a batch of finger-nail dented balsa behind.

Any white glue will work — Titebond was used on the original. It dries quite quickly, is strong and can be sanded.

The Jap tissue for Oily Bird's covering is available in several bright colors. Use two

or three for a wild color scheme. By getting color this way — only clear dope will be needed to attach the tissue and give it a gloss finish. Pick a butyrate type of dope as it is fuel-proof and won't be harmed by any spilled fuel.

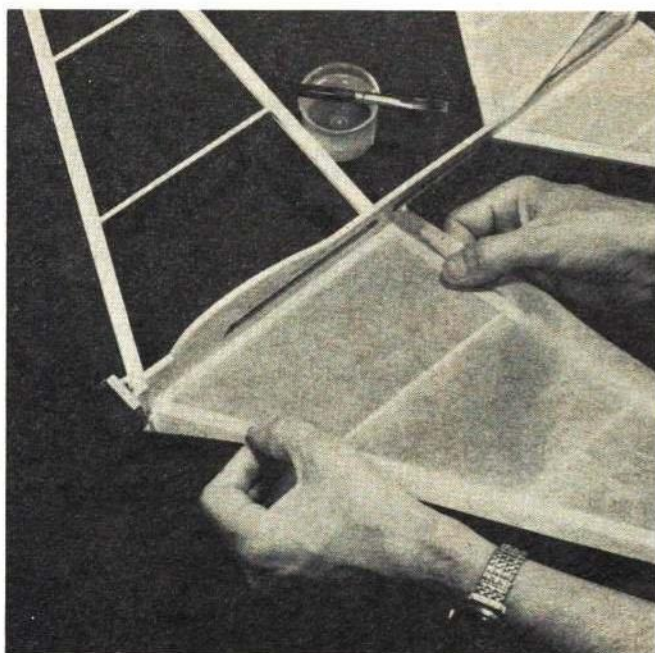
Construction: Find a flat building board (Celotex, soft white pine or even plywood will do), tape down the plan and cover it with a protective sheet of plastic or waxed paper. Otherwise the glue will stick to the plan.

Following the steps given on the plan, build the fuselage and the fin together. Use straight pins — steel ones, as the brass kind are too soft to hold the wood strips to the

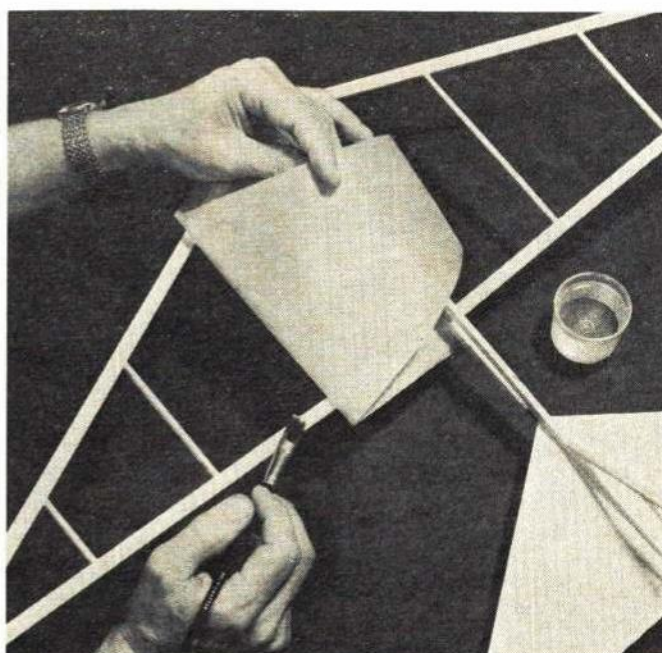
board. Pin right through the strips. In making the pointed tips, cut the strips so they will meet; pin down; trim a triangular filler block to shape, coat with glue and install. A strong joint results. Add the solid canopy at this time.

Work on the stabilizer as the fuselage and fin dry. Note that the trailing (rear) edge is one piece. Also make sure that the two center pieces are spaced just far enough apart to accept the $\frac{3}{16}$ " thickness of the fuselage.

Before lifting the fuselage and fin from the plan, trim the fuselage nose to the correct downthrust angle. As soon as the stabilizer is dry, slip it on the fuselage.



Lay tissue on freshly doped area, butting it against fuselage. Rub it down so dope penetrates. Use overhang to pull out folds.



Work outward from the fuselage, a few inches at a time. Lift the tissue, brush on dope and replace, smoothing out wrinkles.



Four wood screws mount the Pee Wee. Note downthrust. Prop is a $4\frac{1}{2}$ dia. x 2" pitch.

Align and square it with the fin; glue in place. Finally, when this assembly is dry enough to handle, bend up the bottom strip or longeron. Insert the small filler block ahead of the stabilizer and liberally glue all cracks and crevices around the fuselage/stabilizer joint.

The firewall or motor mounting block installation is well detailed on the plan. But, here are some tips. Sand and bevel the fuselage nose slightly to make a good joint with the firewall. The two vertical, reinforcing strips should fit closely around the landing gear wire. Use dope thinner to remove oil from the wire. Give the glue a chance to stick to it. If that $\frac{1}{16}$ " wire fights you at each bend, go to a smaller size.

Wheels can be laminated or scrounged from an old kit.

Wing construction does not vary from that of the stabilizer. See plan steps 5 and 6. When locating the fuselage atop the wing center, check alignment, making sure the fin is vertical. Finally, wrap and glue the gauze reinforcement around and underneath the wing. Give all glue a chance to completely dry. As preparation for covering, Oily Bird's framework is sealed with two coats of dope. If you want, sand lightly between coats.

Tissue is cut oversize. A $\frac{1}{8}$ " extra all around is about right. Use the model's frame as a pattern or trace the outline from the plan. The last seems easiest. Jap tissue has a shiny side and a dull one. For a higher gloss finish, keep the shiny side out. Remember that all sides, tops and bottoms of Oily Bird's surfaces get covered.

Refer to the series of photos; cover each frame from the fuselage outward. Do the stabilizer first and then the fin. Handling these smaller pieces of tissue on the tail group will let you gain experience with little chance of running into problems. Apply the tissue by coating a portion of the frame outline with dope, laying the tissue over this, rubbing it down with the fingers while gently pulling out any wrinkles. Cover small portions at a time; don't try to rush it. The wing is next. Its top is covered first. When doing the bottom, overlap the tissue at the center. Cover only the open areas on the fuselage or wherever you want color; solid wood areas, like the canopy, need not be covered.

Jap tissue will tighten and the wrinkles will disappear over all open areas when it has been sprayed with water. An atomizer works well as does a Windex sprayer. You shouldn't soak the tissue. Even so, it will sag and look miserable, but as it dries, it smooths out and tightens.

The final finish starts out with a two-coat application—with the one inch brush—of clear dope. Let it dry well. All of the tissue trim must be flat and wrinkle-free. You won't be water-spraying this. Press it with an iron if necessary. Hold the trim in place and brush dope thinner on it; the thinner will soften the pre-doped surface and fix the trim in position. By the way, some modelers prefer to use this method in attaching the original covering. They feel it gives better control. Try it—you may find it easier too. Now, two or three more

MATERIALS LIST

- 5 — $\frac{3}{8}$ x $\frac{3}{8}$ x 36" balsa strips
- 1 — $\frac{3}{8}$ sq. x 36" balsa strip
- 2 — $\frac{1}{8}$ x $\frac{3}{8}$ x 36" balsa strips
- 1 — $1\frac{1}{4}$ x 1" pc. of $\frac{1}{4}$ " plywood
- 1 — 12" length of .045 or $\frac{1}{16}$ " diameter music wire
- 4 — #0 x $\frac{1}{4}$ or $\frac{3}{8}$ " round head, wood screws
- 4 — retaining washers for landing gear wheels
- 2 — 18 x 20" sheets of Jap tissue (this covers entire model, any trim will be extra)

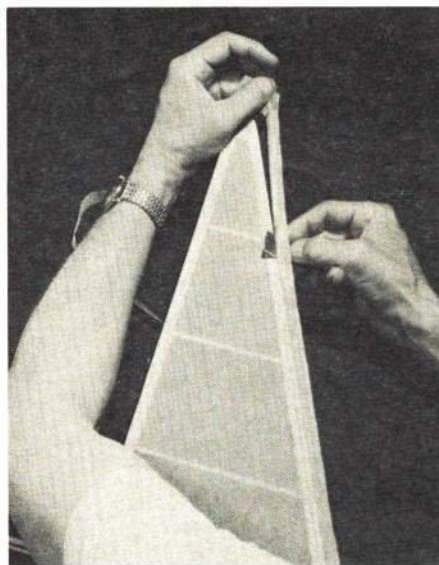
Miscellaneous: 5" length of gauze or other reinforcing fabric; 1" wood or plastic wheels; white glue; $\frac{1}{2}$ pt. ea. of clear butyrate dope and butyrate dope thinner; $\frac{1}{2}$ and 1" brushes for covering and doping.

coats of dope will complete the finish. We like to use thinned dope (about one part dope to one part thinner). Cut down on the thinner if the mix turns out too runny. Flow these coats on. The last one should be allowed to dry a full 24 hours, if you can wait.

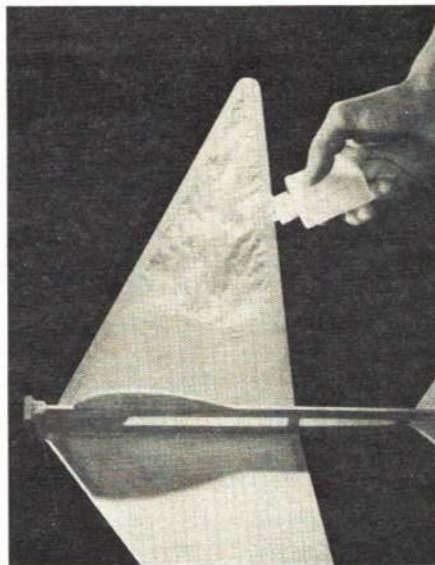
No doubt, during the construction, you've acquired the .020 engine, mounted it and given it a test-run or two. Do this before going out to fly. Practice starting. Get used to the needle valve adjustment and the sound of a smooth running engine. Follow the manufacturers instructions. The prop must be flicked over smartly.

Center the engine on the firewall. With a sharp nail or compass, point mark the mounting screw locations. No need to drill these; just enlarge them with the sharp point. Install the wood screws after rubbing soap on their threads. They'll turn a lot easier in the plywood. Bolt on the prop and you are ready to check Oily Bird's balance—on the plan it's marked Center of Gravity. Add small amounts of clay at the nose or tail to correct any imbalance.

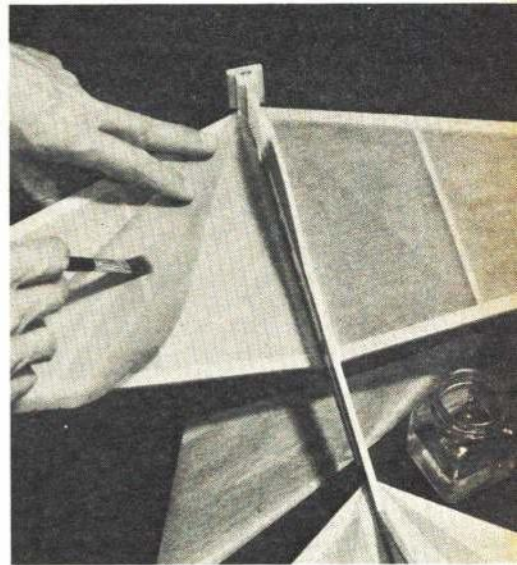
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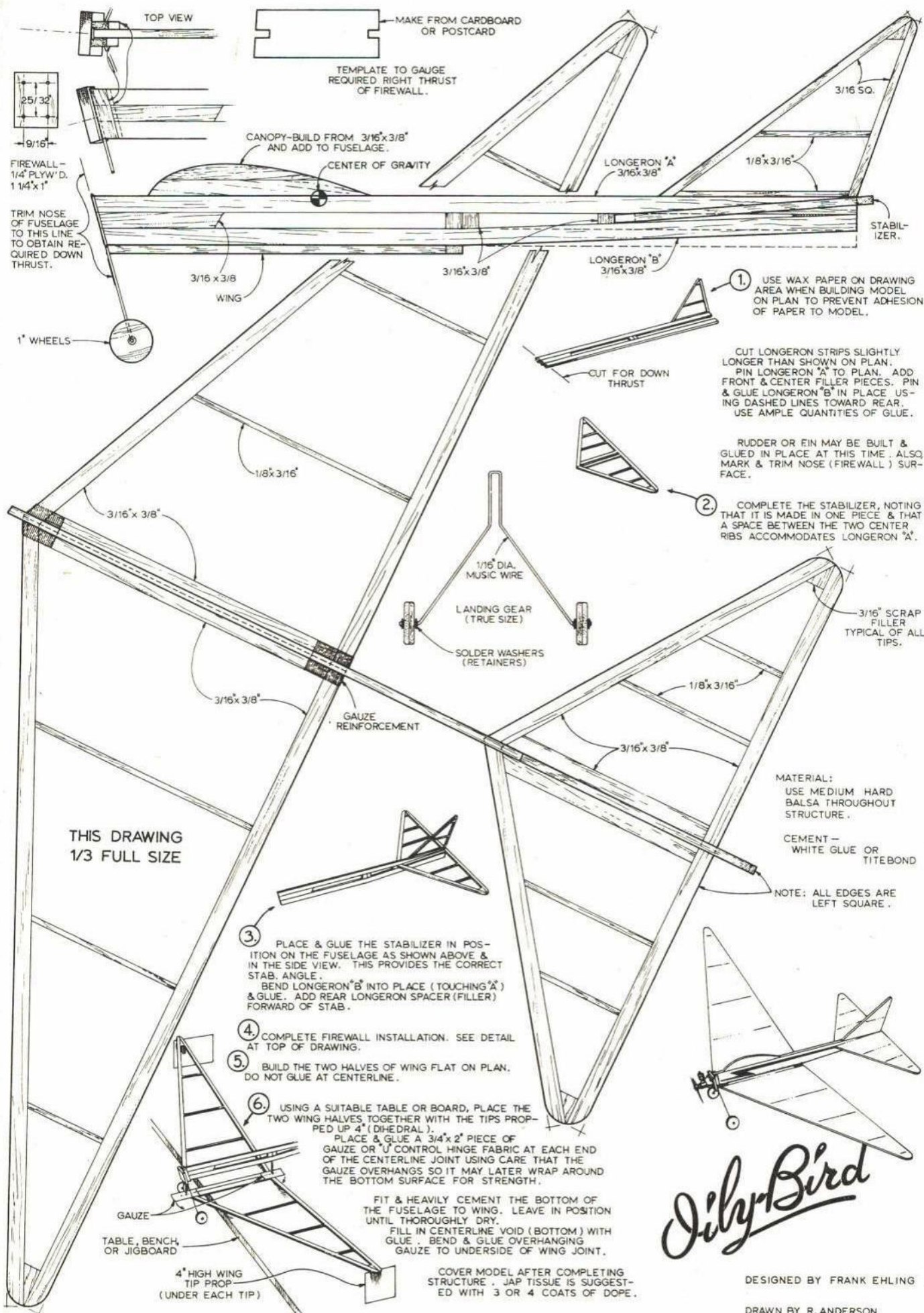
When done covering, trim off any overhanging excess with a single-edge razor blade.



Water-spray covered surfaces with a fine mist. Wrinkles disappear when they dry.



Tissue trim will go on easily if thinner is applied at the center and brushed out.





model world

...on the international scene



Both photos by L. Hoffman.

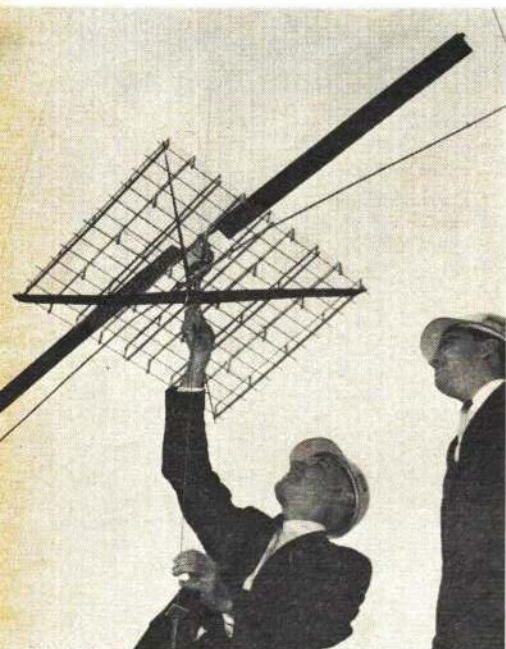
Fourth, All-Japan R/C Plane Contest, Multi-Class, held near Mt. Fuji, had 35 entries

On first day, K. Mihara, one of five speed contestants who flew 1-km path, 10 times around, set speed record of 190 km/hr. OS 15, handmade 5.5 x 7 prop, 75% alkyl-25% castor fuel. A visitor was Franz Kavan, of carburetor fame, shown talking with, L to R: M. Takamatsu, president, OK Model Co.; I. Matsui, first-place winner of contest; K. Ioka, president, Station Hobby Co. (Inter-

preter, left). Thirty-five contestants attended Nationals, flown to present FAI patterns. Two minutes for starting engine, ten for flying. Mufflers not mandatory. Registration occupied first day. Flying began 6 a.m. of second day, each contestant standing at specified spot in front of five judges. First and second places used Micro-Avionics, third MK Digital.

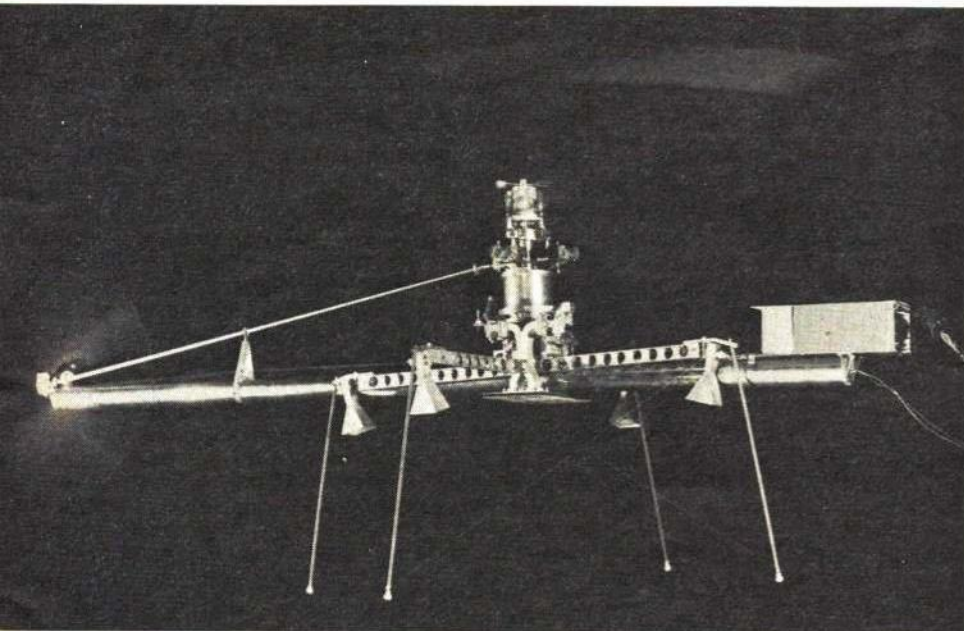
City-wide contest for kids at the Washington Coliseum

Far left: Intent youngsters came under camera of our own Harry Harps who covered AMA-inspired city-wide program. "Simplane" kits were given to youngsters who wrote in after TV appearance by John Worth, AMA's Exec. Dir. Kids who built models at D. C. Recreation Dept.'s 130 centers were taken to Coliseum for competition. They competed for trophies in six age groups: under 8, 8-10, 11-13, 14-15, 16 and older. Aero Club of Washington helped fund Model Aircraft Building Program of Recreation Dept. AMA staffers and members of Maxcutters club taught Rec. personnel to teach building. Left: Irving Roth, Washington Aero Club pres., watches Frank Ehling, time a flight. Right: Officials (L to R) Lester Tyler, of Rec. Dept.; Irving Roth; and John Worth, pose with winners. At left, front, is Charles Taylor, Rec. Dept., who won prize as leader who brought in most contestants.



Weightless-fuel 'copters in Raytheon model tests

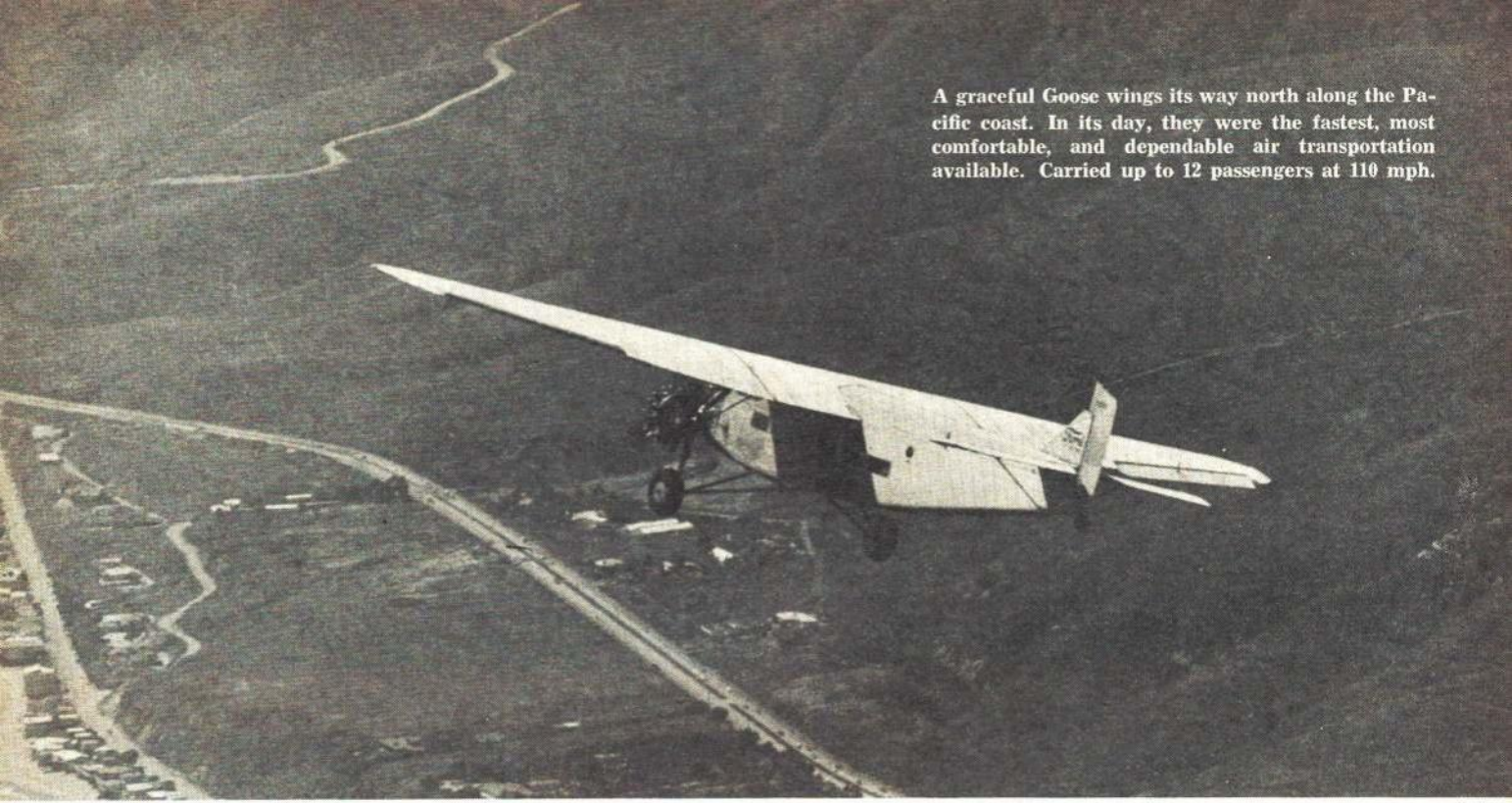
Left: Raytheon Co. tests of microwave-powered helicopter models—a tethered version shown—prove validity of forthcoming high-altitude aero-space platforms. Six-foot rotor model, requiring .105 hp takeoff, weighs 5.25 lbs., has 1.5-lb. payload. A geared electric-drill motor uses ground-transmitted microwave power. Antenna-rectifier with 4000 diodes puts out 280 watts. Beam guidance is next step. Models have remained centered on power beam despite wind. Below: This model incorporates anti-torque rotor to prevent spinning. Full-scale helicopters will be capable of remaining indefinitely on station—for weeks, or even months. Microwave-power transmission has wide application.



Travelair Mystery Ship at auction—to fly again

Above: Aviatix Florence Lowe "Pancho" Barnes pats cylinder on her record-setting 1931 Travelair Mystery Ship (see July issue cover). She paid \$4300 for it during the world's first auction of historic aircraft, conducted by Parke-Bernet Galleries, on May 29 at Orange County Airport, Santa Ana, Calif. Many Nationals and MATS show modeler visitors were familiar with the museum exhibition, featuring historic ships—including a number of WW I prizes, accumulated by the late Paul Manz, famed movie airplane stunt man and racing pilot. Sales totaled about a quarter-million dollars. Miss Barnes intends restoration of reclaimed prize—a happy ending if there ever was one!

A graceful Goose wings its way north along the Pacific coast. In its day, they were the fastest, most comfortable, and dependable air transportation available. Carried up to 12 passengers at 110 mph.



The Cry of the Tin Goose

Ford's better idea in 1926 was the lumbering Trimotor, so dependable and durable that some are still flying.

DOUGLAS J. INGELLS

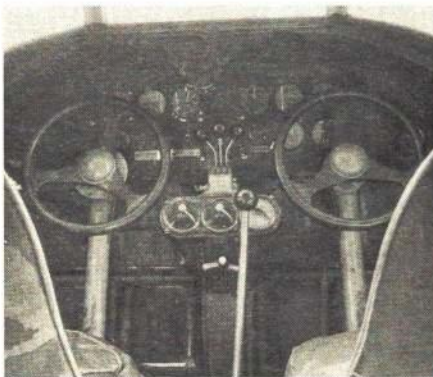
ABOUT two hours before, I had been sipping champagne and savoring a luncheon steak five miles above the earth in the quiet, spacious cabin of a 600-mile-an-hour Boeing 727 jetliner. Now, I was flying in an airliner of the roaring 20's, a thick-winged, Ford trimotor, the famous "Tin Goose," lumbering along at 80 miles an hour, 1000 ft. above ice-covered Lake Erie.

Ralph Dietrick, the pilot, let me ride in the co-pilot's seat. There, in the cramped cockpit with no sound-proofing and only a few feet away from the 235-hp engines, the roar was deafening. The control cables on the outside of the fuselage, slapping against the corrugated metal skin, set up vibrations that made your teeth chatter. It was cold, like riding in a winged refrigerator. There were no heaters, just raw airplane.

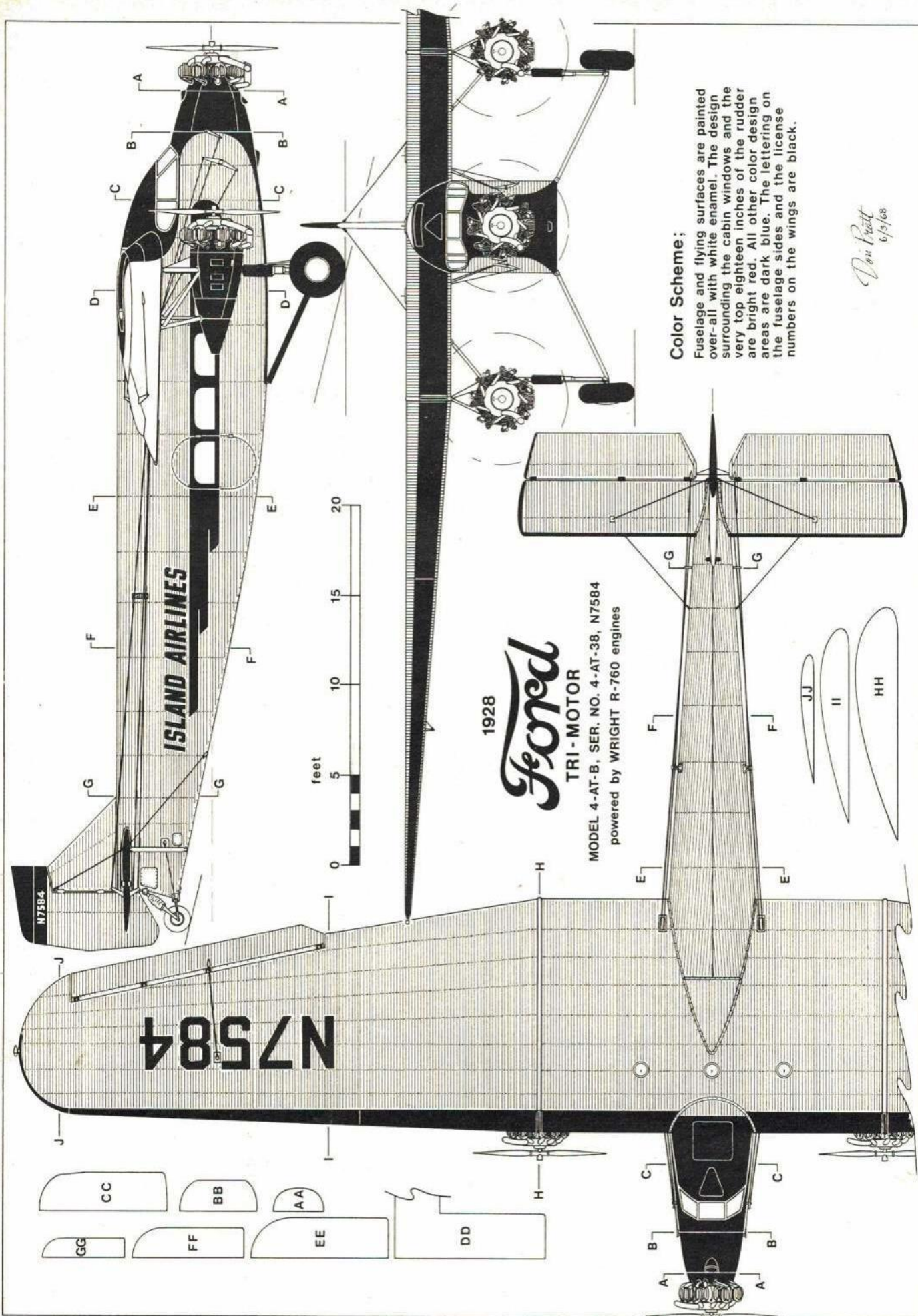
But who cared? This was really flying, a nostalgic journey into aviation's yesteryears. The machine in which I was a passenger, was built 40 years ago, the oldest of her breed still in daily use.

No, we weren't on some special flight. There were 12 other passengers back in the cabin, half-a-dozen sacks of mail, two loped hound dogs, a power snow-blower, and a variety of other smaller items, jammed in wherever there was space. This was a regular, scheduled trip on Island Airlines which flies an average of five round-trips a day from its home base in Port Clinton, Ohio to a small group of islands just offshore in Lake Erie about halfway between Toledo and Cleveland. "The Shortest Airline In The World," it says on the time-table.

But what makes Island Airlines unique is



For the flying in those days, this was considered a well-equipped cockpit. That is a steerable-type handbrake sticking up from the floor. At a time when unexpected landings were commonplace, the Ford's three reliable engines made those landings very infrequent. Admiral Byrd took a Ford to Antarctica where it is buried under ice.





William Stout stands in front of the airplane he is so often thought to have designed, but in fact he had little to do with it — other than use it on his airline. Ford had backed Stout, then bought up his Stout Metal Airplane Co. A team of famed designers was hired by Ford.



American Airline's magnificent modernized 5-AT Ford was found in the back country of Mexico serving as the home for a family of five! Now used for publicity. American owns two of the 12 Fords still in existence, has given 10,000 courtesy rides.



This is the Bushmaster 2000, a modern and improved Tin Goose with all the design features and abilities of the old bird including the corrugated skin. Stout participated in this "new trimotor. It flies faster, lifts more, takes off just as quickly, and generally handles better than the original. Horsepower has been more than doubled, engines in neater cowls turning three-bladed propellers. World-wide interest exists in the "new Ford" and flight demonstrations are planned as we go to press.

that it owns three of the ancient Fords. Last year, shuttling back and forth from the mainland to the islands, they carried 70,000 passengers, more than 250 tons of freight — anything that would fit inside — and about 175,000 lbs. of mail.

Things aren't likely to change. Dietrick, a World War II flight instructor and Air Transport Command pilot, who is president of Sky Tours, Inc., which owns Island Airlines, confided to me — "We've got enough spare parts and engines to keep the Fords flying for the next 15 years. They're our main attraction."

Surprisingly, there are other Ford trimotors in today's aviation picture. The Johnson Flying Service of Missoula, Montana owns two of them which are used almost exclusively working with the U. S. Forestry Service in fire retardation and soil conservation programs. Last fall, when one of the worst fires in history hit the Sun Dance Forest region of Idaho, they were first on the scene dropping smoke-jumpers to fight the inferno. They also are used for timber-spraying and aerial grass-seeding, their stripped-down interiors fitted with ingenious tanks, bins and blowers.

At Clover Field, Santa Monica, California, I flew in another Ford trimotor owned by Gaylord Moxon, who collects and refurbishes famous planes of the past. "Mox" flies the plane "barnstorming" up and down the coast.

Aviation buffs come from far and wide to pay \$5 for a 20-minute sight-seeing ride. Passengers get a souvenir ticket with a picture of the plane on it, and the printed attestation: "I flew in the original Ford trimotor N-9651." The name of the plane, incidentally, is "Graceful" and that's the way she flies.

American Airlines, Inc., probably has done the most to keep the Tin Goose before the public. The airline owns two of the 12 remaining flyable Fords in this country. Both planes have been completely renovated, painted with their original colors and markings of the 30's when American flew them on its coast-to-coast route, and equipped with modern instrumentation and other safety features.

During the past five years, they have visited various cities along American's far-flung route system. Some 10,000 persons have been thrilled with courtesy rides, and three million more have inspected the planes when they were on static exhibition.

"Put one of our Ford trimotors alongside one of our trimotor Astrojets and the 'Goose' will draw the crowds," confessed one of the airline's public relations representatives. "It's a great gimmick. They'll be around for some time."

American has made sure of that. One of its Fords is slated to go to the Smithsonian Institution in Washington, D. C. when the new National Air Museum is completed.

Meanwhile, Ford Trimotor, Inc., of Ottawa, Kansas is flying one of the venerable aerial workhorses used for cropdusting and barnstorming at fairs and air shows. There are said to be others still flying in Mexico, Nicaragua and South America. It is possible others are scattered in remote areas around the globe. They vanish, then suddenly reappear again, a habit the Tin Goose probably picked up from the feathered specie.

The most unusual of the Fords still licensed to fly, I located in Reno, Nevada. It is owned by Bill Harrah, and has been used as an "air taxi" for his famous Harrah's Club casino. Harrah's trimotor is different, because it is the only one ever built having smooth skin instead of the corrugated metal which earned the Fords another name: "the flying washboards."

Continued on page 58

NEW PRODUCTS CHECK LIST

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



Badger Air-Brush/Electric Power Tool. Designed for modelers, craftsmen and hobbyists of all kinds, this bench-top motor will buff and polish, cut and grind plastic, wood, music wire, die-cast metals and brass. Drill with it or rout and deburr. Precision-made, 3,000-rpm motor is housed in a high-impact, heat-resistant styrene cabinet. Two-ft.-long flexible shaft has an adjustable locking chuck and allows great maneuverability. Brochure is available: **BADGER AIR-BRUSH CO.**, 9204 Gage Ave., Franklin Park, Ill. 60131.



Midwest Products Co./License Numbers. No Mess! That's the way Midwest describes the easy application of their Micro-Cut aircraft numbers. Die-cut from pressure sensitive Mylar, they are immune to fading, cracking or peeling. Digits are 3" high; they come in black, white, red and yellow colors. Price is 15c each.

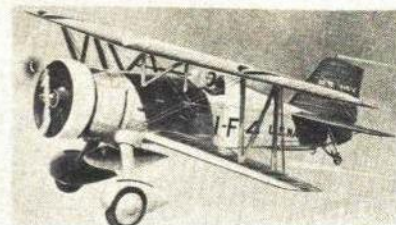
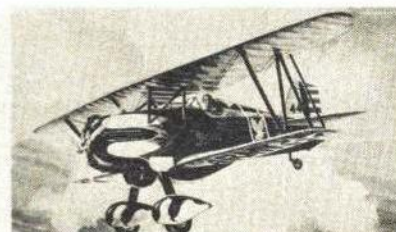
Also, a note from Midwest concerns their two, new R/C bipes—Fokker D-7 and Nieuport 17. Both kits, as you know, sport a foam wing and stab, and retail for \$19.95 each. Engines 15 to 19 in size are suitable. Well, plans for these kits specify a 3"-dia. Williams Vintage wheel. This should be changed to 3 1/8"-dia. (stock no. VA3). Query: **MIDWEST PRODUCTS CO.**, 400 South Indiana St., Hobart, Ind. 46342.



VK Model Aircraft/Nieuport 17. Scaled 2" to 1', this R/C model has a wing span of 54", and it will take 46 to 51 sizes of engines nicely. Ready-to-fly weight (with radio gear installed) runs about 5 1/2 lbs. The price will be in the \$45 range. VK went all out in developing this highly prefabricated kit: there are three plan sheets with isometric views; a finished cowl; wood parts are

either die-cut or machined; spruce and hardwood are used wherever strength is needed; operating hardware includes Nylon bellcranks, aluminum torque rods, wire stock for the flying wires and various nuts and bolts. This coupled with authentic decals and insignia results in a realistic model. Write: **VK MODEL AIRCRAFT CO.**, 12072 Main Rd., Akron, N. Y. 14001.

Randolph Products Co./Model Aircraft Finishes. Randolph has supplied finishes, coatings and adhesives to industry and government for over 40 years. Now, they have a full line, 21 colors plus clear, of fuel-proof butyrate dope and related thinners, sealers, surfacers, etc. for the model builder. All formulas have high solids and an ultra high gloss. Ask for the color and cost data: **RANDOLPH PRODUCTS CO.**, Carlstadt, N. J. 07072.



Monogram Models/Fighting Planes of the Thirties. In 1/72 scale, three famous bipes of the 30's are now available from Monogram. They are: Curtiss Hawk, Boeing F4B-4 and Curtiss Goshawk. Each retails at 70c. Or you may buy, for \$2, kit PA216 which includes all three kits! Each kit is complete with pilot, display stand and decals. Wing struts are molded integrally with fuselage halves for easy alignment. **MONOGRAM MODELS, INC.**, 8601 Waukegan Rd., Morton Grove, Ill. 60053.



Steve Muck's R/C Boat Supplies/Rossi .60. Equipped for marine use, the Rossi 60 comes with factory-installed water jacket and anodized fittings. It develops 2.2-hp at 20,500 rpm just as the racing version. Steel flywheel weighs 10 oz. R/C version costs \$79; the racing type sells for \$71, less universals. Universal joint package is \$2. For Rossi engine owners—marine or otherwise—Steve Muck has parts. Ask for list: **STEVE MUCK'S R/C MODEL BOAT SUPPLIES**, 3422 Greenwood Ave., Los Angeles, Calif. 90066.



Three photos: Leo Kohn and Experimental Aircraft Association.

Radio Control Scale Model

Stits Playboy

A quarter-scale R/C version of this popular, 22-foot, one-place home-built.

BUD ATKINSON

IN the long line of Ray Stits' home-builts, one of the first and most successful airplanes was the well-known Playboy. The prototype of the SA-3A was first flown in 1953. Since then more than 1,000 sets of plans have been sold.

The Playboy is a small, one-place, fully aerobatic compact airplane with 22 ft. span. It uses a 60- to 90-hp engine, and is in the 140-mph class with larger engines. The construction of the SA-3A used a welded-aircraft-tubing fuselage and tail with the wings, bulkheads and stringers of fabric-covered wood. The cowling on the original Playboy was modified from the Taylorcraft cowling and is distinctive in appearance.

Playboys can be seen at most any of the home-built fly-ins. They exist in many varieties of modifications, with bubble canopies, various rudder shapes, fiberglass cowls, and even with trike gears. Some have been seen with trike gears. Many of the magazines covering the fly-ins have pictures of the Playboy, so when building your model you have many subjects to pick from, and, of course, many color schemes. The original Playboy was red, trimmed with white.

I believe that, at some time or another, every modeler has the ambition to build a large R/C job. An easy scale to work from is quarter-scale, as it is simple to scale the plans from the full-size airplane to the model. Most airplanes at 1/4-in.-to-the-foot scale work out rather large and have a wing span of 8 or 9 feet. The fuselage width is almost larger than the prop diameter.

The Playboy was a natural at 1/4-scale with a 22 ft. span, which makes the model 66" in span. This is an easy one to haul out to the old flying patch, and, also, the wing can be built in one piece.

The fuselage on the full-size Playboy was very slim and streamlined for a home-

built, so again, the quarter-scale of the fuselage works out at only 6" wide. This does not give that fat look that most scale airplanes have at quarter scale. The Playboy has over 800 sq. in. of wing area, so it can support considerable weight.

My Playboy weighs 8½ lbs. I'm sure it could be built much lighter, because I made no attempt to keep it light. The only deviation I made from scale was to increase the stabilizer. Most light, low-horsepower airplanes use small stabilizers, compared to what we use on our models, and since the idea behind the Playboy was to make a Sunday-flyer scale model for the average builder, the stabilizer area was increased to give more stability.

Fuselage: The sides are of 1/8" balsa sheet,

with 3/16" square stringers which simulates the real thing when the fabric is applied. The fuselage is large and roomy; in fact, some of the new mini-gear is almost lost in it. The cowling is of fiberglass, much like the Taylorcraft, with grill bars of soft 1/16" wire epoxied to the inside of cowling. A built-up balsa cowling may be used if desired.

The wing and stab are set a 1/2" positive incidence with the engine zero to the thrust line of the fuselage. This worked out very well, and should not be changed. Balance point is about 40% of the wing chord.

The landing gear was made of 3/16" wire; most hobby shops have it. The full-size Playboy used a Cessna-type gear, attached



Our very real-looking Playboy is a typical radio design in its dimensions. The sturdy two-wheel landing gear causes no ground-looping difficulties. Model is of the original Ray Stits plane. Stits' home-built designs enjoy wide popularity.



The Playboy has been around so long that many follow-on versions have appeared. Various modifications either personalize the aircraft, or improve its performance. Left, above, and right are seen some of these mods: new wing-tip shapes, tail-surface outline changes, different cowlings with bigger engines, sleek or enclosed canopies, and new strut arrangements. Strutless metal-wing Playboys are flying, too. This mod alone allows higher cruising speed and a much slower landing speed.

to the fuselage but, of course, the full-size Playboy had a two-piece wing and the gear was attached to the fuselage at the same point as on the model. However, the model has a one-piece wing, so the gear is attached to the wing on a $\frac{1}{4}$ " plywood mount. Epoxy this mount securely to wing, as shown on plans. You could use a dural gear, but for a model of this size and weight I prefer the spring action of a wire gear—it has worked out very well, so far, on many a flight.

Wing: The wing is standard, with $\frac{3}{32}$ " sheet ribs and $\frac{1}{4}$ " x $\frac{1}{2}$ " hard spars. Wing tips are made of $\frac{3}{8}$ " sheet. Be sure to install the blind nuts for the struts, if you plan to use them. The struts are dummies and need not be installed in order to fly. The wing mount is standard practice. I use $\frac{1}{4}$ " nylon bolts with a hardwood block



tapped for bolts. I use them on all my birds, and have found this to be the simplest and most fool-proof method.

Flying: Flying the Stits Playboy is sheer joy! Takeoffs are very realistic. As soon as model moves forward 8 or 10 ft., the tail will rise to level position and steering becomes automatic. With just a little elevator back-pressure to keep the nose level, the Playboy will fly itself off. Very little torque is noticed. She will climb out smooth and easy. The ailerons are soft,

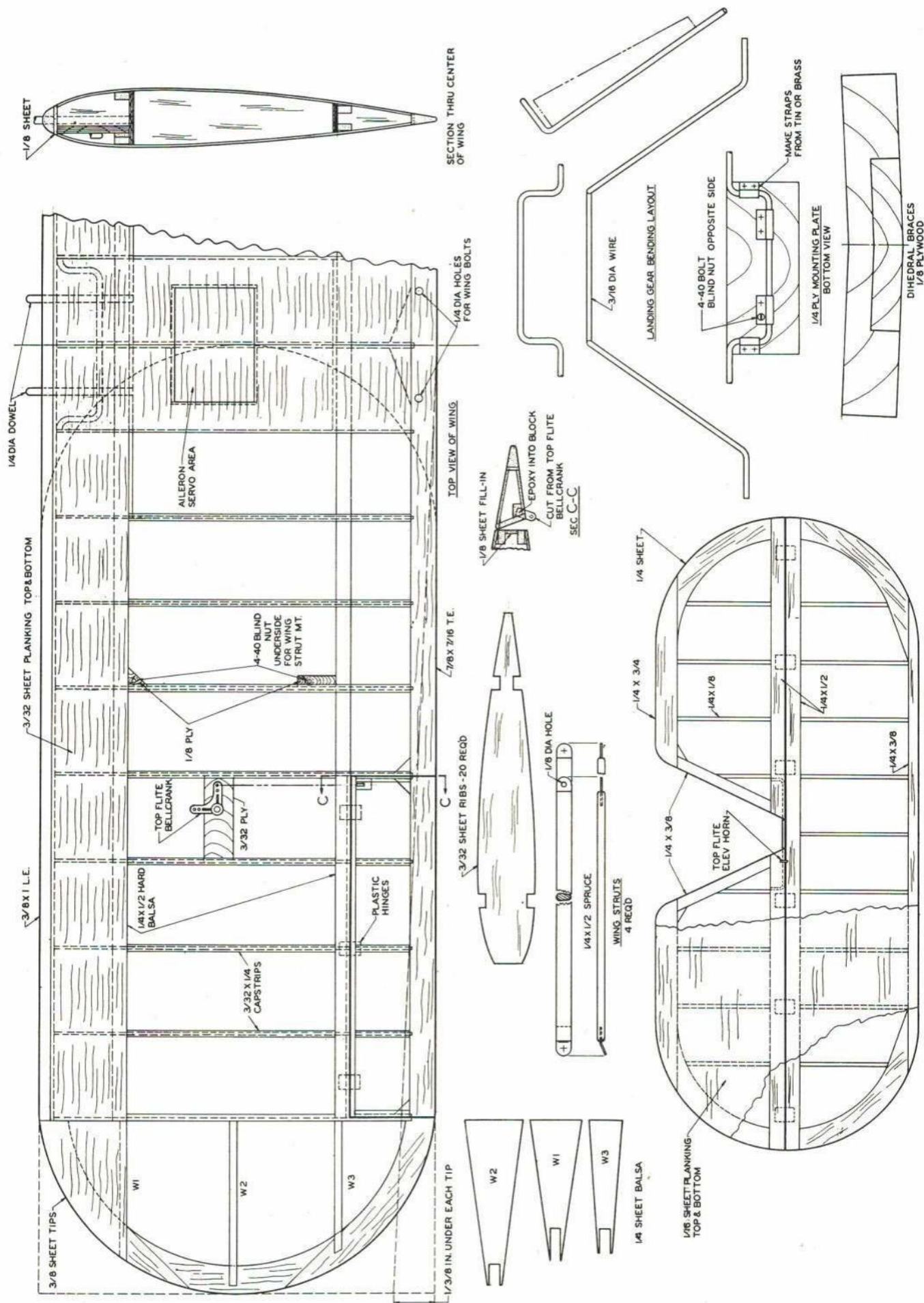
but more than effective.

The Playboy will do most any of the old AMA stunt patterns. You will find yours will do a spin much more scale-like than most models, slow and easy. As for the landing, I think a beginner could land the Playboy. It's very forgiving. The approach is slow but penetration is very good. When flared about three-feet high, a little up-elevator gives a smooth landing. Make a two-wheel landing. They are beautiful to watch; roll-out is very short.



Above: Lots of wing area and lift with generous tail surfaces give excellent slow-flight ability and good stunting. Right: Cowled Enya 60 on Midwest aluminum mounts. Cowl and wheel pants are fiberglass.







The S.P.L. Falcon is a 90-mph plane, stable and easy-to-race in the hottest competition. The wings of these models are made of

solid balsa but those who prefer lighter craft could use a built-up structure. Different color schemes are encouraged.

This is Goodyear

AMA's new control-line, semi-scale event is getting quite popular. Tips and hints, plus, last year's winner, the SPL 'FALCON.'

JOHN F. KILSDONK

THIS article is a re-introduction of Goodyear-type racing—control-line scale racing. It is intended to bring you up to date on the newest AMA event. The growth of CL Goodyear parallels that of full-scale Goodyear racing.

Full-scale GY racing started because of the loss of interest in high-powered, high-speed aircraft which had infiltrated air racing. After WW II, the jets were flown

in the National Air Races. This proved to be the undoing of the spectator interest. These big jets required five miles to turn the pylons, and were in view of the spectators for only a few brief seconds.

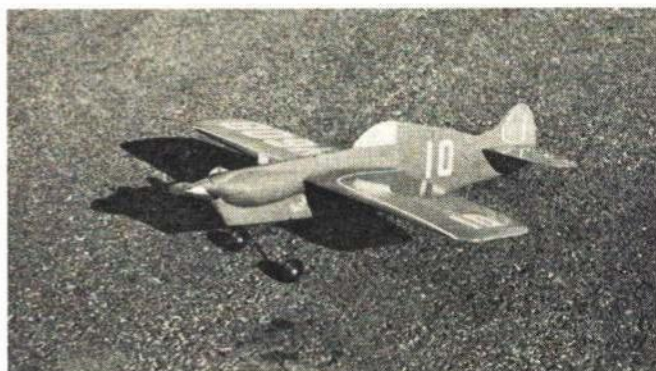
In the 1947 National Air Races, the Goodyear Tire & Rubber Co. established a new event and guaranteed competition for three years. This new class was limited to stock engines with a maximum of 190 cu. in. displacement. Further restrictions to promote safe designs, pinned down the general specifications and construction techniques.

Thus the "midgets" were born. Quite similarly, CL Goodyear was born. The colorful, easy-to-build, slower models offer a welcome relief from the hustle and bustle of the overpowered rat racers.

To the best of my recollection, CL Goodyear began in the early sixties in Tulsa, Okla. Several construction articles appeared in the model mags for a few years after. At that time, the rules were rather general and some models that were published are not now legal by the present rules. However, those that still fit the bill



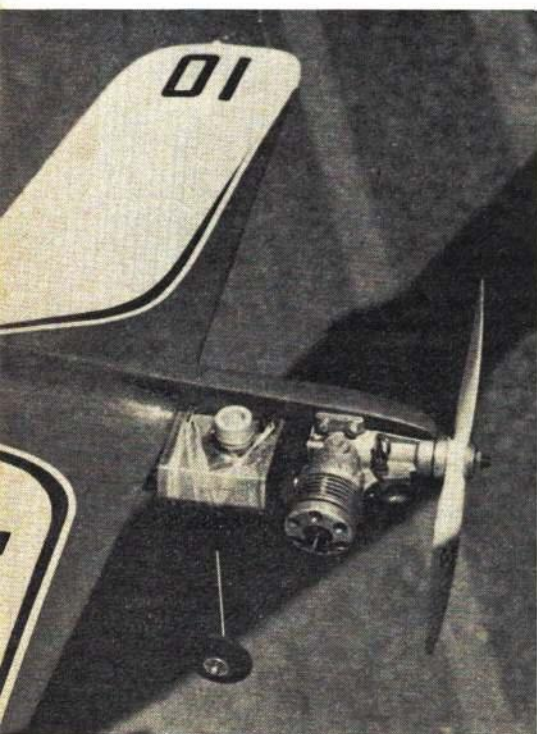
Viewed this way, the impression is that one side is all business, with the engine, tank, and control system out in the breeze.



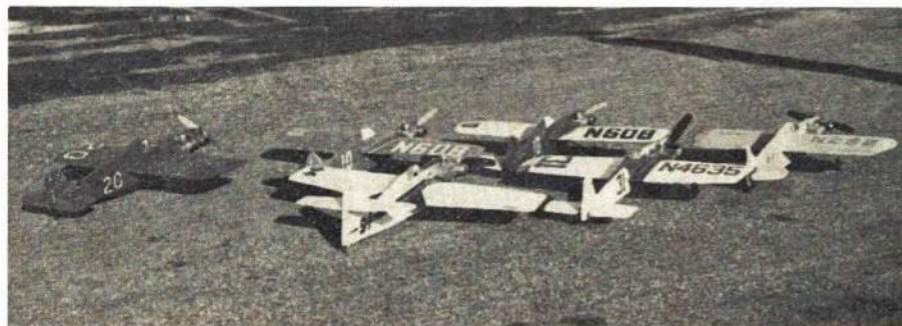
The other side is a different story; smoothly contoured lines convey the sleek semi-scale appearance required in this event.



These ships have survived a full season of tough races. The event is intended for all types of flyers—not just the old experts.



To win, place, or show takes a good reliable engine, an easy-to-fill tank, and a well-trained pit-crew—then lots of practice.



The company that the Falcon has been keeping also is pretty fast. There is a great variety of colorful racing planes that can be modeled for this profile control-line racing event.

are: Bonzo/Buster, AM, 7-61; Cosmic Wind series, AM, 7-61; Denight Spl., AM, 8-61; Leighnor Spl., AM, 1-2, 61; Long Midget, AM, 1-2, 61; Sweet Pea, AM, 1-2, 61; Rivets, AM, 3-4, 61. If you are interested in any of these, you may be able to track down the plans.

The Tulsa group's theme was that of a fun-type club contest, to get Juniors flying in competition. Shortly thereafter, reports of activity in GY came from Florida (St. Pete.), and the east coast around Washington, D. C. My first contact with it was in 1964 in Dayton, Ohio. The I.M.A.A. (Indiana Model Aviation Assoc.) had started some intra-association GY contests between its member clubs.

As previously stated, the rules in the beginning were rather general. They varied from one locale to the other. The main differences were in the amount of fuel that could be carried or in the number of pit-stops which were required. Also, there were differences in engine size and in overall model size.

In the winter of 1964, the M.M.A.A. (Mich. Model Airplane Assoc.) decided to give GY a "push" also. Basically, we patterned our first attempts after the I.M.A.A. with the exception of engine size and fuel requirements. They allowed .19's and only 1½-oz. fuel tanks while we went with .15's and no limit of fuel capacity, but rather required pit-stops instead.

The first year proved fruitful as interest in the new event intensified. There were five contests which had GY that year. The following year, more new blood entered the event and all indications were that this would be a popular event in the years to come.

During the winter of 1965-66 we tried to improve the rules, looking toward AMA acceptance of CL-GY as an official event. The changes made were notable. We increased the minimum size of Thompson Trophy racers to 1/8 scale (previously they were 1/12 scale). Also, we rescinded the required pit-stop rule in favor of the limited fuel capacity of 1½ oz.

Basically, this is what we presented to the CL-Contest Board as the official replacement for the long-dead AMA "B" Team Race. At the 1967 Nationals in California, the CL Contest Board hashed over the rules and accepted them except for the old fuel capacity rule. This particular rule change was decided on in a very vague, rapid manner—anyway, we now have Goodyear (or Scale Racing) as an Official event. You can find the complete rules in the 1968 AMA Rule Book. If you are not in agreement with the final rules, write to your CL-CB representative and voice your opinion.

Briefly, the rules are as follows: The airplane must be a model of an actual GY or Thompson trophy racer. It must be 1/8 scale (1½" to 1") plus or minus 5%. The

scale pertains to the top and side profiles with the exception of the stabilizer. The stab can be increased—in most cases necessary for a good flying model—up to 25% of the original size. The paint scheme is fairly open. The rules state that it must resemble a full-scale racer. What this means is that any paint job short of a clear wood finish or some psychedelic variety is permissible. However, the model must have AMA numbers and scale racing numbers in the appropriate places. Consult your rule book for further details.

The model presented here is a most proven design. I originally chose this particular model in an effort to break away the Bonzo-Buster-Cosmic Wind trends, but more importantly, because of its good platform (i.e. moments) for a CL model.

To substantiate the claim as a proven design, in the past year of racing it has placed: first, four times; second, three times; and third, once, out of nine contests in the Midwest. It finished first in the Midwest point standings with 34 points. Incidentally, second was 15 points behind. These were the totals based on 23 different flyers in the nine AMA contests in the Midwest which had Goodyear. The model also holds the best time for the 160-lap race (7:02).

The purpose of this article is not necessarily to get you to build the Falcon, but rather to give you some insight into GY racing as it has evolved and to show you how to get started. You may choose to scale up a different racer from three-views. This is heartily recommended as the more varied designs which appear at the contests, the more "color" the event will have.

Before getting started there are some interesting and informative publications available on full-size Goodyear racing which may be of interest to the newcomer in this event:

Experimental Light Aircraft & Midget Racers by John Underwood and John Caler, Aero Publishers—1958, \$2.50. Contains photos and brief descriptions of about 80 Goodyear-type racers plus another 100 or so other experimental aircraft.

The World's Famous Racing Aircraft published by Floyd Clymer—1955, \$1.50. Contains a good many three-views and pictures.

Racing Planes Guide by Joe Christy, Sports Car Press—1966, \$1.95. A very interesting publication which gives the complete rundown and history of all major races from 1909 to the present.

Racing Planes and Air Races by Reed Kinert. Available in four volumes at \$3 each. Aero Publishers, 1967. Volume I, 1909-1923; Volume II, 1924-1931; Volume III, 1932-1939; Volume IV, 1940 to present. All four of these were purchased at my local hobby shop and should be available elsewhere.

Now let's get to the construction end of the event. There are three basic types of wing construction which may be employed depending on your preference: First, a solid balsa slab or sheet with appropriate carved airfoil; second, the conventional rib and silk construction; third, the sheeted construction, as used on the Falcon. Any of these methods should be adaptable to most designs.

Let's progress through the stages of construction of the Falcon. You may use this as a guideline for your own design or, if you are lazy like me, you may just use the plans and construction as presented here. Or, you may wait for a kit to become available. Frank Garcher, of Midwest Models, has shown interest in kitting this design.

Assuming you are going to build a different design, first locate an accurate set of three-views of the full-sized craft. Using dividers or a grid system, scale the three-

Continued on page 52

Hoping hero gets ready for a night patrol?
The transmitter was specially designed by
the author for Galloping Ghost operation.



Galloping Hopes

How to make the simplest of all Galloping Ghost systems for tiny World War I planes.

WILLIAM J. SCHNEKER

DO you realize that World War I aircraft used a form of pulse proportional control? Frail fighters and daring pilots returning from a sortie against the Huns, floated over the trees with their engines blurping on and off! Since their rotary engines had no carburetor or throttle, the only means of varying the engine output was to pulse the kill button of the ignition system. Blurp, blurp, blurp, and finally hold the button and coast to a stop. Silence. Yes, that was pulse proportional in 1919! But, now to 1968 and technical matters.

Wanting pulse proportional—Galloping Ghost—in tiny WW I biplanes and other very small models, eliminating as much "gallop" as possible, we needed something different. Very low power and an extremely light radio-control system were musts.

The radio equipment is the German Bentert single-channel super-regen system which uses a magnetic actuator, and weighs a total of a few ounces, including batteries. But, it can't drive both rudder and elevator surfaces. Thinking of ways to cut down friction, inertia, and control surface load, we hit upon the idea of a swept rudder to

squeeze both roll and pitch moments out of one flapping tail surface.

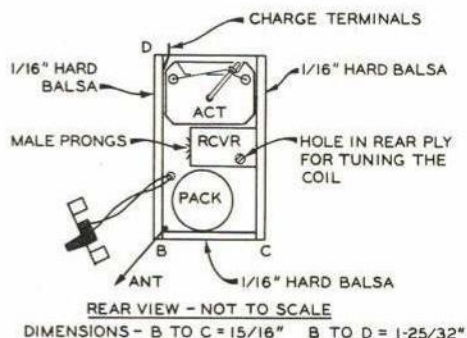
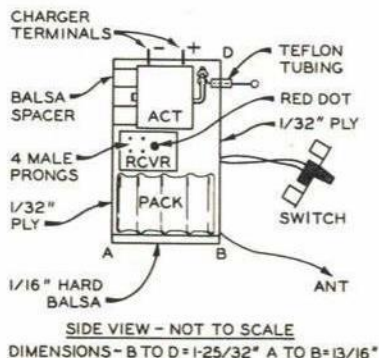
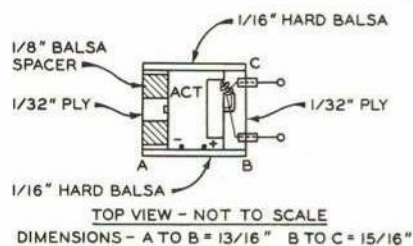
The rudder has been shown in full deflection position (could be either left or right) to demonstrate the elevator effect more clearly. This effect prevents a nose-down attitude when entering a turn by giving a little bit of up elevator equivalent. But we GG'ers can make more effective use of this quirk. Specifically, because we're pulsing both left and right—we can obtain an up with left and an up with right without any turn action as our pulsing averages out to neutral rudder! Thus, we have almost independent elevator effect and rudder effect.

We get varying turn action by the usual means of varying duty cycle, and we get variable elevator action by varying the pulse rate. The lower the rate, the more the swept rudder swings out to both sides, acting to push the tail down and the nose up. As the rate increases, the rudder tends to dither more around neutral and thus eliminates the up-elevator effect which occurs only when the rudder is flapping far out to port and starboard. You can get elevator action without rudder action. But

how can you get rudder action without elevator action? Any asymmetry in duty cycle required for a turn effect will put the rudder out to one side or the other of the neutral line, thus exposing the elevator effect. Make the fin sufficiently small to allow a small change in rudder position to give a large turn effect, yet the total vertical tail surface is more than adequate. The goal is a rudder-fin ratio large enough so that the plane will almost "split-S" on full rudder.

Now, two practical points: 1) What is the best angle of sweep? In point of fact, the second and third models using this system have a 45-degree sweep, and it seems to be working fine; 2) Is there anything about the control configuration used? Yes! Use cables! They look like they belong on a plane and they work better. With the Bentert, their free action and low inertia are absolutely essential.

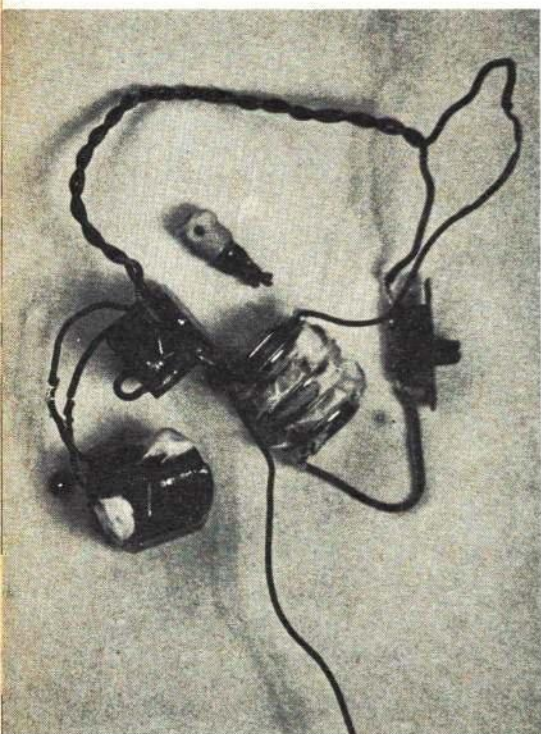
Use a bilateral downcant on the control horns. How this solves the problem is seen best in the side view. Note how, on full left, the horn is in line with the control cable, giving full forward component with no lost



This packaging of the Bentert system shows how to make a miniature R/C module.

Notice that several outlets are needed for tuning, charging, switch and antenna.

Parts placement is critical to avoid magnetic interference, maintain good balance.



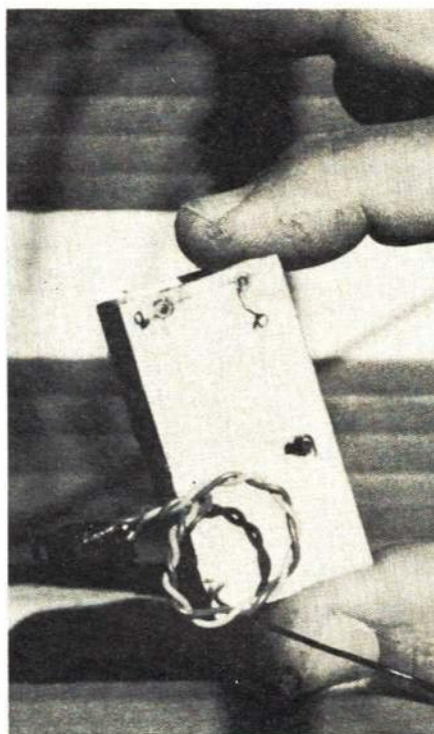
Thoroughly check out the system before assembling the module and potting the parts in the box. Eliminate the receiver plug to reduce weight. Keep gun-type soldering irons away from the magnetic actuator to prevent weakening the magnet.

energy in an upward direction. The fact that full right gives a left horn deflection even more exaggerated than in the conventional setup matters not, since, when the rudder goes to the right, the left cable's function is one only of restraint, not of force application.

Use a balanced rudder—it makes it easier on the actuator and provides a fin configuration less vulnerable to damage. Also add static (weight) balancing so that you can fly the Bentert in an O20 plane. For a practical application in an actual flying-type R/C craft, we chose a 98-cent Top Flite Jigtime rubber-band sheet-balsa kit as the vehicle. We added a wing, put ribs in the wing, mounted a TD 010, and came out with an all-up weight of 3.5 ounces. Our first 30 flights almost returned the kit to its original state, then we shoved in a lot of down and right-thrust, and now it works fine.

Construction of the Bentert module: The advantages of a module are that once the initial work is done, you never have to build or wire again, just transfer the unit from plane to plane.

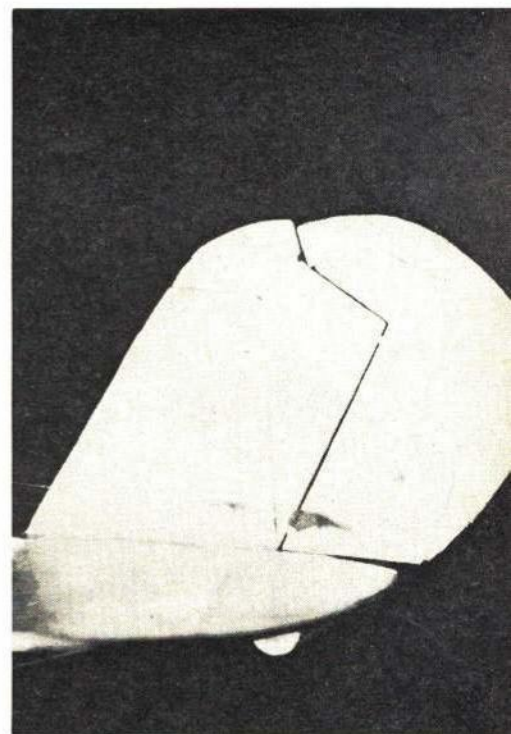
The equipment comes from the manufac-



The entire package is almost as small as most conventional receivers, yet contains everything and weighs only a few ounces. It is quite sturdy and nearly crash-proof. Make its installation removable and locate it to properly balance the airplane.

turer with a cable which plugs into a male connector on the side of the receiver. Clip off the plug and solder your leads direct to the male prongs. Keep leads short—you won't have much room in the module for excess wire loops. Next cut down the actuator output shaft and solder a blob onto rear of shaft to act as control cable loop retainer: **WARNING:** Don't use a soldering gun near the actuator, or for that matter anywhere on a plane which has the actuator installed! The gun's magnetism will weaken the actuator.

Obtain some multi-strand 1/2-A Dacron U-Control-line (I use Pylon Brand "Hi-Tensil," D-1, 12-lb. test). This can be unraveled to three large strands, the latter further sub-dividing into many strands each. Choose one of these three large strands to tie to the rear of the output shaft. After tying its midpoint to the shaft, thread the Dacron through two Teflon collars which act as bearings, or sections of an Andy Wright motor-cable assembly. Tie loops at each end. Hooked to these two loops, by means of fine wire goodies, are two cables of nylon sewing thread, which lead to hooks attached to the left and right



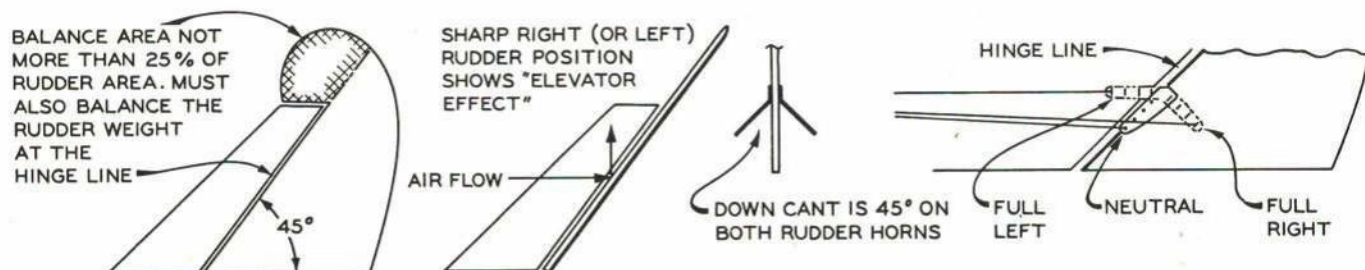
The secret to the lightest Ghost system is the dual-function rudder. The sharp 45-degree sweep of the hinge line, and generous rudder area, gives positive rudder control at all pulse rates and effective up-elevator during slow pulsing.

rudder control horns. Use GE Silicone sealer wherever you tie Dacron or nylon threads; it keeps knots from slipping.

By the way, for rudder hinges, use the same one-of-three Dacron strands, one "Figure 8" loop on bottom, one on top. Don't install the rudder hinges until all dope spraying and painting is done. Use fast-drying cement to secure the hinges, so that the cement won't run along the Dacron fibers.

The nicads: Eveready makes 50 mah buttons (Lafayette 1967 Catalog, p. 268, #32C4730), which come without solder lugs. The instructions say do not solder, but here's how to do it: Take a plastic "Baggie," place an ice cube within, and wrap it twice; then place the button on top of the cube and press down hard with your thumb for about half a minute. This melts a seat for the button, giving good transfer of heat, while keeping the button cool, for the following step.

Now take low-melting-point solder (printed circuit repair solder, such as GC #9131), a large, hot iron or gun (150-250W) and puddle a drop onto the rim of the position side, and another on the angle of the



Three of the four very important details required in the Galloping Hopes control system are the properly balanced rudder—aerody-

namic and static, the 45-degree angle of the hinge-line and the down-canted horns which equalize the movement for each cable.



Author's goal was to have some form of elevator and rudder-control in models of the Monogram Speedi-Bilt series which could be

powered by a Cox 01. This is a fully rigged Spad with wing span of only 12". Note the exaggerated down and right thrust!

negative side. With the same solder, add $\frac{1}{2}$ " multi-strand leads to each point previously puddled onto the cells. Stack three of these so-prepared cells, series connect the intercell leads, and pot the whole assembly in GE Silicone. Thus, you have a 3.6v 50 mah pack. Or, get Gould 50 mah 3.6v commercial stacks—they're listed in the Gould "Silverpac" General Bulletin. Address: 931 No. Vandalia St., St. Paul, Minn. 55114.

Use a World Engines miniature slide switch to operate the system. Now we assemble everything into a balsa-plywood module (with nicads, receiver, and actuator potted in GE Silicone. The component location is fairly important to avoid excessive feedback and/or distortion of the actuator's magnetic field.)

You now have a removable module which slides in and out of the fuselage and is located at the proper point to obtain just the right center of gravity, after the plane construction is completed, thus avoiding need for nose or tail ballast. The module weighs one and $\frac{1}{4}$ ounces, all-up.

Operation of Bentert module: Average pulsing drain is about 25 ma. With the 50 mah pack, this gives about $\frac{1}{2}$ -hour flying time. (If you're puzzled by my arithmetic, remember that battery manufacturers don't fly GG—they sell batteries. The longer I'm in GG, the more conservatively I rate my nicad capacity.) Because the actuator is placed so close to the receiver a certain amount of feedback occurs, causing the output shaft to chatter when the carrier is off. But with the carrier on, there is no problem.

Use full-on, full-off controls ("bang-bang") when: 1) first trimming out; 2) in trouble, and you need fast action-like turning out of a zoom-generated stall; and 3) flying dead-stick after the engine cuts out (e.g. coming in on glide).

Now that GG has been made one order

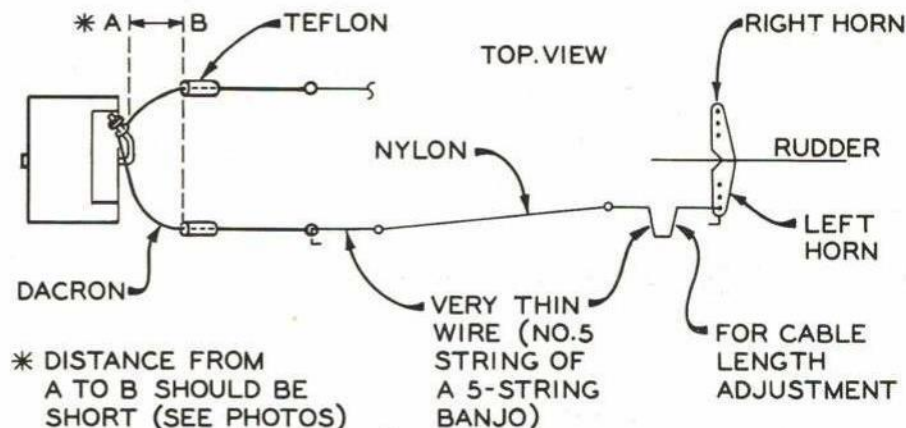
of magnitude smaller, the next project was an 010, 14"-span Monogram Speedee-Bilt Spad VII Pursuit, all-up weight 3.5 ounces, with full combat regalia, interplane rigging, Hat-in-the-Ring insignia, gaudy roundels, bescarfed pilot, ominous machine gun—all for the price of one buck. (Our fellow Cross and Cockade Society members should please excuse us: This Mark VII Spad was the only one used by the 95th Aero Squadron, the others being mark XKKK's.) Editor's Note: Since this article was written, several new miniature systems have been published, or became available to the radio control enthusiast.

The Albin micro-receiver was in an arti-

cle by Howard McEntee, A.A.M., May 1968; also available from Ace Radio Control as a complete kit. The Adams Baby Actuator is slightly heavier than the Bentert unit, but more powerful; also available from Ace. The Bentert system is available from Polk's Hobbies—is the lightest and smallest, but a bit more expensive. Back issues (Nov.-Dec. 1966) of Grid Leaks with the Dr. Schneker GG Transmitter are available from American Aircraft Modeler.

The tiny 3-volt Futaba receiver can drive the Bentert or Adams actuators; is available from MRC, Inc.

Good quality transmitters for GG are available from many manufacturers.



Fourth detail feature of the control system is the frictionless and inertialess cable control arrangement. These four ideas would improve operation of any servo-driven GG system.

An editorial *'If you are tired of 100-mph stunts, noise, smell and expense, give yourself a short vacation and try a glider.'*

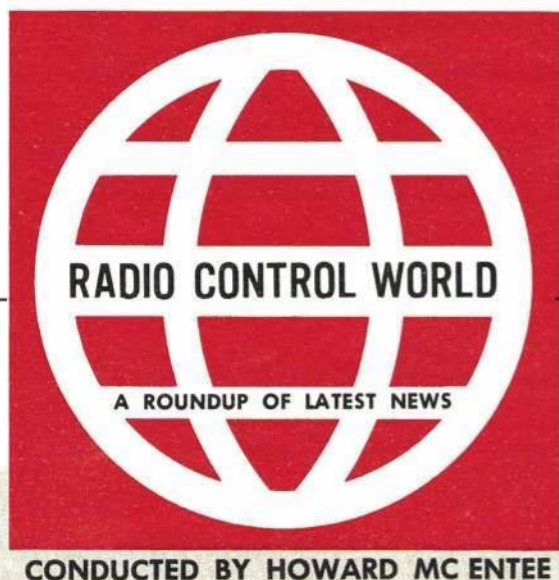
AS noted in this space, August 1968 issue, competition interest is branching out in many directions—to such an extent that plain stunt contests appear to be on the wane in some areas of the country. We see growing interest in Goodyear Pylon, (and hopefully in its sister category, the 600-sq.-in. Continental category). There is more action all over the country in FAI Record flying, and more meets are being sanctioned for this purpose alone. There seems to be more “fun-fly” events than ever before. There is much interest in glider flying—though so far as we know, the only contests before this

have been on the West Coast—and mostly in southern California under the urging of the Harbor Slope Soaring Society.

Having just returned at this writing from the first R/C glider contest to be held in the East, we'd like to jot down some comments on this meet, and on gliding in general. First, we must make plain that the writer is no “glider expert,” having been active in the field only a year or two—and not too active at that. The following comments are thus put forth not from the standpoint of an all-out “glider-and-nothing-else” R/Cer, but rather from one who has sort of stood at the edge of the water dipping a toe—but finding the sensation most enjoyable!

First, our observations on the meet itself. It was sponsored on June 8-9 by the DC/RC, and was billed as a “flat land” meet—that is, lift would have to come from thermals, not from a slope. (Most West Coast meets are for slope soaring, due to abundant sites and the reliable afternoon breeze coming in from the Pacific.) As it turned out, the thermals were scarce and mostly rather weak. In some ways this added to the fun, for it was possible to run 13 rounds in the two days—and without really pushing at all. The rules were of utmost simplicity; a flyer got one point for every second he kept his glider aloft (timing started the instant the Hi-Start or winch tow cord dropped off). Added to flight points were 50 more points for landing in a 30'-diameter circle. To make judging easier, the glider had to come to rest in the circle, or with any portion of it over the circle outline. With these rules, judging was simple and certain—no questions of judging experience could arise.

Some 22 entrants signed up, with a few from far places; an



TECHNICAL MATTERS

Dee Bee propo throttle: The old Dee Bee “21” and earlier Mark II proportional rigs are rather obsolete by present day standards. But they are relatively simple and trouble-free, and due to the high AF tones used, are not particularly bothered by interference. Thus, they are ideal for the sport flyer who doesn’t have much cash to expend (used outfits in good shape are going for not much more than \$100 in some areas). These outfits have three simultaneous propo channels, but motor control is trimmable—and rather tricky to master.

The climax of the flying session of the 1968 DC/RC Symposium was the flight of Paul Sherlock’s tremendous scale model of the 500-passenger Boeing 747 airliner.



Air Force man came all the way from Oklahoma for the meet, and the winner came with a flying buddy from Cleveland, Ohio. One interesting fact was that few of the entrants had been seen previously on the Eastern contest circuit—it was almost an entirely new group! We view this as a most significant point in itself.

The pace was leisurely throughout; we even took an hour off each day for lunch, and still had plenty of flights! More than one flyer commented (and many of them are active and experienced R/C power-plane flyers) that it was a blessing not to hear a single model engine the entire two days. Amen! The sponsors provided several high-starts and electric winches, and with no "ground maneuvers" to be run off, it was possible to have a large number of planes aloft at once. Considering the moderate speeds at which gliders travel, this was much safer than with a large number of high-speed stunters cavorting together.

There was real variety in the planes—all the way from single-channel escapement up to full-house multi propo. Eventually, the gliders will have to be split into more compatible groups, probably, but for a first try this worked very well. Not surprisingly, a little under half the entry list came from the DC/RC itself—but why not; this club has one of the largest and most active glider groups in the country, and most of the visitors learned plenty from the experts.

At meet's end, all scores of each flyer (minus his single poorest score) were added up, to decide winners. Top man with 3793 points was Chet Lanzo, flying what he agreed was a much enlarged Nordic design—and in view of the light wind and

thermals, a perfect choice for this meet; Chet even towed it aloft by hand, just like the free-fighters do (he was afraid the wings wouldn't stand winch or hi-start launch—but he got higher than most of us using these, anyhow). In second place, Walt Good (2879) with a very beat-up but still fine-flying Kurwi. Tom Rankin was third (2626) flying an Osprey, a local design. Your reporter was fourth (2425) with a "fat" Kurwi. Maynard Hill flew the beautiful Nelson KA6 to fifth, with 2318 points; he had the longest flights of the meet—but not enough of them.

All in all, it was one of the most enjoyable meets many of us had ever entered; if you want something a little different, and prefer your competition flying on a rather peaceful low key—try a meet like this!

Other glider groups have held competitions that included touch-and-go's, stunts, limbo, speed runs and so on. The possibilities are enormous—and the cost of the planes and their upkeep is relatively low. Most gliders have just rudder and elevator. The simpler two-control systems such as Rand Dual Pak or even GG should be quite suitable. No expensive engine is needed, no continuous outlay for fuel and props. And man—it's sure a blessing to be able to pack your glider away without a thorough cleaning to remove the oily mess!

R/C glider interest is certainly growing. We don't expect it will ever supplant power-flying, but it will certainly develop into another branch of a wonderful sport. If you're a little tired of 100-mph stunters, noise, smell and expense, give yourself a short R/C vacation and try a glider. Many jaded stunt experts have—and most of 'em love it!

In the Sept. 1965 issue of A.A.M., we gave info on adding propo throttle to the "21" outfit, which uses transistor drivers for the servos. Here is some data along the same lines, but is intended for use on the Mark II relay receivers. The circuitry follows that of the earlier item closely, and we advise reading that one for the full story. In this case, however, the pulse-rate change is not taken from the receiver itself, but rather, from the rudder servo, as in the manner of the old Kickin' Duck system. A tiny transformer (Lafayette #99H6126, costing 79c) is hooked across the servo, the output going via a couple of diodes to the circuit shown in the earlier issue. A few component changes will be seen, but this circuit has been in use for several years, with fine results. Many analog feedback servos will work fine, the Spar and Controaire being recommended. Resistor R1 is generally 2.2 ohms in Mk II systems, is used to cut servo current drain a bit and to prevent over-control, when the Bellamatic II servos are utilized. R2 sets the throttle servo to the position you desire, in conjunction with the throttle control in the transmitter.

If the circuit shown does not give wide enough output voltage variation to move your throttle servo over the full range, R3 may be reduced a bit in value. As noted, diodes D1 and D2 may be most any kind, either germanium or silicon; 1N293's have worked fine. Once set, R2 should seldom if ever need change. The entire circuit shown

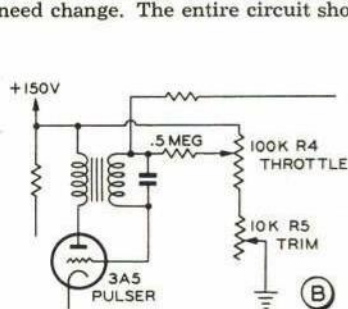


There's lots of model flying in the Philippines. This is a modified Taurus, Super Tigre-powered, and guided by Micro Avionics. It is flown by 10-year-old Arlen Lam.

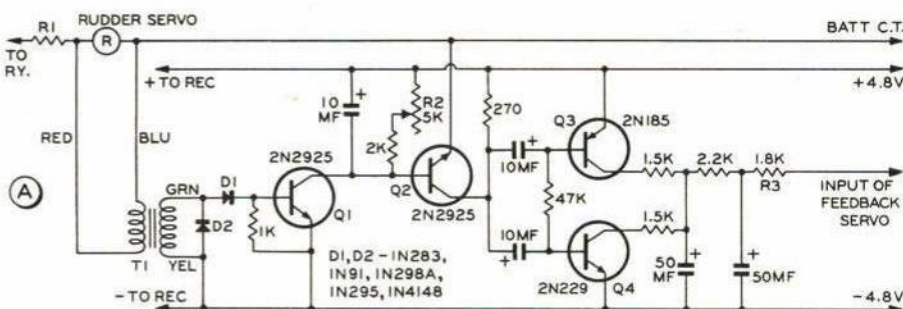
here was mounted on a glass fiber board about $1\frac{1}{2} \times 2$ ", the assembly weighing $\frac{3}{4}$ oz. Current drain is only a few milliamps, but of course, the drain of the feedback servo itself must be added to this. As long as this servo is not allowed to drive up against a solid stop at either extreme, its current

drain will be low, except when it is actually shifting the throttle.

Pulse rate variation for circuit A is obtained by moving pot R4 installed in the transmitter. R5 was added for trim purposes. Again, refer to the earlier article for data on transmitter changes. The changes

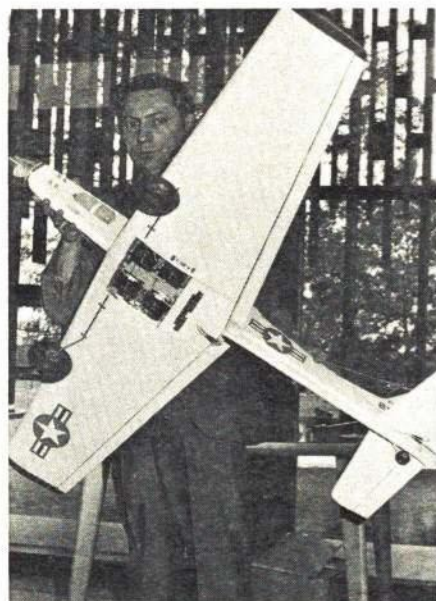


Circuit mods for obtaining propo throttle with old Dee Bee 21 rigs. Best method yet.

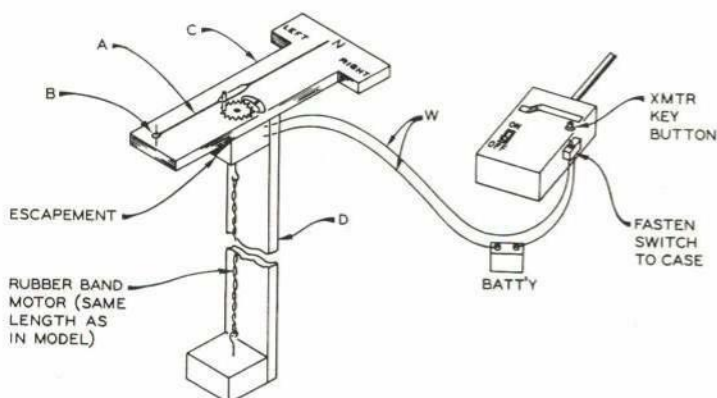




Guess what happened to George Sheeks' Junior Falcon in Thailand? The model, out of control, hit the tough hide of the water buffalo in the background and was thoroughly damaged. Animal didn't blink!



At DC/RC Symposium, Ed Manulkin showed and flew a proposed ready-to-fly kit for a profile P-51 Mustang in which all the R/C gear is buried in the foam wing. This model flew very well and may just begin something wild — like R/C Combat! Or Profile Pylon racing? Quick to build, inexpensive. A Messerschmitt is next.



George Siposs suggests the above method for counting and keeping track of the airborne escapement. Follows a duplicate on the ground.

of circuit B were made in a Dee Bee "21" transmitter.

Only drawback in the whole system was found to be a slight neutral shift in all three control surface servos, when going from high speed to idle. It was found possible to reduce this shift as follows: Each tone generator tube (there are three of them, all 3A5's, along the bottom edge of the PC board) has a 4.7 meg resistor in series with tube terminal 3, and this value was increased to 10 megs for each tube. No problem has been had with this resistance, and it could probably be made even higher.

The POD in the receiver has not been used since propo throttle was added; when either transmitter throttle button is depressed the MC servo drives to extreme low and the POD pot should be set to prevent the relay from operating, or the relay may be blocked open.

Waterproof switch cover: Seen on the float-equipped plane of Joe Roslyn (35 McLean St., Red Bank, N.J. 07701), is this simple arrangement. Ordinary toggle switch turns on plane equipment; top portion of a plastic pill bottle of appropriate size is sawed off, edge smoothed, and cemented to fuselage side. Joe found Aero-Gloss cement worked well on most bottles. In use, the flexible bottle cap is snapped in place after switch is operated, has been found entirely waterproof.

Escapement turn counter: How many escapement flyers have "run out of winds" and lost control? How many have become confused as to "which turn direction comes next," when using other than a compound style escapement? The gadget seen here could cure both problems, should be most helpful for a beginner. Basically, the idea from George Siposs (10462 Parliament Ave., Garden Grove, Calif. 92640) is to mount an escapement similar to that in your plane on the wooden frame, and use a rubber-band of the same length and size of rubber on this one. A switch operates this ground escapement every time you push the transmitter keying button, via an added switch on transmitter case side (latter switch and the strap over transmitter face should be adjusted so that both switches operate in unison). The same number of turns must be put on the ground escapement as on that in the model, of course. One point to remember: plane escapement is working the rudder against air pressure, so it will cease to function when turns get low before the ground escapement, which has no such load.

Aileron linkage adjuster: Simple arrangement allows Simon Dreese (Rt. 1, Box 48, Broadview, Mont. 59015) to change aileron setting at will, in his Montana Duster stunt plane. Light metal "U" has wire soldered to one side for linking to servo output.



At local meet, Don Downing of Dallas R/C won at AMA Scale Pylon, first Flying Scale and, with another plane, third Class C expert.

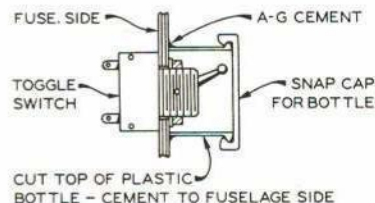
Small bolt and nut clamps the "U" to connector between the two sections of Nyrod; loosen bolt to shift the ailerons relative to servo position.

CLUBS AND MODELERS

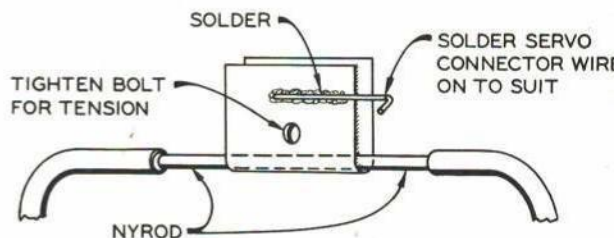
Symposium bursting seams! The 11th Annual DC/RC Symposium, May 19, brought such a crowd that the facilities at the Johns Hopkins Applied Physics Lab were seriously taxed. There were 260 paid admissions for the technical sessions. Some dozen manufacturers had displays at the APL Library, and there was also an interesting display of modern R/C planes and antique R/C equipment worked up by club members, to be featured both at the Symposium and other technical meetings held at the Labs.

As usual, the technical talks are available in book form (send \$2.50 to AMA for a copy). The book contains the following articles (not all presented at the meeting): Capacitive Feedback Servo (Phil Kraft); FAI 1.7 meter R/C Racers (Maynard Hill); Model Wankel Engine (Fred Militky of the German Graupner concern); Rubber-Powered R/C Models (Hewitt Phillips); Ultra-Light R/C Systems (H. G. McEntee); FAI World Record R/C Flying (Red Gunning); Large R/C Glider Development (Ray Smith); New R/C Gliders (Dale Willough-

Continued on page 69



To waterproof a toggle switch, put under a snap-cap plastic cup. Idea from J. Roslyn.



For making the aileron linkage in his stunt ship, Simon Dreese wanted an adjustable Nyrod system with a straight-through inner tube. Easy, reliable.

Getting Started in R/C

Further notes on nickel-cads. Storage, temperature effects, and charger precautions.

HOWARD MC ENTEE

NICKEL-CADMIUM cells are such a vital part of R/C these days—not only in the complex multi systems, but even in the simplest rudder control outfits—that we feel a few more comments upon them, for which there was no room last issue, might be helpful.

To take up where we left off, how about "charge retention?" This refers to how well your cells will hold a charge, once they have been fully charged but are not immediately put into use. Figures vary between manufacturers quite a bit. For one thing, the type of cell has considerable bearing on the matter. Sintered-plate cells can supply much more current under load than cells with other types of plates, but they will not hold a charge as well. One maker of sintered cells states his units will lose almost 30% of capacity the first month; non-sintered cells might lose only 10-12% of capacity in the same period. Generally, this is not of great import to modelers—it is so easy to charge your cells overnight before you need to use them. The cooler the cells are kept during storage, the less the capacity loss. To quote typical values, a fully charged cell of one make will still have 60% of capacity after storage at 113 degrees F for one month, 88% if stored at 70 degrees and 95% is stored at 40 degrees. The answer is obvious; if charge retention is important for your particular application, keep the cells cool. Put them in the refrigerator, which should run somewhere around 40 degrees.

What's the story if you want to fly all winter in cold climates? As far as storage or charge retention between flights, it's pretty good. Nickel-cads have top capacity at room temperature, and the makers use this temperature when capacity is specified. Capacity is still around 80% or so for most

cells we use at zero degrees F, at the ten-hour discharge rate. This drops more if the rate is increased, which is the case in many plane installations. Specifically, Sonotone data shows that a sub-C cell (1.2AH size) at 25A drain gives full 1.2AH capacity at 75 degrees F, and this drops to about 1.07AH capacity at this same load at zero degrees F. Same cell with load of 1A is shown as giving about 1.13AH at 75 degrees and .9AH at zero degrees. In other words, if you must fly in very cold weather, consider that your battery capacity is much reduced. Make less flights per charge or per day. If you insist on flying up a storm, then equip your R/C gear with two or more power supplies.

There is a modest capacity loss at temperatures higher than room temperature (about 70 degrees F), but not enough to worry about. However, prolonged operation at elevated temperatures (which might develop in a black painted fuselage on a bright sunny day!) will shorten battery life.

Perhaps we did not make it clear enough that cell voltage rises as a cell is charged; it can get up to around 1.45V for a fully charged cell (at the standard C/10 charge rate). This is while the cells are still on charge. When the charger is turned off, the no-load voltage will soon drop, eventually to around 1.35V. Then when you put a load on the cell, the voltage drops still more. With C/10 load, the discharge voltage averages around 1.25V. No matter what the load, when the voltage starts dropping rather rapidly, you should consider the cell discharged, and remove the load immediately. All voltages we have quoted are based upon use of an accurate voltmeter, of course. If your meter is of unknown accuracy, it can still be useful for comparative purposes.

Unlike lead-acid cells, nickel-cads may be stored in any state of charge or dis-

charge. It is probably wise to store them in a cool (or cold) place when they will not be used for a month or more. But warm them to room temperature before you try to charge them; we've heard cases of cells exploding when a modeler tried to charge them in a very cold area (as in an unheated garage during winter, after the cells had gotten thoroughly chilled). After long storage—six months or more—it would be smart to fully discharge the cells, then put them through one or two charge-discharge cycles before you put them into service. This will give you a chance to check their capacity and make sure they are ready for further use in your model or in the transmitter you use.

We have found that the chargers furnished with some R/C outfits do not put out enough current to fully charge a set of cells in the usual 14-16-hour charge period. This does no harm, but it helps to know just how much current a charger is putting into your cells. If at all possible, check the current when you first obtain a new outfit, and modify your charge time according to this current. The chargers which do not have a transformer (most of those built into transmitters are of this variety) deliver a practically constant current, whether the cells are fully charged or are discharged. On the other hand, chargers which do have a built-in transformer generally will put much higher current into cells that are discharged, than into those that are fully charged. And a note of caution: Transformerless chargers can be a shock or short-circuit hazard, since one side of the battery is hooked directly to the power line; keep all equipment containing such chargers, and hooked to them, away from grounds—water and gas pipes and the like, even damp floors; and do not touch such equipment and any possible grounds yourself. Such chargers are supposed to be insulated and isolated from the line to minimize the shock and short hazard, but don't push your luck!

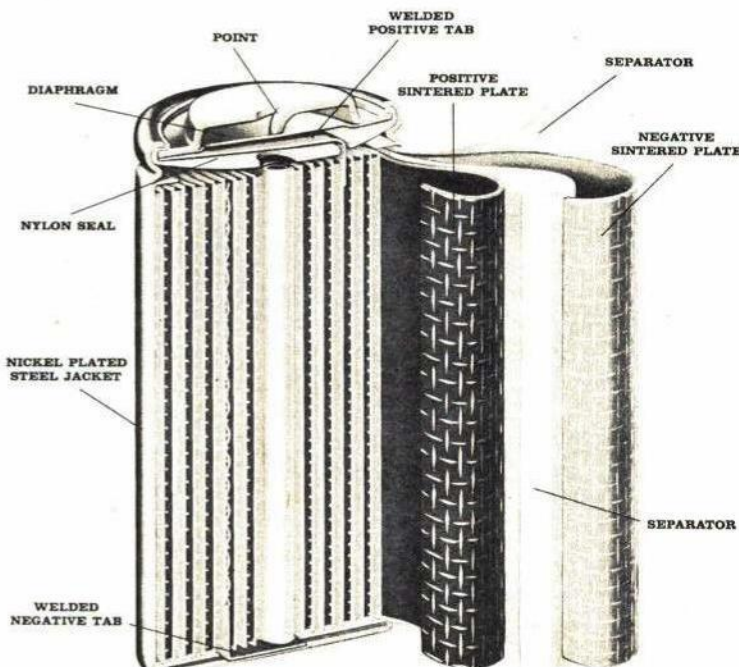
One last note. It is very damaging to solder directly to the case or ends of nickel-cad cells, simply because the heat can ruin or seriously harm them. It not only "boils" the moisture in the cell, but can ruin the seal, leading to leakage. If any soldering is required, try to obtain cells with solder tabs welded to them. Such tabs keep the worst of the heat from the cells themselves. Your best bet is to quickly tin both the connecting wire and the cell's solder tab. Then solder both of them together.



Sonotone Corporation.

These cells are commonly used in R/C. Those on the right are used in receiver packs and those on the left are often used as engine starting batteries. Capacity ranges from 500 mah to several amps.

The innards of a sintered cell reveal a densely packed unit. Higher amp/hour capacity is a function of increasing the square-inch area of positive and negative sintered-plate material.



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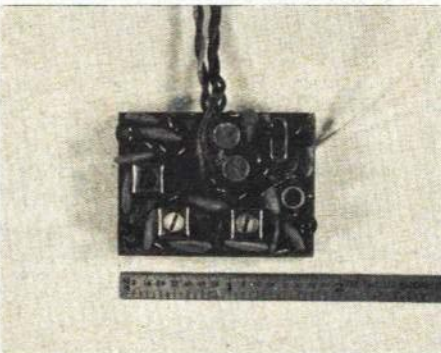
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ACE R/C

SERVES YOU FOR ANY R/C NEED
SERVING YOU SINCE 1953

NEW!



COMMANDER DE SUPERHET RECEIVER

This is the first superhet receiver to be produced by Ace R/C! And it is a first in many respects: Small—measures only $1\frac{1}{4} \times 1\frac{1}{2} \times \frac{1}{4}$ "; Light—weight is about .6 ounce; Relayless—but double-ended (DE) with 1 amp transistors in output for hookup direct to dual coil actuators; Adaptable—may be easily changed to single ended output for escapements or decoders; Low voltage—works reliably at maximum range on just 2.4 volts; Versatile—works with most any transmitter of from 400 to 1400 hz; Pulses—exceptionally fast!

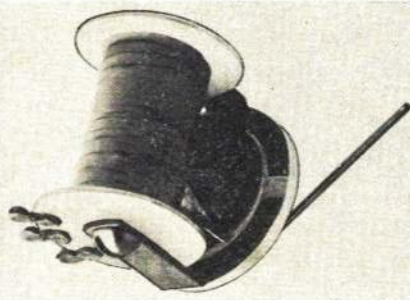
Manufactured by Ace exclusively under license agreements with designers—several circuit breakthroughs found only in this unit.

Works with only minor change on Dickerson-Skyhawk GG Conversion kit. Uses highest grade miniature components—completely assembled, tested and guaranteed.

Not only is the Commander the smallest and lightest superhet available today—it is also the lowest priced at this special introductory offer.

Available on 26.995, 27.045, 27.095, 27.145 and 27.195 mHz. Be sure to specify.

No. 12K1—Commander DE SH, Rx, Assembled\$26.50



ADAMS SINGLE AND TWIN ACTUATORS

Adams Baby Actuator—smallest dual coil made. Only $\frac{1}{2}$ oz. Only\$6.95

Other Adams Actuators in low voltage coils in both single and twin magnet assemblies in stock. LV Single \$6.95. LV Twin \$9.95. Improved!

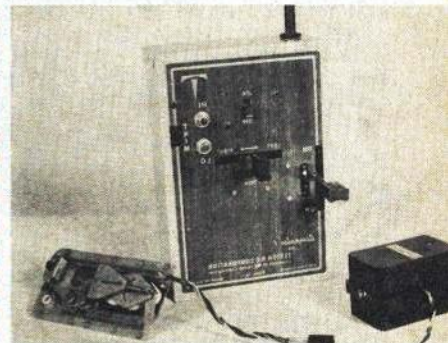
ACE

Accessories Components Equipment

Whether it's Tuffline fuel tubing, or a 2/56 x 1/8 machine screw, or an item from almost any major manufacturer, the chances are good that Ace has it in one of the most comprehensive lines of Accessories, Components or Equipment available anywhere. Our own designer-approved radio kits are added to by lines from E-K, Bonner, Lanier, Midwest, Bee Line, SPL, Coverite, Jensen, Rocket City, Su-Pr-Line, Sterling, MRO, Enya and Webra, etc., etc., etc.

NEW!

DICKERSON—TESTOR CONVERSION KITS



Although intended primarily to convert the Testor Skyhawk to GG operation for rudder and elevator (motor if desired), the kits below are among the most versatile ever offered.

The plane conversion kit will give GG for the Skyhawk, but also may be adapted for airplane up to .19 power! May also be used with almost any other type of receiver—relay or relayless.

RECEIVER CONVERSION KIT

The Dickerson conversion kit for the Skyhawk receiver utilizes some of the components already in the unit, but adds a switching decoder to convert signals for a Rand LR3. Kit consists of PC board for housing switcher, LR3, switch and charging jack on a $2\frac{1}{4} \times 4\frac{1}{4}$ " deck. Contains all transistors and resistors. LR3, connector, switch and charging jack are not supplied.

No. 15K53—Dickerson Skyhawk Rx Conversion Kit, \$11.50

TRANSMITTER CONVERSION KIT

While foregoing may be used with any GG transmitter, this kit makes the conversion of the Testor Simpulse Tx into a two stick GG transmitter easy and simple. Only hand tools required. Basic kit contains all pots, brackets, extra stick assembly (SPST push switches for motor available as extras.)

No. 11K5—Dickerson-Testor GG Tx Conversion Kit, \$11.50

No. 30K3—SPST push switch for motor control (2 required) each, \$4.5

TESTOR RX CONVERSION PC BASE

Printed Circuit base for plane and receiver conversion is available separately for the scratch builder.

No. 28K75—Dickerson-Testor Rx Board, \$3.25

NEW!

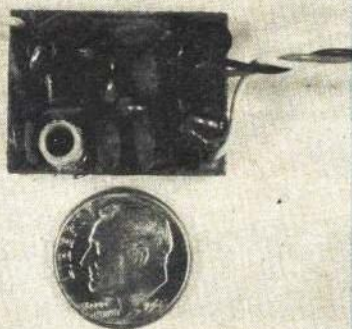
TRANSMITTER SIGNAL STRENGTH METER KIT

Would you like to add a signal strength meter to your Jansson or Commander or almost any R/C transmitter that does not have one built in? This simple Ace kit, while designed primarily for the Jansson transmitter, can easily be adapted to any transmitter that allows just a bit of room in case.

The S/S Meter Kit monitors the RF going into your antenna and is reliable indication of the signal you have from your transmitter.

Simple to install! All components mount on meter except for connections to antenna and case. Kit contains all components, including instructions.

No. 22K17—Transmitter S/S Meter Kit.....\$4.95



NEW! ALBIN MICRO RECEIVER KIT

Would you believe a superregen receiver weighing just .2 oz? This Bill Albin kit design measures $\frac{1}{16} \times \frac{1}{16}$ inches, uses silicon transistors, $\frac{1}{8}$ watt resistors, micro mini caps, drilled $\frac{1}{16}$ inch PC base. Single ended output for actuators of Bentert type. While it is superregen, this kit will be used in applications where this is not too important. Makes indoor R/C a distinct possibility!

Recommended for those with some building experience, since small size makes care necessary. Not complicated, however.

No. 12K60—Albin Micro Receiver Kit, \$12.95

NEW! AOSK II KIT

A switcher for the Albin .2 oz. receiver and the Adams Baby so you can use one set of batteries and don't have to use a spring for return!

Designed to fit on the actuator itself, this Add On Switcher Kit II is micro miniature. Designed for the Albin receiver only.

Complete kit contains $\frac{1}{2}$ etched and drilled PC base, $\frac{1}{8}$ watt resistors, tantalum cap, two Motorola transistors and full instructions. A gem of micro miniaturization using discreet components.

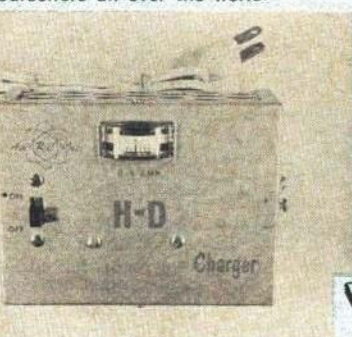
No. 15K55—AOSK II Kit.....\$3.25

DECODER KITS

Ace has the American Modeler featured Simpro III kits, which allow you to go to decoder action for GG with two actuators for less wiggle, more power. Also kits for the Rand Switchers and Decoders. Full details in our 1968 catalog. (NOTE: Decoder systems require faster pulse rate than ordinary GG systems.)

COMING SOON!—Don Dickerson's Dual Dither low cost all transistor decoder for use with Rand actuators; a Micro Decoder Center which is all solid state including Adams actuators for completely inter-action-free flying. Also the Radio Control Modeler Decoder which will be featured soon will be available in kit from Ace.

Watch our ads for details—or better yet get on our mailing list by sending us an order! Free catalog supplements AND R/C Data—acclaimed by do-it-yourselfers all over the world.



NEW! H-D CHARGER

The H D refers to Heavy Duty—and that's exactly what this brute is—capable of charging your larger nickel cads and wet cells. For rates of 100 ma up to 1 amp. Has meter for monitoring and for setting of charge rate. Not dual purpose, but made for those husky charging jobs where you need the power. For nickel cadmiums from 1.2 to 10 ampere size. Will also series charge transmitter battery packages. Adjustable internal resistor sets rate.

Uses all new components double the ratings necessary to assure long life. Housed in aluminum case, with ventilated back, and rubber feet. A deluxe design. Assembled, tested, guaranteed. No. 34K1—H-D Charger, assembled.....\$13.95

SOON!

COMING!

SOON!

Proportional Rudder + Package

READY TO INSTALL THOROUGHLY FLIGHT PROVEN FOR THE BEGINNER

ENGINE MAY BE ADDED ADAPTABLE FOR ELEVATOR

SOLID STATE MICRO-ELECTRONICS

SOON

Watch This Space

SOON!

PROVEN WINNER!

ACE VARI-CHARGER

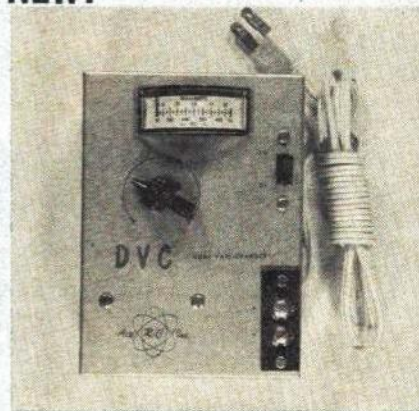


IN KIT FORM OR ASSEMBLED

Will charge nickel cadmium batteries—20 mils to 150 mils. Capable of charging up to 12 volt packs. Indexed dial & simple chart for correct milliamp reading for charging different size battery packs. Completely isolated from AC line supply. An extra deluxe item. New transformer of highest quality. UL approved line cord. On-off switch. 500 milliamp diode. Full instructions.

No. 34K21—Ace Vari-Charger assembled\$8.95
No. 34K22—Ace Vari-Charger Kit 7.50

NEW!



DUAL VARI-CHARGER

This is the one you've asked for—A dual rate all-purpose charger! Has two ranges to cover your every nickel cad battery charging need. Completely metered in BOTH ranges so that you know how much you are putting into your batteries, and BOTH ranges are adjustable!

Heavy duty transformer for complete isolation and shock hazard protection. All components used are twice required ratings to insure long and trouble-free life.

Dual range meter has LO range of from 0 to 100 milliamperes; HI range is from 0 to 1 ampere. LO range is completely variable by external knob from 0 to 100 ma; HI is internally adjustable from 100 ma to 1 ampere for the huskiest batteries.

UL approved line cord, ventilated metal case for safe heat dissipation, HI-LO switch, edge reading US made meter, screw terminal output. Completely wired, tested and guaranteed.

No. 34K2—Dual Vari-Charger (Assembled) \$17.95

MORE THAN JUST A CATALOG FOR 1968!

Our 1968 version of the Ace R/C Catalog is also a handbook—has an R/C Glossary; How To Solder; Pulse Proportional Control for Rudder and GG, including Decoders; Schematic Symbols; Batteries and Charging; Resistor Color Code, Transistor Chart; Electric Motor Spec Chart and many more Data Sheets you will refer to again and again. Three holes punched, $8\frac{1}{2} \times 11$ in size, it is designed to be added to! Will fit special Ace Binder, for permanently keeping any of your R/C instruction as well... In addition it lists all the latest Ace R/C Products and thousands of other R/C items and R/C accessories made by other manufacturers all over the world... Cost is only \$1.00. BUT this is refundable on your first order! So actually the catalog costs you nothing. Your order also places your name on the Ace mailing list to receive regular additional R/C Data info, and newsletters... The Ace Handbook-Catalog is a must for the tinkerer, the Sunday and the sport flyer. We have served the R/C field since 1953... Send your catalog buck on a round trip today. You can't lose!



*Ace Virgin Vinyl Binder. For the protection of your Ace Catalog R/C instructions, data, news letters and much more! Only \$2.00

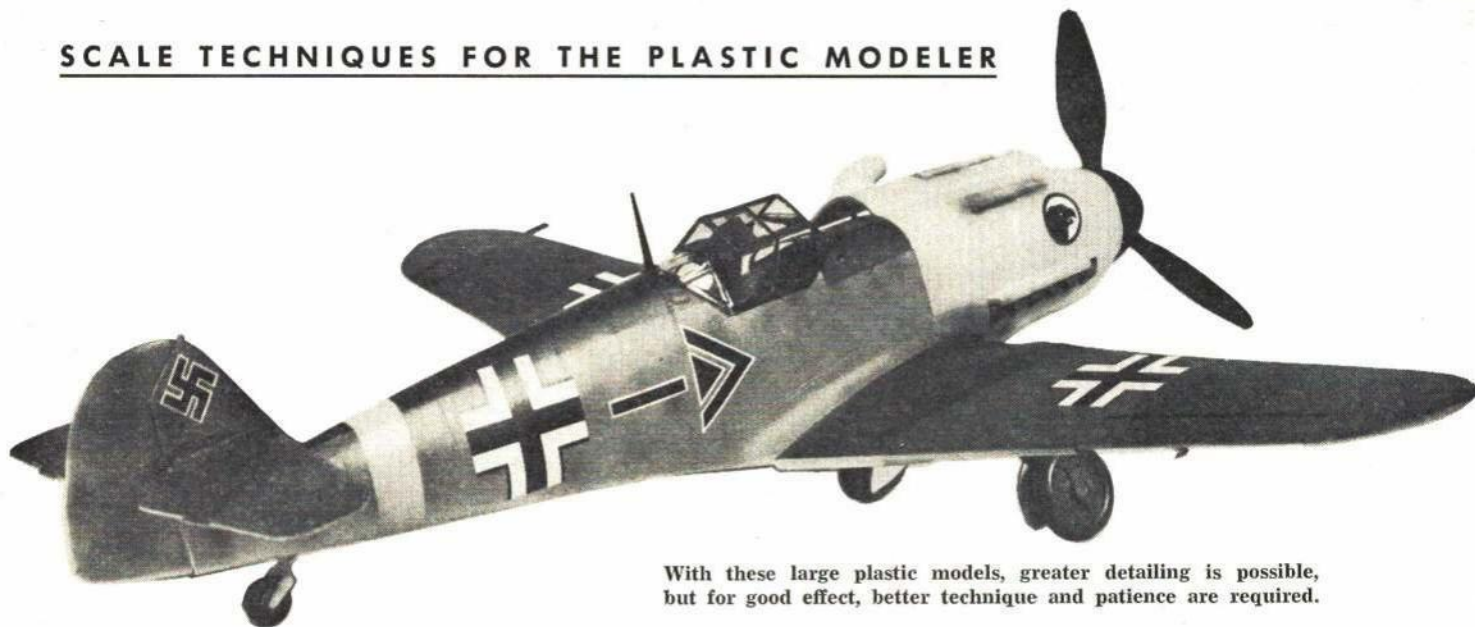
Important: For overseas delivery on catalog or Binder please add 50¢ for additional postage.

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City _____ State _____ Zip _____

QUANTITY	STOCK #	NAME OF ITEM	PRICE	TOTAL

Guaranteed delivery anywhere. Orders over \$3.00 sent prepaid. Orders under \$3.00 please add 50¢ for postage and packing.



With these large plastic models, greater detailing is possible, but for good effect, better technique and patience are required.

Willie's Fabulous Bf 109F-2

This month's colorful model is a one-foot span WW-II fighter, featuring a fully detailed engine, cowling, and cockpit.

JOHN N. TOWNSLEY

THIS model is a $\frac{3}{8}$ " scale Revell Bf 109F-2, one of Revell's new king-size series (Kit No. H-284—retail \$2).

The color scheme is for the aircraft flown by Oberst Werner Molders (KDORE, JG-51) during the November, 1941 Eastern front campaign. Undersurfaces: pale blue (almost white), wing tips yellow. Upper-surfaces: two-tone green (med. and dk. green) camouflage pattern. Top decking of fuselage is camouflaged in two-tone green; fuselage sides and rudder are medium gray,

with medium green mottle. Yellow band encircles entire fuselage. Spinner and propeller blades: black. Engine block and engine area: dark gray; mounts: natural metal color or dark gray; wheel wells: dark gray. Engine exhausts: rusty brown. Entire cowling is yellow; instrument panel dark gray with black dials.

Dimensions: Wingspan: 32' 6.5", length: 29' 8". **Weights:** empty: 4,430 lbs.; max. loaded, 6,054 lbs. **Powerplant:** One 1,300 Diamler-Benz DB 601 liquid-cooled inverted Vee, 12-cylinder. **Armament:** One 15mm MG 151 nose-mounted cannon, 200 rounds. Two 7.9mm MG 17 machine guns,

500 RPG. **Performance:** maximum speed: 373 mph at 19,700 ft.; service ceiling, 37,000 ft.; range, 440 miles.

Preliminary procedures: Check for broken or missing parts; make a "dry run" of parts assembly to see if parts fit well. Next, dunk all parts in warm detergent suds (I have found that 'Trend' seems to work most satisfactorily for this purpose, as it easily floats off the mold release).

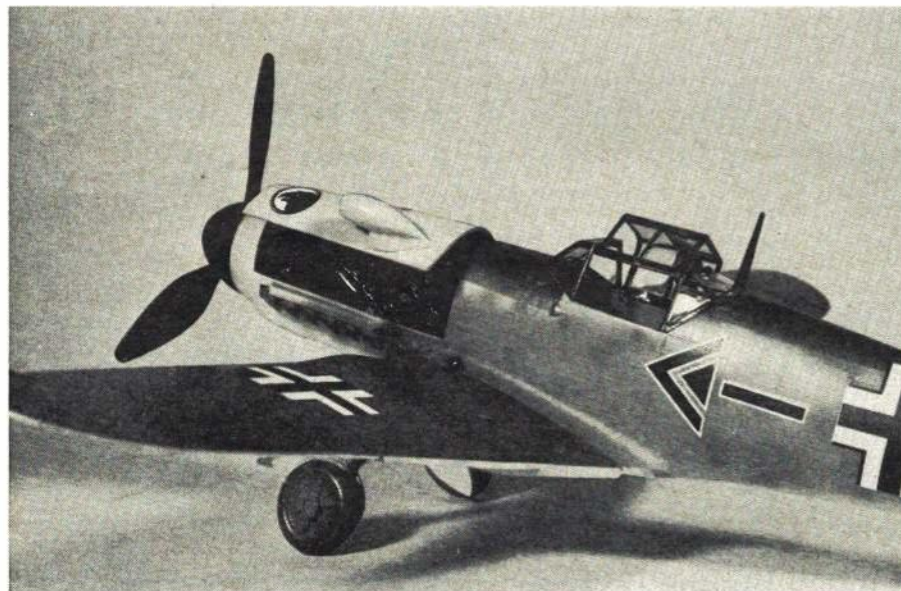
Assemble all research material you will require for photographic reference. Check on your paint supply to make sure you have correct colors and of sufficient quantity to paint a model of this size; roughly four times as much is required. If mixing colors, be sure to mix enough.

Lest you think that king-size kits are not a collector's scale, or that they will not reflect your skill—don't you believe it! Try building one, then pass judgment. I can assure you that this scale will require your very best efforts. Nothing can be faked, as is possible with a 1/72nd scale model. Sloppy jobs are out—all detailing must be done carefully. Selection and application of paint are very important, as is the finish. Nothing can be hurriedly done as every mistake is all too obvious.

On the credit side of the ledger, model building in this scale is a challenge and cannot help but improve your technique. You will also be aware that although more difficult, the king-size allows a larger working area in which to accomplish better workmanship.

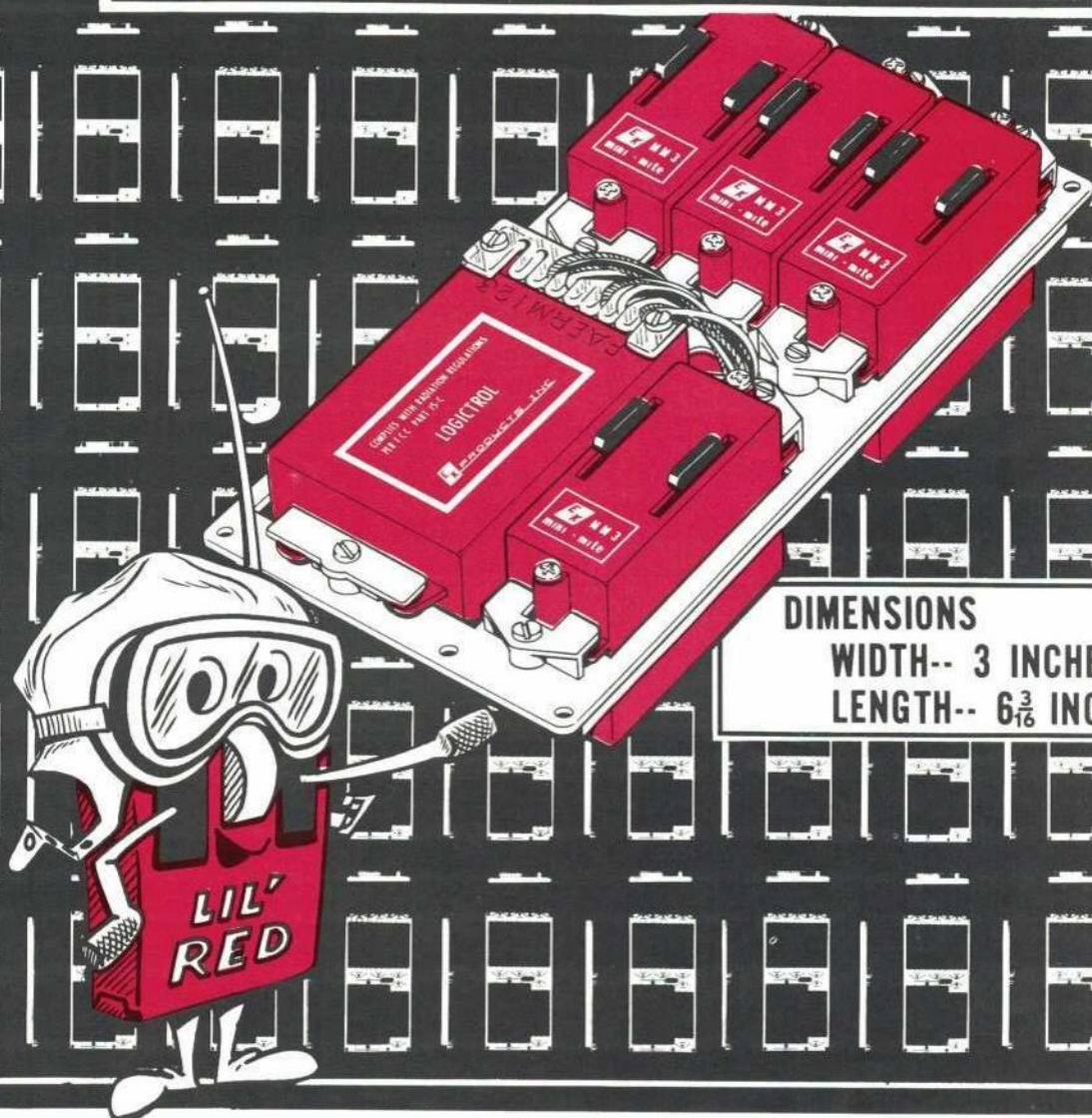
Tools required: 1) Jeweler's saw, with assorted blades; 2) Zona razor saw; 3) Set of assorted files (jeweler's); 4) Assorted twist drills and pin-vise (drill numbers 57 through 80); 5) Flexible small spatula or piece of spring steel; 6) Sharp pocket-knife or X-acto knife with #11 blade; 7) Dividers; 8) Scissors; 9) Box of single-edge razor blades; 10) Binder clips (#16); 11) Tweezers (large); 12) Rubber bands

Continued on page 55



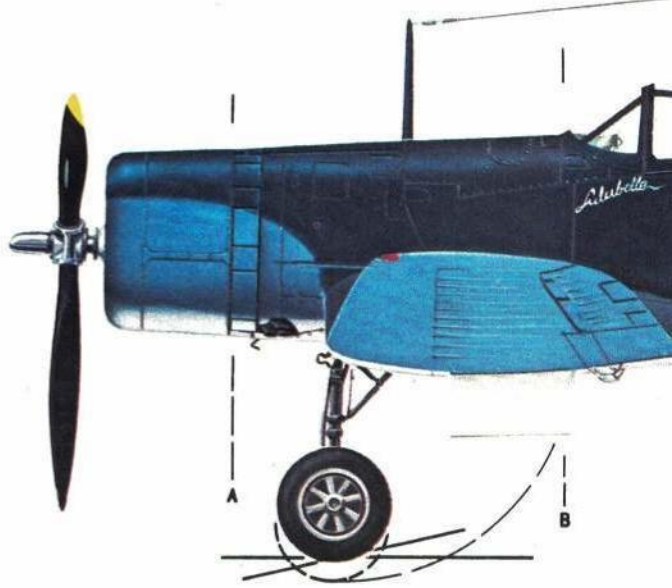
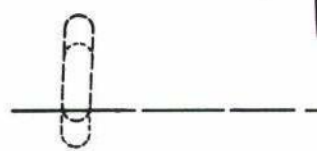
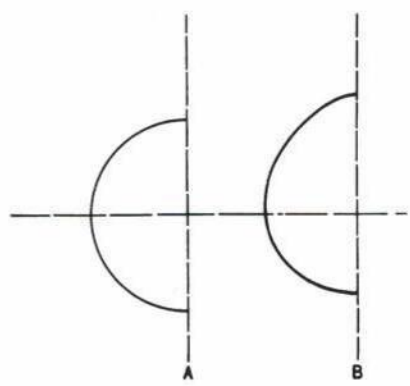
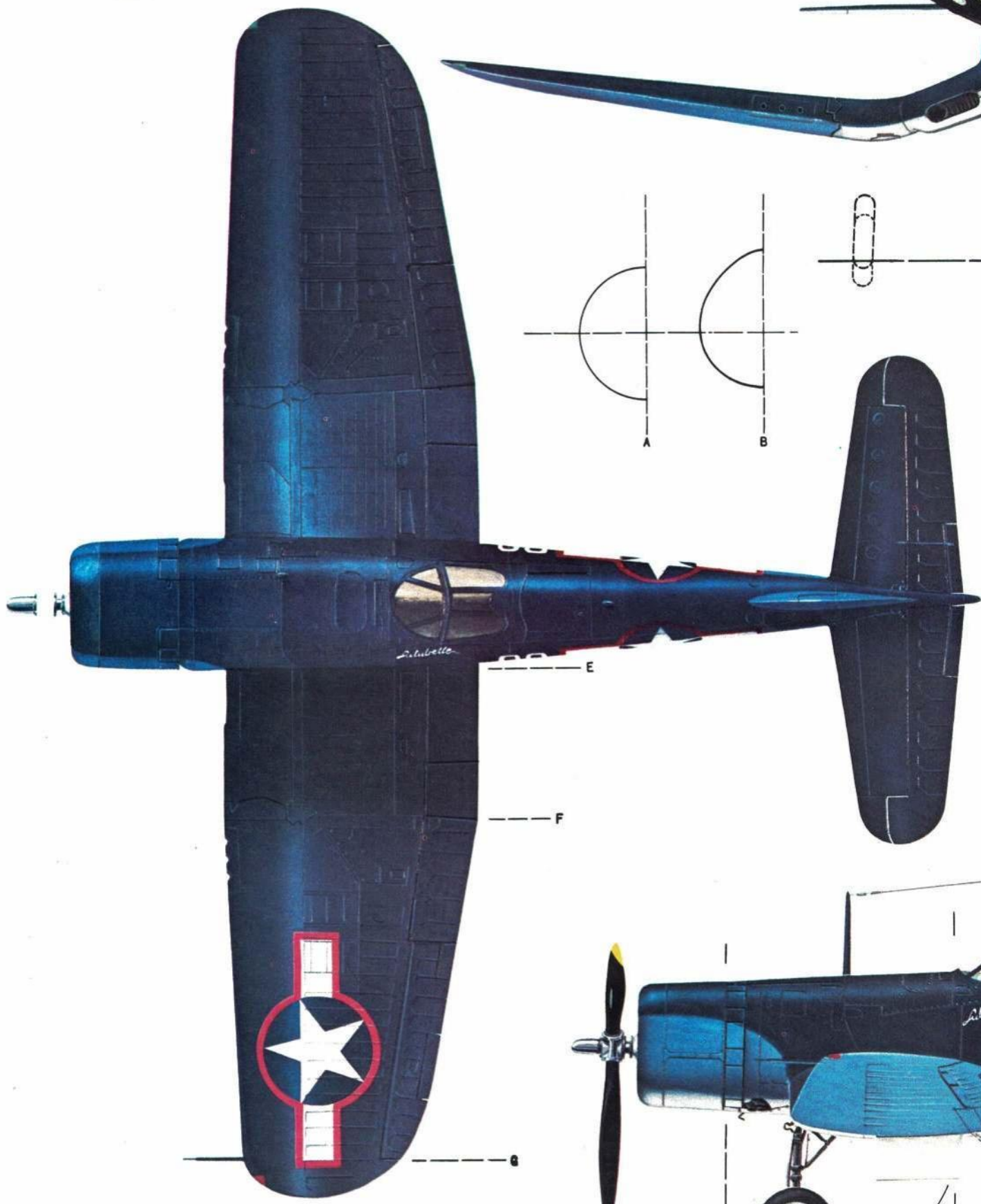
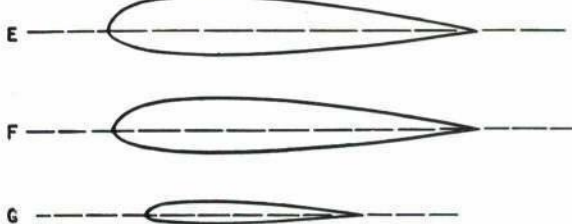
Taking advantage of size, Townsley has modified the kit by opening the cowl and canopy to show interior details. Scrap sheet plastic was added to properly line the wheel wells.

UNI-MOUNT



DIMENSIONS
WIDTH-- 3 INCHES
LENGTH-- 6 $\frac{3}{16}$ INCHES

EK PRODUCTS INC.
3233 W. EULESS BLVD. HURST, TEXAS 76053 (817) 283-4092



American Aircraft Modeler album of all-time favorites:

CHANCE VOUGHT F4U-1 CORSAIR

Depicting mount flown by Lt. Col. Ace "Pappy" Boyington (28 kills) VMF-124 (Black Sheep Squadron)

Power plant: One Pratt & Whitney 18-cylinder twin-row R-2800-8(W) Twin Wasp B. 2000 h.p. at 2700 rpm

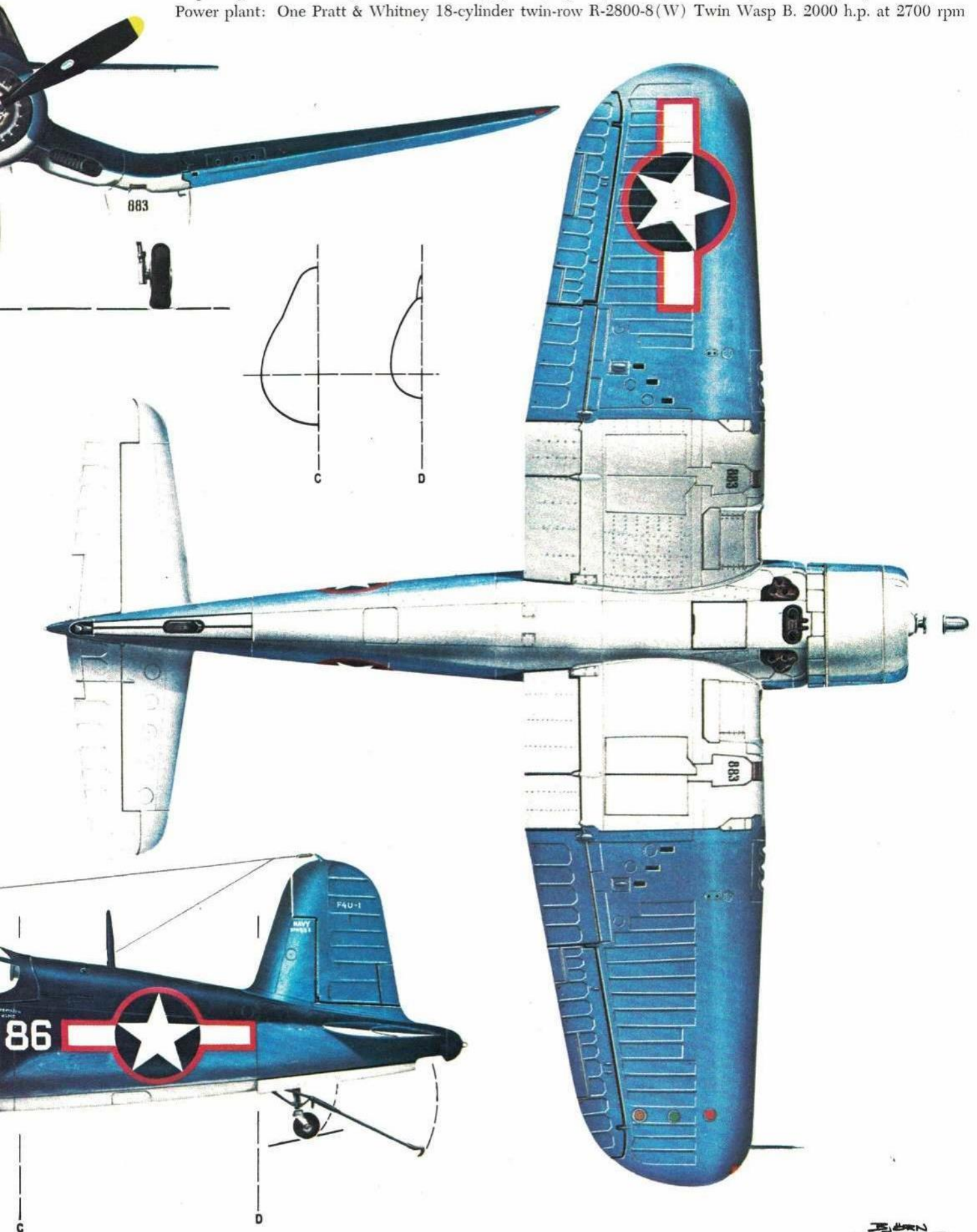
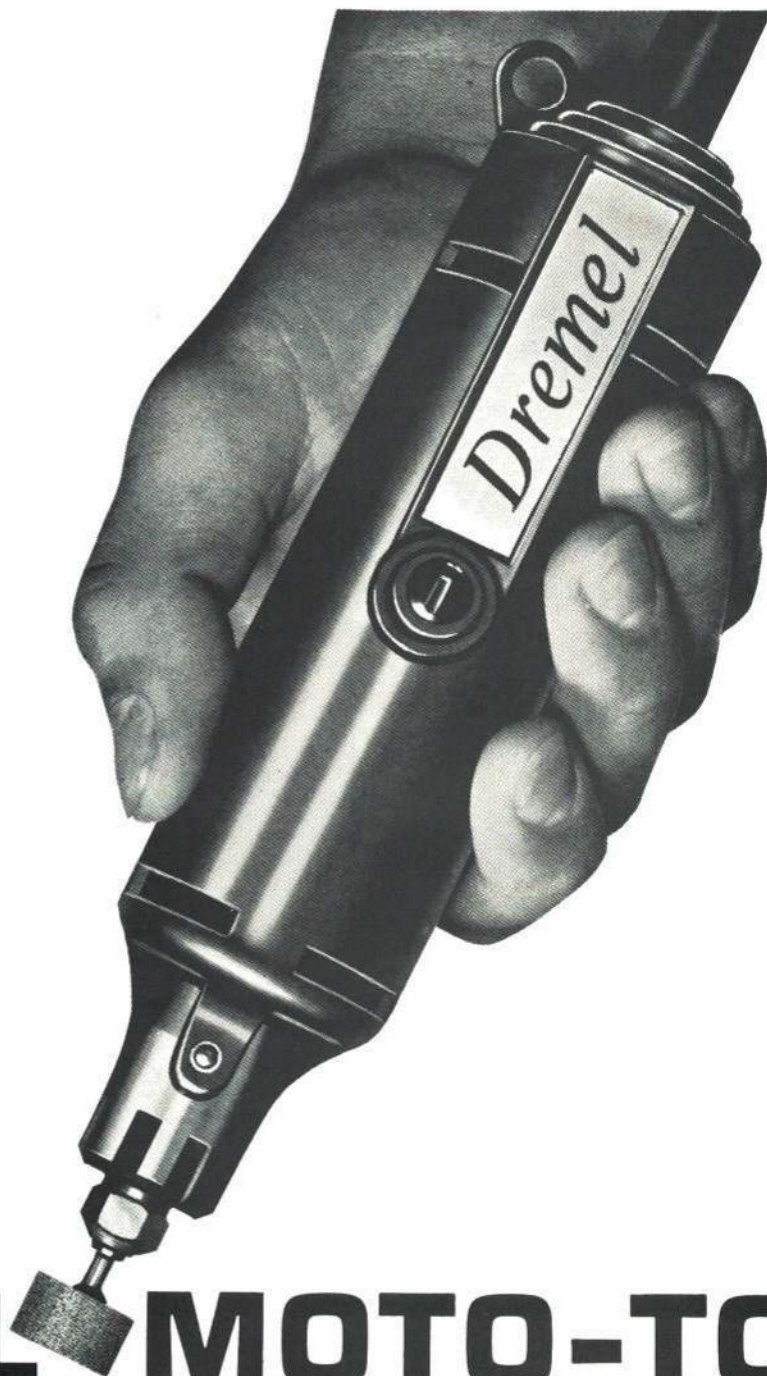


Illustration by
KATY KATY

If you're really
serious about
model building,
pick up a
super-compact

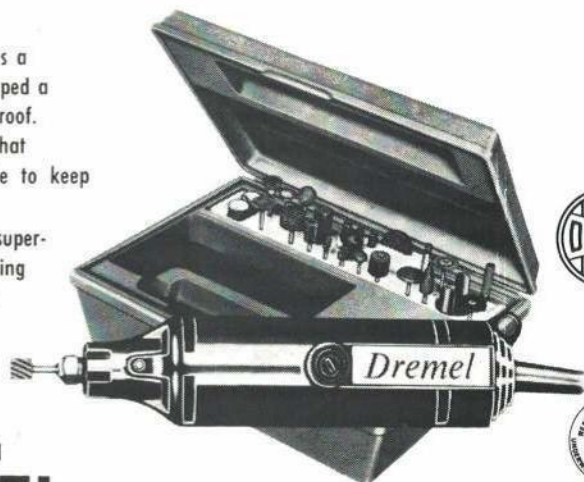


NEW DREMEL MOTO-TOOL

If you're after professional-looking results, a hand tool is a help, but a Dremel Moto-Tool is a must. It packs greater speed, more precision, and more fun. Especially since we have developed a whole new line of Moto-Tools that belt out enough torque to make them virtually stall-proof. This new power comes from a space-age ceramic magnet that helped our engineers design what they call a "constant-torque" permanent magnet motor. To you, this means the muscle to keep churning away at top speed, even when you're really bearing down.

Each of our three models winds up 30,000 RPM and has a tough Lexan housing. The super-compact No. 260 weighs a scant 9 oz., while the larger No. 270 and heavy-duty ball-bearing No. 280 weigh only 11 oz. All three models are also available in kit form — the molded plastic storage case holds 34 accessories for grinding, drilling, polishing, carving, deburring, and sanding. Moto-Tool prices start at \$22.95, kits from \$32.95. So get professional — ask your hobby or hardware dealer for a "prove-it-to-me" demonstration.

Write us for your free copy of the complete Dremel Tool catalog. You'll also want to send us \$1.45 for a copy of our new 160-page Dremel Handbook of Hobbies, Crafts and Projects. It's packed with craft projects and how-to tips.



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Model Trains, Planes, Ships, Cars, R/C, Everything!

MAIL ORDERS
PROMPTLY FILLED



FAMOUS PLANES KITS DESIGNED FOR R/C

Contain selected balsa and hardwood parts, precisely cut to size and shape. Heavy gauge aluminum or fiber glass cowling and wheel pants supplied where required. Complete hardware (less wheels and R/C fittings) and full size plans included.



SE5 WWI FIGHTER \$54.95
WINGSPAN 54", 49 to .61 ENGINES



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WINGSPAN 54", 49 to .61 ENGINES



CHIPMUNK Single Wing \$64.95
WINGSPAN 62", 49 to .61 ENGINES



WWI SOPWITH CAMEL \$54.95
WINGSPAN 54", 49 to .61 ENGINES



COVERING MATERIALS

SILK—\$1.95 Per Yard
White/Red/Orange/Yellow/Sky Blue/Gold
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4 yds Red/Orange/Gold/Sky Blue
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Blk-White, Blk-Red, Red-White
POLK-A-DOT \$2.00 yd.

White & Blue, Red & Black
PURE SILK (Med. Wgt.) \$1.50 yd.

8 1/2 x 11" White, Red, Yellow, Blue
SILRAY "Lite-Flite" \$1.25 yd.

SILRAY "Super-Flite" \$1.25 yd.

White, Red, Yellow, Orange, Blue
COVERING PAPERS

RAYSPAN (21" x 30") 15¢

White, Red, Yellow, Orange, Green
BAMBOO (21" x 30") 15¢

White, Red, Yellow, Orange, Blue, Black
JAP. TISSUE (21 x 32) White 8¢

SPEED BOAT KITS DESIGNED FOR R/C

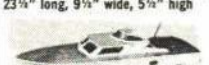
Complete with plated fittings. Kits contain seasoned hardwood, pre-fabricated for accurate, fast assembly. Decks are aircraft grade plywood with hatches and other openings, ready cut out. Convertible cabin changes model from cabin cruiser to run-about. All necessary fittings (except R/C related parts) shaft, stuffing box, engine muffler, water pick-up rudder, coupling, engine mount, fly wheel, fuel tank with tubing, screws, nuts, bolts, instructions, etc. Special "Deep-V" hull design for high speed in straight away and extra stability and control in tight turns. Engine powered or by battery operated electric motors.



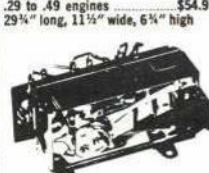
"TARPON" for .60 engine \$67.95
37 1/4" long, 14 1/4" wide, 7 1/4" high



"DOLPHIN" for .15 to .19 engines \$34.95
23 1/4" long, 9 1/4" wide, 5 1/4" high



"MARLIN" for .29 to .49 engines \$54.95
29 1/4" long, 11 1/4" wide, 6 1/4" high



ARISTO-MATIC MARK II BOAT ACTUATOR \$13.95

Self-contained low drain electric motor. Special integral switching gives TWO channel operation from low cost single-channel receivers. Features: Electrical Switching Action—forward, stop, reverse, stop. / Mechanical Directional Control — left, neutral, right, neutral. / Operates on 3-6 volts.



.49 MERCO GAS ENGINES

20% OFF

MK11 R/C SINGLE PLUG HEAD

MK11 R/C TWIN PLUG HEAD

REG. \$39.95—SALE \$31.95

MINIATURE JETEX

JET PROPULSION ENGINES

Model Power for Aircraft, Helicopters, Racing Cars, Speed Boats.



SCORPION 600 \$4.00. For contest models. Engine thrust 4 ozs. Duration 7-9 secs. Wgt. 1-9/16 ozs. Lgt. 2 1/4". Dia. 1 1/4".



PAY-LOADER 150 \$2.00. Engine thrust 1 1/2 ozs. Duration 7 sec. Wgt. 15/16 oz. Lgt. 3-1/16". Dia. 7/8".



ROCKET HT 50 \$1.50. For space ships and missiles. Engine thrust 4 ozs. Duration 4-5 sec. Wgt. 3/4 oz. Lgt. 1 3/4". Dia. 7/8".



50 HELL-CAT \$1.00. Engine thrust 3/4 - 7/8 oz. Duration 14 sec. Wgt. 5/16 oz. Lgt. 1 1/4". Dia. 3/4".

ENGINE AUGMENTER TUBES

to increase engine thrust:

No. 50 @ 70¢

No. 150-600 @ \$1.50.

JETEX FUEL PELLETS

50-10 @ 60¢, 50-20 @ \$1.00,

50-20 HT @ \$1.50, 150-10 @ \$1.00,

150-20 @ \$1.50, 600-10 @ \$2.00.

GRAUPNER GLIDER KITS

DESIGNED FOR "JETEX" POWER

"PINTO"—Wingspan 16 1/2" Wgt. 7 1/4 ozs.



"SULPHE" Wingspan 25 1/4" Wgt. 10 1/2 ozs. \$4.00 ea.

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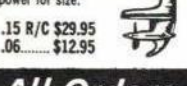
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COUNTDOWN

Polish Boost-Gliders

Designs depart from usual U.S. configurations. They're good too — this one beat us at Dubnica in 1966.

Jaronczyk shows three versions of his model for different weather conditions. Unlike most American boost-glider designs, his models do not eject power-pod at burn-out.

G. HARRY STINE

Polish-Boost-Gliders

EASTERN Europe has been a hot-bed of model rocket activity for years. Although the adoption of American techniques created a jump in interest, model rocketry in Poland has been a going thing probably as long as anywhere else in the world. The Poles have been holding their meet at Krakow for more than five years, and Pawel Elsztein of Warsaw has the distinction of authoring the first handbook of model rocketry published anywhere.

As the American model rocket team learned in Dubnica, Czechoslovakia two years ago, the Eastern European modelers are tough competitors in spite of the fact that we Americans have more and better balsa, glues, and paint.

The Poles took up B/G with gusto along with the Czechs. The Poles seem ready, willing, and able to try almost any configuration. In contrast to some of the wild and woolly B/G design attempts seen in the USA, the Poles apparently have a stronger background in model aerodynamics. This is probably because of the fact that Polish rocket modelers tend to be much older than American modrockers. The average age of an American model rocketeer is about 13.6 years, and most USA rocket types have not had much experience in making and flying model aeroplanes and, in fact, tend to look down their noses at flying machines when they should be eagerly trying to find out how the airplane types do it. In Poland, because of the state-operation of all modeling clubs, a young man doesn't get his hands on a model rocket engine until he has proven himself to be a good aeromodeler. I don't know whether this is good or bad, but I rather prefer our USA free-wheeling approach to modeling as an individualistic hobby.

But the Polish B/G designs are good. Furthermore, they show some interesting

variations and departures from the usual American B/G design with its basic hand-launched glider configuration.

Consider the subject of our plan this month, the FI 22 design by J. Jaronczyk of Poland. This model was flown in competition at Dubnica, May, 1966, and was the top-scoring Polish B/G with a flight time of 99 seconds, placing fifth in the category. It aced-out the best USA B/G time of 90 seconds turned in by Gleda Estes.

The FI 22 design is interesting because of its very low aspect ratio (ratio of span to average wing chord) of 2.94. Most B/G designs don't look like competition types at all unless they've got an AR of 5 or better, but the FI 22 with its stubby little wings and a wing area exactly the same as an Astron Falcon is probably a very good design for flying in windy, gusty weather. The Polish FI 22 did outperform everything but Sky Slash types and Pavel Bares low-AR elliptical winger at Dubnica under some of the worst flying weather ever encountered!

Jaronczyk had four variations of the FI 22 at Dubnica with varying amounts of sweep in the wing panels, as is evidenced from the photo. The FI 22 shown in the plans is the one he flew at Dubnica; it appeared in plan form in the Czech magazine, *Modelar*, in June, 1967.

The original FI 22 used simple engine ejection to shift the CG, but this is no longer permitted under our new rule book, or FAI rules, either! So I have therefore modified the FI 22 design for a streamer-recovered powerpod. This makes it a longer, skinnier model on the launcher, but cleans it up no end for gliding.

The drawing's dimensions are in millimeters. The millimeter is so much handier to use because there are 25.4 of them in an inch. Anyway, model rocketry is now in the metric system, and the original *Modelar* plans were in the metric system, and Jaronczyk built the original model using metric system . . . so why not metric? The only concession to the English system is

in all of the balsa dimensions.

The fuselage should be made from hard, straight $\frac{1}{8} \times \frac{3}{8}$ " balsa. Note that it has its thinnest dimension in the pitch axis. A piece 383 millimeters long will do fine — that's $15\frac{5}{64}$ " long, so you see why millimeters are much easier to work with.

The wing panels are cut from $\frac{1}{8}$ " sheet balsa, sanded to an airfoil section. They are then glued to the side of the fuselage with 14 mm. of dihedral under each tip. This didn't seem to me to be enough dihedral, but that's what Jaronczyk used at Dubnica! Incidence should be carefully held at zero unless you want your hair parted at launch.

The stab is cut from $\frac{1}{16}$ " sheet balsa to a symmetrical airfoil, then glued to the bottom of the fuselage. Again, maintain a zero-degree incidence. In common with most B/G designs, the FI 22 is a zero-zero decalage design. The long rudder is also cut from $\frac{1}{16}$ " sheet and glued to the bottom of the fuselage.

The powerpod pylon height may seem to be too low, but again I matched the pylon height used by Jaronczyk, allowing for the greater diameter of the Krywald 22 mm.-diameter Polish engines he built his FI 22 for. The pod mounting arrangement is a refinement of one I used on the original Uni-Jet Unicorn back in early 1965. A block of balsa $\frac{1}{4} \times \frac{3}{8}$ " is cut 76 mm. long and a 45-degree angle cut on the back end of it is shown. It is then glued to the top of the front fuselage ahead of the wings.

The powerpod is made in the usual way with nose cone (pick your favorite shape), body tube, engine holder wire to keep the engine from blowing out at ejection, streamer recovery assembly (be sure to use about 36 square-inches of streamer), and launch lug. A piece of $\frac{1}{4} \times \frac{3}{8}$ " balsa cut to 45-degree angles as shown is glued to the tube. Two side pieces cut from $\frac{1}{16}$ " sheet balsa are glued to the side of this and to the tube.

The balsa side pieces slip down over the



Another similar Polish rocket design uses even more wing sweep and a lower span-chord ratio. They average nearly 90 seconds!

fuselage nose and hold the pod straight, while the two pieces—one on the fuselage and the other on the pod—cut to 45-degrees match up and lock the pod in place. The pod can come off the glider in an upward and backward direction.

How does the pod part company with

the glider? Hopefully, nice and clean when the ejection charge goes off after the engine has lofted the FI 22 to a respectable altitude. When the ejection charge fires, it kicks the wadding, streamer assembly, and nose cone forward; the resulting reaction force shoves the pod to the rear, unlocking the 45-degree angle pieces and allowing aerodynamic drag to separate the pod from the glider.

Part of the problem of getting a powerpod like this to come off cleanly without having the streamer tangle with the glider, resulting in a "Red Baron" spin, is to pack wadding in tightly . . . but not too tightly. If you pack it in too tightly, the ejection charge will just gasp lightly and nothing will happen . . . except that your FI 22 will prang when it meets the ground.

The FI 22 should be trimmed-out like any other powerpod B/G. Trim for glide first without the pod, using hand launches. I don't guarantee it with the FI 22, but some of the other B/G designs will turn in better time with a hand-launch than they will with a boosted launch! Once the glide trim is established, mount a loaded powerpod and check to see that the boost CG is located at least at the leading edge of the wing. With the FI 22 design, you should have no trouble in this regard.

M. I. T. papers available: For you buffs who really dig it, including integral calculus, there are now available two of the erudite papers that were presented by members of the M. I. T. Model Rocket Society during their convention in late March.

George Caporaso's paper, "Solutions of the Differential Equations of Ballistic Flight Paths for Model Rockets," runs 16

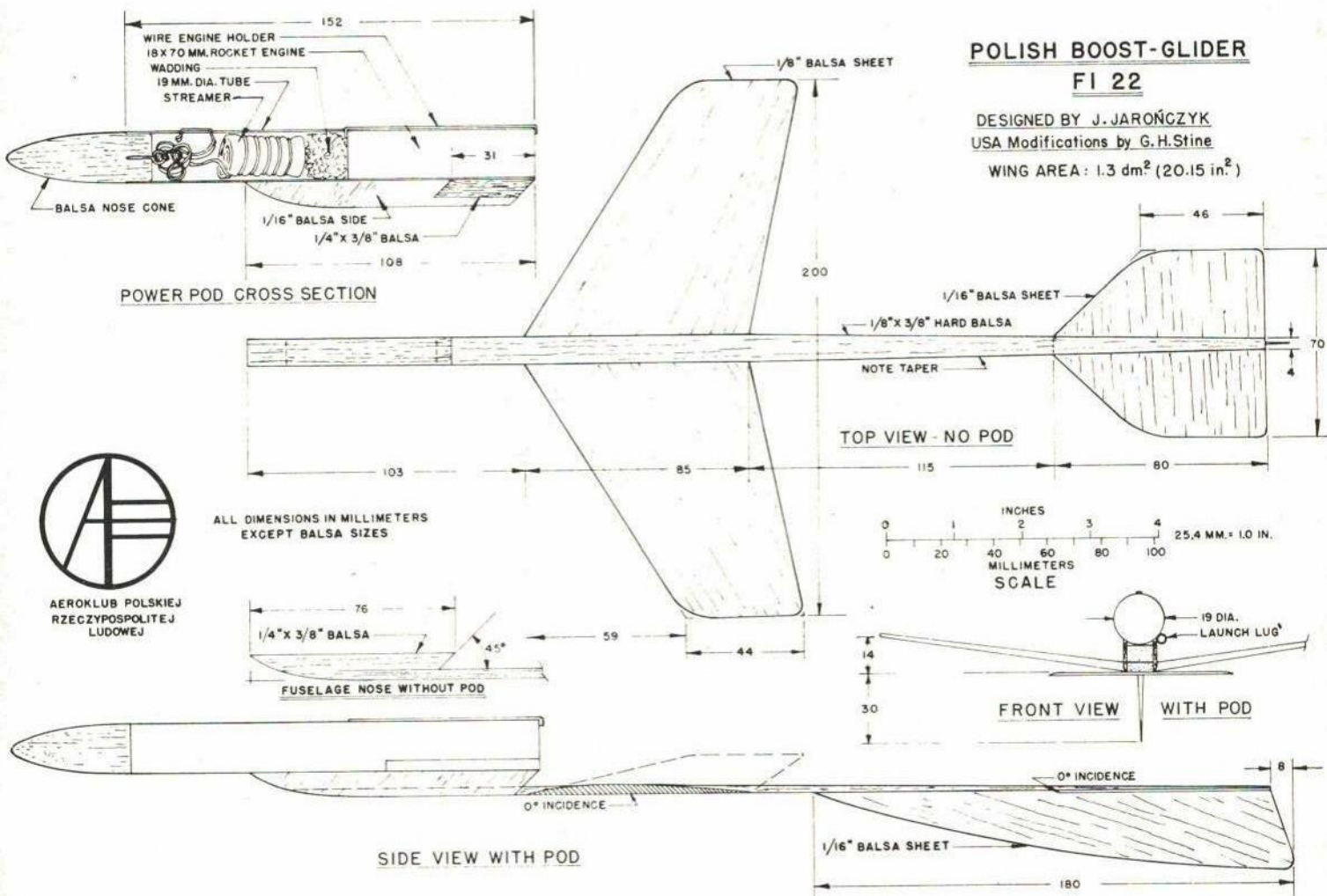


These two models by Furkai are quite out of the ordinary. One is a swing-wing rocket and the other is a fork-tailed bat-bird.

pages and is loaded with mathematics. It takes up where Malewicki leaves off and shows the results of some of the computer runs conducted by Caporaso at M. I. T.

The second paper is a gem that will probably become a classic in model rock-

Continued on page 49



POLISH BOOST-GLIDER FI 22

DESIGNED BY J. JARONCZYK
USA Modifications by G. H. Stine

WING AREA: 1.3 dm² (20.15 in.²)

WONDERING

WHICH R/C SYSTEM IS BEST FOR YOU



Perhaps this can help you to a better understanding of the systems available. Currently, there are three basic types, each with its own advantages and disadvantages.

I. DIGITAL PROPORTIONAL: This is the deluxe or ultimate of the three basic methods of controlling any type of model. There are a number sold (by others) which do an excellent job. If you are serious about RC and if parting with \$350-500 before you have a ready-to-operate model does not cause problems in your situation, go this way. With Digital Proportional you can operate multiple controls on small to large model airplanes, boats, or cars.

II. SINGLE CHANNEL: This is the simplest type control and the one with the most problems and limitations. However, if \$60-70 is your expenditure limit and you want to go RC—you can start this way and fly with rudder control only, or rudder and motor, and have a BALL. Super-regenerative receivers, which are least costly, can even be used in isolated areas which do not have radio interference conditions. These systems are fine on small to medium sized airplane models and with proper care and tinkering much fun flying can be accomplished.

III. SINGLE CHANNEL PULSE PROPORTIONAL: This is the middle cost area of RC systems. You can get into the air with a small to medium size model for \$130 or so and fly using rudder, elevator and motor control in a very satisfactory manner. These systems have simultaneous proportional control of rudder and elevator, which means a small control stick movement results in a small control surface movement on the model—a larger stick movement yields a larger surface movement, etc. The motor control temporarily disrupts the rudder and elevator information, but since the motor control is used only occasionally, this is not a serious disadvantage.

The control surfaces pulse or flutter back and forth continuously and you vary the average position of them to control the model. The pulse rate, even on the slow pulse rate systems, is fast enough so the model does not follow each individual pulse and it flies smoothly. This pulsing or flopping of the surfaces sometimes disturbs the people present but not the model which will take off, roll, loop, fly inverted, and land smoothly—pulsing surfaces or no. Of course the pulsing is a compromise, at best, and requires that the control surfaces and the pushrods connecting them to the output actuator be very free and smooth in operation. However, THE PULSING SAVES DOLLARS. The next RC step, which eliminates the pulsing, is Digital Proportional at much more than twice the cost.

We at Hallco have specialized in Pulse Proportional and have pioneered the complete system concept in this area. Hallco systems are competently engineered, durable, reliable, and the easiest to install. No electronic adjustments or soldering is required during installation. Don't let the open receiver construction worry you, these are RUGGED units—the glass-epoxy board is tough—you don't have to put ours in a case.

There are a number of systems available to fit your various requirements. All will fly small (36-50") and medium sized (50-60") models in a very effective manner. (The dual actuator systems will even operate large models such as a 6 1/2 lb. Aristo Cat powered with a .50 engine satisfactorily—I know, I fly one—Bill Hall.) Further, without obsoleting any of your initial investment even the simplest Hallco systems can be expanded to be the same as the more complex pulse proportional types, when and if you desire to do so.

There are Hallco single actuator systems with slow pulse rate called "Galloping Ghost," and Hallco dual actuator systems with fast pulse rate called "Steady Ghost," BUT THE IMPORTANT FACT IS THAT YOU OBTAIN MORE FLYING ENJOYMENT PER DOLLAR WITH PULSE PROPORTIONAL THAN ANY OTHER WAY.

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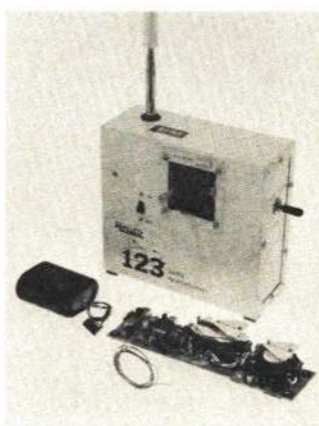
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INTERESTED IN JOINING A.M.A.? Over 22,000 did in 1967. Membership details may be had by requesting FREE BROCHURE from above address.

RC Scale Close to World Championship Status

Radio-controlled scale model competition is expected to be a feature at the 1969 RC World Championships in Germany. This is the first time ever for RC Scale to be recognized as a major international event—the FAI (Federation Aeronautique Internationale) approved the basic rules as official at the end of 1966, but the final rules language was not accepted until this year. Here, for the first time in a publication available to the public in the United States, the complete official rules are printed.

The event in Germany will technically be a World Championship for RC Aerobatics only, but for all practical purposes RC Scale will have similar status—teams representing many countries are expected to participate. The same situation existed at the Control Line World Championships in 1966. This was the first real test of the then provisional FAI scale rules, and the success led to official adoption later that year. Among many countries the U.S. participated—Bob Gialdini (at the Championships as an aerobatic judge) proxy flew Warren MacZura's '66 Nationals-winning F8F Gulfhawk to first place. The U.S. win in this first big international scale contest received world wide recognition.

The possibility of duplicating the feat in 1969 interests many RC'ers. Even though the Academy of Model Aeronautics is technically unable to provide the usual team financial or transportation support—since these are matters of policy which require official World Championship status—there is much that can be done to promote interest and to organize support from individuals and groups. The net result will be that a team entry from the U.S. will be developed although on a different basis than usual.

The least we will be able to do is arrange for the U.S. RC Aerobatic team to proxy fly scale entries, if necessary. We are also working to obtain financial support by promoting an AMA RC Scale Team Fund, with proceeds to go to team members to help them get overseas if possible. The Academy will also handle all paperwork, details of entry, issuance of FAI licenses, and other necessities. Even now principal AMA people are working on contingency plans—the AMA president, the FAI coordinator, the Scale Advisory Committee chairman and AMA HQ personnel are coordinating team selection procedures and special efforts.

More exact planning will have to await the CIAM (Committee for International Aero Modeling) annual meetings in November at the FAI Headquarters in Paris. At that time more details of the international scale meet are expected to be presented:

site, dates, details of entry, etc. Meanwhile U.S. team planning is going ahead with several options in mind. One is to use the Nationals RC Scale event results to select the team. Another is to determine whether other meets or factors should be considered as well.

One difference between AMA and FAI Scale rules is that the latter places more emphasis on flying, so this factor may be given more weight in team selection. Also, the scale subject is not supposed to count as much under FAI—a good World War I scale model is supposed to have as good a chance as a World War II model with lots of gadgetry. The rules are intended to give more credit for scale-like flying. Thus a transport should fly like a transport, a fighter like a fighter and so on. Three loops in a transport is not supposed to gain points like the same maneuvers done by a fighter. On this basis, too, a light plane is supposed to be able to score as many points as a multi-engined bomber—if the former looks and flies as much like the full scale airplane as the latter does. Whether these factors are real and should influence the final team choice is currently being studied.

Meanwhile, for those who are interested in seeing for themselves what is involved, here are the new and official rules:

FAI RC Scale Rules

6.1.1 Definition of Scale Models: A scale model shall be a replica (copy) of a heavier-than-air man carrying aircraft.

N.B. To indicate the subject full size aircraft being scale modeled the word "prototype" is always used.

6.1.2 System of rules: Rules are numbered as follows:

6.1 General Rules and standard for judging Fidelity to Scale.

6.4 Telecontrol Flying Scale Regulations (R/C).

6.1.3 Competition programme: A competition programme for a particular event shall consist of part 6.1 plus the regulations for the specific event; rules for R/C 6.1 plus 6.4. Part 6.1 shall precede the flying programme.

6.1.4 Judges: The organiser of an international flying scale competition shall appoint three scale judges who shall determine the degree of fidelity to scale and a panel of at least three flight judges, who shall preferably each be of a different nationality and shall be selected from a list submitted by their National Aero Club.

In the case of World Championship in flying scale the panel of judges must be increased to five and at



Vintage aircraft have been popular subjects for modeling in radio-control scale. Under FAI scale rules any model is intended to be as competitive as another, so that despite gadgetry, a modern airplane may have little advantage.

least one member of the respective CIAM sub-committee shall be a member of the jury.

6.1.5 Coefficient: Where a coefficient (K) is noted, scoring shall be between 0 and 10. The score shall then be multiplied by the coefficient (K).

6.1.6 Remarks:

a) All models shall become airborne in the manner of their prototype. Hand launching will be permitted for telecontrolled and free flight models at a sacrifice of the total take off points.

b) Models of seaplanes of all classes are permitted to use wheels or wheeled dollies for take off in the absence of suitable water surface conditions. Deviations from Scale through inclusion of permanently attached wheels, skids or similar non prototype devices in the model structures shall be in this case not taken into consideration in the scoring of "Fidelity to scale" points.

c) No parts of a model, except propeller, may be removed between scale judging and flying.

d) A flying propeller of any form or diameter may be substituted for a scale propeller.

e) Metal bladed flying propellers are forbidden.

f) The release or dropping of a dolly immediately after take off shall not be considered as jettisoning.

6.1.7 Number of models: Each contestant may compete with one model only in any one category (C/L), (F/F), (R/C).

6.1.8 Number of helpers: Each contestant (pilot) is permitted one helper (mechanic) during the competition. In the case of multi-engine model one additional mechanic is permitted to assist in cranking the engine.

6.1.9 Proof of Scale:

6.1.9.1 Proof of Scale is the responsibility of the Contestant.

6.1.9.2 Name of Entry: Exact name and model designation of subject aircraft shall be indicated on entry blank and in "Proof of Scale" presentation.

6.1.9.3 The Scale to which the model is built is optional, but must be stated in "Proof of Scale" presentation.

6.1.9.4 To be eligible for Fidelity to Scale points the following documentation must be submitted to the Judges.

a) An accurate Scale 3 view drawing of the full scale airplane.

b) A declaration concerning the sources of information used in preparation of the model.

Such sources may be published material — magazines, handbooks, books or actual factory drawings containing comprehensive drawings of the original airplane.

Home made drawings by the contestant or other draftsman are not acceptable unless certified accurate in advance of the contest by an authoritative source such as the respective National Scale Committee (or equivalent), builder of original aircraft, or other competent authority.

If the drawings presented do not give the basic aircraft dimensions (wing and stabilizer span, length, wing chord, stabilizer chord, etc.) these dimensions must be supplied from an additional authoritative source.

c) At least three (3) photos or printed reproductions of full scale airplane, including at least one of the actual subject aircraft being modelled.

6.1.10 Judging for Fidelity to Scale and Craftsmanship: The designated items shall be judged individually for Fidelity to Scale and Craftsmanship:

	Fidelity to Scale	Craftsmanship
1. Fuselage	K-4	K-3
2. Wing or equivalent	K-4	K-3
3. Tail surfaces or equivalent (empennage)	K-5	K-3
4. Landing gear	K-4	K-3
5. Engine cowling, prop	K-3	K-3
6. Cockpit or cabin detail	K-3	K-3
7. Finish, colour and markings	K-3	K-3
8. Special ingenuity — interior	K-3	K-3
9. Special ingenuity — exterior	K-2	K-2

Note: Point 8 and 9 should be considered as bonus points awarded for exceptional features, ingenuity and skill in the indicated areas of the model.

6.1.11 Scoring: For Flying Scale Contests the Fidelity to Scale and Craftsmanship points shall be the aggregate sum of points awarded by the three Judges. These points can be used for final classification only when the model completes an official flight.

6.4 RADIO CONTROLLED FLYING SCALE REGULATIONS.

6.4.1 General Characteristics:

Maximum surface area: 150 dm² (2325 sq. in.)
Maximum weight of the complete model, less fuel: 5 kg (11 lbs.)

Maximum loading: 100 gr/dm² (32.76 oz. per sq. ft.)

Motive Power

a) Piston motor: 10 cm³ maximum (.61 cu. in.)
b) Reaction motors: either jet or rocket may not be used

6.4.2 Radio Equipment: There shall be no limitations on the radio or mechanical equipment used by the contestant. (Single or multi-channel shall be judged in the same class.)

6.4.3 Definition of an Attempt: There is an attempt when:

- the model fails to take off within the 3 minutes allowed to the competitor.
- the model takes off, but fails to achieve an official flight.
- jettisoning occurs.

N.B. An attempt can be repeated at the judges discretion only when, for any unforeseen reason outside the control of the competitor or organizers,

Current FAI World Records as of July 1

Absolute World Records (maximum performance with any type model)

Duration	Germany	G. Friedrich	7-28-66 (RC Glider)	12h 2m 13s
Distance	USSR	E. Boricevich	8-14-52 (FF Power)	235.35 mi.
Height	USA	M. Hill	9-4-67 (RC Power)	19,500 ft.
Speed	Italy	E. Zanin	4-26-64 (CL Jet)	203.2 mph

World Records — Individual

Free Flight

No. 1	USSR	Duration, Rubber	V. Fiodorov	6-19-64	1h 41M 32s
No. 2	USSR	Distance*, Rubber	G. Tchiglitsev	7-1-62	230.64 mi.
No. 3	USSR	Height, Rubber	V. Fiodorov	6-19-64	5682 ft.
No. 4	USSR	Speed, Rubber	V. Davidov	7-11-40	66.54 mph
No. 5	USSR	Duration, Piston	I. Koulaikovskiy	8-6-52	6h 1m
No. 6	USSR	Distance*, Piston	E. Boricevich	8-14-52	235.35 mi.
No. 7	USSR	Height, Piston	G. Lioubouchkine	8-13-47	13,620 ft.
No. 8	USA	Speed, Piston	E. Stiles	7-20-49	80.63 mph
No. 9	USSR	Duration, Rubber, HC	Nazarov***	6-3-68	33m 26.7s
No. 10	USSR	Distance*, Rubber, HC	Kramarenko***	6-3-68	2,879 mi.
No. 11	USSR	Height, Rubber, EC	Voltchanovskiy***	6-4-68	1154.8 ft.
No. 12	USSR	Speed, Rubber, HC	Motekaltiss***	6-8-68	48.4 mph
No. 13	Rumania	Duration, Piston, HC	S. Purice	10-1-65	3h 12m
No. 14	USSR	Distance*, Piston, HC	V. Titlov	10-1-63	56.85 mi.
No. 15	Rumania	Height, Piston, HC	S. Purice	9-24-63	12,300 ft.
No. 16		Speed, Piston, HC	V. Cramarenko***	2-28-68	42.606 mph
No. 17	Yugosl	Duration, Glider	M. Milutinovic	5-15-60	4h 58m 10s
No. 18	Yugosl	Distance, Glider	Z. Taus	3-31-62	192.83 mi.
No. 19	Hungary	Height, Glider	G. Benedek	5-23-48	7755 ft.

Radio Control

No. 20	USA	Duration, Piston	W. Bertrand	5-13-67	11h 17m 47s
No. 21	USA	Distance*, Piston	M. Hill	10-2-65	184.15 mi.
No. 22	USA	Height, Piston	M. Hill	9-4-67	19,589 ft.
No. 23	Germany	Speed, Piston	W. Kaeseberg***	4-14-68	198.8 mph
No. 24	USA	Distance*, Piston	R. Kunce	2-17-68	206.3 mi.
No. 25	Germany	Duration, Glider	G. Friedrich	7-28-67	12h 2m 13s
No. 26	USSR	Distance*, Glider	V. Titlov	8-20-67	14.29 mi.
No. 27	Germany	Height, Glider	G. Friedrich	7-30-67	4330 ft.
No. 28	E. Germany	Speed, Glider	H. Schumacher***	10-8-67	77.9 mph
No. 29	Germany	Distance*, Glider	G. Friedrich	7-29-67	84.5 mi.
No. 30	USA	Duration, Piston, SP	D. Gregory***	6-1-68	2h 29m 45s
No. 31	USA	Distance*, Piston, SP	D. Gregory***	6-1-68	72.08 mi.
No. 32	USA	Height, Piston, SP	M. Hill	9-3-67	18,540 ft.
No. 33	USA	Speed, Piston, SP	P. DiNoto***	6-30-68	66.9 mph
No. 34	USA	Distance*, Piston, SP		No Record Claimed	

Control Line

No. 27	USA	Speed, 2.5cc	Lauderdale & McDonald	5-4-63	170.04 mph
No. 28	USA	Speed, 5cc	T. McDonald	11-15-64	179.54 mph
No. 29	USSR	Speed, 10cc	A. Kouznetsov	9-30-62	196.0 mph
No. 30	Italy	Speed, Jet Power	E. Zanin	4-26-64	203.2 mph

Indoor

No. 32A	Czech	Cat. I — to 26 ft.	J. Kalina***	6-15-68	19m 20s
No. 32B	Czech	Cat. II — to 49 ft.	J. Kalina	9-19-66	26m 40s
No. 32C	USA	Cat. III — to 98 ft.	J. Richmond	8-3-67	33m 47s
No. 32D	Germany	Cat. IV — over 98 ft.	K. Riecke	9-22-62	45m 40s

HC — Helicopter SP — Seaplane *Straight Line **Closed Course ***Tentative

the model fails to start.

6.4.4 Definition of an official flight: An official flight shall be recorded when:

- manoeuvre 6.4.6.4 has been completed.
- model has been airborne for 60 seconds.

6.4.5 Number of flights: Each contestant shall have two attempts to complete each of two official flight programme.

6.4.6 Flying Time: Competitor must be called at least 5 minutes before they are required to enter starting area.

Contestant shall have 10 minutes in which to complete a flight programme. One minute additional time shall be added for each extra engine in the case of a multi-engine model.

The time shall start when competitor begins to crank engine or 2 minutes after entering starting area which ever is first.

Model must become airborne within the first three minutes (plus one minute for each additional engine).

No points shall be scored after expiration of the time limit (10 minutes plus one minute for each extra engine).

6.4.7 Flight:

6.4.7.1 Take-off (optional see 6.1.6.a)	
a) Taxi	K-5
b) Take-off	K-15
6.4.7.2 Straight flight	K-5
6.4.7.3 Procedure Turn (90° + 270°)	K-5
6.4.7.4 Figure eight (intersection over transmitter)	K-6

6.4.7.5 Option	
6.4.7.6 Option	
6.4.7.7 Option	
6.4.7.8 Option	
6.4.7.9 Option	
6.4.7.10 Realism in flight	K-10
6.4.7.11 Approach in rectangular circuit	K-10
6.4.7.12 Quality of landing	K-5
6.4.7.13 Precision of landing	
in a circle of 25 meters dia.	K-10
in a circle of 50 meters dia.	K-5
outside the 50 meters circle	K-0

6.4.8 Optional Demonstrations: Contestant shall give evidence that his subject normally performed each selected option.

Selection must be announced to judges in writing before taking off.

A. Multi-engines. 50 points shall be awarded for each engine in excess of one provided that it contributes thrust, is located on other than the vertical centre line of the model, runs through an official flight (see 6.4.4) and that the model maintains stable flight in the event of failure of one or more engine(s).

All engines must be running at take-off and continue to run through maneuver 6.4.7.4. Score.....

B. Retract and extend landing gear. Gear may be retracted immediately after take-off and extended for landing. K-10

C. Retract and extend flaps. If prototype used flaps for take off model shall also. Flaps shall be retracted for flight. If prototype used flaps for manoeuvring model may also. Flaps shall be lowered for landing. K-8

D. Dropping of bombs or fuel tanks. If bombs are carried internally, bomb-bay doors shall open — bombs drop — and doors re-closed for maximum score. If bombs or fuel tanks are carried externally they may be dropped as per prototype. K-5

E. Stall Turn. K-5

F. Immelman Turn. K-10

G. 3 Loops (each to be individually marked and score added). K-4, 3, 3

H. Split S (Reversal) K-10

I. Cuban 8 K-12

J. Normal Spin (3 turns) K-12

K. Roll K-8

L. Parachute. If prototype was used to drop cargo or men via parachute, competitor may demonstrate such an operation during his flight — if prototype uses a parachute in landing competitor may demonstrate such landings. K-5

M. Touch and Go. Model should land normally and take off again without coming to a stop: Precision and Smoothness of landing and take off will be judged. K-8

N. Overshoot: Landing approach on low throttle to below 3 m (9.8 feet) above the ground without touching down in which the model resumes normal flight at full throttle. K-4

O. Side slip to left and right K-4

P. Contestant may demonstrate a flight function of his own choice. He must supply evidence that this

function was performed by his subject. He must indicate to the Flight Judges the nature of his demonstration before going to the flight line. The Flight Judges shall determine K value, before flight, based on relative difficulty of demonstration.

K-4 to 10

6.4.9 Marking (Flight points). Each manoeuvre may be awarded marks between 0 and 10 by each of the judges during the flight.

These marks are multiplied by a coefficient which varies with the difficulty of the manoeuvre.

The manoeuvres must be performed in a plane and at a height which will allow them to be seen clearly by the judges. The non-observance of this rule will be penalized by loss of points.

6.4.10 Flight Score: Flight Score shall be the aggregate sum of the points awarded by all three Judges in 6.4.7 multiplied by the coefficient 0.62.

6.4.11 Organisation of R/C flying scale event: All transmitters likely to be used during the contest must be checked and placed in a compound kept under observation. During the contest, a steward must be in control of the transmitter compound and will issue the transmitter to the competitor only when his name is called for him to stand by to make his flight.

As soon as the attempt has ended the competitor must immediately return his transmitter to the steward at the transmitter compound.

All unauthorized transmissions during the contest will result in automatic disqualification of the offender from the entire contest, and render him liable to further penalties.

During the time the flight manoeuvres are being carried out the pilot, with his transmitter, must stay within the area reserved for this purpose and be standing on the ground. The course steward will notify the pilot when his model is flying outside the prescribed area.

The order of starting of the various countries and the competitors will be established by means of a draw before the start of the contest.

Competitors must be called at least 5 minutes before they are required to occupy the starting area.

6.4.12 Scoring: Add points earned in 6.4.11 and the score of the best flight under 6.4.10.

CL Beginner Plan

An unusual program late last May may bring many youngsters to the ranks of model flyers. The program, which received fine publicity from *The Cherry Hills News* (N.J.), provided instructions for youngsters in flying ready-to-fly control line models. The sponsors were concerned about the number of kids who receive such models as gifts but who never learn how to fly them; they set out to provide the youngsters with the basic knowledge with which to enjoy their gifts.

The program was indeed a success, according to reports, for 72 boys and 8 girls—many of whom had never seen a control line model fly—turned out and paid a small fee (50c first flight, 35c each additional flight) for instructions. The money went to benefit the Cub Scouts after deductions for special one-day AMA Junior memberships.

The program also provided continuous demonstrations of radio control ground handling and various types of control line flying.

Paul Haley was Contest Director, but credits the South Jersey Flyaways and Bill Condray for the basic effort. About 70% of the kids showed good flying ability, and about 50% said they were going to start flying as soon as they could get a plane.

The meet was AMA sanctioned by way of the new special one-shot membership: Junior age youngsters pay 25c to the CD for AMA membership (and insurance coverage) for the duration of the meet. They are permitted to fly any kind of model except that those with engines are limited to 1/2A. This type of membership permits youngsters to get exposed to AMA type flying without having to commit a normal—and more expensive—Junior membership. And the CD is protected as are all other AMA members involved. Any CD may add such events to a contest or hold a special contest with special events. The special Jr. forms are available on request from AMA HQ.

Bill Bertrand was one of several who attempted RC Seaplane FAI World Records earlier this year at York, Pa. Trying for a duration record, model used two engines—Super Tigre 45 for takeoff, Super Tigre 15 diesel for cruise. Attempt unsuccessful when 15 did not sustain cruise.



Sporting Aviation Group Formed—AMA Represented

The AMA together with seven of the country's leaders in the field of sporting aviation met early this year to formally organize the National Sport Aviation Council. Purpose of the Council, created by the National Aeronautic Association, is to coordinate and combine the efforts of NAA's thirteen divisions and affiliates, of which AMA is one, in promoting the progress, participation and development of all forms of sporting aviation both nationally and internationally. Altogether, the Council represents 80,000 people interested in various aspects of aerospace activity.

Next meeting of the National Sport Aviation Council was planned for the end of July at Rockford, Ill., in conjunction with the Fly-In of the Experimental Aircraft Association. Walt Good, who recently completed two terms as president of the Federation Aeronautique Internationale (FAI) Committee for International Aero Modeling (CIAM), was to represent AMA in the Council meetings.

An important agenda item for the Rockford meeting is the compilation of a list of airspace needed by the various types of sporting aviation activity. This will be the first time that all such interests have been accounted for. This data will be invaluable in coordinating with the Federal Aviation Agency to insure that sporting aviation activities maintain a fair share of the amount of airspace available.

The Council plans to hold its meetings in conjunction with activities of the various NAA affiliates; therefore, it is expected that AMA will be host, in conjunction with the National Contest, in some near future year.

Efforts of the Council are to include, but not be limited to, the following:

To cooperate on sport aviation events and meets to the extent practical and beneficial to one or more aviation sports.

To combine the efforts and provide a means to obtain one voice representing all the participating organizations in the furtherance of sporting aviation.

To provide expert constructive advice to the local governments, state legislatures, U.S. government agencies and the U.S. Congress when requested or when appropriate, on matters affecting one or more aviation sports.

To seek resolution on any matters wherein there is a conflict of interest between two or more participating organizations to the end that the best interest of all are served.

To anticipate to the maximum extent possible technical developments, legislation, rule-making and the like, nationally or internationally, that might affect sporting aviation and to develop and carry out plans to foster the beneficial, and to counteract the undesirable.

To promote better understanding and closer ties between all participating organizations by providing a forum for the exchange of ideas on matters of common interest and concern.

To provide counsel and advice to the officers and directors of NAA as may be considered desirable for the promotion of aviation sports, and to provide recognition of outstanding contributions.

To promulgate on an international basis, through the FAI, such of the above as may be appropriate.

To be responsive to requests from the officers and directors of the NAA within the scope of the responsibilities of the Council.

To endeavor to work with those sporting aviation interests not in conflict with the aims and objectives of the NAA.

Organizations eligible for representation on the National Sport Aviation Council, each a division or affiliate of NAA, are: AMA, Aerobatic Club of America, Air Mail Pioneers, Antique Airplane Association, Balloon Federation of America, Experimental Aircraft Assn., National Aerospace Education Council, National Association of Rocketry, National Pilots Assn., National Women's Pylon Racing Assn., Professional Race Pilots Assn., Soaring Society of America, and United States Parachute Assn.

AMA Record Roundup

The following new national AMA records, together with those listed in the Sept. Model Aviation section, update the full listings published in the May and August editions—as of July 10.

Outdoor Free Flight

1/2A Gas ROW Jr. M. Thompson	8:45.0
A Gas ROW Jr. M. Thompson	10:55.0
B Gas ROW Jr. B. Hannah	7:58.0
A-1 Towline Jr. W. Gibbs	16:55.0
A-1 Towline Sr. R. Steckel	22:54.0
A-1 Towline Op. T. Peardon	14:47.0
A-2 Towline Sr. G. Burr	13:57.0
A-2 Towline Op. P. Brun	34:26.0

Control Line

1/2A Proto Speed Op. W. Kurth	97.10
A Speed Jr. B. Nelson	147.78
B Proto Speed Sr. J. McKinzie	140.68
Indoor, AMA Ceiling Cat. II	
FAI Stick Sr. J. Servaities	14:38.2

DIRECTORY OF AMA OFFICERS

Which officers live in your district? Select correct address when writing officers.

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Secretary-Treasurer:

Earl Witt, Longview Trailer Court, R.D. #3, Chambersburg, Pa.

Executive Director:

John Worth, c/o AMA Hq., 1239 Vermont Ave. N.W., Washington, D. C. 20005

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- IV: C. Telford, 8612 Rayburn Rd., Bethesda, Md.
- V: Jim Kirkland, 344 Edge Ave., Valparaiso, Fla.
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- VII: Jack Josaitis, 23663 Lawrence, Dearborn, Mich. 48128
- VIII: L. Peters, 3025 Hillglen Rd., Dallas, Tex. 75228
- IX: Stan Chilton, 446 Ida, Wichita, Kans.
- X: J. Pond, 2162 43rd Ave., San Francisco, Calif.
- XI: R. D. Stalick, 2807 S. Oak St., Albany, Ore.

CONTEST COORDINATORS:

- I: W. Leonhardt, 100 Abbott St., Lawrence, Mass.
- II: E. F. Hoffman, 158 Carpenter St., Belleville, N.J.
- III: E. Biddle, 2156 Street Rd., Warrington, Penna. 15976 (East)
- M. Weisenbach, 4568 West 146th St., Cleveland, Ohio 44135 (West)
- IV: D. L. Johnson, 3367 Sudlersville So., Laurel, Md.
- V: T. McLaughlan, 741 W. Hernandez St., Pensacola, Fla. 32501
- VI: Gosta Johnson, 6810 S. Crandon, Chicago, Ill. 60649
- VII: Odell Marchant, 2004 N. Hillsboro, Minneapolis, Minn. 55427 (North)
- W. Hartung, 14759 Kilbourne, Detroit, Mich. 48213 (South)
- VIII: M. Frank, 2933 Blankenship, Wichita Falls, Tex. 76308
- IX: R. R. Combs, RR #1 Box 712, Morrison, Colo.
- X: D. C. Farnsworth, 301 Carl Dr., Visalia, Calif. 93277 (North)
- Pete Brandt, 5817 W. Ironwood, Palos Verdes Peninsula, Calif. 90274 (South)
- XI: A. L. Grell, Rt. 1 Box 165, Tangent, Ore. 97389

CONTEST CALENDAR

Official Sanctioned Contests of the Academy of Model Aeronautics

- Sept. 1 — Riverdale, Ill. (AA) IIAA Annual Model CL Contest. Site: 144 & Halsted. W. Webb CD, 15722 Vine Ave., Harvey, Ill. 60426.
- Sept. 7-8 — Amarillo, Tex. (AA) ARKS Annual RC Meet. Site: Club Flying Field. B. Irwin CD, 3302 Lewis Lane, Amarillo, Tex. 79109. Sponsor: Amarillo Radio Control Society.
- Sept. 7-8 — West Suffield, Conn. (AA) 4th Annual NCRCC RC Contest. Site: Weideker Farm. B. Williams CD, 347 Southwick Rd., Westfield, Mass. 01085. Sponsor: Northern Connecticut RC Club.
- Sept. 7-8 — Marietta, Ga. (AA) Southern RC Air Races. Spec. Events. Site: Club Field. L. Purdy CD, Route 1, Oakwood, Ga. 30566. Sponsor: Cobb County RC Modelers.
- Sept. 7-8 — Conklin, Mich. (AA) Grand Rapids Annual RC Meet. Site: Den Hoff Farm. J. Wolfkin CD, 3971 Causeway Dr., Lowell, Mich. 49331. Sponsor: Grand Rapids RC Club.
- Sept. 8 — Larchwood, Iowa (AA) Sioux Falls Gas Model Club Annual RC Meet. Site: Zanger Airfield. D. Lillyquist CD, 1315 S. Norton Ave., Sioux Falls, S. D. 57105.
- Sept. 8 — Riverdale, Ill. (AA) Chicago Model Masters CL Contest. Site: 144 & Halsted. W. Webb CD, 15722 Vine Ave., Harvey, Ill. 60426.
- Sept. 8 — Bong Field, Wisc. (AAA) 25th Annual Midwestern State FF Championships. Spec. Events. P. Sotich CD, 3851 W. 62nd Pl., Chicago, Ill. 60629. Sponsor: Chicago Aerons.
- Sept. 8 — Dayton, Ohio (AA) Dayton Buzzin' Buzzards Annual CL Jamboree. Site: Municipal Model Flying Field. C. China CD, 5028 Broughton Pl., Dayton, Ohio 45431. Sponsor: Dayton Buzzin' Buzzards.
- Sept. 8 — Deer Lake, Pa. (AA) Tri-Co. Wing Snappers 6th Annual RC Meet. Site: Airport. E. Stoyer II CD, 210 Washington St., Schuylkill Haven, Pa. 17972. Sponsor: Tri-County Wing Snappers Inc.
- Sept. 8 — Kansas City, Mo. (AA) Sky Devils 1400 Lap RR 3rd Annual Meet. Site: Swope Park. T. Kergeries CD, 5239 Bryans Ford Rd., Kansas City, Mo. 64129. Sponsor: Sky Devils MAC.
- Sept. 8 — Orange, Mass. (AA) Antique Model Rally for FF. Site: Airport. L. Wellman CD, R.F.D. 1 Gillette Rd., New Hartford, Ct. 06057.
- Sept. 14-15 — Rhinebeck, N. Y. (AA) W.W. I RC Aircraft Jamboree Meet. Site: Old Rhinebeck Aerodrome. B. Blake CD, 12 Shale Dr., Wappingers Falls, N. Y. 12590. Sponsor: IBM RC Model Club.

Sept. 14-15 — Seattle, Wash. (AA) RAMS Annual RC Meet. Site: Mt. Rainier RC Field. R. Brooke CD, 17845 3rd Ave. S.W., Seattle, Wash. 98166. Sponsor: RAMS.

Sept. 14-15 — Bossier City, La. (AA) SHARKS Annual Meet for RC. Site: SHARKS Field, Airline Drive. J. Monk CD, 574 Janet Lane, Shreveport, La. 71106. Sponsor: Shreveport Area Radio Kontrollers.

Sept. 14-15 — Tullahoma, Tenn. (AA) 9th Annual Airfoiler RC Contest. Site: Airfoiler Field. L. Webster CD, 1000 Sycamore, Manchester, Tenn. 37355. Sponsor: Coffee Air Foilers.

Sept. 14-15 — Billings, Mont. (AA) Billings Flying Mustangs RC Contest. Site: Mustang Field. A. Darnielle CD, 3043 Barton Blvd., Billings, Mont. 59102.

Sept. 14-15 — Odessa, Tex. (AAA) Odessa-Midland 13th Annual AAA FF & CL Meet. Site: Ector Co. Airport. L. Hood CD, 4110 E. 37th, Odessa, Tex. 79760. Sponsor: Odessa Prop Busters.

Sept. 14-15 — Wyandotte, Mich. (AA) 15th Annual Indian City RC Meet. Site: Pennsylvania & Allen Rds. E. Lynn CD, 3167 22nd St., Wyandotte, Mich. 48192.

Sept. 15 — Hastings, Minn. (AA) 9th Annual Upper Midwest Internationals for FF. D. Monson CD, 131 W. Wentworth, W. St. Paul, Minn. 55118. Sponsor: Minneapolis MAC.

Sept. 15 — Frederick, Md. (AAA) Annual Maryland Model Airplane Meet for FF, CL, & RC. Site: Municipal Airport. J. Patton CD, Rt. 5, Frederick, Md. 21701. Sponsor: Frederick Model Airplane Club.

Sept. 15 — Tucson, Ariz. (AA) Fall Invitational CL Contest. Site: Rodeo Park. F. Townsend CD, 2751 N. Campbell, Tucson, Ariz. 85719. Sponsor: Cholla Choppers MAC.

Sept. 15 — Lafayette, Ind. (AA) Lafayette Cloud Jockeys Meet for CL. Site: Market Square. R. Ramsey CD, 1117 Rochell, Lafayette, Ind. 47905. Sponsor: Lafayette Cloud Jockeys.

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

Sept. 21-22 — Fiskdale, Mass. (AA) 3rd Annual N.E. Hydro Radioplane Championships. Site: Brimfield Dam. J. Ross CD, 19 Sterling Dr., Dover, Mass. 02030. Sponsor: New England RC Modelers.

Sept. 21-22 — Madera, Calif. (AA) Fresno Air Races for RC. Site: Airport. A. Chisolm CD, 615 E. Belmont Ave., Fresno, Calif. 93701. Sponsor: Fresno Radio Modelers, Inc.

Sept. 22 — Urbana, Ill. (A) 3rd Annual Fly for Fun FF & CL meet. Restricted. Site: Illini Airport. J. Fasimaur CD, 310 E. Benham St., Tolono, Ill. 61880.

Sept. 22 — Southfield, Mich. (AA) Cloudbusters 8th Annual FF Meet. Site: 11 Mile & Franklin Rd. G. Lewis Jr. CD, 29546 Bonnie Dr., Warren, Mich. 48093.

Sept. 22 — Sacramento, Calif. (AA) 4th No. Calif. FF Council Meet. Site: Jackson & Sunrise Aves. J. Brown CD, 722 Durshire Way, Sunnyvale, Calif. 94087. Sponsor: 900 Club.

Sept. 22 — Pittsford, N. J. Rockaway Valley Novice RC Meet. Site: Sky Manor. A. Schroeder CD, 18 Spencer Rd., Glen Ridge, N. J. 07028. Sponsor: Rockaway Valley Radio Club.

Sept. 22 — Bong Field, Wisc. (AA) 6th Annual Chicago Aerons Fall Old Timers FF Contest. P. Sotich CD, 3851 W. 62nd Pl., Chicago, Ill. 60629. Sponsor: Chicago Aerons.

Sept. 22 — New Castle, Pa. P.O.R.K.S. 9th Annual Invitational RC Meet. Site: PORKS Field. Z. Al-lerton CD, 124 Richelieu Ave., New Castle, Pa. 16101. Sponsor: P.O.R.K.S.

Sept. 28-29 — New Orleans, La. (AA) Annual Crescent City RC Meet. Site: Club Flying Field. A. Wiltz CD, 3231 47th St., Metairie, La. 70001. Sponsor: Crescent City RC Club.

Sept. 28-29 — Huntsville, Ala. Rocket City RC 8th Annual Contest. Site: Old Huntsville Airport. C. Scholefield CD, 2709 Briarwood Dr. S.E., Huntsville, Ala. 35801.

Sept. 28-29 — Aurora, Colo. (AAA) Rocky Mountain 3rd Annual FF Championships. Site: MMM Flying Site. W. Henshaw CD, 1161 Fulton St., Aurora, Colo. 80010. Sponsor: Magnificent Mountain Men.

Sept. 28-29 — Winston Salem, N. C. (AA) RC League of N. C. State Championships. R. Collette Jr. CD, 660 S. Main St., Mocksville, N. C. 27028.

Sept. 28-29 — Fresno, Calif. (AA) Fresno's 28th Annual FF Meet. Site: Near Kerman. P. Gallo CD, 1725 Kenmore Dr. W., Fresno, Calif. 93702. Sponsor: Fresno Gas Model Club.

Sept. 29 — Mitchell, N. Y. (AA) NAGS 1st Annual RC Meet. M. Palumbo CD, 201 Martin Dr., Syosset, N. Y. 11791.

Sept. 29 — Bong Field, Wisc. (AA) 8th I.M.A.C. Invitational FAI FF Contest. P. Sotich CD, 3851 W. 62nd Pl., Chicago, Ill. 60629. Sponsor: Illinois Model Aero Club.

Sept. 29 — Dayton, Ohio (AA) Cold Cash Speed Bash for CL. Site: Dayton Model Airport. H. Roe CD, 165 Broadripple Rd., Centerville, Ohio 45459. Sponsor: Dayton Buzzin' Buzzards.

Sept. 29 — Mystic, Conn. (AA) SCAMA Sweepstakes. Site: Lantern Hill. H. Struck CD, RFD #2, Hamburg, Conn. 06371. Sponsor: So. Conn. Aero Model Assn.

Oct. 5-6 — Dahlgren, Va. (AA) 7th Annual Dahlgren RC Meet. Site: Naval Weapons Lab. P. Rawlings CD, 5600 Helmsdale Lane, Alexandria, Va. 22310. Sponsor: No. Va. RC Club & Fly Away RC Club.

Oct. 5-6 — Sebring, Fla. (AAA) Hurricane Meet for FF & CL. Site: Air Terminal. C. Adams CD, 5201 88th Terr. No., Pinellas Park, Fla. 33565.

Oct. 5-6 — Albuquerque, N. M. (AA) SWAT 4th Annual FF Meet. Site: Club Site. C. Averill CD, 2314 Palomas N.E. Albuquerque, N. M. 87110. Sponsor: South West Aero Team.

Oct. 5-6 — Sunnyvale, Calif. 1st Annual Kosby Flying Tournament. Site: Club Flying Field. J. Sunday CD, 667 Rainbow Dr., San Jose, Calif. 95129. Sponsor: Pioneer RC Club.

Oct. 6 — Lincoln Park, N. J. (AA) 10th Annual CL Model Air Show. Site: GSCB Club Field. J. Miske Jr. CD, D-3 Orchard Ct., Clifton, N. J. 07012.

Oct. 6 — Chandler, Ariz. (AA) 2nd Annual Invitational Meet for CL. Site: Galvestor School. J. Valenta CD, 3041 E. Shangri La Rd., Phoenix, Ariz. 85028. Sponsor: Air-Zona MAC.

Oct. 6 — Pittsford, N. J. (AA) 1968 Eastern States RC Meet. Site: Sky-Manor Airport. L. Shulman CD, 42 Blake Ave., Cranford, N. J. 07016. Sponsor: Central Jersey RC Club.

Oct. 13 — Lincoln Park, N. J. (AA) 10th Annual Model Air Show for CL. Site: GSCB Club Field. W. Swentzell CD, Sunset Ct., Montville, N. J. 07045.

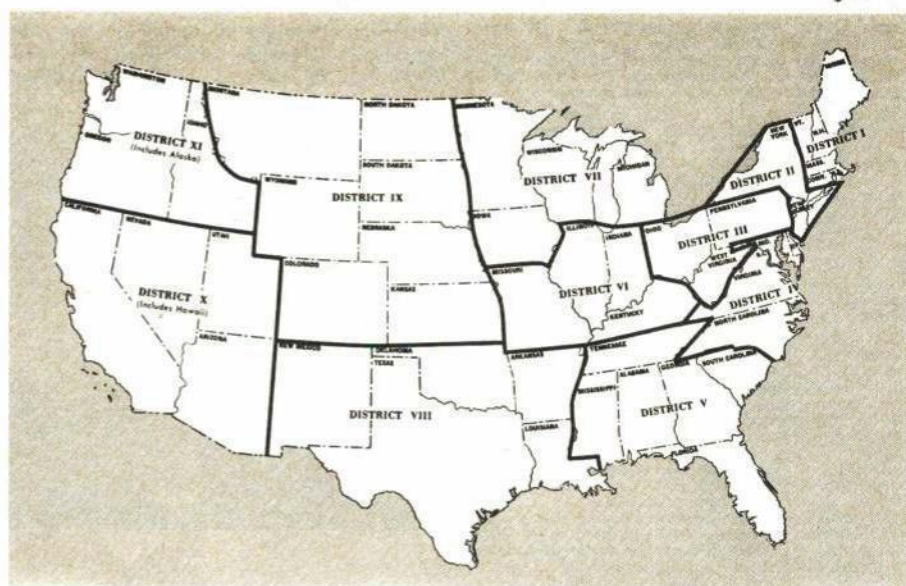
Oct. 13 — Sacramento, Calif. (AA) 5th No. Calif. FF Council Meet. Site: Jackson Rd. & Sunrise Ave. D. Foote CD, 2438 Palm Palmetto St., Oakland, Calif. 94602. Sponsor: Oakland Cloud Dusters.

Oct. 19-20 — Winter Park, Fla. (AA) 8th Annual RC Rendezvous. Site: RCACF Field. W. Schoonard CD, 2080 Sharon Dr., Winter Park, Fla. 32789. Sponsor: Remote Control Assn. of Central Florida.

Oct. 20 — Taft, Calif. (AA) SCIP's 2nd Annual Texaco Type Event Meet. Site: Gardner Field. B. Chandler CD, 7858 Farrallone Ave., Canoga Park, Calif. 91304. Sponsor: So. Calif. Ignition Flyers.

Oct. 20 — Phoenix, Ariz. (AA) Drisc Memorial FF Contest. Site: Pinnacle Peak. W. Ross CD, 1706 E. Montecito Ave., Phoenix, Ariz. 85016. Sponsor: Phoenix Model Airplane Club.

Oct. 27 — Fresno, Calif. (A) Fresno Monthly FF Meet. Site: Near Kerman. P. Gallo CD, 1725 Kenmore Dr. W., Fresno, Calif. 93702. Sponsor: Fresno Gas Model Club.



B-52

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World's Finest and Biggest Scale Model Airplane

Monogram has taken the giant 200-ton, 185-foot wing span Boeing B-52, with eight jet engines, and created a magnificent 30 inch model with realistic jet sound.* Amazingly detailed.

Operating bomb bay doors, swiveling turret, flaps and wing spoilers. Detailed cockpit interior. Bombs, guns, tanks and three-man crew. Electric motor, jet sound device * and whine just like the big jets. Simplified instructions and authentic insignia decals.

1/72 SCALE • DELUXE KIT

* Patent Pending.

WIN A JET AIR TRIP!

Win an all-expense-paid air trip for two to Colorado Springs and a tour of the U. S. Air Force Academy—or one of 1340 Other prizes.

Monogram Models, Inc., Morton Grove, Illinois

See the Magnificent B-52 Model at Your Favorite Store—Then Enter

B-52 SWEEPSTAKES

Win an air trip for two to Colorado Springs and a tour of the U. S. Air Force Academy with all expenses paid. Or win one of 1340 other fine prizes. First give yourself a real treat. Go see the fabulous B-52 model at your favorite store. Then put your name and

address on the official entry blank packed with each kit or use a plain piece of paper 3½ x 6 inches and mail it with the Monogram trademark or a copy of it. Nothing else to write or work out. See sweepstakes rules and list of prizes below.

SWEEPSTAKES PRIZES AND RULES

FIRST PRIZE

A trip for two to Colorado Springs and a tour of the U. S. Air Force Academy including air transportation from the winners home town and return. Prize includes also, one each of the second, third and fourth prizes.

5 SECOND PRIZES

Dremel Deluxe Moto-Shop and 8 assorted Monogram \$1.50 Airplane Kits.

10 THIRD PRIZES

Deluxe Badger Air Brush and 8 assorted Monogram \$1.00 Airplane Kits.

25 FOURTH PRIZES

Testor Paint Assortment (\$10.00 value) and 6 assorted Monogram \$1.00 Airplane Kits.

50 FIFTH PRIZES

Xacto Knife set and 6 assorted Monogram 70 cent Airplane Kits.

250 SIXTH PRIZES

Assortment of 3 Monogram Airplane Kits. Value \$2.00.

1000 SEVENTH PRIZES

One Monogram \$1.00 Airplane Kit.

RULES

1. Write your name and address on an official entry blank or a plain piece of paper. Mail it with a Monogram "Quality Hobby Kits" trade mark cut from a B-52 Stratofortress box or a rough copy of the trade mark. Enter as often as you wish, but each entry must be mailed separately.
2. Mail to Sweepstakes, Monogram Models, Inc.,

Morton Grove, Illinois 60053. Entries must be postmarked by midnight December 31, 1968.

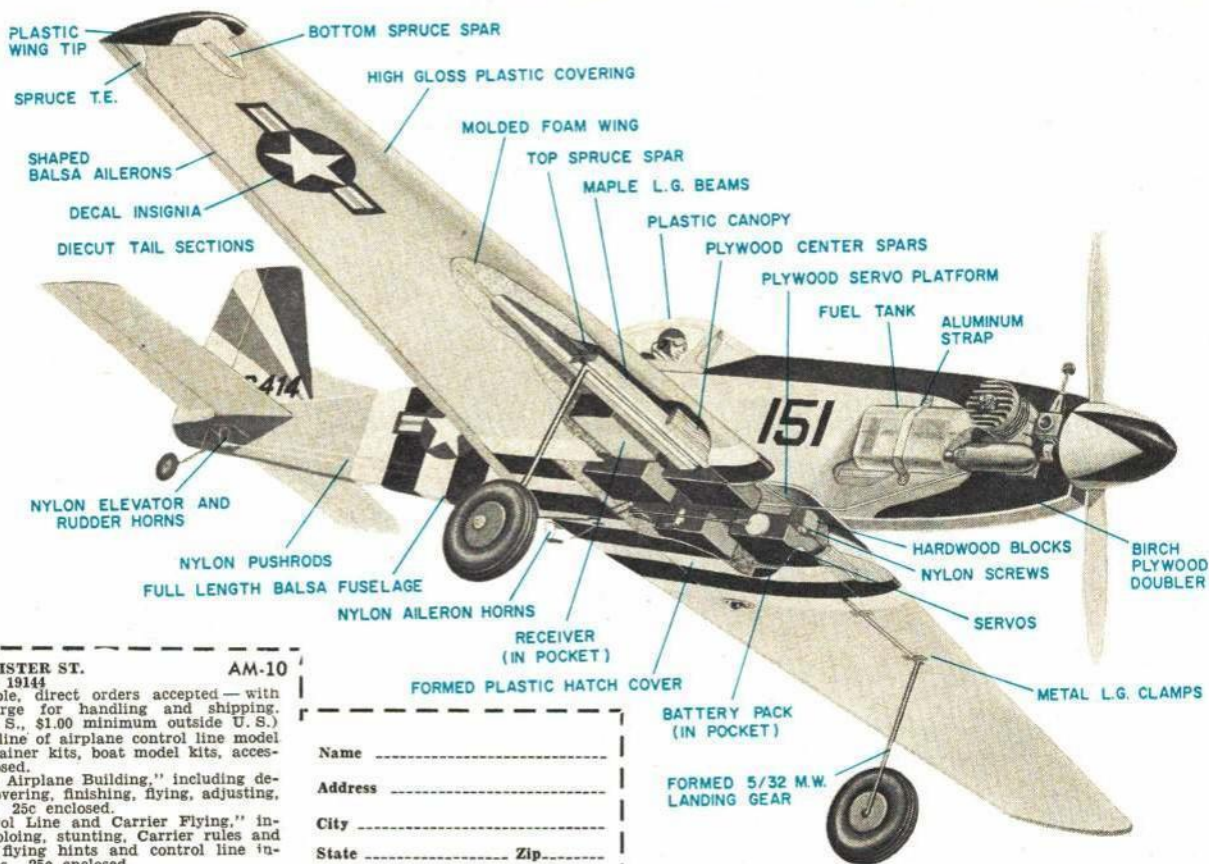
3. Winners will be selected by random drawing by an independent group of judges. The judges' decisions are final. Only one prize to one entrant. Winners will be notified within 30 days after sweepstakes is ended.

4. The B-52 Stratofortress Sweepstakes is open to everyone except Monogram employees and agents and others engaged in the sale of Monogram products and members of their families. This invitation to enter the sweepstakes is void in states or other areas where prohibited, taxed or restricted by law.

5. If a list of major prize winners is wanted by entrant, send a stamped and addressed envelope after close of sweepstakes.

FULL HOUSE

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If no dealer available, direct orders accepted—with 10% additional charge for handling and shipping. (50¢ minimum in U.S., \$1.00 minimum outside U.S.)

□ Catalog of entire line of airplane control line model kits, R/C scale & trainer kits, boat model kits, accessories, etc. 10¢ enclosed.

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AM-10

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Address _____
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WE'RE EXPANDING NOW...

GOODIES are GOODIER

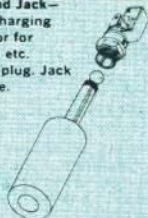
Living Hinge Material—polypropylene— $\frac{1}{8}$ " x 24" long. One package can be used for many models, cut the length you require.

#215 .010 x $\frac{1}{8}$ " x 24"
#216 .020 x $\frac{1}{8}$ " x 24"
25¢/pk 12 pk/cd



Universal Plug and Jack—Can be used as charging plug and socket or for monitors, meters, etc. Subminiature $\frac{1}{8}$ " plug. Jack mounts in $\frac{1}{8}$ " hole.

#248
49¢/pk
6 pk/cd



Connectors—High quality, using round pins for a sure and firm grip. Available in 4 pin and 6 pin models—set includes both male and female.

#224 4 pin connector
\$1.29 set 6 sets/cd
#225 6 pin connector
\$1.49 set 6 sets/cd



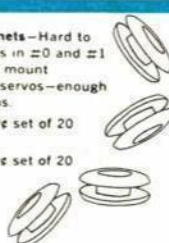
Anten-Away—Vertically polarized Antenna. Fully retractable. Always electronically connected.

#209
\$2.00 ea
3 pk/cd



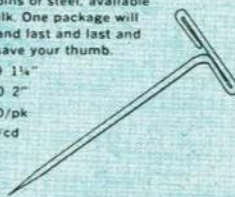
Servo Grommets—Hard to get grommets in ± 0 and ± 1 size. Used to mount proportional servos—enough for five servos.

#235 ± 0 59¢ set of 20
6 sets/cd
#236 ± 1 59¢ set of 20
6 sets/cd



Modeler's "T" Pins—Finally, "T" pins of steel, available in bulk. One package will last and last and last and will save your thumb.

#249 1 $\frac{1}{2}$ "
#250 2"
\$1.50/pk
6 pk/cd



THESE ARE JUST SOME OF THE NEW GOODIES...WATCH THIS MAGAZINE EACH MONTH FOR MORE OF THE NEW AND COMPLETE LINE OF GOODIES BY

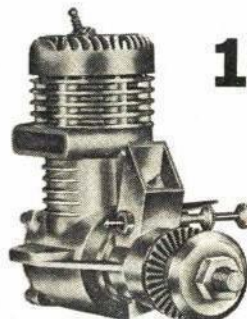


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1995



BORE800
STROKE715
DISP.36
WT. 7 $\frac{1}{2}$ OZ.

A motor for GO and SHOW. Set up with all the tricks of Xpert combat artists. Crank port reamed and milled. Oil relieved - rod drilled for oil. Piston O. D. honed. Case milled to relieve exhaust port. Head milled for higher compression and true gasket surface. Pressure fitting installed in rear cover. Castings polished. Every motor individually run in before shipping.



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and it's almost ready-to-fly!

PROFILE R/C MUSTANG

\$34.95

KIT FS-23
wing span: 55"
length: 43"
engines: .45 & up

A cinch to assemble! Flies like a dream! The most rugged R/C model of them all!

The ideal R/C Trainer — great for Sunday and Sport Flying!

IF YOU'RE A FIRST-TIME R/C FLYER — THIS RUGGED, EASY-TO-BUILD, EASY-TO-FLY BEAUTY IS YOUR PERFECT R/C TRAINER! IF YOU'RE AN "OLD HAND" AT R/C, YOU'LL FIND THIS FULL-HOUSE, FULL-SIZED PROFILE R/C MUSTANG IS AN ABSOLUTE DREAM FOR SUNDAY AND SPORT FLYING.

IT'S ALMOST READY-TO-FLY! HERE'S WHY! FOAM WING: Molded for accuracy (not hand wire cut). Panels come factory finished, and are assembled in a matter of minutes. Spars, landing gear beams etc., are already installed and wing comes already covered with a brilliant high-gloss white plastic skin that eliminates painting. Includes shaped, full length strip ailerons.

PRE-ASSEMBLED FUSELAGE: Practically all factory-built, the fuselage is just about ready for the single unit balsa tail surfaces. Factory installed in the fully shaped balsa fuselage are: the maple nut

blocks, maple motor mounts, birch plywood side plates, birch plywood wing saddle, etc.

BENCH-TYPE RADIO INSTALLATION: Where is the Radio equipment installed? . . . It's simply tucked away in the bottom of the wing on a plywood plate — with plenty of room to spare! A look at the cut-away shows how neatly the four servos fit . . . and it will easily accommodate any proportional type servos. The nicad battery pack slips into a pocket on one side of the foam wing, the receiver into the other. We know of only one receiver (and that one's a kit) that wouldn't fit. For this, all it takes is a small fairing. That's why this is practically a bench-type installation, requiring an absolute minimum of time. The molded hatch cover then slips into place completing the wing shape, hiding everything.

And That's Not All! Also included are nylon horns, nylon push rods, nylon wing screws, formed $\frac{3}{32}$ wire landing gear and retaining clips, decal insignia, clear

plastic canopy, a host of nuts, screws, etc., etc., and also one of the new 8 oz. Sullivan "see-through" R/C fuel tanks!



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BELFIELD AVE. & WISTER ST
PHILADELPHIA, PA. 19144

ATTENTION N.A.R. MEMBERS

Due to difficulties not within A.A.M.'s control, it was impossible to include the regular N.A.R. column in this issue. When the closing deadline had long since passed, efforts to obtain copy before press time proved fruitless.

Countdown

Continued from page 41

etry and may also become a standard for full-scale professional rocketry as well. It's Gordon Mandell's "The Linearized Rotational Dynamics of Streamlined Projectiles," 50 pages worth of tightly reasoned analysis of the dynamic stability of fin-stabilized rockets. It's the only work that I know of which takes the nasty math of dynamic stability and puts it into a form usable by advanced model rocketeers. Note that I said "advanced," and I meant just that. This is not a paper for beginners because of the math involved and the concepts treated.

These papers can be obtained by sending a check for \$1.25 to M. I. T. Model Rocket Society, M. I. T. Branch, P. O. Box 110, Cambridge, Mass. 02139.

This and That: New C6- engines from Estes will literally put a Big Bertha out of sight! Both Estes and Centuri have scale model kits of the NASA Apollo Little Joe II now available.

Willy Ley, NAR Trustee and one of the founders of NAR, has a newly revised edition of his famous book on the history of

MODEL ROCKETRY



Flight Time

Whether you're a beginner with your first Alpha rocket, or an experienced modeler with the perfectly detailed Estes scale model of the Uprated Saturn I, one thing is certain. Flight time is always as exciting as you expected it to be . . . Lift-off, acceleration to peak altitude, parachute ejection and safe recovery. Great!

All models
good for
many flights

flights up
to 2500 ft.



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Estes Industries offers the complete rocketry program — over 35 exciting kits to build and fly, the finest engines in the world, Technical Reports, Model Rocket News, and the largest selection of true scale models anywhere.



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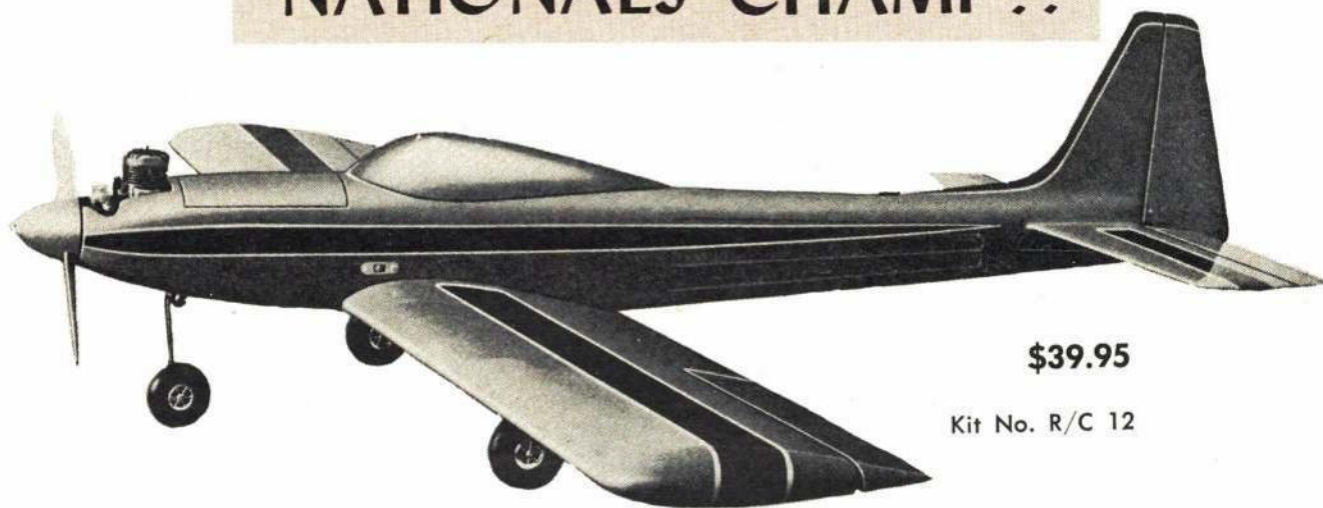
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MULTI-R/C WORLD & NATIONALS CHAMP!!



\$39.95

Kit No. R/C 12



**Designed by
PHIL KRAFT**

**TOP FLITE'S
FINEST KIT EVER**

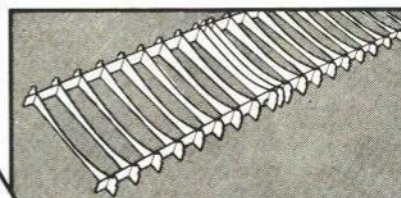
Much could be said about KWIK-FLI III but "PHIL KRAFT DESIGNED—TOP FLITE ENGINEERED" says it all!

Now available in complete kit form at leading hobby shops with, of course, the quality, engineering and unique features that have made Top Flite world famous.

Now, Top Flite . . . always the pioneer in new ideas . . . gives you a T.A.C.* jig to build the complete wing in one assembly plus full 11 1/4" wide wing planking . . . absolutely no splicing needed.

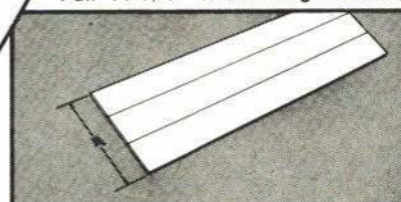
These innovations, combined with many completely finished parts, make KWIK-FLI III easier and faster to build than ever.

** T. A. C. means True Alignment Construction.*



** T. A. C. Wing Jig!*

Full 11-1/4" Wide Wing Planking!



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Introduces Brand New

SUPER MONOKOTE™

(Patent Pend.)

The **NEW, IMPROVED** Covering with the Built-in Finish

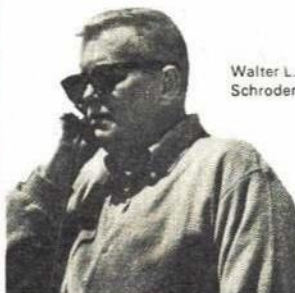
TESTED AND ACCLAIMED BY MANY OF THE WORLD'S BEST KNOWN MODELERS



Maynard Hill

SUPERB FINISH IN FRACTION OF TIME

Super MonoKote is a modern material that will be widely used on all types of models. It is easy to apply, durable and provides a superb finish in a fraction of the time needed for conventional methods.



Walter L. Schroder

DOES EVERYTHING A COVERING SHOULD

When asked why I liked working with the new Super MonoKote, my answer was simple and direct, "Its new dry adhesive makes it the simplest material to cover with that I have used as yet. It works evenly and smoothly around corners and curves and when shrunk, it holds its tautness." When a covering material does all it is required to do and then adds a bonus of a fine-looking, colorful machine, it rates tops in my shop.



Don Dewey

COVERS COMPOUND CURVES WITH EASE

There is absolutely no question that Super MonoKote is the fastest known method of finishing a model aircraft. Super M-K is easy to apply, adheres uniformly and covers compound curves with extreme ease. RCM does not hesitate to put its tested, approved and recommended stamp on this new material from Top Flite.



Ken Willard

TOUGH... FUELPROOF... EASY TO CLEAN

Super MonoKote covers a model easier and faster than any other covering material, yet it gives your model a high gloss, professional appearing finish that you can be proud of. It's strong and tough, easy to clean, fuelproof, and simplifies patching over repair jobs. I now use Super MonoKote on all my models, and recommend it.



Dale Willoughby

STAYS TIGHT OVER OPEN FRAME

Super MonoKote has been tested for over a year on my radio controlled gliders. The red and orange colors in one mill thickness applied over open framework on both wings and tail surfaces were repeatedly exposed to extremes in heat and cold, but showed no creeping nor wrinkling tendencies. I consider Super MonoKote to be the best all-round model covering material and my choice for the "BIG SAILOR," a radio controlled glider design created for World Records Trials.



William C. Northrop, Jr.

NO WRINKLING... NO SLIPPAGE

With the development of Super MonoKote, Top Flite has at last fulfilled all of the requirements for a one-shot model airplane covering material. There is no wrinkling, no slippage, no softening of the adhesive by glo fuel, no "fly paper" stickiness while handling. Having tested Super MonoKote for more than a year, I'm sure that like me, once you've tried it, there'll be no returning to outmoded covering and finishing methods.



Dr. Walt Good

A TRULY BEAUTIFUL FINISH

The new Super MonoKote has given my Aeromaster biplane a truly beautiful finish. The dry nature of the undercoating and the thinness of the film make it very easy to apply, even around sharp corners. I highly recommend Super MonoKote to the modeler who wants a beautiful finish in the shortest time.



Dario Brisighella

SAVES TIME AND WEIGHT

I'm careful and finicky about finishing my planes. It usually takes me 30 to 40 days (about 4 hours per day) to cover and finish with silk and dope. Using Super MonoKote I can cut this down to 7 days... less than 1/4 the time. Another big advantage is a weight savings of about 1 lb. 3 oz. on my biplane. I'm sold on Super MonoKote... it's great!



TOP FLITE MODELS, INC.

2635 S. WABASH
CHICAGO 16, ILL.

New Super MonoKote, because of its dry adhesive backing, will not adhere to itself. It's fast, simple to apply, and is easier to work around compound curves. Another important benefit of new Super MonoKote lies in the fact that it comes in rolls 26" wide and can be purchased by the running foot.

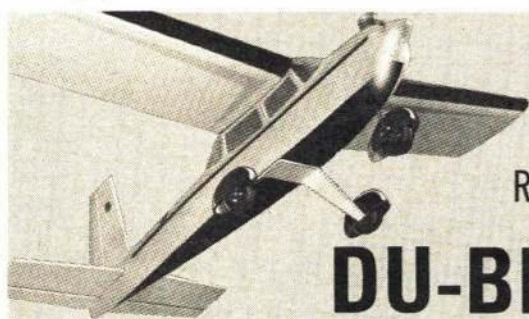
AVAILABLE AT ALL LEADING HOBBY SHOPS

NEW SUPER MONOKOTE IS AVAILABLE IN 6 ULTRA HIGH-GLOSS FINISHES

only \$1.35 per running foot 26" width

International Orange
Piper Yellow
Missile Red

Mustang Aluminum
Sky Blue
Jet White



No matter how you
look at it—this
almost ready-to-fly
R/C plane is truly a bird!

DU-BRO *presents the new* **AERO COMMANDER 100**

SEMI-SCALE R/C KIT

*from Galloping Ghost to Full House!—
for .15 and .19 engines*

only **\$34.95***
including parts



SPECIFICATIONS

WING SPAN: 49"
WING CHORD: 8"
WING AREA: 388 SQ. IN.
LENGTH: 36"
FLYING WEIGHT:
3 LBS. 12 OZS.
(including R/C gear)

- Easy assembly and handling make it ideal for the beginner—near-scale appearance and roomy design appeal to the advanced.
- All parts pre-formed. Wing and stabilizer have foam cores.
- Servo rails and fuel tank mount are installed in vacuum-formed, high impact, reinforced fuselage. Simply epoxy the wing halves together... bolt landing gear to fuselage... add engine with radial mount... then cowl. Hinge rudder and elevators... paint and trim. Attach tail group and wing... fuel up and you're ready to soar.
- *Does not include engine or wheels.

**ALSO
NEW**

Newest field-tested high-quality R/C accessory by

DU-BRO strip aileron linkage hook-up

**NO
NOISE!**

Complete... fully adjustable
... can be used on any high,
mid or low wing plane.

22 PIECE SET **\$2.95**

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rockets and space flight. This time, it's called, "Rockets, Missiles and Man In Space." From Viking Press, 557 pages, \$10.95... and worth it! This is the definitive book on the history of what we're doing, and the NAR is mentioned therein.

This Is Goodyear

Continued from page 28

views up to 1/8 scale. Then you can either stop there or take advantage of the 5% tolerance to scale ruling. The 5% may seem small, but it is 1" in 20 inches (i.e. a longer or shorter wing, fuselage, etc.). The Falcon has the minimum span, chord and length allowable (i.e. 1/8 scale minus 5%). The next step is to determine the desired stab area and rescale that. Rarely will it be necessary to take full advantage of the plus 25% tolerance on the stab. Usually 12-15% is adequate. When adjusting the tolerances, be sure to maintain a consistent scale over the entire area. The easiest way is to use a protractor and maintain the same angles on straight surfaces. O.K., now you've got some patterns to go by.

First saw out the fuselage from 3/8 balsa, add maple or other suitable motor mounts and plywood doublers. Also add a piece of 3/8 x 3/8 spruce for a tail-skid mount.

Assuming you choose the sheet-balsa type of wing construction, the first step is to butt-glue two pieces of 1/16 sheet balsa, which when joined will be as wide as the wing root chord. I prefer a 6" wide sheet and about a 1/2" splice at the trailing edge. You should end up with a single sheet large enough to accommodate the entire wing planform including wing tips.

The next step is to determine the bellcrank location and in-lay a 1 x 2" piece of 1/16 plywood into the 1/16 sheet balsa for the bellcrank mount. Then glue a 1/8 x 3/16 strip along the leading edge. Add a piece of 1/4 x 1/4 balsa spanwise at the desired airfoil high-point. Leave a gap large enough for the bellcrank to swing. Cut out the desired number of ribs and glue in place. The ribs look like a truncated triangle. Very few ribs are actually required.

Add the control system, including the pushrod and lead-outs, followed by the 1/4 sheet wing tips. The tips are glued on top of the 1/16 sheeting laid out for the bottom of the wing. Add the top sheeting and sand the leading edge to the desired contour. Finish-sand the entire surface and the wing is done.

The stab and rudder are 1/8 hard sheet balsa. If you use the sewn hinge technique, 3/8 x 3/8 spruce spars are necessary on the stab. These will prevent the thread from pulling through. The best material for sewing hinges is either Top Flite hinge thread or heavy carpet thread.

The landing gear is made in two sections. The right-hand gear is bent the opposite of the left-hand gear. Drill a 3/32 hole through the fuselage and doublers and position the gear as desired. Remember, the gear must "exit" at the scale location, the other bends and lengths are up to you.

The fuel tank is held on by U-shaped pieces of coat hanger, then secured with rubber bands. Add the engine pod (which is optional).

Assemble all of the individual components and your model is ready to paint. Don't forget all the required numbers. If you finish the model with butyrate dope, add two coats of Hobbydope clear or SPL-990 clear for a real fuel-proof finish. The original was covered with Silkspan, followed by two coats of SPL clear, two coats of Sig dope, decals added, then a final two coats of SPL clear. Butyrate dope alone will not withstand the high nitro

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DUAL CONTROL LIGHT WEIGHT
PROPORTIONAL CONTROL SYSTEM

FROM MICRO-AVIONICS' XL SERIES

The Micro-Co-Pilot is a complete dual control system for safe flight training. With the use of this system, a beginner can be taught by an experienced flier to handle any of the current contest-type aircraft without the danger of having to transfer the transmitter from hand to hand at a critical time. Instructor pilot may take over control of the system at any time with no interruption in signal and with no unwanted control movement due to an exclusive logic switching system. The connecting cable between the two units is an extremely durable, flexible two-conductor shielded cable with screw-on type connectors to prevent accidental disconnection of the system. The airborne portion of the system is our standard XL package which consists of an extremely compact receiver and exclusive Micro-Loc servo mounting system.



Available in either 4- or 6-channel units on 27 MHz band only. Four-channel system complete with 4 servos, ready to fly — \$449.95. Six-channel system complete with 4 servos — \$479.95.

The Micro-Co-Pilot is an ideal club project for teaching beginners. AMA chartered clubs may write on club letterhead for special price information on the above systems.



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VOL. 5

HISTORICAL AVIATION ALBUM

Factual stories on the 1913 MARTIN TT, WRIGHT F2W-1/-2 racers, CURTISS P-6E HAWK, GRUMMAN WIDGEON, BREWSTER BUFFALO, ROVER inverted AERO ENGINE, CHRISTMAS BULLET and other fascinating features.

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FREE BROCHURE AVAILABLE

fuels used in this event.

The best engine by a long run is the ST-G15 front rotor. However, some Cox 15's and K&B 15's have been used with some success. Don's Model Aeronautics makes a couple of good tanks equipped with fast-fills. They are available in the 1½-oz. and 2-oz. sizes. With a ST engine, 1½ oz. will be adequate.

I've tested every conceivable propeller on my racers and nothing can beat a 7-6 Tornado nylon. This is on a ST engine. Cox's sometimes run a little better with an 8" diameter prop (4 or 5" pitch).

For fuel, practically anything will work. A Super Tigre runs best on 40 to 70% nitro. I prefer Harry Roe's fuel with about 60% nitro. This is now available through World Engines as "RoGo."

As far as becoming proficient at racing, that's up to you and lots of practice. Concentrate on good dependable pit-stops first, then work on improving the speed without sacrificing on the pit-stops. Ninety mph is about the minimum competitive speed in our area with 110 mph being about the tops right now. However, if your area is just starting Goodyear, then of course you can run much slower.

Good luck, and may your pit-stops never be long!!!

Straight and Level

Continued from page 6

opment of the famous AMA Delta Dart. The basic idea fittingly is entitled "For the Tenderfoot." The young beginners may actually achieve their first free-flight success. Experts might not like the model, but what the heck, fellows, it is free-flight! The ready-to-fly guy may learn that he does, by gosh, have an ability to build something!

BLAST OFF INTO SPACE

with Real FLYING ROCKETS

JAVELIN ROCKET KIT — K-32 2.00

- Rocket • 2 safety approved engines
- Hi-altitude to 2500 ft. • Parachute recovery • Launch over and over again
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Complete outfit . . . SK-32 — 6.95
All of above, plus • Launcher Pad
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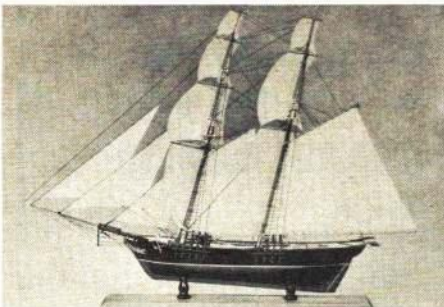
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WOOD SHIP MODELS

Kits include Carved Hulls • Metal Fittings • Display Stand



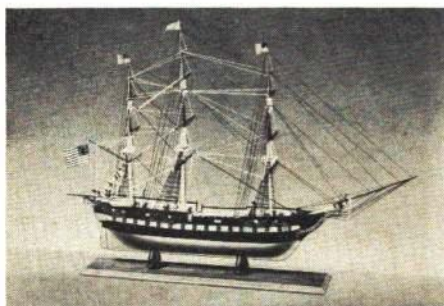
Kit 172 BALTIMORE CLIPPER, Dos Amigos. 22½" Deluxe kit, printed cloth sails, metal fittings\$16.95



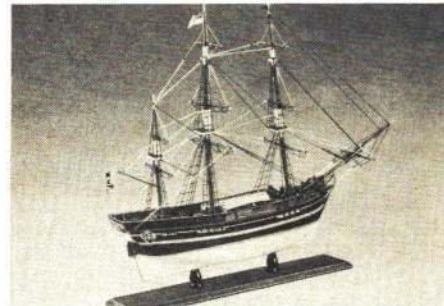
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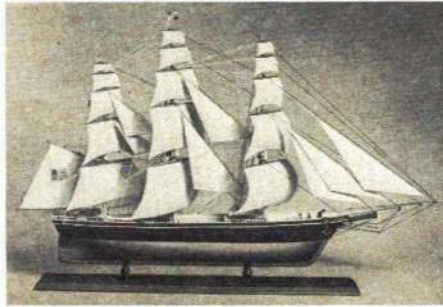
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Maybe to fly it too. For the guys in between, here is something good just to fool around with. Be he a school kid or granddaddy, or a young lady (and some of our finest contestants are girls), here's fun and things to be learned.

What we want you to note is that the Oily Bird is the lead article, not some championship crate or aviation article. For us this is a dedication to the causes of youth (that so-called Junior problem), and a fuller exploitation of the whole hobby by anyone broadminded and inquisitive enough to share more fully the true meaning of the whole spectrum of the model airplane hobby. As a reminder to all of us, editors, readers, and industry, this series will lead off every issue.

Oily Bird

Continued from page 14

Flying: Pick a site that's grassy but free of trees. Free-flight models find trees deadly attractive and seem to always seek them out. Tall grass has a nice cushioning effect. Make the first few flights with the 4½" dia. by 2" pitch prop mounted backwards. It will be less efficient this way. You can also use the 4" dia. by 2½" pitch prop. Fill the Pee Wee's tank only half way. This is easy. Simply turn the engine on its side and fill; overflow out of the vent tube will keep the tank from filling completely. Adjust the needle valve so the engine is running rich and slow. Launch Oily Bird straight into the wind from a level position. Watch the flight carefully. Try to determine how the model performed. What did it do and when? Was your launch O.K.? If there's any doubt, repeat the flight. Now that you're sure about the flight pattern, let's go over the trimming technique. First, as the engine's speed is increased to its peak rpm, all maneuvers become more violent. Circles tighten up as do loops. Spiral dives happen a lot quicker! So if the first-flight pattern was O.K., increase the engine's speed. If any erratic movements show up, trim them out.

Downthrust keeps Oily Bird from looping wildly. Usually you'll need to add some rather than remove it. Right thrust gives right turn. Too much causes a right spiral, most often downwards. Too little will emphasize a looping tendency. None, or even some left thrust, will cause the model to go left. A just-right amount, coupled with the tendency to loop, results in the model making a nice, climbing spiral. Balance these effects. Insert small washers under the mounting tabs. Make your own out of shim stock or tin-can material.

Oily Bird will glide to the side with the heavier wing tip. If it goes straight — sur-

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prise — then pick a direction and add a bit of clay to that wing tip. When a glide turn is too tight (circle too small), add clay to the lightweight tip. The circle will open up. Experiment.

Try to aim for a moderate amount of climb and a fair glide to keep chasing down to a reasonable distance. Then if there's not too much wind, fill up the tank and watch her go! May your bird be Oily!

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Fabulous Bf 109 F-2

Continued from page 38

(smallest size); 13) Spring-type clothes pins (about 1 doz.); 14) Diagonals; 15) Long-nose pliers; 16) Spray-paint outfit and mask.

Materials required: 1) Cement (liquid or tube); 2) Emery boards; 3) Sandpaper (preferably garnet finishing paper #7-0 and #8-0) and wet or dry, silicon-carbide paper, #400 "soft-back," very fine, #320 medium, #240 coarse grade; 4) Sable brushes #000 (pointed, artist's detail brush) and 1/8" and 3/8" flat brushes; 5) Duratite Surfacing Putty; 6) Duco or Ditzler's Special Spot Putty; 7) Flat and gloss enamel.

The kit has very clean plastic parts with practically no flash; however, the landing gear in the kit is incorrectly mounted. To correct, a little filing is required so that the wheel struts will slant several degrees forward to the nose of the plane. File the rear slot hinge with a rat-tail file. File deeply, so that the part is almost separated, but enough material is left to insure that the unit will remain in one piece.

A file-and-check operation is required to assure proper angle of landing gear. The landing gear on the model in article is cemented in wheels-down position and propeller is stationary. Actually, this is the easiest way out. The fitting to allow raising and lowering of gear would be very tedious work. I have never liked the idea of movable parts on my models, as my models are only used for display purposes.

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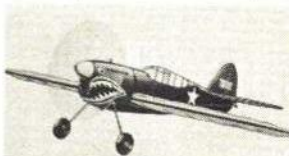
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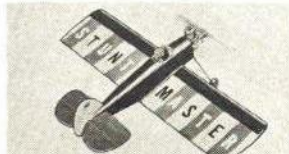
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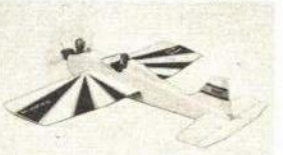
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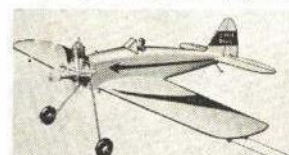
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1) Wheel wells: Use lightweight cardboard about the thickness of postcard or file card. Use this piece of cardboard as a template and mark where they overlap. Cut at overlap mark; transfer to .010 sheet plastic and cut to fit. Cement in place and file edge smooth, flush with wing. Almost any well-stocked hobby shop should carry this item; however, if you cannot find any in your area you may send stamped, self-addressed envelope to me in care of the editor for address of firm which sells styrene.

2) If you wish to expose the excellent engine detail featured in kit, and do not wish to remove complete cowling, use jeweler's saw fitted with fine blade and saw cowlings to side of hinge line. On side to be raised, bevel edge and keep filing until you have opening large enough to see engine detail. The model photographed in article has about a 1-inch opening. Cement cowlings in raised position as it would be if adjustments were being made on actual aircraft.

In my files I have one photo showing a Bf 109F-2 with the entire cowling off and placed on the ground, and another photo showing one side of cowling raised. So you see, you have a choice of removing entire unit, or raising either side. If one side is to be raised, cement small prop which would be necessary to hold the cowling section up under normal repair conditions. Make prop of piece of $\frac{1}{16}$ " plastic sanded or filed round.

Subassembly of parts: Assemble and paint motor. Set aside to dry and when dry, mask with masking tape. Do not remove the tape from motor until entire plane is sprayed with final finishing coat, then remove tape from motor before you cement the painted engine cowling in place. Assemble rest of model according to plan, except for landing gear, tail and main wheel, propeller and spinner. These parts are painted separately as per color scheme.

Painting: Spray entire plane with a good primer coat and sand after dry, using wet or dry (about #400) to smooth if surface is rough. After primer coat is dry, fill all seams with spot putty (leading and trailing edges, top and bottom of fuselage) where any joinings were not cemented too tightly. After spot putty is dry, sand until smooth.

At least two coats of primer are required; about three to four will give best finish. When last coat is completely dry and

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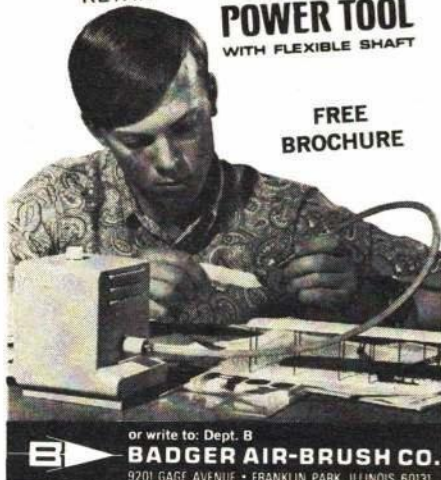
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sanded smooth, then spray all undersurfaces, fuselage, wing, tail surfaces, etc. with pale blue. When dry, mask off blue area and spray sides of fuselage and rudder with medium gray. After medium gray is dry and sanded smooth, mask off gray area which is to be left gray and spray medium green on decking, wings and tail. After medium green is dry, mask off areas you wish to remain medium green and spray with dark green. Mottling on sides is a medium green, sprayed very lightly, giving a shadow-like effect.

Next, mask off and spray $\frac{3}{8}$ " yellow band encircling fuselage. Yellow on bottom of wing tip is $\frac{3}{4}$ " from wing tip. (Square off with aileron.)

Paint barrel of cannon with silver paint. Cement canopy in open or closed position. Cut decals as close to color area as possible and apply. Paint metal parts of canopy with medium gray.

(Next month's article features the first of a series of conversions — Ed.)

Tin Goose

Continued from page 20

The remarkable thing is that the old thunderbirds that Henry Ford built when the Model-T was the only car The Ford Motor Company produced, are still around. The indestructibles!

Moreover, the Aircraft Hydro-forming Corporation of Gardena, California has built, mostly from original Ford trimotor blueprints, a modern version which it calls, "The Bushmaster 2000." Last fall at the Long Beach, California airport, I saw the experimental model going through its final flight tests to get its airworthiness certificate.

By February of this year, the plane had

accumulated more than 50 hours in the air, and reportedly has been sold to a big U.S. corporation.

What happened, however, between 1926 when Henry Ford built the first Tin Goose and 1966, when The Bushmaster 2000 made its first flight, reads like a Hollywood scenario co-starring Horatio Alger and Tom Swift.

The Ford Motor Company was thrust into aviation during the first World War as a prime contractor helping to build the famous Liberty aircraft engines. But Henry Ford, himself, didn't have much interest in the airplane. An extreme pacifist, he called it: "another one of those damned war-making machines."

He probably would never have had any more to do with airplanes except for a most unusual letter which his son, Edsel, received one day in 1923. One paragraph of the letter read: "I should like a thousand dollars, and I can only promise one thing — you will never see the money again."

The letter was written by William Bushnell Stout, one-time aviation writer for the Chicago Tribune, founder and editor of a magazine called, "Aerial Age" and member of the War-time Aircraft Production Board. On the strength of that reputation, Edsel answered the letter enclosing his personal check for \$1,000 and an equal amount in his father's name.

Stout had written other prominent businessmen and industrialists the same letter, which also offered a kind of correspondence course in the state of the art of aeronautics. When word got around that the Fords were interested, he collected something like \$125,000. With that capital he started the Stout Metal Airplane Company in a small factory near the Ford plant in Dearborn, Michigan.

There, he designed and built a four-pas-

Citizen-Ship

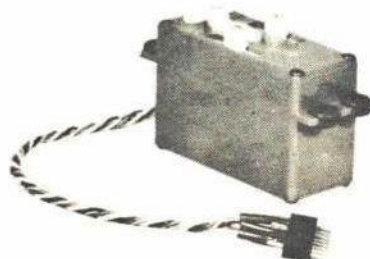
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senger, high-wing monoplane which he called the "Air Sedan." During test flights at Selfridge Field, Mt. Clemens, Michigan, an Army Air Corps base, Henry and Edsel Ford came out to see how things were going. They saw the plane fly, but it didn't fly very well.

Stout explained to Ford, "This thing isn't worth a damn. I need more horsepower." Henry Ford replied, "You don't just need more horsepower, son. You need more airplane."

The Fords backed Stout with more money, and Stout came up with a bigger plane, the "Air Pullman" of all-metal construction, powered with the higher-horsepower Liberty engine, and capable of carrying eight passengers. In a slightly modified version, it became the "Air Transport," and this time he had a winner.

After witnessing several flight demonstrations, Henry Ford gave Stout an order for five of the planes. About the same time, he announced he was going to build a modern airport, a new factory to produce the Air Transport, and start a company-airline to carry personnel and freight between the Dearborn Ford plant and the factory branch in Chicago.

The Ford Airport was dedicated in January, 1925 and three months later, on April 13, the first Air Transport, christened "Maiden Dearborn I" took off with 1300 lbs. of auto parts for Chicago. The Ford Air Transport Service was born.

The airline was a month old, when Ford bought all the stock and assets of the Stout Metal Airplane Company. William Benson Mayo, nominal Chief Engineer of the Ford Motor Company was put in charge, although Stout remained on the payroll. The latter was given a new assignment—design a bigger plane.

Characteristically, Bill Stout already had

been working on a larger trimotored design using the latest Wright, radial, air-cooled, 200-hp engines.

In late November, 1925, the plane was ready. Henry Ford and his "Top Brass" turned out to see the maiden flight. At the controls was Major R. W. Schroeder, an Army flyer of high-altitude record fame, whom Ford had hired as chief test pilot.

When "Shorty" Schroeder came down, he called Henry Ford aside. "This thing lands like a brick," he reported. "Forget it."

A short time later, the Stout Metal Airplane Company factory was completely destroyed by a mysterious fire. In the debris, was the twisted, charred remains of the Stout version of what never did become the famous Ford trimotor.

Until some decision was reached about the future, Stout was told by Bill Mayo that Henry Ford wanted him to go on an extensive lecture tour around the country promoting aviation. More idea man, writer and promoter than he was engineer, Stout was delighted with the opportunity. But things were going on he didn't know about.

Ford had a better idea. Harold Hicks, who had designed racing boats for Edsel, was made chief aviation engineer of a newly formed Airplane Division of the Ford Motor Company. Hicks hired a group of experienced aeronautical engineers including Tom Towle, who had worked with Stout on the "Air Pullman," and three young M.I.T. graduates, Otto Koppen, John Lee and James McDonnell, now president of McDonnell-Douglas. Hicks put them to work on a concept for a trimotor that Henry Ford had in mind.

According to Towle, who lives in Syracuse, New York: "I did the first three-view drawings, employing a completely new wing and fuselage configuration. The others came along a short time later and, working

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Fairchild PT-19 control line stunt winner by Dave Hempstraught. Spans 53"; overall length 38"; takes .35-size power plant.

"Army Rat" easily made U-control Rat Racer designed for First Army's military modelers. Spans 19"; 21" long; uses .35 motor.

Pan Am's **"Caribbean Clipper"** was inspiration for Larry Conover's latest PAA-load cargo free flight. Spans 53"; 29 1/2" long; uses .02 engine.

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together, we came up with the finalized version of what was to become the Tin Goose in its popular profile."

"By the time Stout returned from his lecture tour," Tom Towle further explained, "things were too far along for him to have anything to say about it. The plane was already being built in the new factory."

Designated the 4-AT (because it was the fourth model design of the Air Transport series), the design resembled the original Stout trimotor about as much as a pelican resembles a partridge. It did, however, look like a Chinese copy of the plywood-and-fabric trimotors designed by Anthony Hermann Gerhard Fokker, the Dutchman, who built World War I warplanes for the Kaiser. The trimotor Fokkers were making a name for themselves in the skies here at home and abroad.

Coincidentally, it was a Fokker trimotor that Commander Richard E. Byrd had selected for his planned flight over the North Pole. The plane was named "The Josephine Ford" after Edsel's wife, because Ford money helped to finance the 1925-26 Byrd Polar Expedition. The story goes that both Fords were "sold" on the Fokker's performance capabilities and the word went down to Hicks—"build one like that, only make it all-metal!"

One thing is well substantiated, Bill Stout had very little to do with the ultimate Ford trimotor design, although for 40 years the popular version is that Stout designed the Tin Goose.

The fact is, Bill Stout, whom this writer interviewed many times, never did claim he designed the Tin Goose. In his autobiography ("So Away I Went," Bobbs-Merrill, 1947) Stout mentions only his work on the "Air Sedan," the original Liberty-powered "Air Pullman," the "Air Transport" and the best-forgotten 3-AT trimotor which he also called the Air Pullman. There isn't a single picture of the Tin Goose in the entire volume. And the author in a cynical tone, criticizes the Ford-designed trimotor.

Stout did say, and he never let anyone forget it—"My greatest contribution to aviation was getting Henry Ford interested in building airplanes." That, alone, earned him a place in aviation's Hall of Fame.

The first Tin Goose with the recognized scripted FORD emblem proudly displayed on its tail, flew on June 11, 1926, and during the next seven years, 200 of the all-metal airliners, including some experimental models, were built by the Ford Motor Company. Henry Ford immediately put the big plane in service on his airline, which had been expanded to include Cleveland on its route, and was now carrying the first scheduled Air Mail in the U.S. under private contract.

Pilots wore snappy uniforms, and there was a flight escort on board to care for passengers' needs. Coffee and box lunches were served in flight. At Ford Airport there was a terminal building with waiting room, ticket counter, lunchroom, and even hotel accommodations. Today, the famous Dearborn Inn stands on the same site.

Ford also pioneered airport limousine service with a Model-T bus. His engineers came up with a radio beacon for bad weather approaches. And the airport had the first paved runway. There was also a mooring mast for dirigibles. The field was open to all flyers, and here began the first Ford Reliability Air Tours to promote interest in aviation.

Stout got back into the picture again, starting his own airline operating between Grand Rapids, Michigan and Detroit, and the planes were Ford-built trimotors. That was this writer's first contact with the Tin Goose. I flew in one of the Stout Air

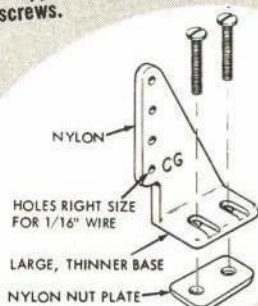


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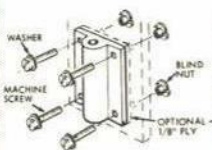


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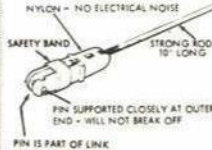
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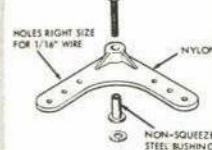
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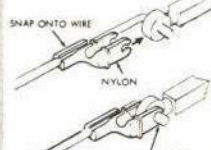
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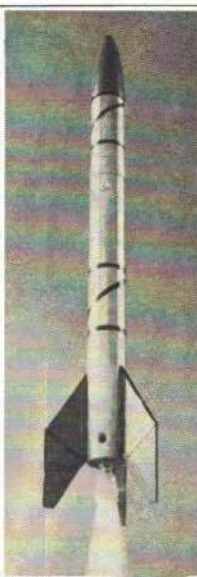
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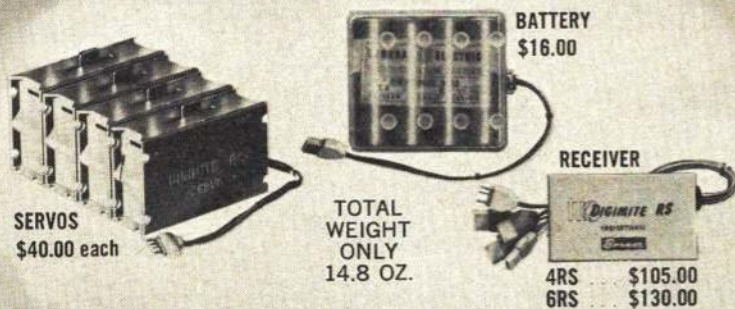
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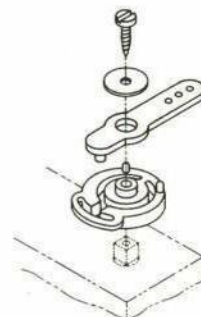
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Right from the start, the Ford trimotors attracted customers. Standard Oil bought one, and turned it into an executive aircraft. Monarch Foods transformed another into a "flying grocery store," and took it all over the mid-West displaying their products at airports. The Army Air Corps bought them for personnel transports, as did the Navy and the Marine Corps. One was made into a "flying ambulance." Another, designated the XB-906-1, was entered in a bomber competition, but it crashed during factory tests.

They fitted the Tin Goose with skis for winter operations. They put huge pontoons on her to make her into a seaplane, and then, they put wheels on the floats to make her an amphibian. They even stretched the basic design with a king-sized model, the 5-AT, capable of carrying 12 passengers with a cruising speed of 110 mph. Airline customers stood in line to buy the first all-metal airliner in this country. Overnight, she was the new "Queen of the skies."

Strangely, the flying Fords were never much as record-breakers and headline-makers. They were too busy pioneering scheduled air transportation. One 5-AT did, however, have her day of glory.

Named "The Floyd Bennett," after the pilot who had flown Byrd in his Fokker "The Josephine Ford" over the North Pole (May 9, 1926), the plane was poised at Little America in Antarctica on Thanksgiving Day, 1929 for a dash to the South Pole. Fitted with skis and souped-up engines, the plane, with Commander Byrd and four others aboard, staggered into the air at 3:30 p.m. A good tailwind pushed them southward over the treacherous Ross Barrier.

Ahead lay the towering Queen Maud Mountain range, and nobody was sure the over-loaded Ford could clear the 10,000 ft. hump. Engines throbbing, the Tin Goose waddled up the glacier, climbing to 8000 ft. But there, she hung, with rock battlements closing in on both sides.

Bernt Balchen, the pilot, shouted above the roar—"Dump something. Two hundred pounds, or we can't make it."

Byrd had to make a decision. Gas or food? The fuel load had been calculated precariously close. On the otherhand, there were scant rations for the trek home in case of a crash.

"Ditch the food!" he ordered. Overboard went bags of precious foodstuffs, and the plane climbed higher. But still, the ridge loomed high above them, dead ahead, and there was no room to turn around now.



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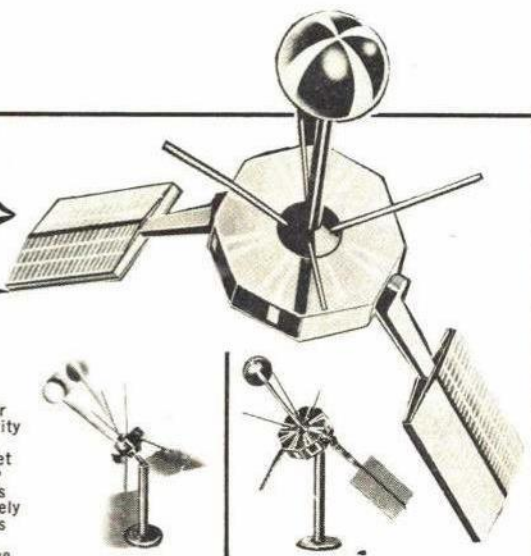
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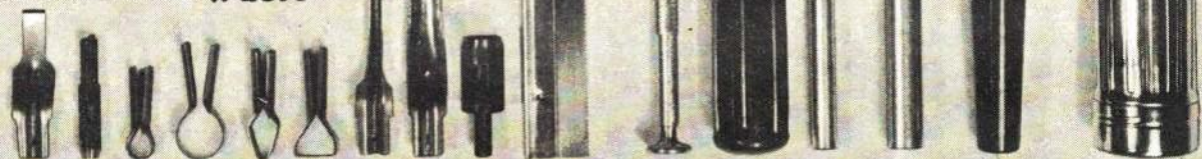
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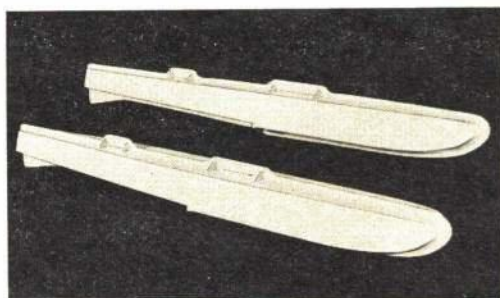
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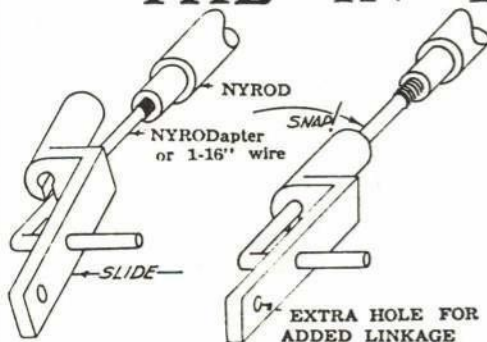
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"More!" yelled Balchen, the wheel pulled way back against his chest. "She's stalling!"

A month's supply of rations went out the door. Minutes ticked by, and The Floyd Bennett, throttles at the fire-wall, shook and trembled, clawing for extra altitude. Then, with skis almost brushing the saddle-back of ice, she mushed over and swept out across the vast Antarctic Plateau.

The plane droned on, flew over the South Pole and returned to Little America. Today it rests in a place of honor at the Ford Museum in Greenfield Village, Dearborn. Although on static display, it is still listed as one of the remaining flyable Fords.

The Fords domination of the commercial airlines was short-lived. There came into being in the mid-thirties, the Boeing 247, twin-engined 10-passenger airliner, and the Douglas DC-2 and Douglas DC-3 which were much faster, and could carry far greater loads for less operating costs.

Henry Ford tried to meet the competition with a 40-passenger trimotor, the 14-AT, which had Pullman-like compartments with seats convertible into berths, an airborne galley, sound-proofing, air-conditioning and many other special features. The plane never got off the ground.

Ford also designed and built a single-place, bantam-weight "flying flivver" which many believed, he had in mind to make the Model-T of the air. Unfortunately, the plane crashed during tests in Florida, killing its pilot, Harry Brooks, one of Henry Ford's close friends. It is said that crash led Ford to order all plane production stopped. The last Tin Goose was produced in 1933. Until 1942 when Liberator B-24 bombers were produced at Willow Run, Ford was out of aviation.

Meanwhile, as fast as the Boeings and Douglas' were available, the airlines bought them and got rid of their Ford trimotors. The Tin Goose was a dead gander.

But the indestructible Tin Goose had other ideas. Lowell Yerex, a pioneer aviator in Central America, who founded an airline called TACA (Transportes Aereos Centro-Americanos), put a fleet of 30 Fords to work. For more than 15 years, they flew passengers and freight over some of the roughest terrain in the world. Others turned up in far-off places. The name FORD, known just about everywhere, in some remote areas, meant airplane, not automobile.

Even here at home, there were still some jobs where the Tin Goose was wanted. Grand Canyon Airlines, as a thrilling tourist attraction, flew Ford trimotors through the canyon, not over it. A fleet of five started Island Airlines in 1935. Others appeared, now and then, at county fairs and air shows.

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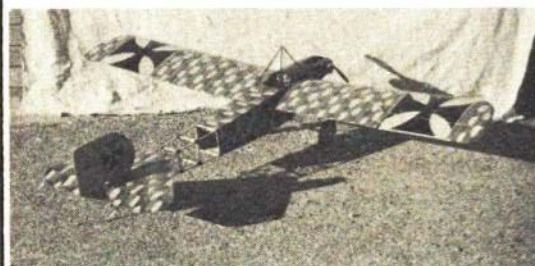
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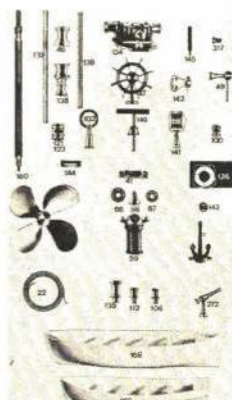
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stunt pilot, Harold Johnson, with his Tin Goose at the Cleveland Air Races.

Johnson would swoop down out of the sky, pull out at about 100 ft., then flip the Ford over on its back, and come roaring past the grandstand, the big barn-door-like rudder almost scraping sparks off the runway. Then, he would make another pass and pull up and do a loop-the-loop, as a hundred thousand pairs of eyes stared in disbelief.

"Incredible!" exclaimed a veteran pilot, who was standing next to me. "There never was a plane that big which could take such punishment."

During World War II, a Ford trimotor was used on Bataan to evacuate civilians until the Japs shot it to pieces when it was on the ground. And General George C. Kenney, MacArthur's Air Chief in Australia told me they "flew the rivets out of" some Ford trimotors operating from jungle airstrips during the early stages of the conflict.

After the war, nobody heard much about the disappearing Fords until some of the airlines remembered it was time to call public attention to their earlier inaugural flights which started scheduled air transportation to many cities. TWA was first, and in 1949, it found an old Ford trimotor, painted it up as the "City of Los Angeles," which in 1929 flew the first all-passenger, coast-to-coast trip for Transcontinental Air Transport (TAT), a forerunner of today's Trans World Airlines. Resultant publicity revived the "Saga of the Tin Goose."

Northwest Orient Airways, did the same thing in 1956 to commemorate its 30th anniversary. American Airlines followed suit with their first Ford in 1963, flying it across the country to commemorate American's first transcontinental service.

It was in the mid-fifties, however, that the Tin Goose really got a new lease on life; more like a resurrection. A small group of individuals who worked in California's vast aircraft manufacturing complex, got together and formed the Hayden Aircraft Corporation, Robert E. Hayden, president and chairman of the Board. William B. Stout, still active in aviation, although aging in years, was named as the director of engineering for the new company. And Stout immediately announced they were going to start producing the Ford trimotors all over again.

Because of his previous connection with Ford, Stout was able to obtain many of the original drawings from which the Tin Goose was born. With these to work with, and the help of younger aeronautical engineers at Hayden, he started redesigning the basic 5-AT Ford taking advantage of Jet Age "know-how" and technology. The new Ford was to be known as "The Stout Bushmaster."

The prototype of the aircraft was to have been completed in 1957, but the project suffered many setbacks. Bill Stout died suddenly, and everything was up in the air. Hayden Aircraft faded out of the picture.

There were those still interested, however. One was Laurent Eugene "Frenchy" Savard, an old Ford pilot and an original Hayden stockholder. Another was Ralph S. Williams, president of Aircraft Hydroforming Corporation. Savard and Williams had known each other in the past when both worked for the Douglas Aircraft Company. They decided to revive the project.

"After Stout died," Savard recalled, "we ran into all kinds of troubles because many of the drawings for specific parts were missing. As an alternative, we decided to buy an old Tin Goose, study the parts needed, and make our own drawings. Like somebody wise-cracked, the new Goose

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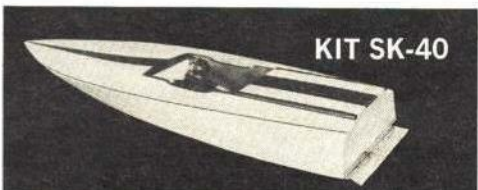


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was hatched before the egg!"

The tough job was locating one of the antique Fords for sale. They finally found one in Mexico. "When we found it," Savard explained, "the plane was sitting on cement blocks in a weeded field, and a family of five was living in it. But it was all there, engines, wings, undercarriage, everything. So, we put it together and flew it back."

There, according to Savard, they took the plane apart again, piece by piece, and in the process they got all the detailed information they needed to complete the drawings for the plane Stout had started. After that, they put the old plane together again and sold it to American Airlines.

For the next three years, the new Ford trimotor began to take shape in the shops at Aircraft Hydro. Then, in August of 1966, "The Bushmaster 2000" (they had changed the name) was ready for its test flight. Famed Douglas test pilot, Bill Bridgeman, flew it and she was pronounced airworthy and safe.

When I saw the plane, about 15 months later, there was no doubt about it, the likeness to the original Tin Goose was remarkable. There was still the thick, high-lift wing although with a slightly altered aileron and tip configuration. She had the same corrugated skin, the same shaped fuselage, only more vertical fin in the tail. She had more than double the original 5-AT horsepower, housed in more streamlined nacelles, and three-bladed propellers. Inside, there was room enough for 26 sky-troopers, and the cockpit was modernized with the latest instrumentation.

"What we have here is a plane designed to be a workhorse," Ralph Williams says proudly. "She can takeoff and land in about the same distance as the original Fords. But she is much faster and can carry a much greater payload. And she

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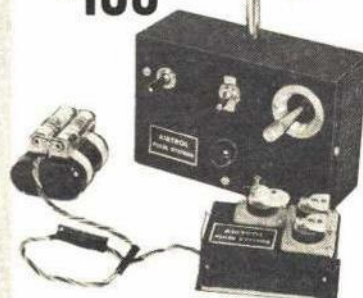
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Williams also told me that they have received thousands of inquiries about The Bushmaster 2000, and representatives from several foreign countries have visited Long Beach to see the plane fly. The U. S. Army has expressed interest, and she may get a trial in Vietnam. The U. S. Forestry Service has requested some tests.

"We plan a series of demonstrations," Williams said. "Then, pending results, and if there are firm orders, we plan to put the plane into production."

Cracked test pilot, Bill Bridgeman: "It looks like there may be another flying Ford in our future."

Radio Control World

Continued from page 34

by); Crystal-Filtered R/C Receiver (H. R. Beurrier); New Materials for Model Builders (Sigafoose, Spalding and Murphy).

Representatives of Top Flite Models and Balsa Corp. of America presented demonstrations of their latest covering materials (Super MonoKote and Coverite) during the APL sessions, and Vern Krehbiel showed movies of the Rhinebeck WW I meet last fall. The new Spectrum Analyzer of Hewlett-Packard Corp. (which makes a fine monitor for R/C flying sessions and was so used on Sunday) was described by Al Walcek of that concern, and signals of "good" and "bad" transmitters were shown. A Saturday evening banquet at a nearby country club was followed by an illustrated talk by Paul Garber of the Smithsonian Institution on old-time flying.

Fine weather prevailed for the flying session on Sunday—until a thunderstorm

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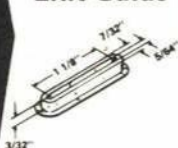


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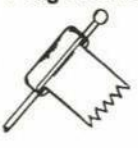
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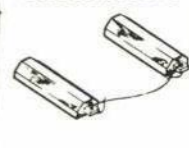
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around 4:30 terminated the affair. Demon-
strations were interspersed with fun-flying.
The air was filled most of the time — at one
point there were 72 transmitters at the
impound area! Planes demonstrated in-
cluded a 2/3-size Qwik-Fly by Phil Kraft,
a converted UC stunter (Nobler) flown with
full-house R/C by Ed Sweeney, Jerry Nel-
son's forthcoming KA6 ARF R/C glider
(flown by M. Hill), and a huge scale copy
of the new Boeing 747, brought all the way
from the West Coast for this Symposium by
builder Paul Sherlock.

This 10' span craft was 11' long, weighed
18 lb. and was powered by two ST 60's
mounted in the inner nacelles (the outer
nacelles were dummies). Made mostly of
styrene-foam, covered with balsa, the plane
was obviously intended for operation from
a hard-surface runway — it had 18 wheels
in the landing gear just as does the big job,
but they were all 2" diameter! The drag of
the grass field and low prop clearance made
it impossible to ROG in the normal manner
(the plane had been flown successfully
prior to its trip east). After many unsuc-
cessful attempts and mounting tension, the
plane was finally given an "assisted ROG"
takeoff with a long cord under the wing.
It showed that it could, indeed, fly nicely
(even though one of the dummy engine
nacelles dropped off soon after it was air-
borne). It blended in perfectly with the
full-size jets flying over on their way to
and from nearby Friendship Airport. Paul
made quite a few circuits of the field at
high and low engine speeds, then brought
it down for a fine landing. Most flying
thereafter was anti-climax, and the 747
flight was a fitting conclusion to another
outstanding DC/RC Symposium.

Sad news from Toledo: We have been in-
formed by members of the Weak Signals
Club of the death in May of Art Christen,
long a most active member of this club,
and also an avid flyer of UC and FF, and
operator of R/C model boats. Owner of a
sheet metal firm in Toledo, Art attended
many contests, was well-known in the Mi-
ami area, as he was an avid flyer in King
Orange meets. Not so well known is his
continuing aid to younger modelers, par-
ticularly those with scanty cash resources.
We mourn a gentleman who practiced
sportsmanship — and who brought many
chuckles to his fellow modelers.

R/C in Asia: During an extended busi-
ness trip to Southeast Asia, Lawrence W.
Hoffman visited with modelers in Thailand,
Manila, Hong Kong. He found some odd
practices in some areas; for example, he

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noted that all model boatmen and R/C flyers in Thailand operated their single-channel escapements or servos the opposite of what is normal here. They rig their equipment to give left rudder with one push of the button, right for two punches.

Donations again needed: It was just a little over two years ago that the AMA was able to announce successful conclusion of a campaign to secure more frequencies for R/C use—in this case, five spots on the band from 72-76 Mhz. To assist in the work it had been necessary to hire a lawyer experienced in handling such matters before the FCC, and all expenses for the campaign were paid from funds donated by AMA members, R/C clubs and manufacturers. (We might note in passing that even after we were successful in obtaining these spots, some said they would never be of much use for model R/C—but we understand that today at least one large R/C maker has 80% of his production devoted to 72 Mhz apparatus!) When the campaign was over, a moderate sized fund remainder was left, and has since been devoted to AMA business, including having our lawyer check into several FCC matters that might affect R/C.

The AMA now tells us this specialized fund has run out—but our frequency needs are greater than ever, due to the vast expansion of R/C activity. It may be necessary to start a brand new frequency campaign in the near future; meanwhile, we still need expert help to watch over our interests in matters dealing with the FCC. In short, contributions to the AMA Frequency Fund are needed NOW; send your donations so-marked to the AMA at 1239 Vermont Ave. N.W., Washington, D.C. 20005.

R/C in Canada: We learn from the Glitch (Soo Modelers RCC, Sault Ste. Marie, Ont.) that flyers above the border have received a real break from their R/C licensing agency (the Dept. of Transport). While ham and CB licensees recently had their fees raised from \$3.50 to \$10 annually, the R/Cers pay only a dollar initially to register their transmitter—and that's it! Congratulations to the D.O.T. It is also said that 72 mc spots may soon be available in Canada for R/C model uses. On the sour side, rumors have it that R/C spot frequencies may be opened to other uses—presumably CB phone; problem here is simply that not enough R/Cers license their transmitters, and it appears to officialdom that the R/C spots are used by far fewer modelers than is really the case.

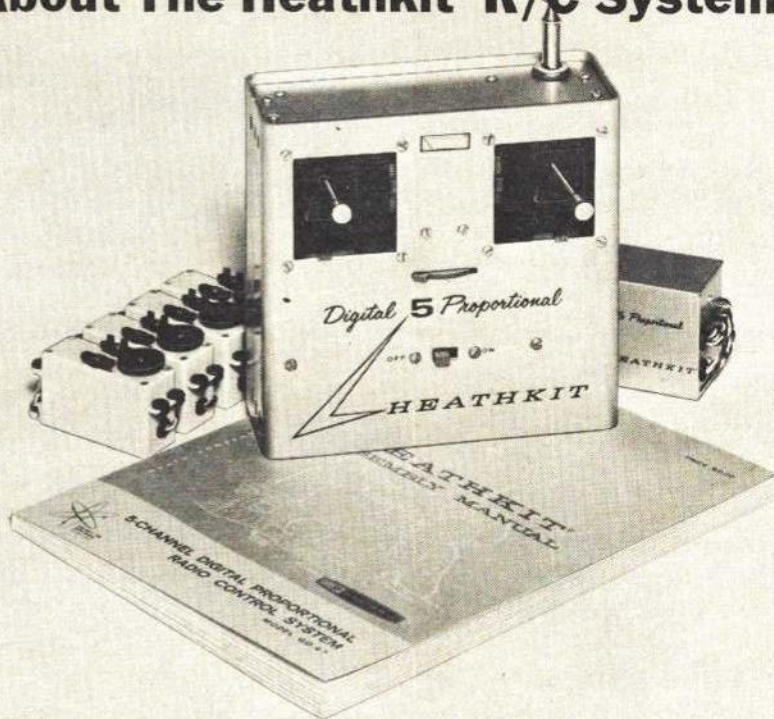
COMPETITION FLYING

Rhinebeck 1968: The ghosts of Richtofen, Lufberry and other WW I pilots are already stirring up along the Hudson, for plans have long been under way for the Second WW I R/C Jamboree. It will be sponsored by the IBM RCC on Sept. 14-15, at Cole Palen's Old Rhinebeck Aerodrome, Rhinebeck, N. Y. CD Bruce Blake says the events will be the same as last year—Scale, WW I Maneuvers, Team Combat, Bomb Drop with Balloon Burst and Spot Landing. Emphasis this year will be placed upon flying realism (several planes entered last year flew at scale speeds that some full-sized jets couldn't attain!). For a 2" scale plane—which is the preferred scale, but is not mandatory—a realistic model speed would be around 15-25 mph. Nuff said!

Balloon burst event will be changed to a slowly rising free balloon with crepe paper streamer attached. Some modelers have worked out in-air sound effects for their guns, and much improved bomb dropping is promised.

FAI speed record: Rumors have had it that an R/C speed model hit close to 200 mph in Germany, and details of this come

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from our correspondent, O. Schmolinske (c/o Das Flugmodell, Esslingen, West Germany). At speed trials on April 13, sponsored by the Ikarus club of Harsewinkel, Werner Kaseberg flew his 40 1/4" span plane over the course at 320 km/hour (about 199 mph). Engine was a ST G 60RV, with Bartels 10-12 prop (probably fiberglass). Simprop 2 + 1 radio was used. Fritz Bosch was second with 306 km/h. Both Bosch and Kaseberg are executives of Simprop.

Dallas third annual: From all accounts, a fine meet was held in this Texas city on May 4, 5, CD'ed by Carl Summers (who has been deeply involved in R/C events at past Dallas Nats). Prez Bill Aaker (211 W. Jefferson, Dallas 75208) says the meet was probably the biggest club-sponsored affair ever held in District 8, and almost 50% bigger than their 1967 effort. Of 59 entries, only three were from DRCC and some came from 650 miles away. Two-way radio helped greatly in running both Pylon and Pattern; in latter event, flyers averaged 5.1 flights. The judges were put through a week of "school," their last "lesson" coming just before the Pattern event started at 7 a.m. Sunday morning! Two flight lines were kept moving constantly; 55% of entrants were on 27 MHz, 40% on 72 MHz, the rest on 50. Bill notes that oddball frequencies on latter band caused many problems — perhaps it's time meet sponsors insisted that flyers on this band stick to the AMA-recommended spots.

Top winners: Class A, Steve McGuire (86 1/2 points); Class B, Ken Collier (125 1/2); Class C Novice, Bill Thomas (279); Class C Expert, Gerald Krause (309 1/2); AMA Scale Pylon, Don Downing (Don also won the Scale event with this same plane, attaining 9867 points).

P.A.R.C.C. Fun-Fly: The first meet sponsored by this New York metropolitan regional group on May 25-26 brought out 62 entries, of whom 50 actually flew. Meet held at club field of member group, the Rockland County RCC (Orangeburg, N. Y.). Winners: AMA Class B Pattern, Pat Buzzeeo (RC/RC); Spot Landing, Tony Di Edwardo (RC/RC); Limbo, Jay Jennings (RC/RC); ETA, Jay Jennings; Team Relay Race, Baychester RCC team; Scale, Lou Peretti (Baychester); Hidden Spot, tie, Buzzeeo and Jed Mattola (both RC/RC); Oldest Flyer, Pop Wilson (RC/RC); Youngest Flyer, Butch Schroder (WRAMS).

FAI hydro records: AMA has applied for several records in the R/C Hydro category, which were set at trials held near York, Pa. on May 4, 5. Planes flew from Lake Meade, and many members of the York Area RCC assisted in the proceedings. Austin Leftwich set the first mark, flying a conventional Class C stunter on floats, on Saturday. He completed 21 laps of flying

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around pylons, to set up a Hydro Closed-Course Duration claim of 21 kilometers (13 miles); it was his first experience in hydro flying, but even the wind didn't spoil his efforts. He was in the air 20 minutes on this flight. On Sunday, Maynard Hill topped Leftwich to boost the Hydro Closed Course Duration mark to 60 laps (60 km, or 37 1/4 miles), a flight that took an hour and 20 min. FAI Record Attempt Newsletter Editor, Red Gunning, kept his plane aloft for one hour, 39 minutes and 17 seconds for a new Hydro Duration mark, but feels this is so low, he expects it to be broken very shortly. Bill Bertrand and Hill both have planes capable of over five hour flights, so the marks should be rising soon. Bill has a .15 diesel on his plane (this engine intended to run throughout the flight) and a .40 on a pylon over the wing, to get the plane off the water. It got off fine, but the .15 just wasn't able to sustain flight.

Goodyear pylon throttles: Some planes have been flown in official Goodyear races with only a variable exhaust restrictor. The NMPRA takes a dim view of this, pointing out that by all standard definitions, an engine "throttle" is a device that controls fuel flow into the engine. You can, of course, hook on an exhaust restrictor if you wish. Planes with just the latter will not be allowed to fly at the Nats, and this may set a trend for all Goodyear flying. Incidentally, the Pylon boys want to change the name of their event (what—again!?). It's proposed that the 450 sq. ft. category, now generally known as just "Goodyear," but listed in the latest rules book as "AMA Scale Class—Radio Control Pylon Racing," be called "R/C Formula I" racing. The present Continental category planes (the 600 sq. in. wing area group) might then be called "Formula II." Not official so far—just suggested.

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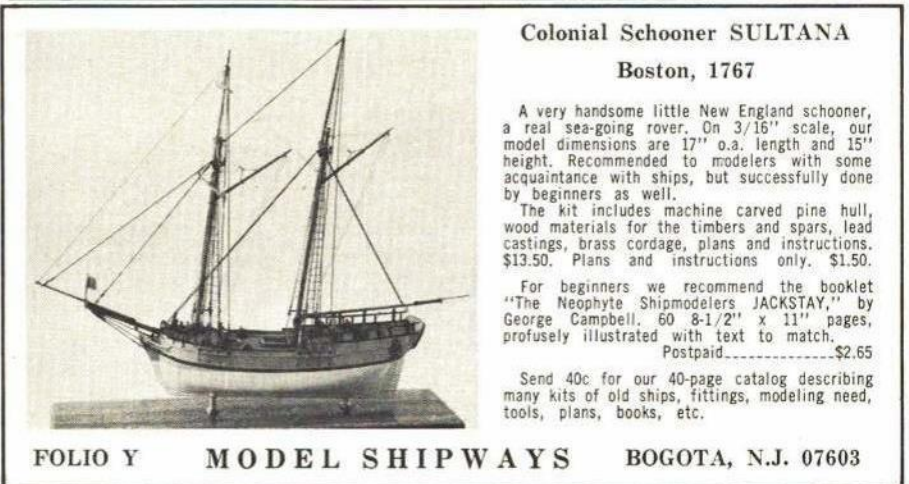
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YOU said it!

Continued from page 11

backgrounds are equally many and varied.

Several volunteer workers have, with the direct assistance and encouragement of the school officials, initiated hobby programs in an attempt to touch the boys lives with something other than standard school environment with the hope that some of what we give them will go with them when they leave the school.

The programs underway so far are: Two groups of nine each in flying model airplane clubs, and two groups of five each in ham radio. These programs are in their embryonic stage having been conceived only a short time ago. The goal of the ham radio group is to train the boys so that they can get Novice radio tickets. The goal of the model building group is to get the boys up in proficiency so that building and flying models is not a mystery, and to enable them to enter model competition with proficiency. These goals are, of course, stated goals to the boys. The true goal of these groups is immediately obvious.

Having been a modeler for 26 of my 36 years and having carefully reviewed the various model publications through the years, I and the other model group leader have decided that your publication is the most diversified in coverage and the most youth oriented. Therefore, please send us two separate subscriptions for one year.

If you could hurry these subscriptions along, I'd appreciate it since having built a fire under these boys, we want to keep it burning. . . . Keep up the good work with your magazine.

Bruce E. Packham, Cockeysville, Md.

Help!

Boy, am I confused. What in the world is the difference between multi, proportional, multi-proportional, and digital proportional? Every time I think I have it straight, some article confuses me again.

Craig Massey, Pompano, Fla.

McEntee's long series "Getting Started" supplies some of the answers. Truthfully, that feature was begun as an extremely simplified filler — and its support points up the crying need for beginner aid from the industry. The situation is enough to confuse all of us. Ed.

Prefers black and white

As you probably know by now, there are quite a few of us with "soul so dead." Karlstrom's drawings in black and white are very good, but the four-color drawings leave a lot to be desired.

The color simply obliterates too much of the needed detail. These colored drawings could be used to supplement the real drawings, but on no account should they substitute for them.

I defy anyone to build a really accurate model from the four-color P-26A plans in my copy. For one thing, there aren't any elevators, the outline of the cowl is uncertain, as are the top and bottom views of the fuselage.

The S6B on the June cover is a little better, but here again, the color obscures detail. Also, the outlines of the horizontal tail surfaces are fuzzy. Please get off this colored-plan kick. Stick with black and white plans.

Bill Roosa, Waterloo, Ontario, Canada

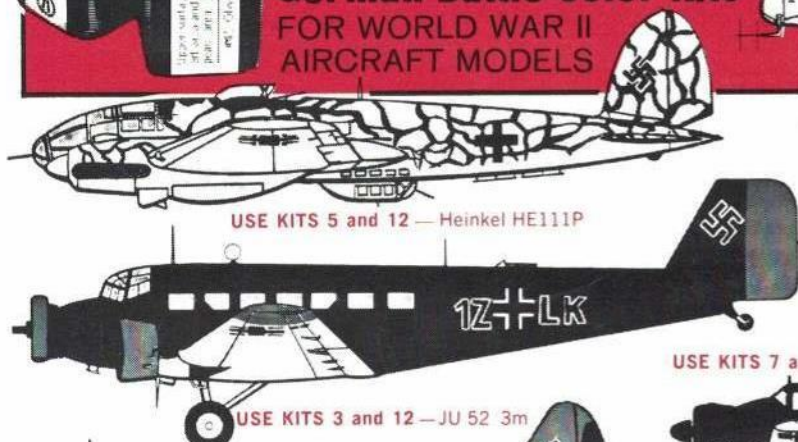
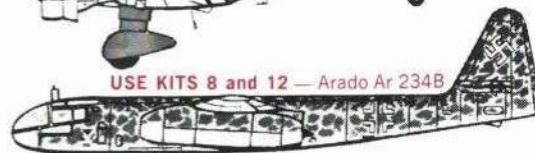
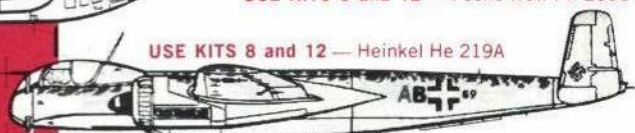
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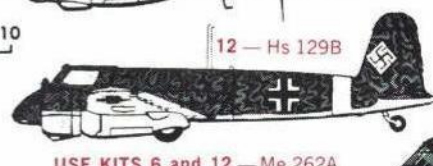
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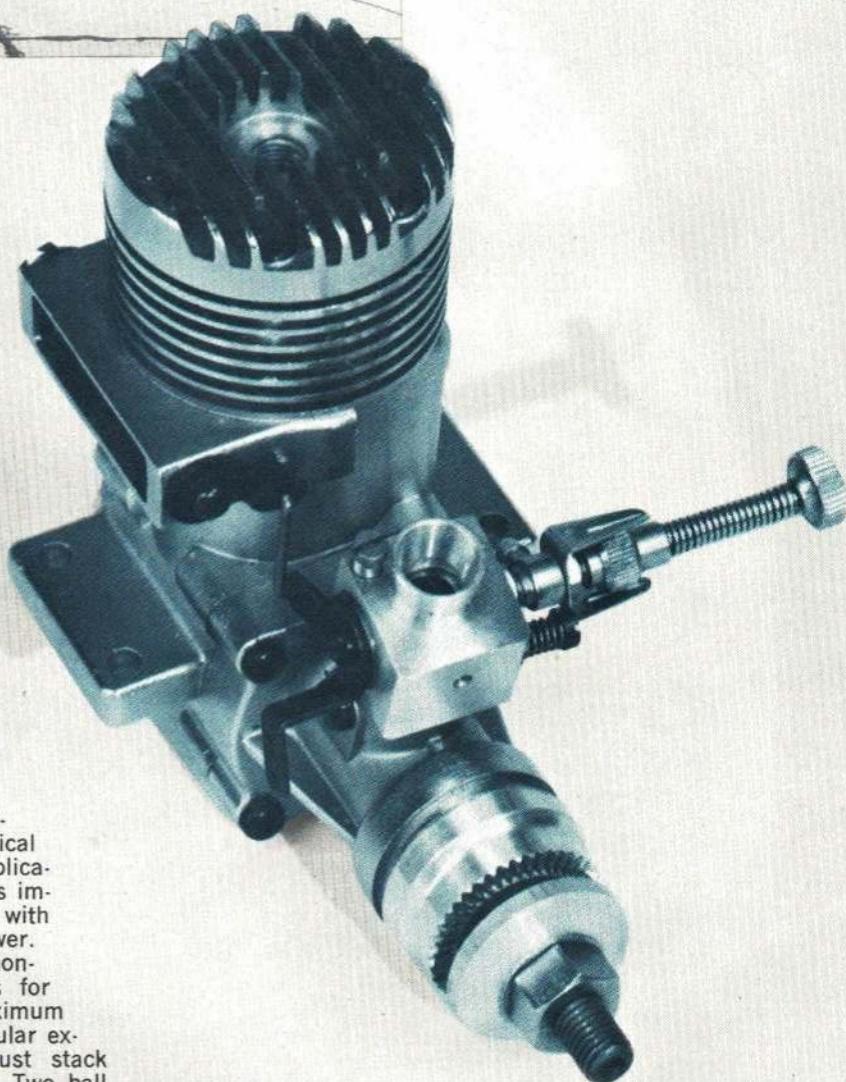
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