

m american aircraft modeler

THE LARGEST MODEL HOBBY MAGAZINE IN THE WORLD
INCLUDING THE OFFICIAL NEWS OF THE ACADEMY OF MODEL AERONAUTICS

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DECEMBER, 1974





THERMOPYLAE Famous Clipper

She was the majestic clipper ship that dared to challenge the unrivaled speed of the Cutty Sark, New York to London, circa 1868. Designed by Bernard Waymuth and launched, Aberdeen, Scotland, she was 212 ft. LOA, 36 ft. beam.

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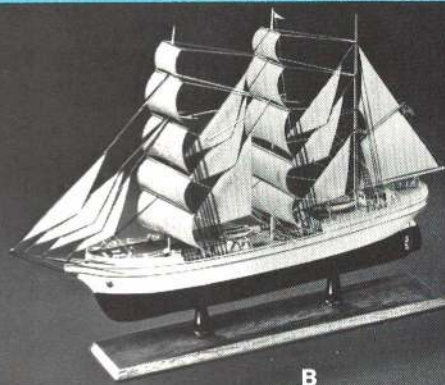
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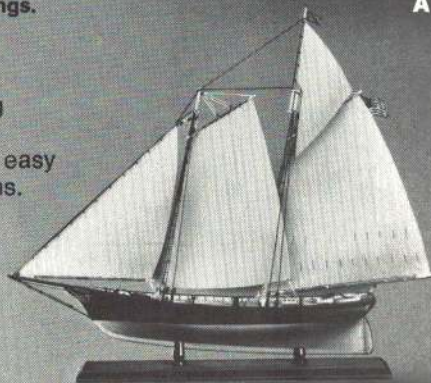
All ships shown with sails include antique finish cloth sails, colorful flags and decals, tapered hardwood masts and yards, rigging materials, pre-ruled decking, wood display stand, handsome nameplate, and complete, easy to follow step-by-step assembly instructions.



A



B



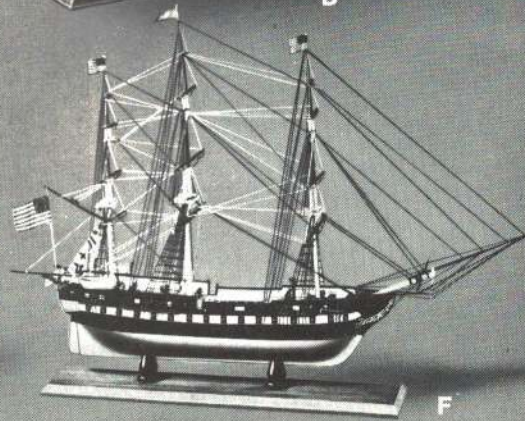
C



D



E



F

A. Kit 174, **Cutty Sark**, length 15",
Clipper Ship, \$12.95

B. Kit 168, **U.S.S. Eagle**, length 13",
Coast Guard Training Ship, \$12.95

C. Kit 178, **Schooner America**, length 17",
Circa 1868, \$14.95

D. Kit 169, **H.M.S. Bounty**, length 14",
of the famous mutiny, \$12.95

E. Kit 167, **Flying Cloud**, length 14",
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F. Kit 170, **U.S.S. Constitution**,
length 14", "Old Ironsides," \$12.95

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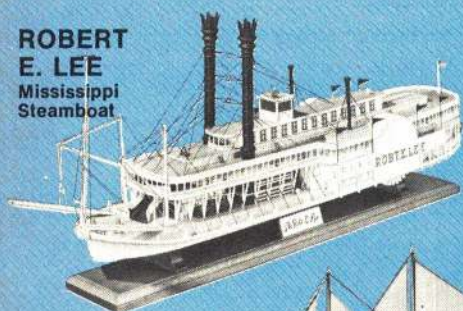
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The kits that make Authentic Ship Modeling easy!

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Steamboat



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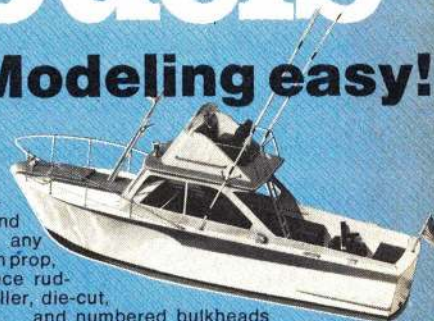
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A. Kit 163, **Cutty Sark**, length 24", famous Clipper Ship, \$24.95

B. Kit 164, **Bluenose** length 24", famous "Down East" Schooner, \$24.95

C. Kit 177, **Golden Hind**, length 20", English Flagship, \$24.95

D. Kit 166, **U.S.S. Kearsarge**, length 27", Civil War Gunboat, \$29.95

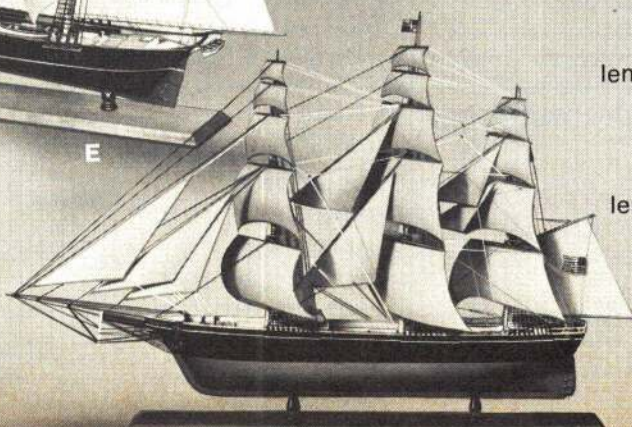
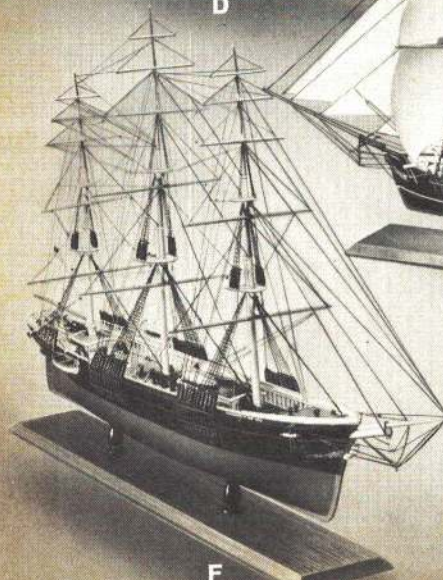
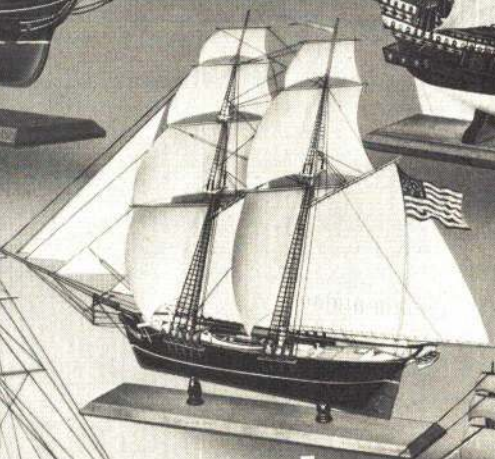
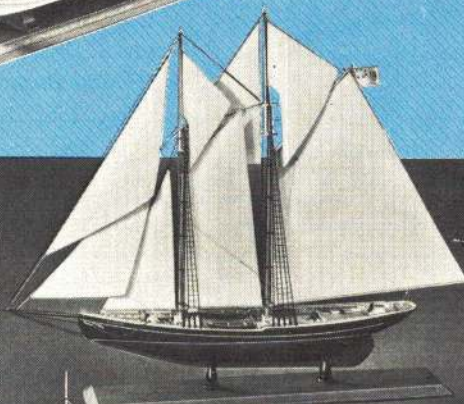
E. Kit 172, **Baltimore Clipper**, length 23", Pirate Brig., \$24.95

F. Kit 165, **Sovereign of the Seas**, length 24", 1852 Clipper Ship, \$24.95

G. Kit 171, **Sea Witch**, length 27", Clipper Ship, \$24.95

**SCIENTIFIC
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340GH Snyder Avenue
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american aircraft modeler

VOLUME 74, NUMBER 12

DECEMBER 1974

COVER STORY

The hottest machine on the QM circuit this season is John Fotiu's Miss Paranoia P-51. A full construction article appears on page 20. (Photo by Ed Michalik)



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Published monthly by Potomac Aviation Publications, Inc., 249 Freeport Blvd., Reno, Nevada 89510. Edward C. Sweeney, Jr., President; Walter L. Hulstedt, Treasurer; Harvey E. Cantrell, Business Manager and Secretary.

ADVERTISING DEPARTMENT: All advertisers' orders and correspondence to 8001 Forbes Pl., Suite 210D, Springfield, Va. 22151. (703) 321-7745.

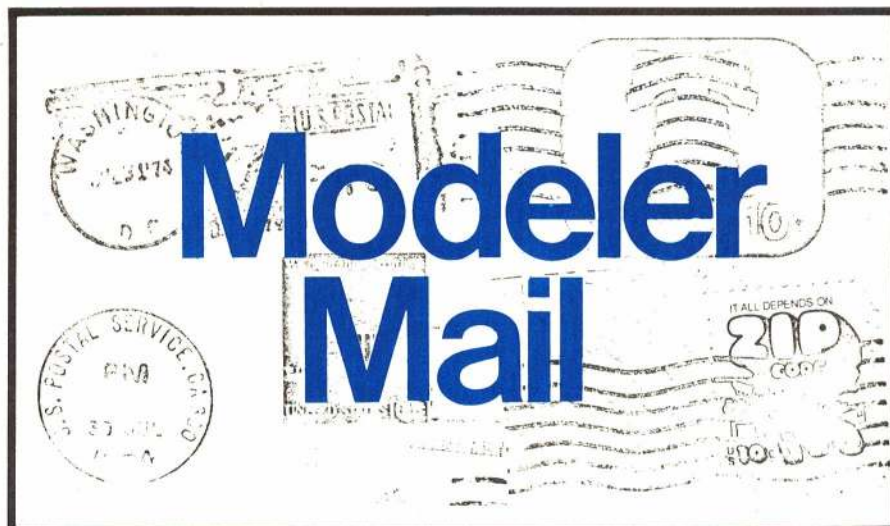
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POSTMASTER: Send Form 3579 to American Aircraft Modeler, 249 Freeport Blvd., Reno, Nevada 89510.

Printed by McCall Printing Co., Glen Dale, Md. Newsstand distribution by Kable News Co., N.Y., N.Y. Hobby Shop distribution by Kaibach Publishing of Milwaukee, Wisc.



WTAI Is Back

I was extremely disappointed to find the Where The Action Is section missing from the October, '74, issue of AAM. I feel that this section of the magazine was the most consistently interesting and informative part of your format. I was always sure of finding at least two or three columns of interest to me in this part of the magazine, and would be very sorry to see it discontinued as a regular feature.

Arthur F. Dundon, Jr.
Grawn, Mich.

Fear not! This was only a temporary situation. With the limited page space available to us, we opted to exclude the WTAI section in order to present you, the reader, with coverage of the all-important summer events—the AerOlympics, S.O.A.R. Nats (October AAM) and the NATS (November AAM).

Presentation of our WTAI section is resumed as of this issue. Glad you enjoy it.—php

'Von Helium' Defended

As a participant in the Fifth Annual RC Soaring Nats, I read Patrick Potega's article in the October, 1974, issue of AAM with interest.

I found it most entertaining until I got to page 124. There appears a disturbing implication regarding sandbagging.

Those who don't know Otto Heithecker as I do might get the impression he wins so often because he cheats by sandbagging. Nothing could be further from the truth. I have flown with and against Otto since the day he



Otto Heithecker: Bag of sand or sandbagging?

brought his first RC sailplane, a Cirrus, to the field. During this time, I have never seen him sandbag at a contest. He doesn't have to. There is no doubt in my mind that Otto is the most able champion we have seen in our sport to date.

Edward P. Manning, Jr.
Royal Oak, Mich.

Thank you for coming to Von Helium's defense, but I suspect that you missed the point (or I missed writing in the humor). Otto got the bag of sand at the awards presentation in the same comic vein that S.O.A.R. awarded Rod Smith the Willow-Bee Wand (see the LSF Tournament story in this issue). Otto, being the true champion that he is, took the joke in the intended spirit. I've flown against Otto enough to know that he doesn't need anything to win but his professional skill.

Now if only I could figure a way to

(Continued on page 105)

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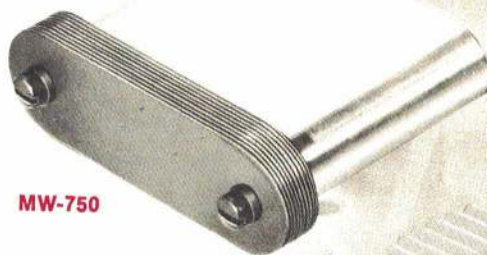
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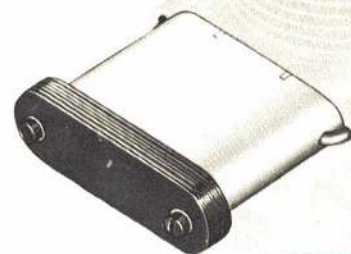
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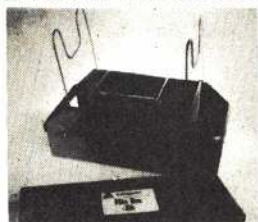
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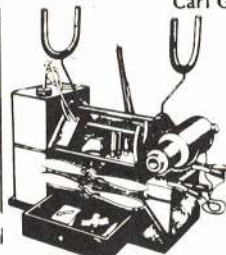
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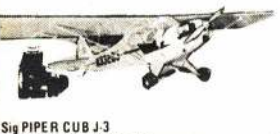
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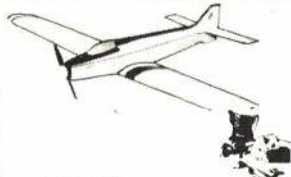
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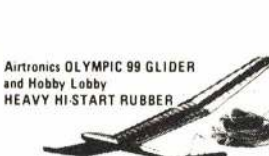
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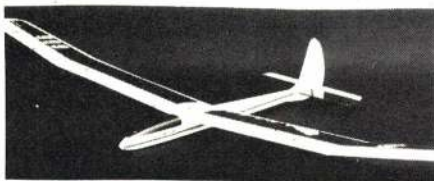
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National Multiwing

"The Freestyle Omaha pattern really fills the bill for an easygoing contest." / by O. L. (Olie) Olson

It was a warm evening and the sun was sliding below the western horizon, casting long shadows over the 80 acres of virgin prairie that is Hawk Field. The flight line crew, consisting of members from the four sponsoring clubs (Omahawks, Nebowas, Frontier Flyers, and Cobras) were putting the finishing touches on the site of the 1974 National Multiwing R/C Championships.

As I took one last look over the immaculate site, I thought of the few loose ends that had to be tied before dawn. I thought of the months of planning and preparation and the hundreds of man-hours invested by dozens of club members. I prayed that we would have a good turnout. I wondered (as I'm sure most CDs have on occasion) why these people and I were working up such a sweat out here, when we could just as well be sitting on the sidelines nursing a cold one.

"We're convinced this is the way to go. We look for the new events featuring Bipes in Pattern, Scale, and Pylon to be the shot in the arm that competition has needed so long"—Herman Lowery (South Pekin, Ill.).

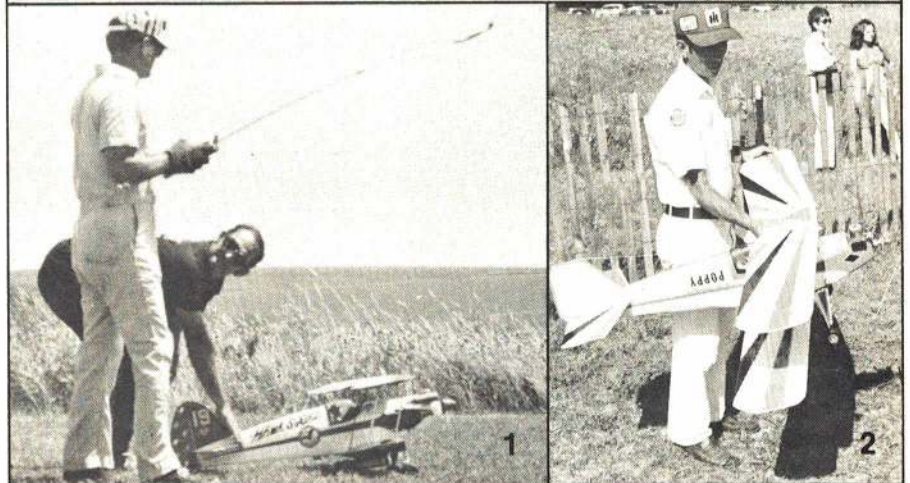
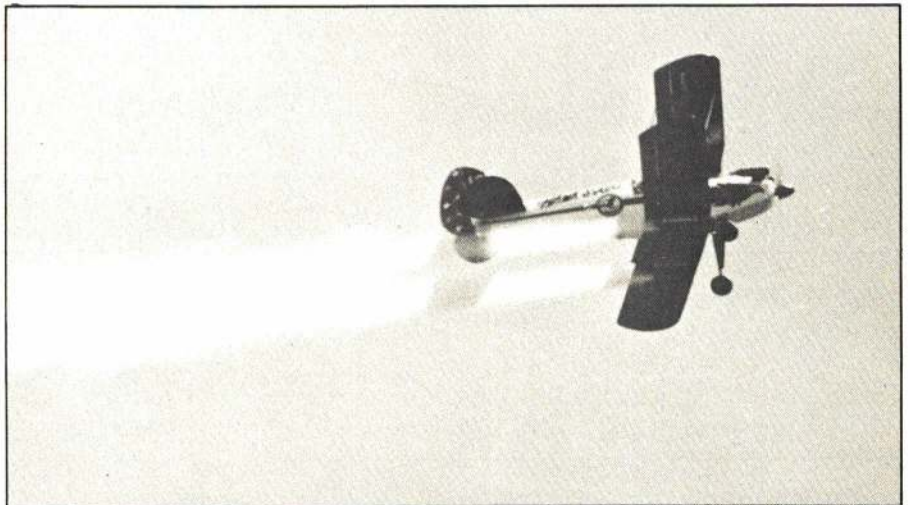
"Certainly it is that something different which many of us feel is needed to keep this thing going"—Paul Runge (Ace R/C).

"The National Multiwing R/C Championships was the first contest I've entered in three years that made me feel relaxed in the friendly atmosphere"—Jack Poppenhager (Canton, Ill.).

"We've attended some good and some not-so-good contests. We have had some very good luck and some bad. The good was the decision to attend the Multiwing Contest. Making new friends like those we made in Omaha is what makes our hobby so much fun"—Dick Graham (Ottumwa, Iowa).

"Thanks for a really fun contest. The Freestyle Omaha pattern really fills the bill for an easygoing contest"—

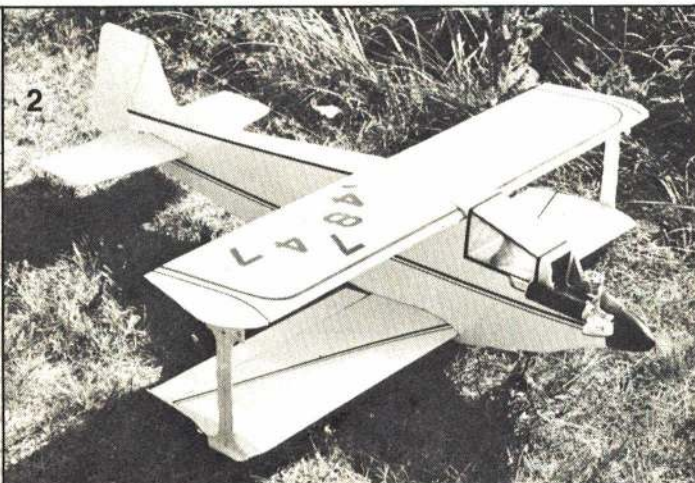
(Continued on page 94)



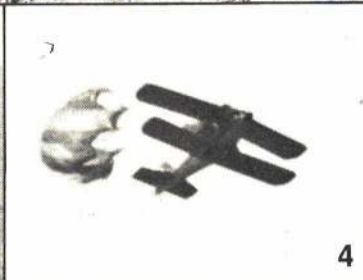
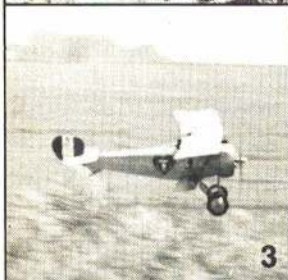
(1) Ralph Brown, whose Aeromaster smokes away in our lead photo, prepares to take off on his trophy-winning High Noon Barnstorming flight on Saturday. (2) First place in Expert Pattern went to Jack Poppenhager. Aeromaster, Webra, Kraft. (3) A gaggle of bipes are shown, ready and waiting to be judged in scale.



Championships



(1) Larry Quigley took all the photos at the contest, but he still had time to fly his two-year-old V.K. Nieuport (Enya, Orbit). (2) Rubin's Rascal, by Rubin Pastian, is an original effort which still needs a little work to fly right. Model uses a K&B Schnuerle RR with a Max 60 carb. (3) Quigley's Nieuport on a low fly-by. (4) The author's Aero-master was a real show-stopper with its parachute descents. (5) Maxi Bipe, by Max Hansen, had trike gear and was constructed of .406 polyurethane foam covered with 1/16" balsa. Webra Speed, Orbit. (6) Bill Heger's Knight Twister takes off. (7) Bill Vogelsang with his Alexander Eagle Rock, which he started building in 1965! (8) The Grahams prepare Dick's Scamp for a flight.



Nickel-Cadmium Batteries

Conclusion

There have been lots of stories circulated about "memory" in nickel-cadmium batteries. This is a temporary condition brought about by repeated partial discharge and recharge. The battery adjusts so that its fully charged capacity is reduced—a deep discharge and recharge will generally restore the battery to near its rated capacity. Chances are, if you're an active flier, you won't experience a "memory" problem. However, it's a good idea to perform a deep discharge periodically, as this is a good way to find out if you have any weak cells.

It is best to discharge cells individually. Batteries can be discharged in series, but care must be taken to prevent deep discharge (to a point where one or more cells go to zero voltage). This can cause cell reversal. Several cycles with cell reversal will result in cell failure.

Some of the more technically oriented types bring out leads from each cell in the battery to a multi-pin socket. The mating plug is connected to a series of load resistors (light bulbs of the proper value are best). Cells can then be discharged individually or simultaneously. Current and voltage can be monitored if desired.

More sophisticated testers can be built, incorporating a relay and an elapsed-time clock. The relay is set at a drop-out voltage for the level of discharge required (4.4 volts, for instance). The battery is discharged through the relay into a load. The relay allows the timer to run when closed. When the drop-out voltage is reached, the relay opens, stopping the timer. You then have a direct reading of useful capacity at the discharge rate used. This also prevents deep discharge to the point of cell reversal.

Modern sealed cells are ruggedly constructed and will accept considerable abuse. However, cells can still be damaged in a crash. After a crash, examine the battery case carefully. If there is any sign of impact damage, open the case and examine each cell. Modern plastics may be deformed momentarily and virtually return to their original state. The metal cell case inside may have been severely dented, but the battery case may give little evidence of damage. If a cell has been dented, replace it. Although it appears to operate satisfactorily, the extent of internal damage is unknown and a separator breakdown can cause a short circuit and subsequent failure of the cell.

getting started in R/C

by Jim McNerney

In our last article we talked briefly about charge acceptance. A cell will charge to a higher capacity at rates larger than the "one-tenth" rate normally used. Cell-rated capacity is, however, based on the "one-tenth" rate. By the same token, the amount of cell capacity available is a function of discharge rate. Thus, a cell rated at 500 mah could be expected to last 10 hours at a 50 ma discharge rate. However, if the discharge rate is 500 ma, the cell will last considerably less than an hour.

It's a good idea to know the capacity and demand of your radio. The systems, as supplied by the manufacturers, and with a fresh charge, normally will provide adequate power for 8 to 10 normal flights without approaching minimum battery capacity. Some people wish to fly for longer periods and others, wishing to minimize airborne weight, want to use smaller cells. For these fliers it is necessary to tailor power supplies.

Most transmitters are designed to operate on 9.6V (DC). The power input on most frequencies is limited to one watt or less. This means most transmitters operate at about 100 ma. Using a 500 mah pack, the transmitter can be operated safely for at least four hours on a full charge. Receivers draw anywhere from 20 to 80 ma. Servos draw 15 to 50 ma at rest, about 100 to 200 in operation, and about 350 at stall. A good rule of thumb is to assume 50 ma for the receiver. Then, in a full house (four-function) system, the average draw is 250 ma, or about 90 minutes of constant operation. This gives you 9 flights of 10 minutes' duration.

If you add functions such as electric retractable gear, the time is shortened. If you rig your airplane so that a servo stalls (that is, you command a servo position, but it can't get there because the linkage won't let it) you can exhaust the battery quickly. You can extend the period of normal operation by reducing the number of functions (fewer servos), or by using cells of a larger capacity.

In summary, remember that, while nickel-cadmium cells are probably the least reliable component in today's radios, a little care and understanding can go a long way toward overcoming their limitations, and markedly reduce your chances of a crash due to power supply failure.

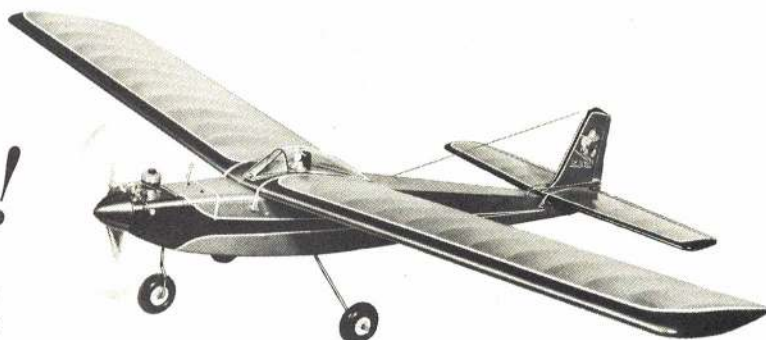


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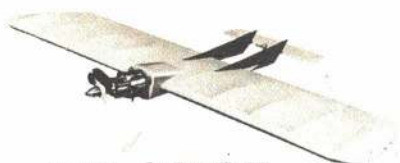
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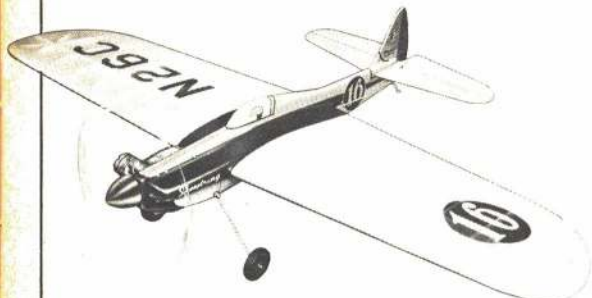
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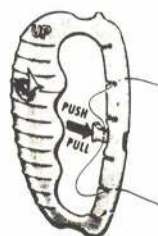
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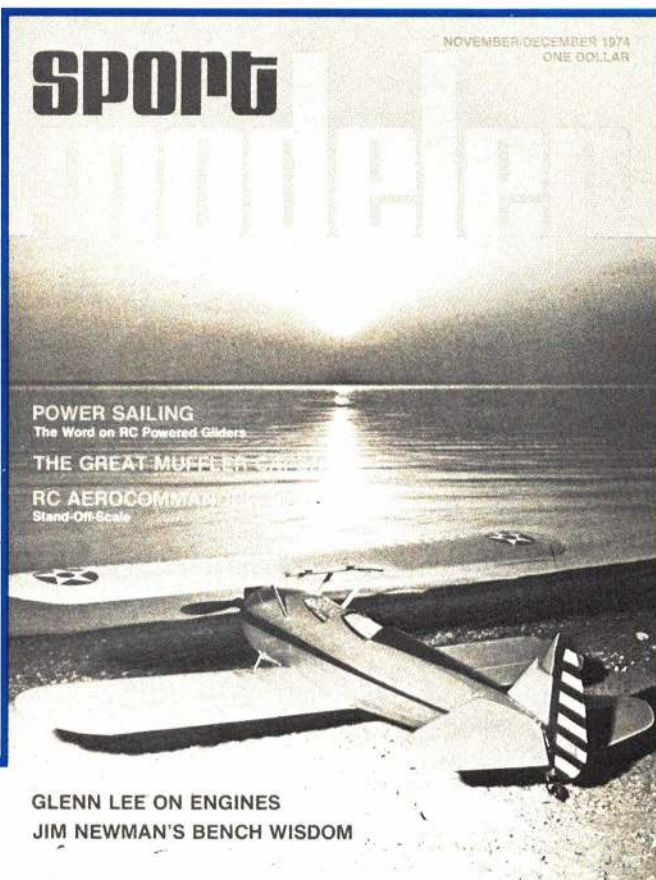
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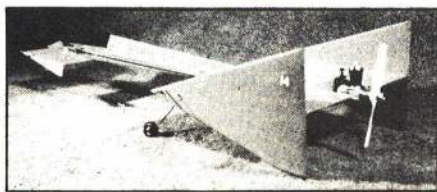
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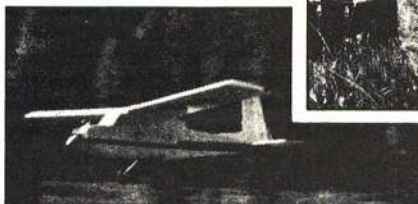


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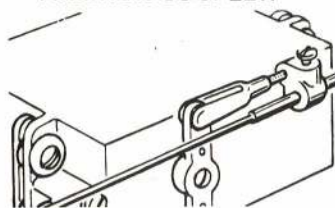
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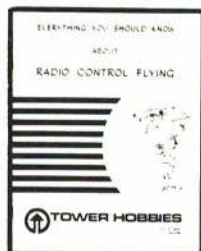
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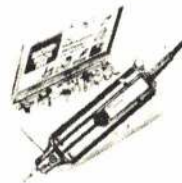
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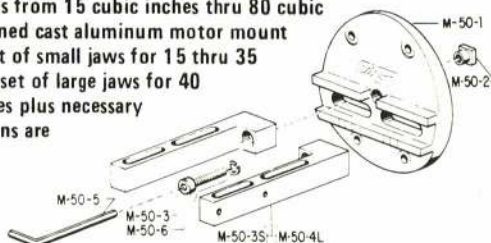


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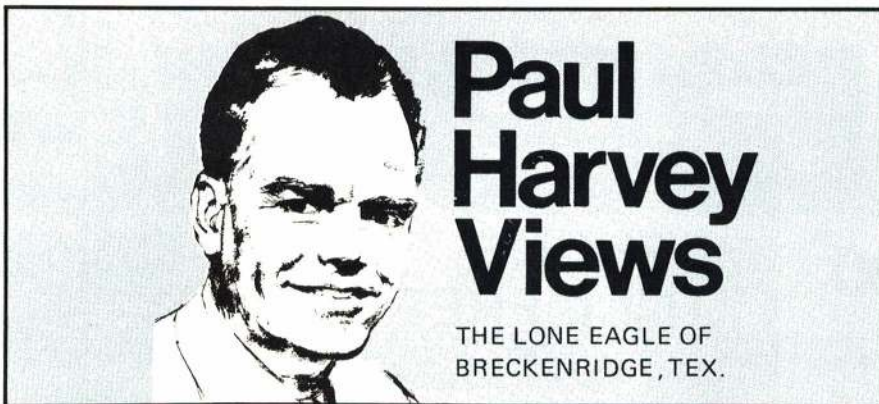
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Would your interest in RC flying sustain?

Bob's does.

I met Bob Herndon during a Dallas speaking engagement. The Texas Hospital Assn. was in convention and Robert T. Herndon, administrator of the Stephens Memorial Hospital in Breckenridge, Tex., was present.

The convention brought us to Dallas; our hobby brought us together.

The "Lone Eagle of Breckenridge, Tex.," may have a fondness for RC flying greater than anybody's. There is

rarely a dry day when the Texas wind is tolerable that Bob Herndon is not out flying—alone.

It wasn't always like that.

In the late 1930s as a schoolboy in Miami, he and neighborhood youngsters were finger cranking rubber band models. His first "gassie" was a Zipper Junior, and it is best remembered bitter-



Bob Herndon prefers the loneliness of the small city flier. With a sailplane, pattern ship, semi-scaler, Q/M racer and free flight, Bob enjoys the diversity of our hobby/sport.

Because of the changes in the state of the art, the definitive work on RC may never appear. Lately, however, there's been a slight lull, during which manufacturers have contented themselves (and us) with consolidating the tremendous gains made recently by improving reliability and making refinements like the three-wire servo connectors.

Even the battle against airborne weight seems stalemated until battery technology evolves beyond NiCads. So the appearance of *Radio Control Model Aircraft* seems timely now, because it will be valid for a relatively long time.

Longevity aside, this compact book contains more clearly presented information than I've seen since Howard McEntee's *Propo Primer*.

Understandably, its emphasis is on RC, but much of the lore here applies to modeling anything that flies. And even though a lot has appeared before, this well-illustrated book, at minimum, serves by collecting and organizing the many hints and techniques which help

Modeler's Bookshelf

by James Nordhoff

RADIO CONTROL MODEL AIRCRAFT

by Robert Lopshire
Macmillan

180 pages

builders improve their skills.

Robert Lopshire starts with a courteous nod to Walter and William Good, the Wright Brothers of RC, then steps briskly into his subject. The sections on adhesives, coverings, finishes and construction techniques are of hobbywide value and extremely lucid. His evaluation of the paraphernalia of modeling is the sort of thing every beginner should have available and will, I suspect,

sweetly for Bob's first experience with a flyaway.

World War II, and the subsequent preoccupation with college interrupted the flying. Then Bob's first job took him to Carthage, Tex. Within days he'd homed in on the drone of mini-engines and found a largish group of CL fliers doing their thing. In less than a week he had a plane in the air and was one of them.

When Bob's son was 10 and developed an interest in free flight (he won a trophy at his first contest) there were some happy years when the interest was shared. At the '65 and '66 NATS, son John won trophies while Dad picked up a fifth place in C-Gas.

Then, one day, son John discovered girls, and it was about this time that the Herndons moved again. For himself and family, Bob vastly prefers the relaxed

(Continued on page 94)

motivate a few older-timers to set up a more efficient shop.

In any specialty, much inside dope turns out to be plain, old-fashioned horse sense. And RC is no exception. But having the information neatly presented, with the danger areas suitably red-flagged, can provide a state of mental discipline doubly important to the growing ranks of enthusiasts. First, by reducing prangs caused by equipment failure, it lets the modeler spend more time out in the healthy fresh air.

Even more important, it promotes a higher level of safety, making the hobby more socially acceptable. In this, the book perhaps serves its most valuable purpose. Though the pages on equipment selection for the big step into RC are well done, the reader also learns safety. Without preaching, Lopshire points fliers in the right direction, giving his book philosophical soundness as well as practical merit.

Another benefit is the author's cost consciousness, making it possible for the reader to weigh convenience against expense in making decisions.

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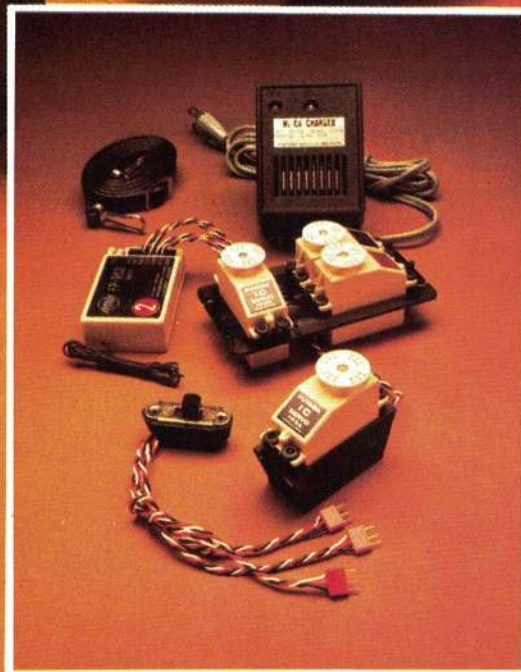
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Miss PARANOIA

An important part of racing is competitive "psych." Miss Paranoia can unnerve the most ruthless competitor, leaving a trail of fear wherever she races. / by John Fotiu

The Miss Paranoia is a highly competitive quarter midget designed for winning contests. To win, the airplane must be fast enough to stay ahead of the pack. Equally important, it must have good slow-speed characteristics for the idle landing requirement. If the airplane stalls or is unstable at slow speed, you may not be

able to race the remaining heats because of landing damage.

Tight turning is also important in cutting off precious seconds. Consequently, the wing is probably the single most important factor in designing a racer. After trying several airfoils in the past two years, I settled on a modified Stafford design, as refined by Bob Jones of the Mentor area. His



basic modification to the Stafford design was to streamline the tip airfoil for less drag. This wing design has a good top end, turns tight and slows to walk-on landings.

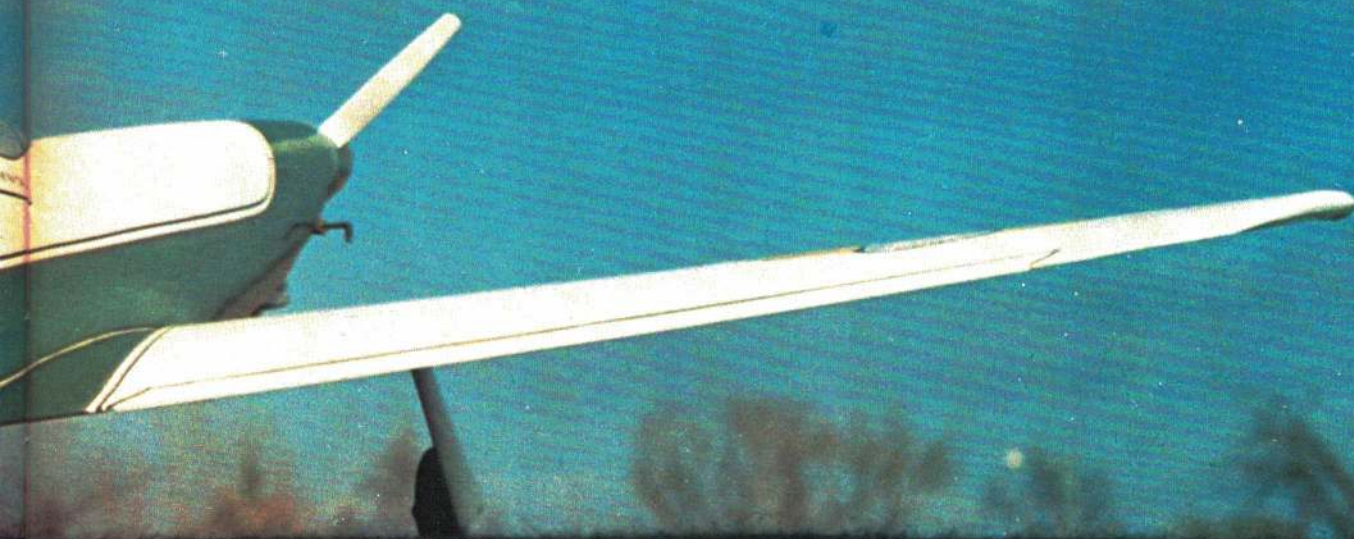
The fuselage and tail assembly are basically just along for the ride, and should be as streamlined as possible. The Miss Paranoia has probably the least frontal area of any

quarter midget yet. This is due to the lack of cowl cheeks, and utilization of the streamlined belly scoop to obtain the five-inch height requirement.

CONSTRUCTION

Construction is relatively simple and should present no problems.

(Continued)



Fuselage: The fiberglass fuselage is hand laid, using 6 oz. cloth and epoxy resin. The use of double layering in areas of high stress and a soda straw ribbing make the fuselage quite strong for its 6½ oz. weight. To purchase a fuselage and belly scoop send a \$20.00 money order to: John Fotiu, 30820 Mayflower, Roseville, Mich. 48066.

Keep in mind that when gluing anything to the fuselage, such as the scoop, firewall, etc., epoxy must be used. Polyster resin will not stick to the fuselage.

Engine Installation: The Miss Paranoia front end was originally designed around the O.S. 15 engine. Since the ST, K&B and Taipan engines use a larger mount than the O.S., considerable grinding of the mount will be necessary to fit it into the narrow nose.

The engine may be mounted sideways, upright or inverted, but keep in mind that the tank center line must be even with the center line of the needle valve. Begin the firewall installation by rough-cutting an opening for the engine. Drop in the engine mount, and bolt the engine to the mount. Now make a 1/32" plywood spacer to fit between the fuselage front and the spinner back plate. Bolt the spinner assembly in place, and tape the spinner solidly to the fuselage. Again, this may take a few trial fits because of the grinding necessary to the larger engine mounts.

Cut out the firewall and drop it into position through the wing saddle opening. Trim the edges of the firewall, until



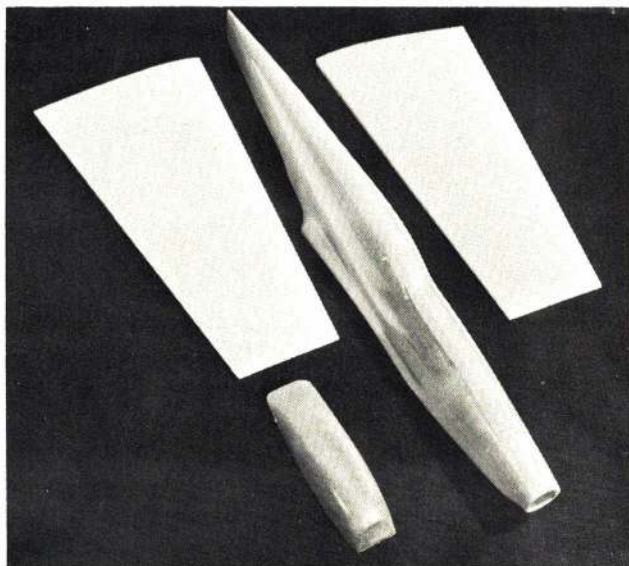
Miss Paranoia was fifth in the Pylon Racer category at Toledo. At the Mentor World Q/M Championships, the design placed second, third, fourth and fifth.

it fits flush against the back of the engine mount. Coat the front of the firewall with a light film of epoxy before gluing it in place.

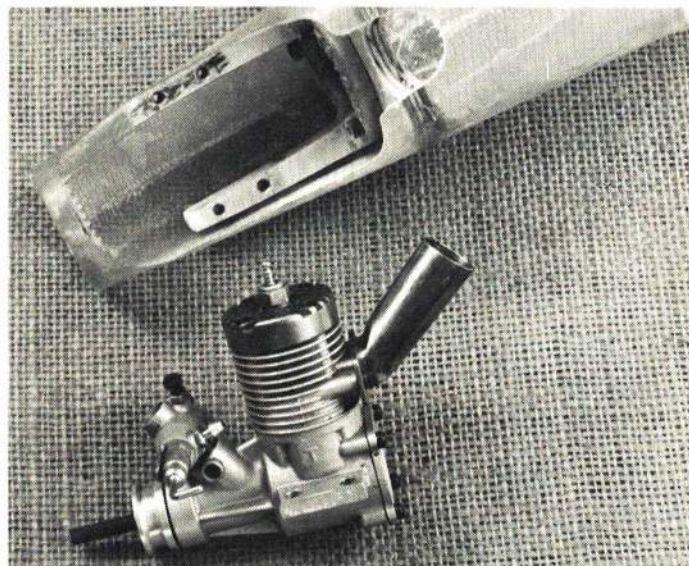
When dry, remove the engine. The engine mount should be lightly epoxied to the firewall. The engine mount holes are now easily drilled in the firewall, after which the 6-32 blind nuts are installed. The firewall may now be permanently bonded in place, using small pieces of epoxy-saturated fiberglass cloth.

When the engine and spinner are properly installed, there should be a 1/32" space between the fuselage and the spinner.

Wing: Begin by cutting the root and tip templates from 1/16" plywood. Be sure to cut the cores with the 3/16" washout, as shown on the plans. Make up four wing skins from 1/16" balsa sheeting. The entire wing can be covered with four 1/16 x 4 x 36" sheets, if you lay them out as shown. Using Sig Core Bond or other contact cement, carefully



Buy a fuselage (\$20.00), or a full kit (\$32.00) from the author.



The new Taipan 15, with a homemade exhaust pipe. Note the cutout in the fuselage to clear the pipe.

cover the wing halves in the polystyrene blocks they were cut from. This will insure that the washout will be the same in each wing panel.

Trim the protruding balsa and glue on the leading and trailing edge strips, using Titebond or equivalent. Block sand the $3/8 \times 5/16$ " trailing edge strip to conform with the wing airfoil. This should make it easier to center the $1 \times 1/4$ " trailing edge stock on the wing.

If you choose to use the one aileron setup, tack-glue only the right aileron stock in place. Glue on the wing tip blocks, and sand each wing panel to airfoil shape.

The landing gear blocks are made by laminating $1/8$ " plywood. Locate their position on the underside of the wing by measuring from the plans. Lay the landing gear blocks on the sheeted wing and trace with a ball-point pen. Remove wing skin and polystyrene foam to a total depth of $1/4$ ". Epoxy the landing gear blocks in place flush with the bottom of the wing.

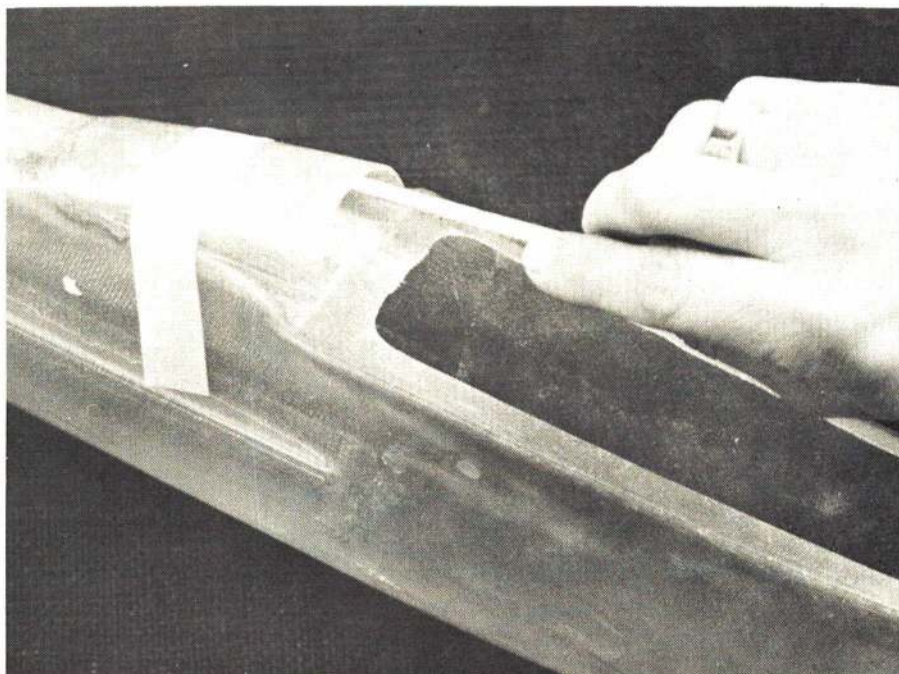
Block sand each wing root to obtain the correct dihedral, and epoxy wing halves together. Add a strip of two inch wide fiberglass tape or Celastic to center section.

Position the $1/8 \times 1 \times 1\frac{1}{2}$ " plywood landing gear support on top of the wing center section. Drill $1/8$ " diameter holes for the landing gear wire. These should go completely through the wing. The landing gear wire should protrude at least $1/16$ " above the plywood support. This type of landing gear has proven itself to be very strong and lightweight.

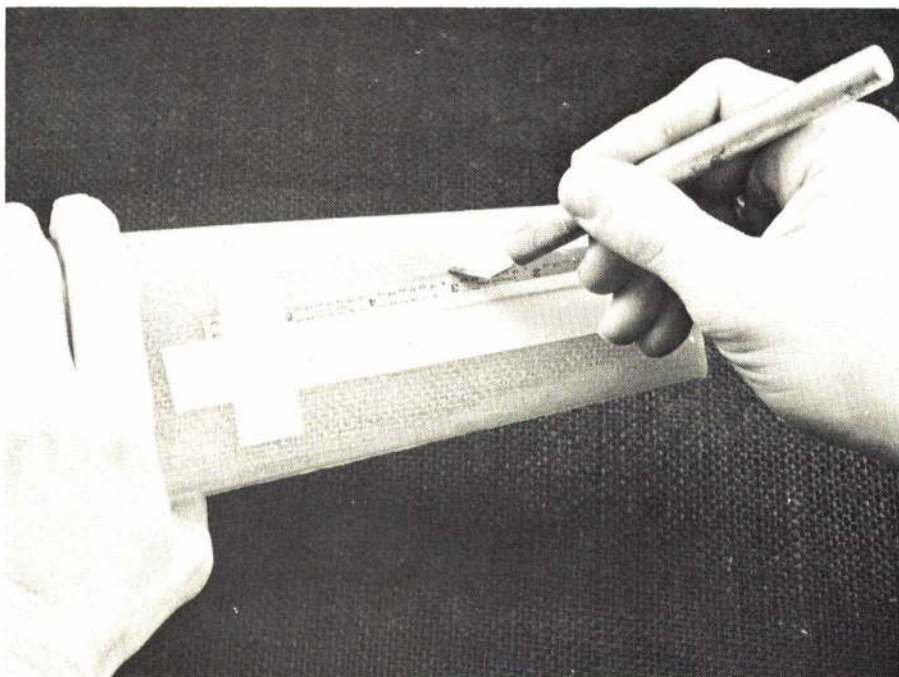
Remove the trailing edge stock and install the aileron torque rod assembly. Also drill the $3/16$ " diameter holes in the leading edge of the wing for the locating dowels, but do not epoxy in place at this time.

Using the template on the plans, make the $1/8$ " plywood dowel locator and epoxy in place on the fuselage. Epoxy a block of the motor mount stock to the rear inside lip of the fuselage wing saddle. Also, add the wing saddle tape.

At this point, the wing locating dowels are epoxied in place and, while the epoxy is still tacky, the wing assembly is positioned on the fuselage. When completely cured, the rear wing hold-down hole is drilled and tapped for the 10-32 nylon bolt. Bolt the wing in



Use a stick to spread epoxy inside the rear portion of the air scoop. The horizontal line in the fuse, at the end of the tape, is a soda straw, which is epoxied inside the fuse as a stiffener.



Tape a steel rule to the fuselage, then scrape a slot for the stab with a sharp X-acto.

place, and epoxy the front portion of the belly scoop to the wing. The open ends of the scoop are capped with $3/32$ " medium balsa. Also, cut an access hole in the scoop for the nylon bolt.

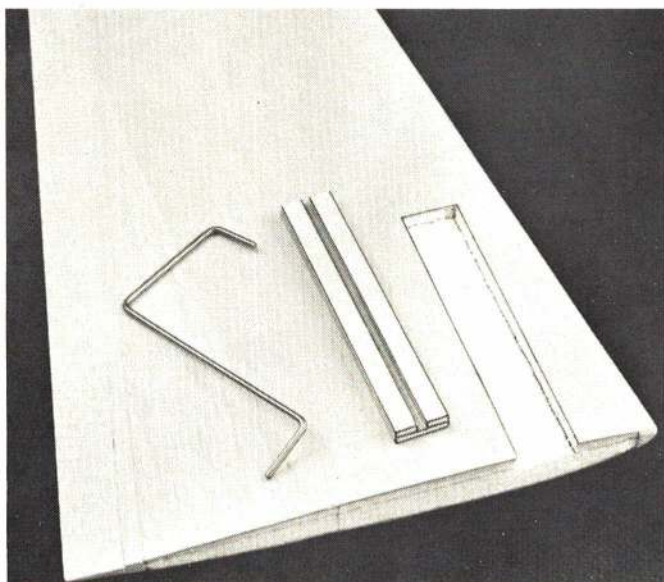
Tail: All tail surfaces are cut from $3/16$ " medium soft balsa. Slot the rear of the fuselage, using a Zona Saw, Dremel tool, or by repeatedly scraping with a sharp X-acto knife.

Finish: I used two coats of Super Pox primer, followed by two thin coats of Super Pox color. The wing is

covered with Super MonoKote, with the exception of the center section, which is also Super Pox because of the scoop.

The numbers on the rear of the fuselage are Para-Type press-on letters, with clear acrylic sprayed over them for fuel-proofing. You must first lightly sand the Super Pox finish to get the press-on letters to stick. Final trim is black and gold J.D.'s Multi-stripe.

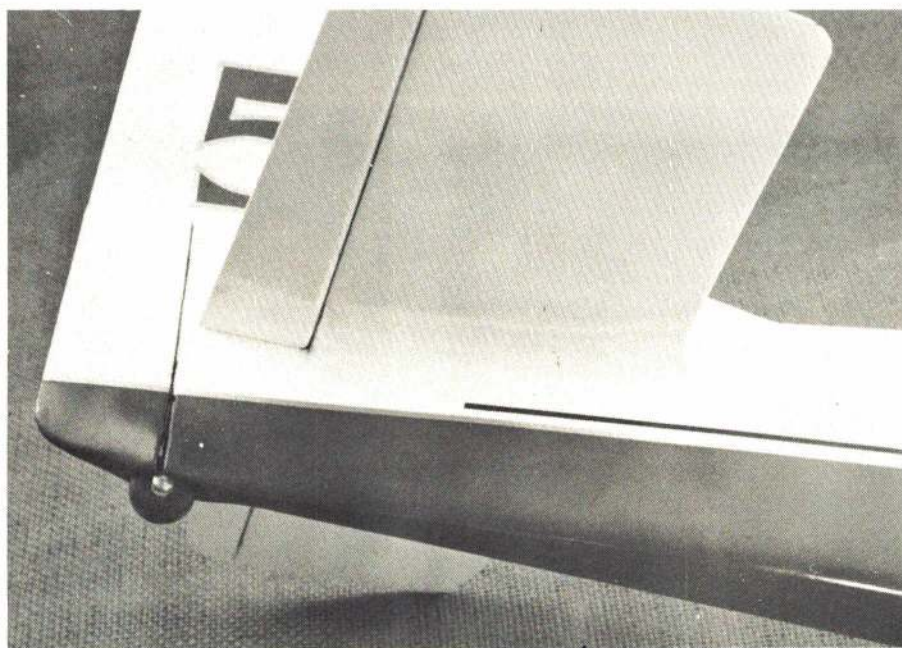
Radio Installation: I mounted my servos toward the front of the fuselage to aid in balancing. The servos are



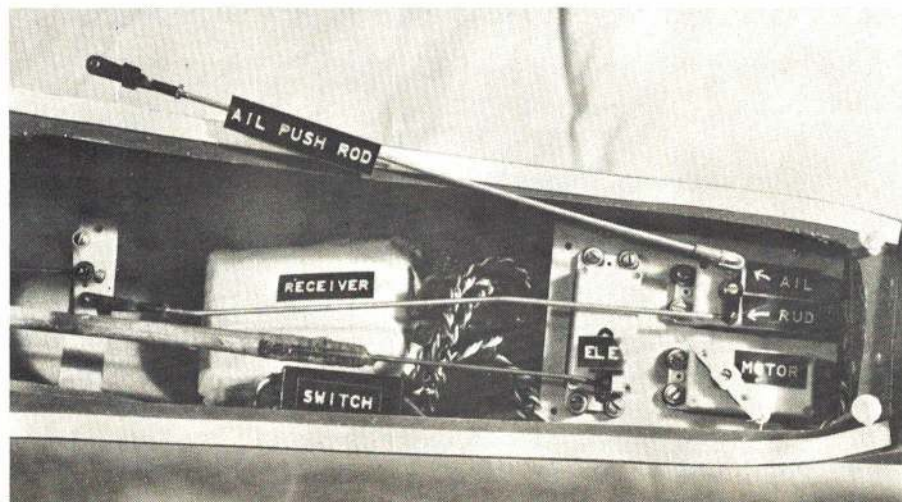
The sheeted wing core with the landing gear trunnion cut out, landing gear block and wire gear.



The author prefers an open engine installation for better cooling and easier maintenance. RPMs courtesy SuperTigre.



ABOVE: A closeup photograph of the tail shows the partial rudder and the recessed tail wheel. BELOW: The radio installation is pushed to the front of the fuselage. Note that the rudder linkage goes through a reduction arm to cut down on throw.



mounted on a removable plywood tray, in order to gain access to the battery pack and tank.

It is advised not to cut out the canopy area of the fuselage. This will allow more room for the receiver.

The rudder servo, which is mounted in the fuselage, also mechanically drives the aileron torque rod, as shown in the photo and plans. The Kwik-Link is simply disconnected when removing the wing. Be sure to use a 2-56 lock nut with the aileron Kwik-Link, so it does not lose trim when disconnected. With the radio installation shown, the airplane will balance out correctly.

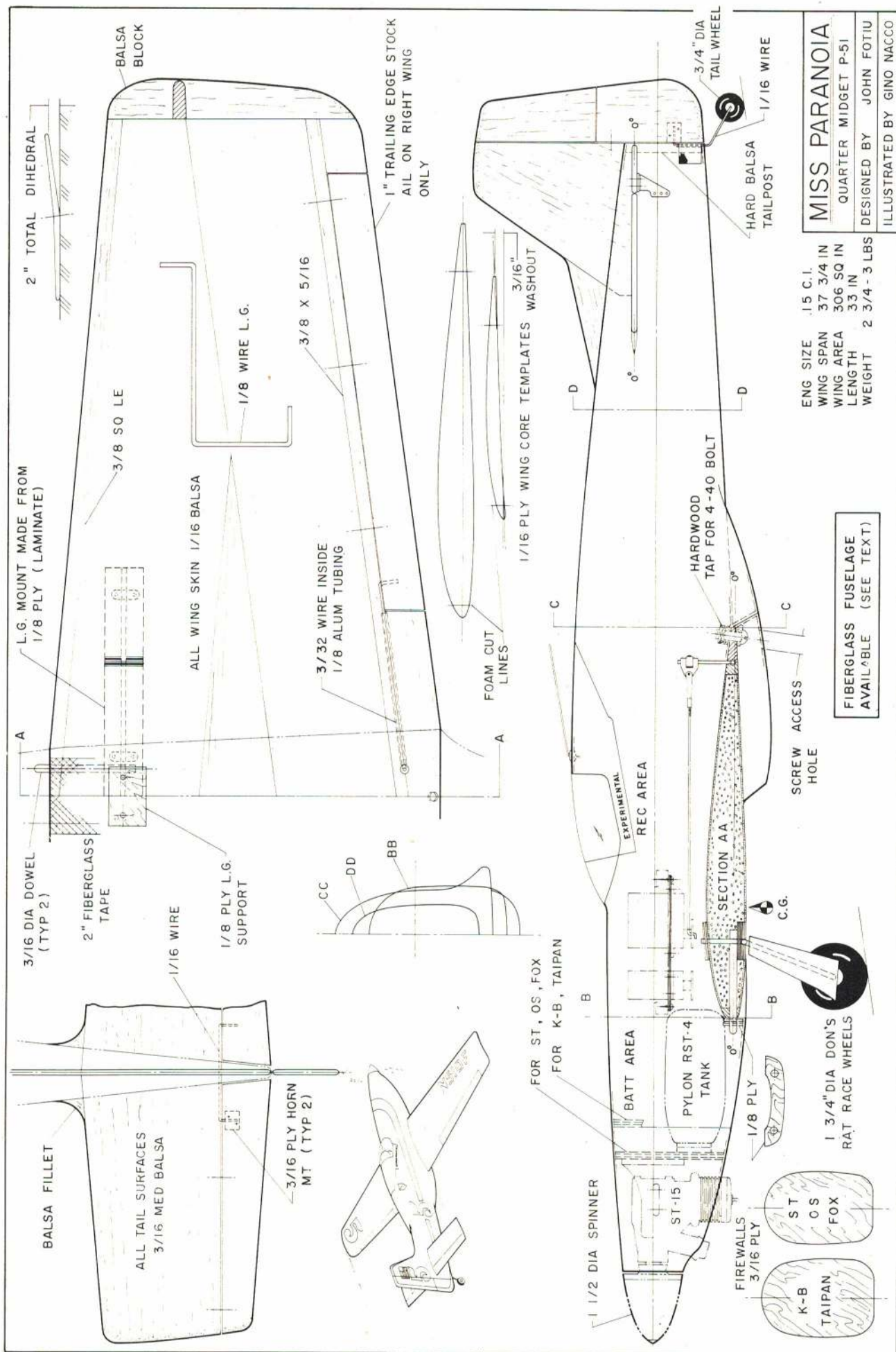
FLYING

Balance the model on the CG, and set up control surface throws as follows: elevator— $1/4''$ each way; aileron— $1/4''$ each way; rudder— $3/8''$ each way.

If you can fly a low-wing sport or pattern airplane, you should have no problems flying the Miss Paranoia. However, due to its clean design, you have to induce enough drag to slow the airplane down for a safe landing. This is done by holding in about one-fourth of the elevator throw, at a near idle throttle setting, well in advance of the final leg of the landing pattern. Practice slowing the plane down at high altitude to get the feel of it.

There are about 15 active contest fliers racing the Miss Paranoia. I sincerely hope you decide to make it 16.

Gentlemen, start your engines and get ready for another one of those two-minute paranoid acts!



FULL-SIZE PLANS AVAILABLE—SEE PAGE 100

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RC-108

For the scale modeler: A straight-forward, relatively simple, light aircraft offering several scale operational features—flaps, external military stores, cargo drops, and even aerobatics. / by Monty B. Groves



Swedish Hocus Pocus

A unique demonstration of Swedish aviation magic has been unfolding over the past couple of years in the form of a totally versatile, rugged utility aircraft that is being assembled in small numbers at the Saab-Scania factory in Malmo, Sweden.

While Saab-Scania is a leader in the design and production of such advanced Mach 2 military aircraft as the Model 35 Drakken and the utterly fantastic Viggen (See *AAM*, January, 1974), they also are starting to field test, display and market a light military airplane that has been designated the MFI 17 "Safari."

The Saab MFI 17 is an excellent, multipurpose, light utility aircraft which is certain to be utilized by many developing nations for its light military and nonmilitary applications. It has the capability of converting, almost instantly, into a cost-effective, adaptable weapons system for low intensity engagements.

The shoulder wing, single engine plane is a true quick-change artist and, because flexibility is the basic design philosophy, it can assume many guises. In addition to being a close-in, ground support weapons platform, it can also be used for police work, basic gunnery and aerobatic flight training, agricultural spraying, target towing, aerial photography, general liaison missions, and for dropping supplies.

Its maneuverability, slow flight and STOL characteristics make it easy to operate from unimproved roads or strips that are in close proximity to the action. A 200 hp, fuel-injected Lycoming (relatively safe from IR-seeking missiles from the ground) per-

mits successful, quiet, "slip up on 'em" missions.

The concept of this aircraft began as a homebuilt in San Diego, Calif.¹ First flown in 1958 as the BA-7, it was designed, built and flown by a Convair employee, Bjorn (Andy) Andreasson. Registered as N2806D, it was powered by a 75 hp Continental A75, and had a wingspan of 23 ft. In 1962, Andreasson returned to his homeland of Sweden, and by 1964, a refinement of his original design was designated the MFI 9, and was being assembled in limited

MFI 15 "trainers" to the small African country of Sierra Leone, the wing structure was beefed up to allow external load mounting. The resulting military mode was designated MFI 17.

The Safari was developed in accordance with U.S. Federal Air Regulation Part 23 covering Normal, Utility and Aerobatic categories, and can also be operated in the Restricted category for military use. The all-metal, stressed-skin MFI 17 is equipped with three seats, and is fully aerobatic (maximum load limit of +6/-3 Gs).

Inside and out, the Safari is pure utility. A no-nonsense, well-designed, fully equipped instrument panel (with American radio gear) is presented to the pilot, who is enclosed in a well-glazed canopy designed to provide excellent all-around visibility. All instrument gauges are in English units.

Normally equipped with tricycle gear, the MFI 17 can be configured as a tail dragger with a combination wheel/ski undercarriage. Constructed in two identical legs that are attached to the main wing



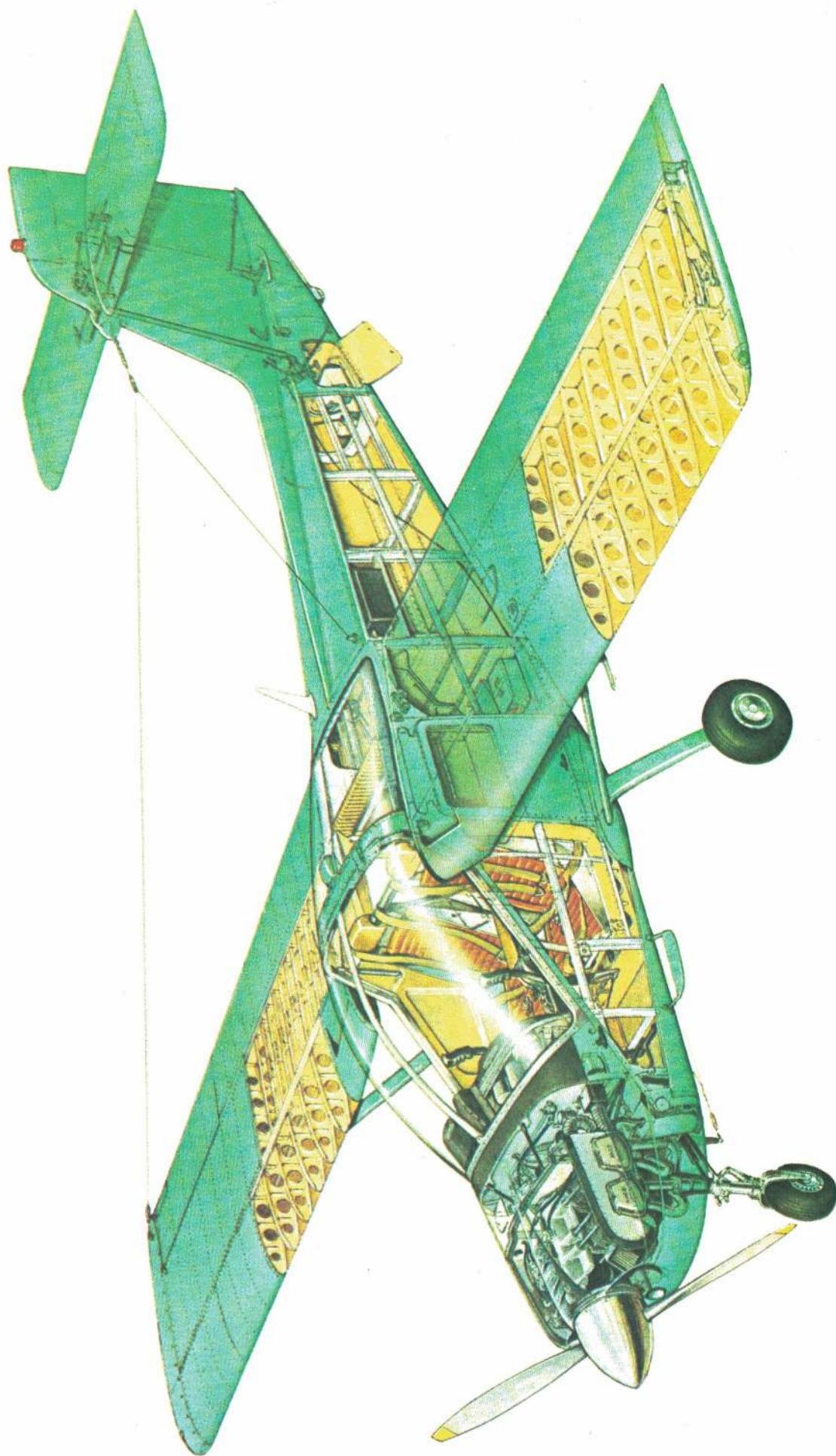
numbers at Malmo. Power for the production MFI 9 was increased to a 100 hp Continental engine.

As a follow-up program, the MFI 15 was conceived and built. Larger in all dimensions, the wingspan and length were increased to 29 and 23 ft., respectively, and the power plant was increased to a 160 hp Lycoming. Basically a primary trainer, the MFI 15 has undergone evaluation by various nations as a possible replacement liaison aircraft. Saab began a vigorous sales effort and after delivery of between 10 and 20

support frame, the main landing gear, although conventional in appearance, is a lightweight and rugged, glass fibre reinforced, plastic material. The cowlings, wing tips, elevator and vertical fin are also constructed of the same material.

For ease of maintenance, the cowlings are quickly removed, and engine accessibility is provided by a special drop-down bracket that tilts the Lycoming.

The wings are unique in appearance in that they are swept forward 5°. They contain the total gasoline capacity of 50 U.S. gallons in integral tanks, allowing



SAAB-MFI 17

LIGHT AIRCRAFT FOR PRIMARY FLIGHT TRAINING
AND ARMY CLOSE SUPPORT. LENGTH 7.0 M. WING SPAN
8.85 M. MAX. SPEED 248 KM/H. TIME TO 2,000 M 7.4 MIN.
EXTERNAL LOADS 300 KG.



Coming in fast among the trees in a low-level strike mission, and armed with rocket pods, the Safari clearly demonstrates it is flexible, but not limp. (All photos courtesy Saab-Scania)

5½ hours endurance. Its internal and external load carrying capacity, coupled with excellent visibility and flight characteristics, provide versatile options to the civilian or military operator.

Under the wings are innocent-looking pylon mounts that can turn this training or liaison aircraft into a deadly close-in attack weapon. With 660 lb. external carrying capacity under the wings, the military stores can be quickly varied according to the mission—Bofors antitank missiles, air-to-surface rockets, GE Miniguns or various combinations of each make up an effective and flexible kill capacity.

But the first real test of the Safari's ruggedness is currently being demonstrated in Ethiopia. Instead of rockets or guns, the pylons are slung with disposable bags filled with a special kind of seed corn. In cooperation with the Swedish Section of the Lutheran World Federation, the Swedish Red Cross, the Save the Children Fund and Saab, three MFI 17s (SE-FII, SE-GHK and SE-FIK) are being used in an attempt to save thousands of natives from starving in the Ethiopian back country.

Organized and under the command of Count Carl Gustav von Rosen of Sweden, a special team is involved in

dropping over 13,000 lb. of sorghum seed each day. Flying six to seven hours daily since April, 1974, the three airplanes have been making relief food air drops "on target" at the extremely low altitudes of 3 to 15 ft.

This unique application of an aircraft is certainly nothing new to the 65-year-old count, whose adult life portrays a true airborne soldier of fortune. He fits this image with his flying adventures, as well as his appearance. Lean and just under six feet tall, the count has steel gray hair and eyes to match.

A childhood filled with aviation lore and African adventure formed the basis for all the "derring-do" of Gustav von Rosen's manhood. His father, Count Eric von Rosen, was an African safari adventurer and aviation enthusiast. And, because he donated their first aircraft, the elder von Rosen is considered the father of the Finnish Air Force.

On March 6, 1918, a Thulin-built Morane Parasol, flown by Lt. Nils Kindberg (Swedish pilot certificate No. 25), was delivered to Vassa, Finland, after a flight from Umea, Sweden. Emblazoned on the airplane was the von Rosen

The civilian version of the Safari, the MFI 15, has the same configuration, but without the pylon mounts for external stores.





ABOVE: Count Gustav von Rosen preflights the Safari prior to his relief air drop mission in Ethiopia. Over 660 lb. of sorghum seeds are visible on the Saab-MFI 17's wing mounts. BELOW: Low and slow, with flaps down, one of Count von Rosen's Ethiopian relief aircraft demonstrates the food-dropping technique at Malmo prior to deployment.





Even with fixed gear and mixed rocket payload slung under the wing, the MFI 17 presents a "clean" appearance.

"good luck" symbol, a large blue swastika on a white field. This insignia was adopted and remained the official marking of the Finnish Air Force for the next 28 years.

Some of the leading aviation figures of the Twenties were frequent visitors at the von Rosen estate far outside of Stockholm. And, among one of the most frequent was one of World War I's surviving Pour le Merite holders, Hermann Goering. Not only did he become Gustav's uncle by marriage, but Uncle Hermann later became commander-in-chief of Germany's swastika-marked Luftwaffe.²

In these surroundings, Gustav became totally enveloped in the romantic age of speed and adventure. Yearning to

be a racing driver, the teenage Gustav ran away from home and raced cars for awhile. This resulted in his father's refusal to speak to him for over five years. After obtaining a flying license at the age of 19, young von Rosen flew for an aerial circus for several years before he became involved in his first African adventure. During 1935-36, he organized a Red Cross Flying Relief Mission for the Ethiopians during the Italian invasion. Slightly exceeding his role as a "relief pilot," the neutral Swede soon had a \$10,000 price placed on his head by the Italians.

Then, after a two-year stint as a flight captain for KLM, Gustav followed in the footsteps of his father by rushing to the aid of the Finns when the Soviets

invaded that country in 1939. As a flying volunteer, he personally flew scores of combat missions in his bomber conversion of a Douglas DC-2, in addition to acquiring other aircraft for the Finns in their valiant (but futile) attempt to stem the Russian advances.³ Returning to his neutral homeland, he flew with the Swedish airline, ABA, from 1940 through 1946.

With all of Europe engaged in total war, this neutral Swedish airline pilot managed to optimize his involvement without actually participating. He flew the weekly courier flights from Stockholm to Berlin. Undoubtedly, there occurred events of deep international intrigue during that period, and an accurate list of passengers and cargo surely would be illuminating.

After the Big War, he was appointed the first chief of the Ethiopian Air Force, which he soon augmented with Saab-B17 light bombers and Saab-Safir light aircraft.

Count von Rosen attained international prominence in 1968, when he organized an "air bridge" of relief supplies to the Nigerian-blockaded Biafrans.³ Flying night supply missions over secret routes from the Portuguese island of Sao Tome, his airlift was suc-



The precursor to the Safari, the MFI 9, with full flaps down, convincingly demonstrates its STOL performance in a crosswind from an unimproved strip.



With minimum ground crew support, pods with Bofors Bantam antitank missiles are easily attached in a "forward" area.

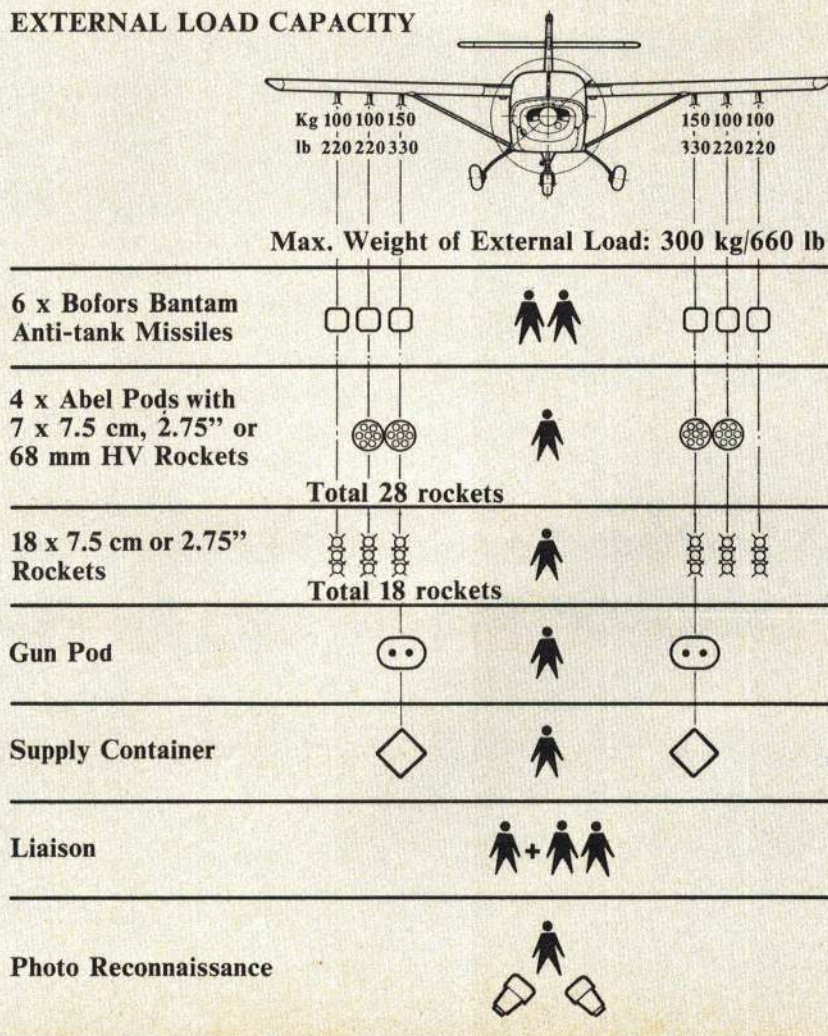
successful in breaking the Nigerian blockade, even though the DC-7Cs and Constellations were continuously being harassed by Russian-built MIG 17s of the Nigerian Air Force.

In May, 1969, the shining shield of Swedish neutrality suddenly became somewhat tarnished when the news media reported that nine small camouflaged light aircraft, without national insignia, that had attacked Nigeria, were being flown by "Swedish mercenaries." (Guess who?)

The light aircraft were armed MFI 9 training craft which somehow had found their way into Africa from Sweden and France, and were assembled into an unusual strike force under the command of the count. These single-engine, light aircraft successfully attacked oil fields and power stations with pylon mounted rockets, and destroyed 11 MIG-17 fighters and Ilyushin bombers, catching them on the ground at a Nigerian Air Force Base.

Needless to say, there was considerable consternation on the part of the Swedish Government. Not only were Swedish nationals involved in a "private war," they were being led by a titled Swede who was flying a Swedish-built

EXTERNAL LOAD CAPACITY



airplane. Count von Rosen caught hell from the prime minister of Sweden. (On the other hand, Saab-Scania, the manufacturer of the MFI 9, was most certainly aware of the international sales potential of such a successful concept which had been clearly and convincingly demonstrated.)

The original Andreasson design continued through the refining process. Its wings were strengthened to accept more payload; it was re-engined to accept the 200 horses of the Lycoming IO-360, and eventually, the small MFI 17, whose mother had been a "MIG-killer," was born in Malmo.

The name "Safari," given to the MFI 17 is *appropos* of von Rosen's interest, involvement and adventures in Africa and in aviation. The Safari promises to be a successful contender in the growing world market for a rugged, multi-purpose, light airplane of a militant or nonviolent nature.

As yet unseen within the U.S., it is reported that Saab-Scania will demon-

Saab-MFI 17 "Safari" Performance

| | |
|--|-----------------|
| Max level speed at sea level | 134 knots |
| Cruising speed, sea level (75% power) | 119 knots |
| Stalling speed with flaps and idle | 54 knots |
| Max diving speed | 197 knots |
| Max rate of climb | 1,050 ft./min. |
| Service ceiling | 17,000 ft. |
| Takeoff roll distance | 490 ft. |
| Max endurance at sea level (10% reserve) | 5 hrs., 10 min. |

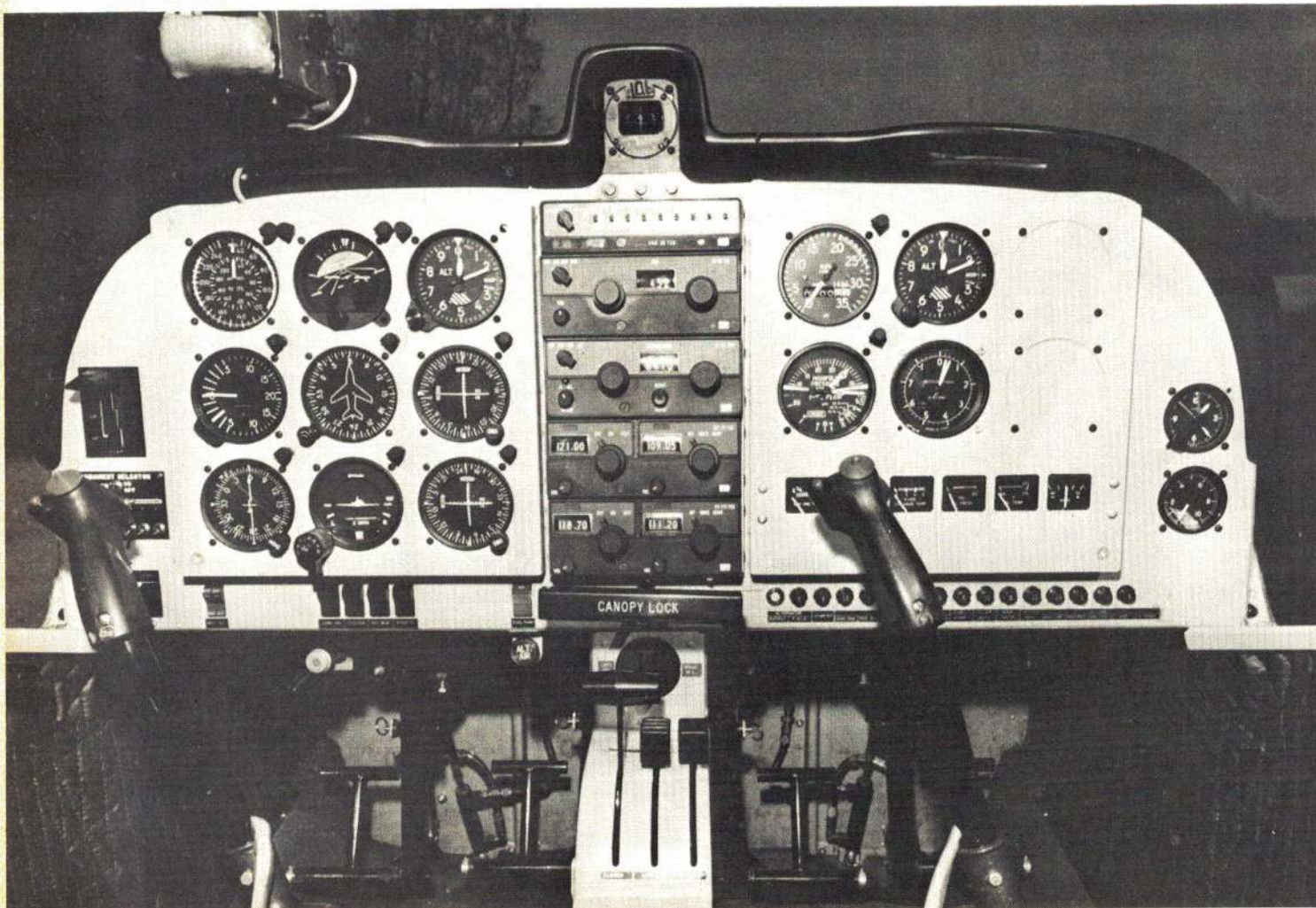
strate the Safari's attributes and capabilities in the Western Hemisphere in early 1975. Saab hopes to establish a marketing agreement with some established North American firm.

In the January **AAM**, Patricia Groves explores the evolution of Anthony Fokker's "secret" airplane and the Luftwaffe's hidden air force, in "Germany's Quiet Birdmen."

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2. William L. Shirer, *The Rise and Fall of the Third Reich* (New York: Simon and Schuster, 1960).
3. *Encyclopedia Britannica Year Book*, 1969.

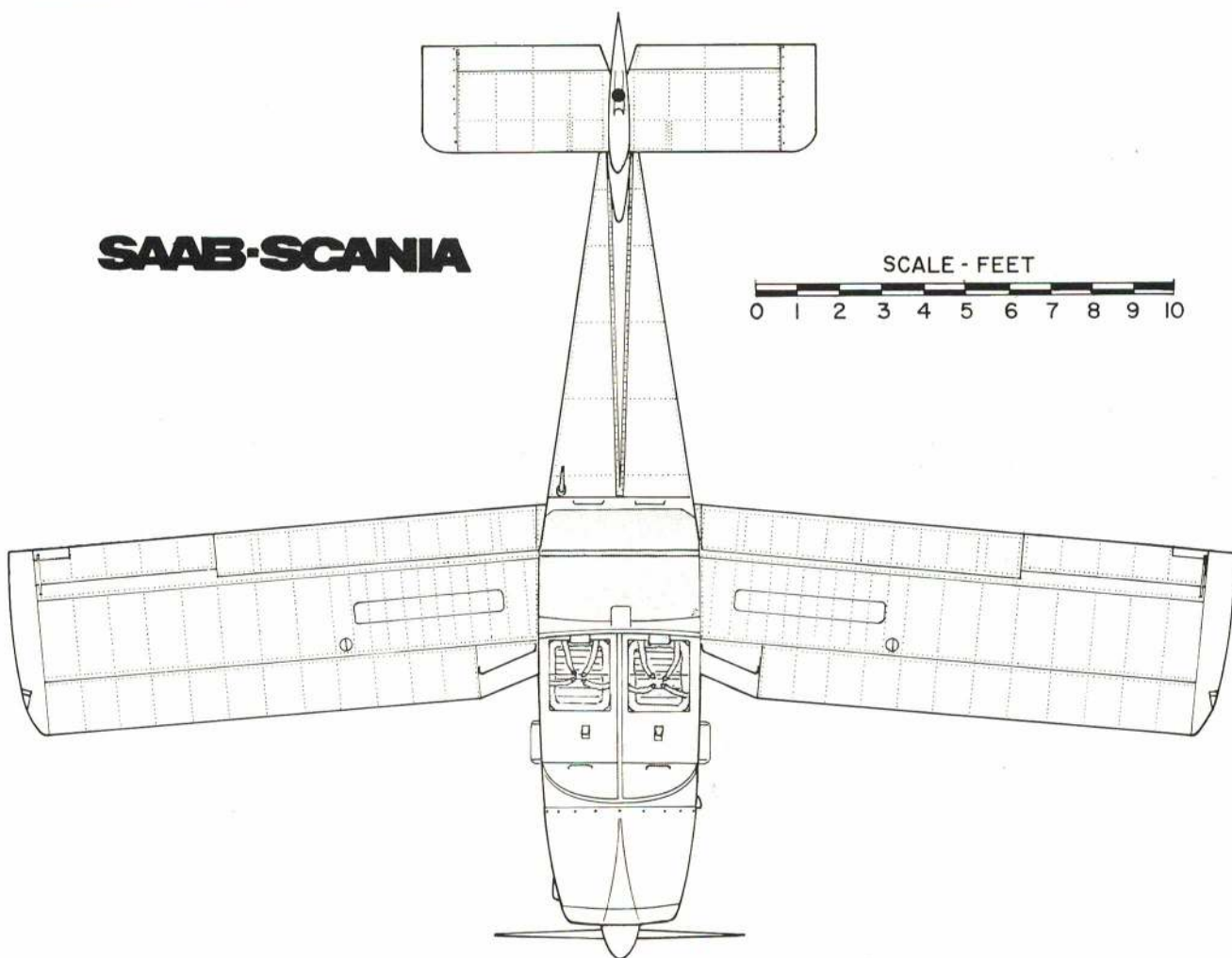
The MFI 17's functional cockpit is complete with dual controls, reflecting gunsight, and a utilitarian arrangement of flight instruments and engine gauges, all marked in English units.



SAAB-SCANIA

SCALE - FEET

0 1 2 3 4 5 6 7 8 9 10



SAAB-MFI 17 "SAFARI"

As Flown By
Count Carl Gustav von Rosen
Ethiopian Relief Flights 1974
Inked By M.B. Groves

the poor modeler's scale



This scrap-box scale will handle one oz. to two lbs. accurately. It can be built in a few hours for only pennies. / by Hank Cohan

A good scale (Webster's New World Dictionary: "weighing machine") is a model-making necessity which, somehow, many modelers get along without. Postage scales sold for home use generally can't repeat their readings within half an ounce, kitchen scales are fine for baking cakes, but are deplorably inaccurate. Almost all such devices are spring operated, and the mechanisms cannot be made linear and smooth enough at the selling price.

Gravity balances and torsion balances are great; they are also quite costly. A gravity balance is one that uses gravity working on a weight of known mass to balance and thus determine the mass of the object being weighed. After pricing a couple, it was decided to design and build a gravity balance that would be accurate and repeatable

enough for model work, require no special tools to build and calibrate, and cost next to nothing.

The balance shown here will handle from 1 oz. to 2 lb. with good accuracy, has a flat pan on which to place the object being weighed, and does not require being suspended while the load is hung from a string (the calibrated yardstick balance).

The basic principle of this balance lies in the parallelogram or four-bar linkage formed by the beam, pan support, main fulcrum support, and the link. This setup permits the pan to remain horizontal as it moves up or down.

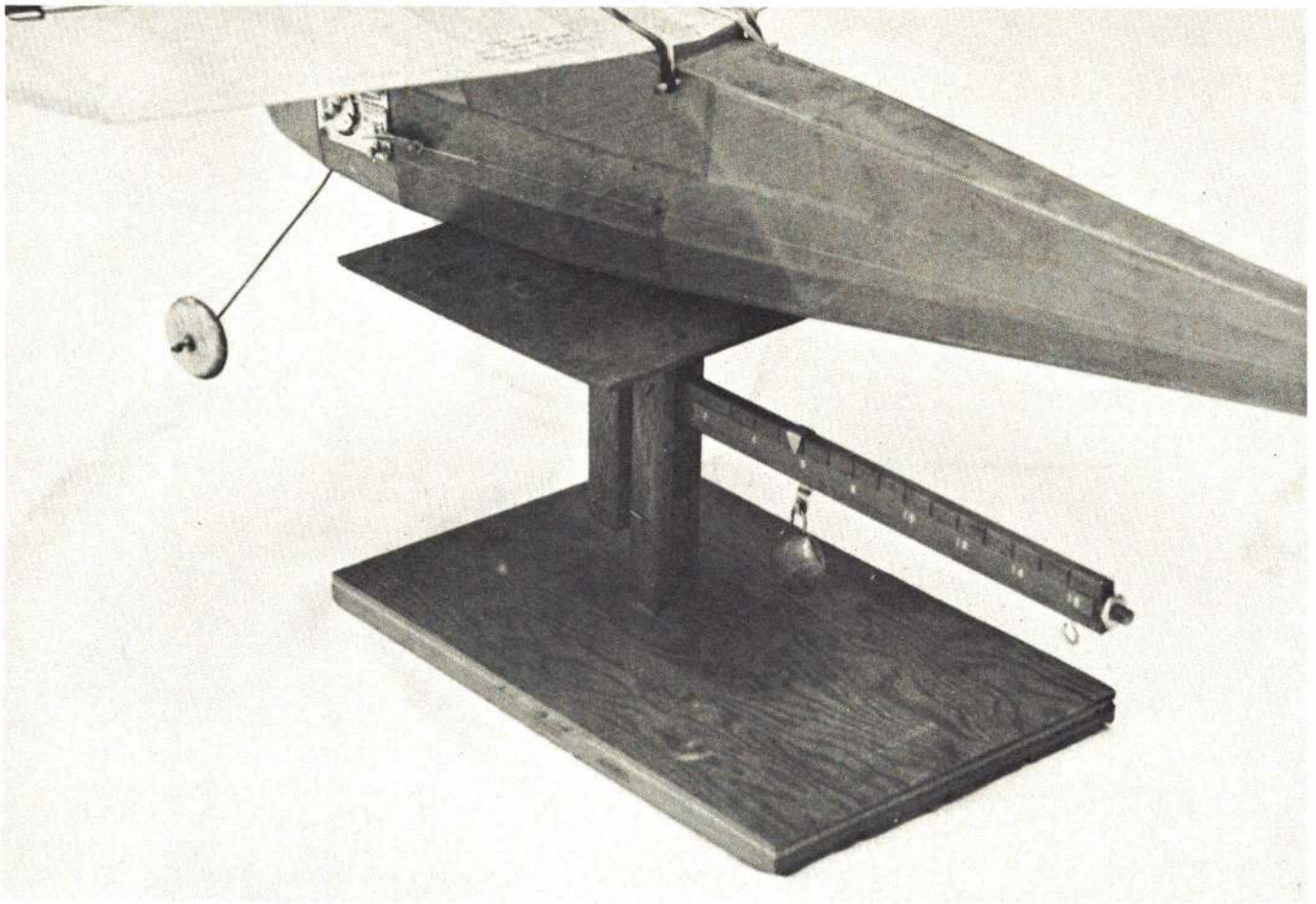
In the original balance, a ratio of one to eight was selected for the sliding weight. A 1" length of beam overhangs the fulcrum and supports the pan, while an 8" length acts, with the sliding

weight, as the counter poise. Thus, a 1-oz. sliding weight will measure up to 8 oz., a 2-oz. weight 16 oz., and a 4-oz. one up to 2 lb. For best accuracy, the user should select the lightest sliding weight consistent with the object being weighed.

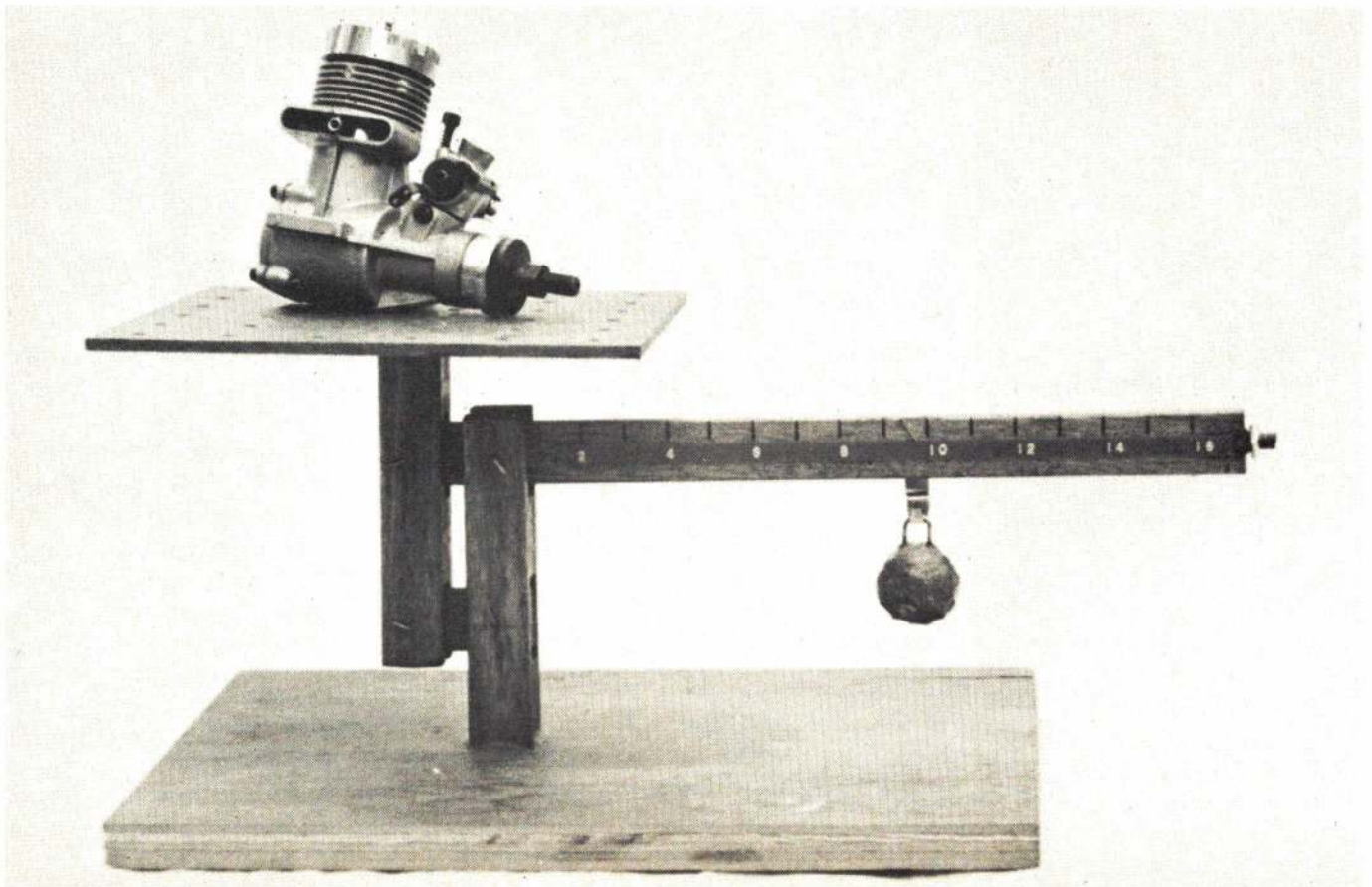
For the builder who wants to go metric, there are two alternatives. One is to remember (or write somewhere handy) that 1 oz. equals 28.35 grams. The other is to reconfigure the balance to metric dimensions. In the latter case, it is suggested that the 1" beam dimension be made 3 cm. and the 8", 30 cm. Metric system weights will then work at a one to ten ratio.

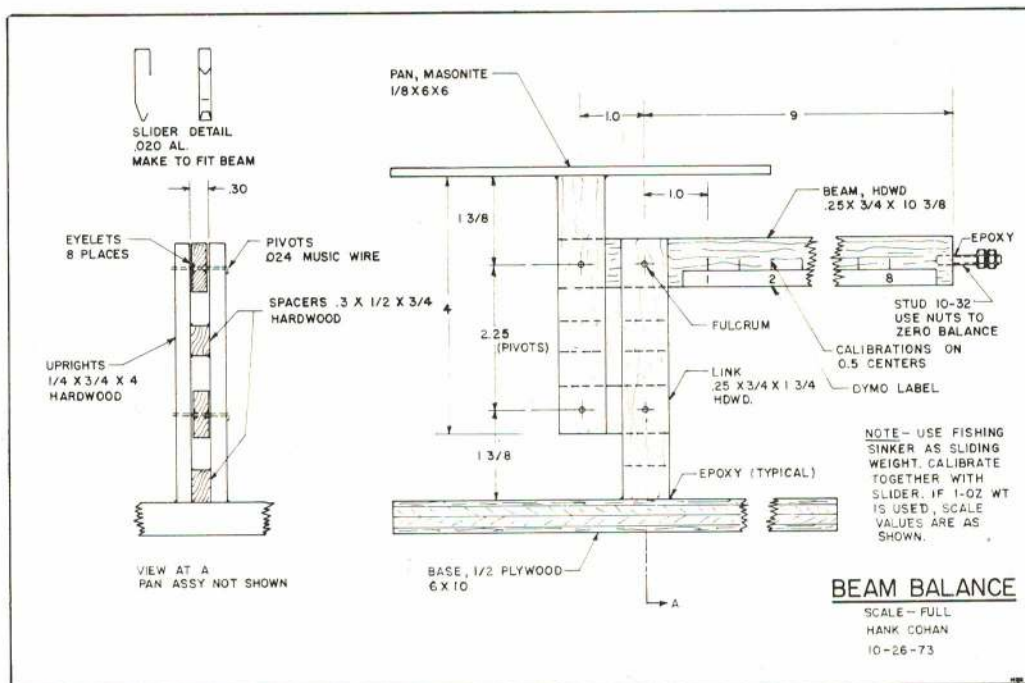
CONSTRUCTION

The major parts of the scale are made from hardwood. Philippine mahogany scraps were used in the



ABOVE: The first step in finding that wing loading is to accurately weigh the model. This scale is more accurate than the commercial ones.
 BELOW: Weighing the parts of an airplane allows you to project not only the all-up weight, but if the model will be nose or tail heavy.





original, while the spacers in the two vertical assemblies are slightly thicker to provide working clearance. The bearings in the original scale are small brass eyelets epoxied into the sides of the beam and link. The eyelets are selected to be a free slip fit on the wire pivots. Brass or nylon tubes may also be used as bearings, again choosing sizes of the tube and wire to make a free slip fit.

First, lay out the beam, it has the only critical dimension—the 1" between bearing holes. Make this accurately, because the accuracy of the beam calibrations depends upon the dimension. Drill the holes the correct size to make a snug fit for the bearing eyelets or tubes, which are installed later.

The two vertical assemblies are made next. Cut four identical pieces as shown, and four spacer blocks. Make into two similar assemblies. Follow the drawings, using white glue, Titebond, or epoxy. If you use Hobby Pox 4, you can build the entire scale in one evening. Now cut the pan from 1/8" Masonite or 1/4" plywood, and the base from 1/2" plywood scrap. Sizes shown are approximate; if you prefer them a bit larger make them to suit yourself, but bear in mind that in using the scale, you must see the beam conveniently when positioning the sliding weight. The sizes shown work well on the prototype.

Now carefully true up the ends of the two vertical assemblies so that each will make a good 90° fit with its appropriate mating part, the pan and the

base, respectively. Drill the four pivot hole pairs. A drill press or guide for lining these holes up square is helpful. Use the two sets of holes in one assembly as a pattern for drilling the other. Now glue one to the pan and the other to the base, making sure they are each vertical. The last major part is the link, made of the same thickness material as the beam. Using the beam as a pattern, drill the two bearing holes 1" apart.

The calibration marks are now added to the beam as indicated in the drawing. Space the major marks 1" apart, and add the 1/4" and 1/2" marks between. The best way to get it right is to clamp a good metal scale (ruler) to the beam with its first inch mark exactly at the hole which will be at the fulcrum. Mark in pencil, then go back later and go over them with ink or ball-point. A Dymo label was used for numbering the prototype. Now notch the end of the beam and epoxy the 10-32 stud in the notch for fine balancing. The stud can be made by cutting off the head of a brass screw.

The last part is the slider. Cut and bend from aluminum sheet, about .020 to .030, to the shape shown. It should slide freely on the beam with minimum slop.

Final Assembly: As mentioned above, the pivot bearings in the prototype are small brass eyelets, larger than the pivot wires, to allow free rotation. Epoxy the eight eyelets or four bearing tubes into the holes in the beam and

link, being careful to keep the center holes from filling with glue. When set, line up all the parts and push the wire pivots through. Put a small amount of very light oil on each wire with a toothpick before inserting.

Calibration: Obtain three fishing weights, one each weighing 1, 2 and 4 oz., from a sporting goods store. Get the type with a little brass eye or loop cast into them. This loop is used to hang the weight from the slider. Take the weights, the slider, and a knife, anywhere there is an accurate scale in the 8-oz. or 500-gm. range. A Post Office branch, or a local high school chemistry or physics laboratory will have good scales for this purpose. Weigh each weight in turn (with the slider included) and pare off lead with the knife until each weight, with the slider, is at the correct value of 1, 2, and 4 oz., respectively.

The last step is to "tare out" the assembled balance. This is done by putting nuts on the 10-32 screw in the beam-end until the beam remains horizontal with no weight on the beam and none on the pan. Check by tapping on the base to overcome the "stiction" in the system. Fine balance is achieved by moving the nuts in or out on the screw.

In using the scale, the 1-oz. weight will read out directly in ounces. Double the readings for the 2-oz. weight, and multiply by four for the 4-oz. For highest accuracy, tap on the base to get final readings.

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Specifications

| | | | |
|-----------|---------------------|----------------|------------------------------|
| Weight | 30 ounces (less RC) | Wing area | 590 sq. inches (4.1 sq. ft.) |
| Wing span | 98 inches | Wing loading | 9.2 ounces (w/8 oz. RC) |
| | | Overall length | 42 inches |

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Configurator III

A direct descendant of the A-6 Intruder, this model perpetuates the exacting standards of excellence in pattern design which the late Jim Kirkland held so highly. / by George Buso

One direct and extremely influential ancestor of the Configurator is the late Jim Kirkland's Intruder design. After two years of modification and experiments, the Configurator still strongly resembles the Intruder, especially in the top or planform view. However, the Configurator employs many important changes that make it an even more forgiving and stable aircraft, with no negative tendencies whatsoever.

A new name was most certainly warranted after several modifications gradually evolved for the airfoil, thrust line, rudder and fin shape, fuselage width, and the wing and fuselage construction. The airplane has been changed considerably over a two-year period, hence, the new name—Configurator III (it performs a prescribed configuration of maneuvers). This third generation model has now been endowed with more desirable flying features, which make it perform with confidence at full throttle and also at lower approach and stall speeds.

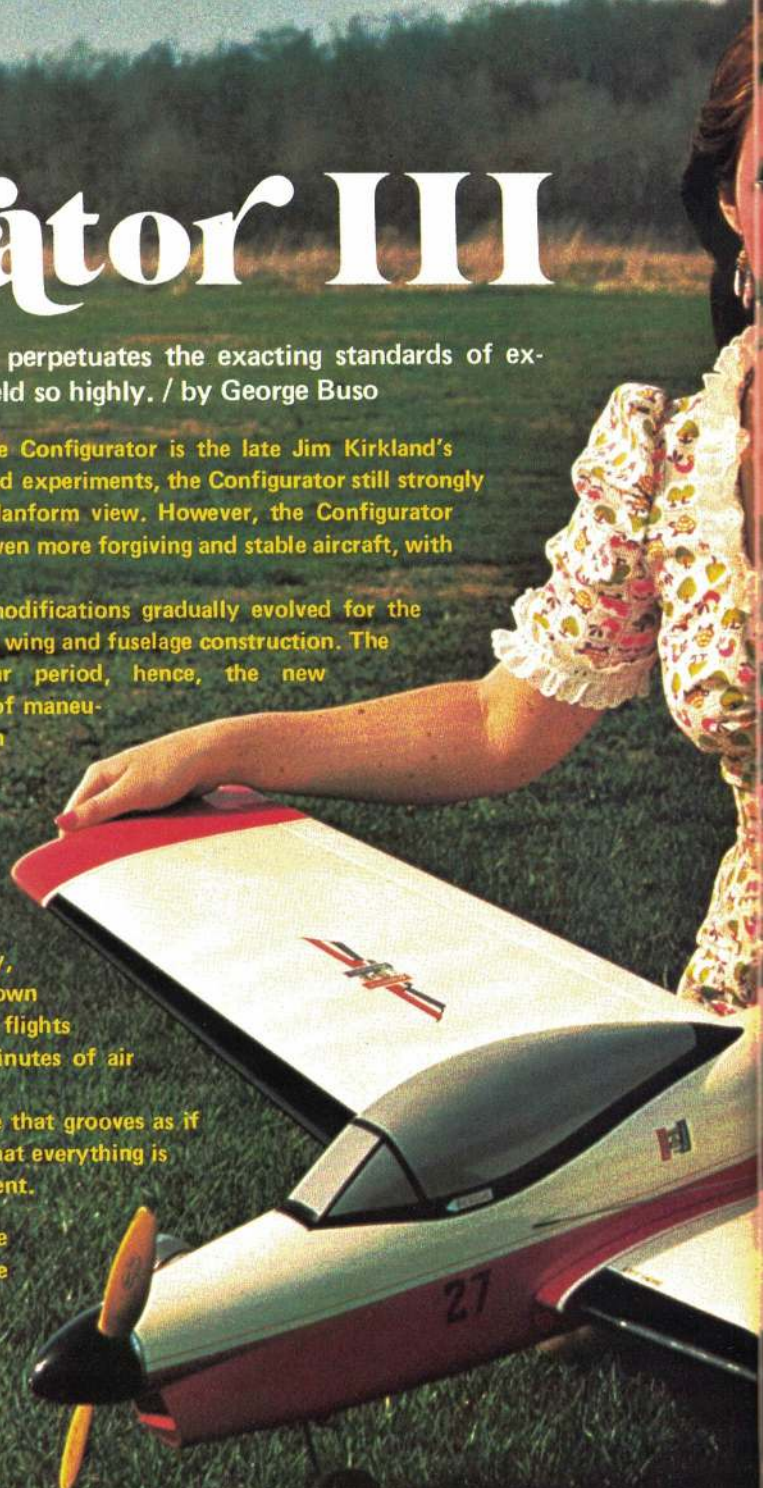
In March, 1973, the airplane placed first in the Pattern Aircraft category at the Eastern WRAMS Show where the entries were judged for original design, as well as for overall construction and finish. By the end of April, in windy, blustery weather, the Webra 61 in the Configurator had gulped down only one gallon of fuel. The only trim adjustment needed for 15 flights of various lengths (including one dead stick after about 18 minutes of air time) was a "tweak" of left aileron.

If you are interested in a fast, steady contest flying machine that grooves as if on rails, then consider building the Configurator. Make certain that everything is square and true during construction for maximum flying enjoyment.

CONSTRUCTION: Only specific construction points will be highlighted here. Anyone building this aircraft will probably be familiar enough with building techniques to complete a Configurator without a great deal of detailed explanation.

Begin the wing construction by cutting out the foam wing cores, using the root and tip templates shown on the plans. A solid balsa leading edge is utilized, which makes the foam cutting somewhat easier. Only a top and bottom outline cut is required, without the necessity of cutting around the critical leading edge airfoil shape. The 1/16" balsa wing skins are also easier to make, because the skins do not wrap completely around the leading edge. The rearward sweep would make a one-piece wing skin much more difficult to construct and to fit correctly.

(Continued)







A no-nonsense design, with complete emphasis on functional geometry, the Configurator rates high as a pattern ship.

After cutting the core and making four separate wing skins—slightly oversize because the excess can be sanded off—glue the $1/4 \times 3/8$ " trailing edge to the core with epoxy or white glue. Sand in the taper when dry. The $3/16$ " plywood landing gear plates are attached with epoxy, after gouging out a $3/16$ " deep impression in the foam with a hot wire installed in a 40-watt soldering iron.

Attach the wing skins with your favorite water-based contact cement, making sure that a warp is not induced into the wing halves. Sand the leading edge sheeting overlap flush with the foam core LE and sand the overlap at the wing tips flush with the core. Attach the $3/8 \times 3/4$ " medium balsa leading edge with epoxy, and follow with the tip blocks.

After carefully sanding the two wing halves to shape, glue them together using Hobbypoxy Formula II. The top of the wing is perfectly flat, thus the bottom only has dihedral. Fiberglass cloth is applied to the center section, as shown on the plans, again using Hobbypoxy Formula II. The ailerons are made from $1/2$ " medium balsa, sanded to shape as indicated on the plan.

The servo cutout and the wheel wells were not cut out on the original until the covering and a base coat of dope were applied. This procedure makes the initial alignment of the two wing halves easier. It permits a "more square" lineup of the retract servo by performing the cutting-out operation at a later time.

Note that the wheel wells are offset rearward to accept a rearward set of the struts. After a few "harder" landings,

the Pro-Line gear struts used on the original tend to set rearward slightly (never forward) and could cause a servo bind if the rear of the wheel could not easily retract into the well. A simple offset of the wheel well eases one's mind about a clean retraction every flight.

The stab is started by gluing the $1/16 \times 5/16$ " balsa strips to the leading edge and trailing edge pieces. Note that $1/16$ " plywood is used on part of the trailing edge for added strength. Block up the leading edge over the plans with $5/16$ " balsa pieces. The trailing edge piece is blocked up $1/4$ " and pinned over the plan. At this point, add all the parts, including S1, all the ribs, and the $3/16$ " square spar. Carefully cover with $1/16$ " balsa, with the joint line on the spar. Thus, four pieces of $1/16$ " sheet are used to cover one side of the stab.

After drying, flip this construction over, carefully blocking up the LE and

TE as before to make sure the final assembly is true. Add the spar and sheeting as before. Note that a slot must be left in the top sheeting for the $1/4$ " sheet fin to slip in above S1. Glue on the tips and sand to shape. The elevators are carved and sanded to the cross section shown on the plan.

The fin and rudder are assembled from $1/4$ " sheet balsa. Sig C-Grain balsa was used for these parts in the original Configurators to minimize warping. Careful finishing, and checking often to prevent warps in the fin and rudder, pay off with a steady, true-flying aircraft, eliminating the more time-consuming task of assembling a built-up fin.

A good rule to follow in constructing the fuselage is to attach as many parts as possible to each $3/32$ " sheet side before assembling to the bulkheads. It is possible to have the $1/32$ " doublers, all longerons, triangles, etc.,

Author checks retract system, which installs easily in thick wing and deep frontal area of fuse.

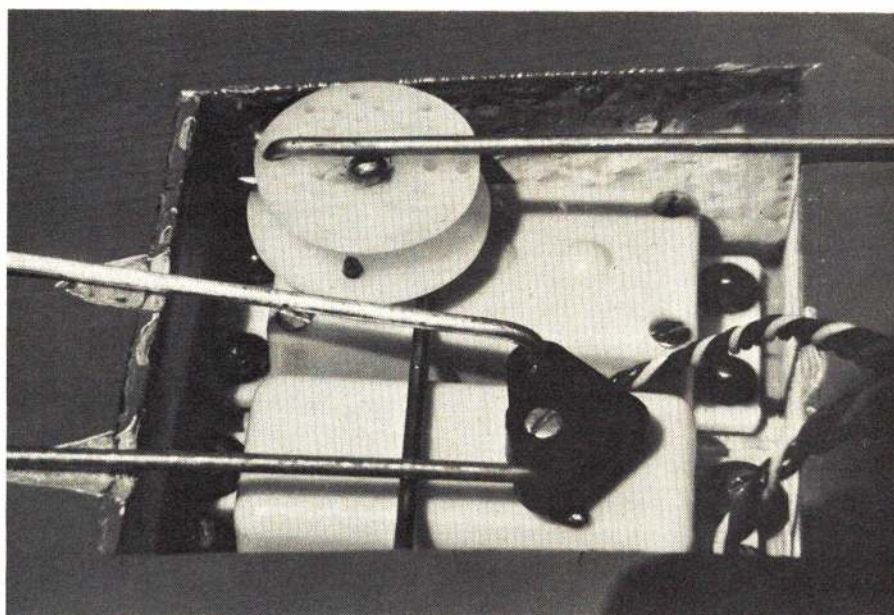


attached, with only the bulkheads and the fuel tank floor to add to the assembly for initial lineup. These are followed by the bottom sheeting, the balsa top block and the 3/8" sheet for the cowl.

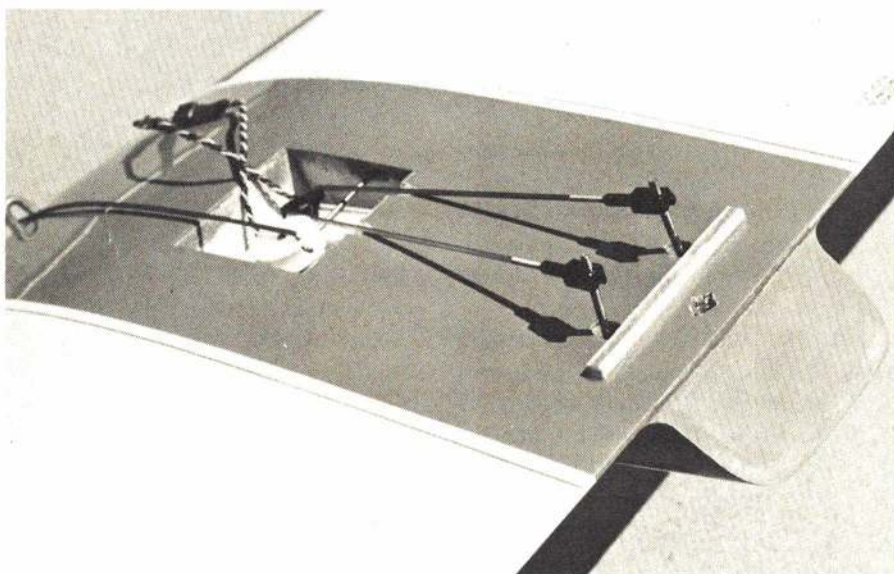
The fuselage sides are assembled to the bulkheads, upside down, with the 1/8 x 3/8" spruce longerons lying on a flat surface. The bulkheads must be vertical. Pin the whole assembly down and make sure F2 is not offset, as this will affect the engine thrust line. The engine thrust line must be zero. After the tank floor is installed, the 3/8" balsa nose filler pieces and 1/2" square pieces are glued in place. These are followed by the bottom nose sheet which will be cut out later to the pattern shown in the photographs, to form the nose wheel retract well.

Du-Bro Kwik-Rod Assembly No. KR30 was used to provide straight servo-to-control horn thrust. The nylon tubing can be epoxied in place before the 1/4" sheet bottom is installed. Measure this accurately to eliminate bind in the steel pushrods after assembly.

The top block is tack glued in place and shaped, and then is carefully re-



One retract servo drives all three gears. The nose gear linkage is driven from the top output on this tandem setup. The other servo is, of course, for the ailerons.



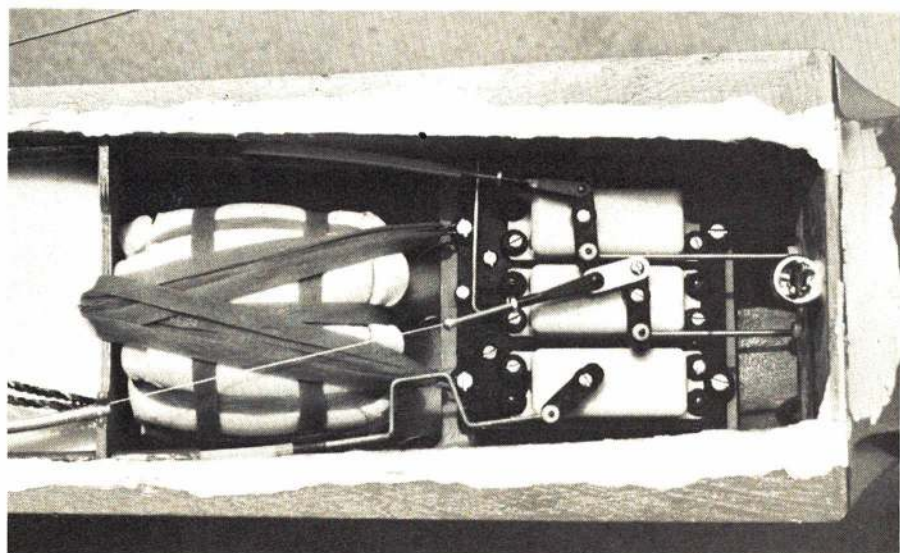
ABOVE: Another view of the wing center section. The hardwood "key" for wing alignment is epoxied in place after the model is completed. BELOW: Batteries are held in place by rubber bands. Note the adjustable brake linkage on the down elevator output of the servo. The throttle override is a simple bend in the wire linkage.



Du-Bro muffler keeps front end streamlined. Note nose wheel brake—an important accessory for paved runway operation.

moved and gouged out to about 1/4" wall thickness, as shown on the plan. At this point the top is glued on permanently.

The cowl construction could take hours to explain in detail. But it is quite easy to construct and shape into the rather unique nose appearance of the Configurator. It will suffice to explain that the 3/8" medium balsa sheets are



glued to approximate shape, hollowed out enough to clear a 60 engine (while the engine is mounted), and shaped with the cut-and-try method to conform to the planform shown. Some prudent sanding around the needle valve and exhaust will result in a good-looking, efficient cowl, which will help carry off the exhaust as well as look great. 1/2" triangle stock was used in the inside corners of the cowl for strength and to provide material for rounding the corners of the cowl.

Accurately line up the wing on the fuselage and glue the bottom balsa filler sheets and triangle pieces to the wing. Sand to shape to blend in from F3 to F5C. The Camlok assembly should be installed at this time as indicated on the plan.

The final procedures consist of fine sanding everything with 6/0 garnet paper to produce a smooth surface for covering, followed by attaching the stab to the fuselage with epoxy. It must be emphasized that the stab has 0 degrees incidence, and must be "square" horizontally. The fin is affixed and all 1/4" balsa fin pieces glued and sanded to blend nicely from the fuselage deck to the top of the fin.

The Configurator III is totally covered with Silk-Spun Coverite. Just be careful with the heat while covering the foam core wing. Keep the iron moving. All fillets around the stab, fin, canopy and wing are Sig Epoxolite, which is blended in and shaped with a wet finger for minimum sanding. The fillets are



The trim decor is classically simple, with a flair for straight lines over flowing curves.

added *after* the complete airplane is covered and given one coat of butyrate dope. Following the single coat of butyrate and the fillets, Ditzler Primer DZL-32 is sprayed on and dry sanded smooth, followed by six coats of a base color of sprayed Ditzler Acrylic Lacquer. There are hundreds of color combinations from which to choose.

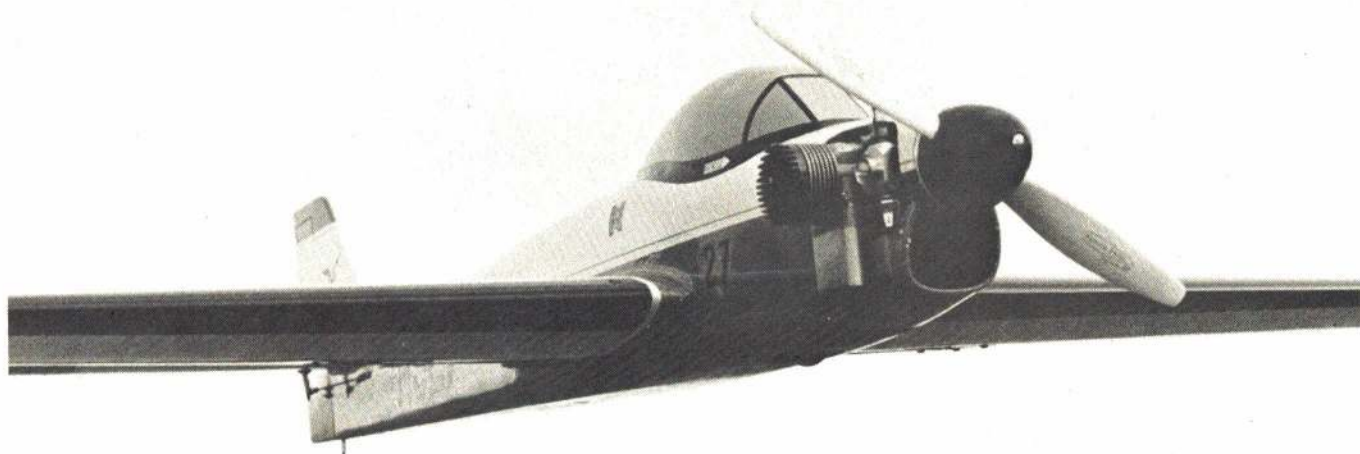
The acrylic lacquers were "well laced" with Flexall, distributed by Southern R/C Products. Flexall really prevents cracking and spider-webbing. Follow the directions on the bottle and add the maximum amount indicated to the acrylic lacquer for best results.

Wet sand between every two coats

(you may want to finish the final coat with polishing compound, rubbed out to produce the depth of gloss desired). This procedure requires some old-fashioned "elbow grease," but the final results appear to be worth the effort.

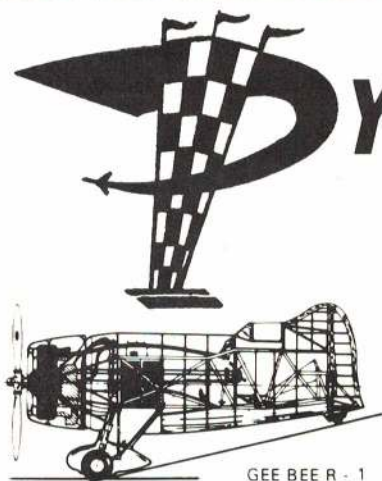
Follow the manufacturer's instructions and your own best experience in installing the retract gear and radio equipment. Make sure that the thrust line and all angles of incidence are zero. Check everything carefully before that first flight, especially the CG, and trim out to suit your flying style. You will have about 7½ lb. of a really smooth and precise flying machine at your command.

Pattern planes must really move out if they are to be competitive. A minimal amount of drag is vital for those extended vertical maneuvers.





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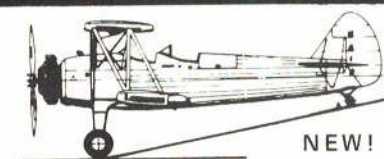
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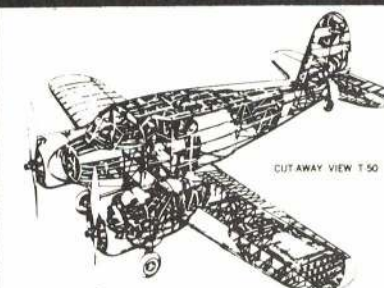
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Bob Gieseke finally made the big one. He flew his modified Nobler to the title of World CL Stunt Champion.

CZECH MATE

The 1974 World CL Championships

by Peter Richardson

Mr. Richardson is the Editor of Aero Modeller, an outstanding English model publication which is available at Quality Hobby Shops in this country.

Control line flying is not only alive and well, it is flourishing, if the 207 competitors from 22 different countries who attended the 1974 World Championships in Czechoslovakia are any indication.

The site itself—a purpose-built model drome with three tarmac circles, each enclosed by safety wire barriers, clubhouse, and full facilities for the proper

judging/marshaling of competitions—was a revelation to all who normally have to fly from car parks, pieces of runway and similar hard standing areas.

Built by members of the Svazarm Model Club, from the town of Hradec Kralove, the project was financed by Czechoslovak state authorities. It is interesting to contrast the high regard in which Communist countries hold the sport of aeromodeling, compared with the "mild tolerance" given by authorities in the West.

SPEED

The one underlying message that came from this event is that you cannot

beat Italian fliers when they are flying with Italian engines! The speeds that Ricci and Dusi (flying, incidentally, as reigning World Champion, and not as a team member) achieved were incredible—173 mph, a full 16½ mph better than the 1972 World Championships could manage.

However, the speed came not just from Rossi-horsepower; 1974 was the year of the "grouper"—a system (see sketch 1) whereby one of the control lines is held behind the other in order to reduce drag. As the lines account for up to 90% of the total drag, any reduction here is bound to be beneficial. And it

was. Around 9-1/3 mph was quoted, but obviously the faster your are going, the greater the speed gain.

Ricci and Dusi both used the "tube and tape" grouper (or "flag," or "fluppy"—call them what you will), and in practice they have achieved over 186 mph. But not in the pylon, as the *pilots* are not capable of circulating that rapidly! Certainly, both these pilots seemed pretty exhausted after "only" 173 mph. Ugo Rossi, himself, "supervised" his fliers and asserted that, for the competitors' runs, the engines were set rich to enable the pilot to keep up with them.

Ricci used an asymmetric model (a planform gaining increasing popularity), while Dusi used his 1972 conventional design. Both were fitted with engine shutoffs, but there was no occasion to use them. Both used normal front rotary Rossi 15s turning 6 x 8" glass or carbon fiber propellers. Ricci employed a uniflow tank, thus relying on suction feed, while Dusi stayed with his pipe-pressure layout. The only obvious external modification concerned the tail pipe, which appeared to be of a larger diameter than normal and was belled out to a slight venturi shape. No fuel switches of any kind were needed.

The two remaining Italians used SuperTigre X-15s. Sr. Gariffoli was there to supervise them! However, at present, the S.T. is no match for the best Rossis. Grandesso placed highest



The new team-race World Champions—Onufrienko and Sapovalov (right) of the USSR. Model was built for the 1972 World Champs, but is now fitted with the latest version of their TMA home-built diesel. Very light construction, beautifully finished.

with his asymmetric wing machine at 159-1/3 mph for seventh place. Both used identical equipment; uniflow tanks, 142 x 155 mm fiberglass propellers (copy of Top Flite) and nonstandard tuned pipes and carburetors. They used molded plastic groupers (as were being sold by Grandesso).

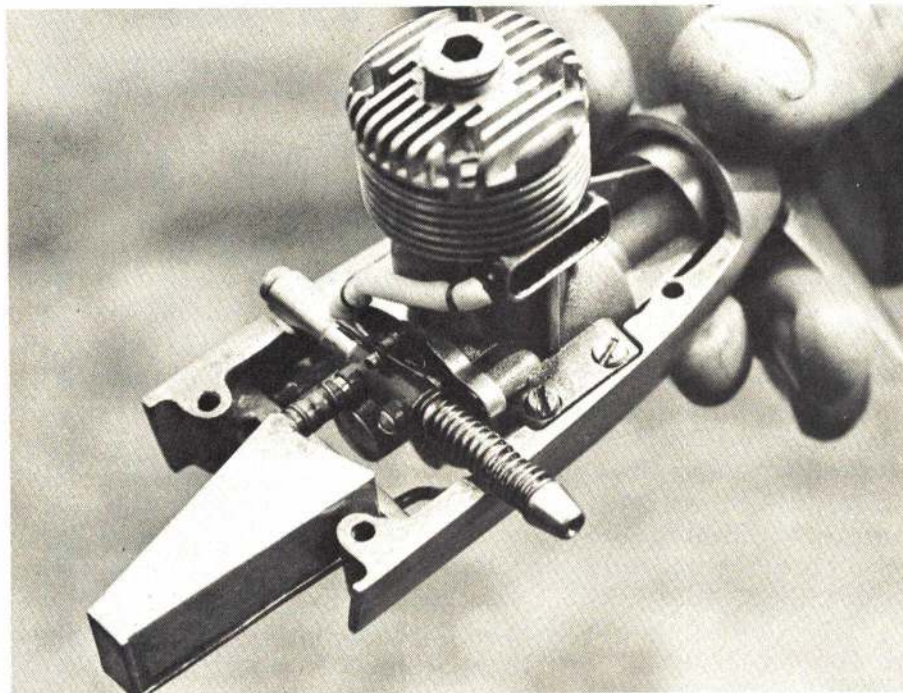
Americans have always fared well in

speed contests, and this occasion proved no exception. All three team members used identical models—metal-winged, asymmetric designs with the engine mounted sidewinder fashion, facing in-board—a layout impractical for front rotary engines, as the tanks would be too far inboard.

Chuck Schuette used a factory ABC Rossi 15 rear valve engine and a single-bladed propeller on his best (and third-placing) run of 165 mph. His spare model was a Rossi front rotary engine, converted to rear valve, using TWA castings and a homemade rotor—just as used by Bob Spahr and Roger Heminway. Props also employed were 5 3/4 x 7" (molded by Schuette and Spahr in fiberglass), and K&W 6 x 6 1/2" G.F., modified to 5.7 x 7.2". All used tube/tape groupers and fed their engines via chicken hopper tanks.

Spahr looked all set for fourth place, until Josef Frohlich of West Germany made a superb third flight of 165 mph (following two previous poor runs at 143 mph), using his Miebach-tuned Rossi 15, running on crankcase pressure and employing a centrifugal fuel switch.

Unluckiest of the U.S. team was Roger Heminway—his model was going really fast in the second flight, but his lines snagged the pylon just as he was



The winning motor—note the simple tank and combined filler/fuel shutoff/exhaust primer valve. Crutch is machined away wherever possible.

about to be officially timed. The model hit the ground, bounced, and headed for the safety fence, passing through it—fortunately without hitting anyone. Needless to say, this did little to improve its appearance, and he was forced to use his more conventional machine with a front induction Rossi. However, he still did not achieve an official flight, which must have disappointed him (and his teammates) sorely.

Apart from these incidents, the position of the rest of the field was really decided by who had the best Rossi, or at least, could set it best. The West Germans were hopeful runners, as were the Swiss, but no one was really in the same league with the top two Italians.

Conclusions? Line groupers increased everyone's speed, but they take a lot of time to make and are easily damaged. As speeds are now greater than in the days of nitromethane and monoline control, an obvious step would seem to be to ban their use in the interests of safety—a view shared by most, if not all, competitors.

TEAM RACE

Again, line groupers were greatly in evidence, although at first it appeared that only the U.S. team was using them. However, other countries soon latched onto the idea and by race day, many teams sported them, finding an increase of up to 1½ sec. in 10 laps.

The major question on everyone's lips was, "What happened to the Russians?" Admittedly a Russian team (Onufrienko/Sapovalov) did win, but they were far from dominating the event as they did in '72 and, unusually for them, they seemed marginal on range. Perhaps they were overconfident (and they certainly did not expect line groupers), but no doubt their biggest shock was the greatly improved standards of other countries in this event.

Which is the "best" engine? Hard to say—give any top team racer a good basic design and he will develop it until it is competitive—which, these days, means over 34 laps at around 100-105 mph. Certainly the most popular was the Bugl 15, produced in very small quantities by team race fan, and engineer *extraordinaire* Paul Bugl. No less than 17 teams used his unique engine, mainly in standard form.

Rossi 15 diesels, either factory units or home conversions from glow engines, were used by several teams and showed



Al Fischer (above) of U.S.A. was out of luck with his Bugl 15-powered Turtle team racer (plan available from *Aeromodeller Plans Service*.) Used Bartels "Bugl" propeller.



Roger Heminway (right) was unluckiest of U.S. team, as he just could not get a good run for the 10 laps. His best model shredded.

good potential, being extremely fast but also very "touchy" on settings. Frequently, they were to be seen going extremely fast for 10-15 laps, only to slowly overheat and slow up towards the end of the tank. Most Rossi users aimed for 25 laps' range.

Standards really have improved. Just

two years ago in Helsinki, a 4:40 best time qualified for the semi-finals, while on this occasion 4:19.3 was the slowest qualifying time, and 28 teams were under 4:40!

The semi-finals produced the usual crop of hard-luck stories, with perhaps Great Britain's team of Heaton/Ross be-



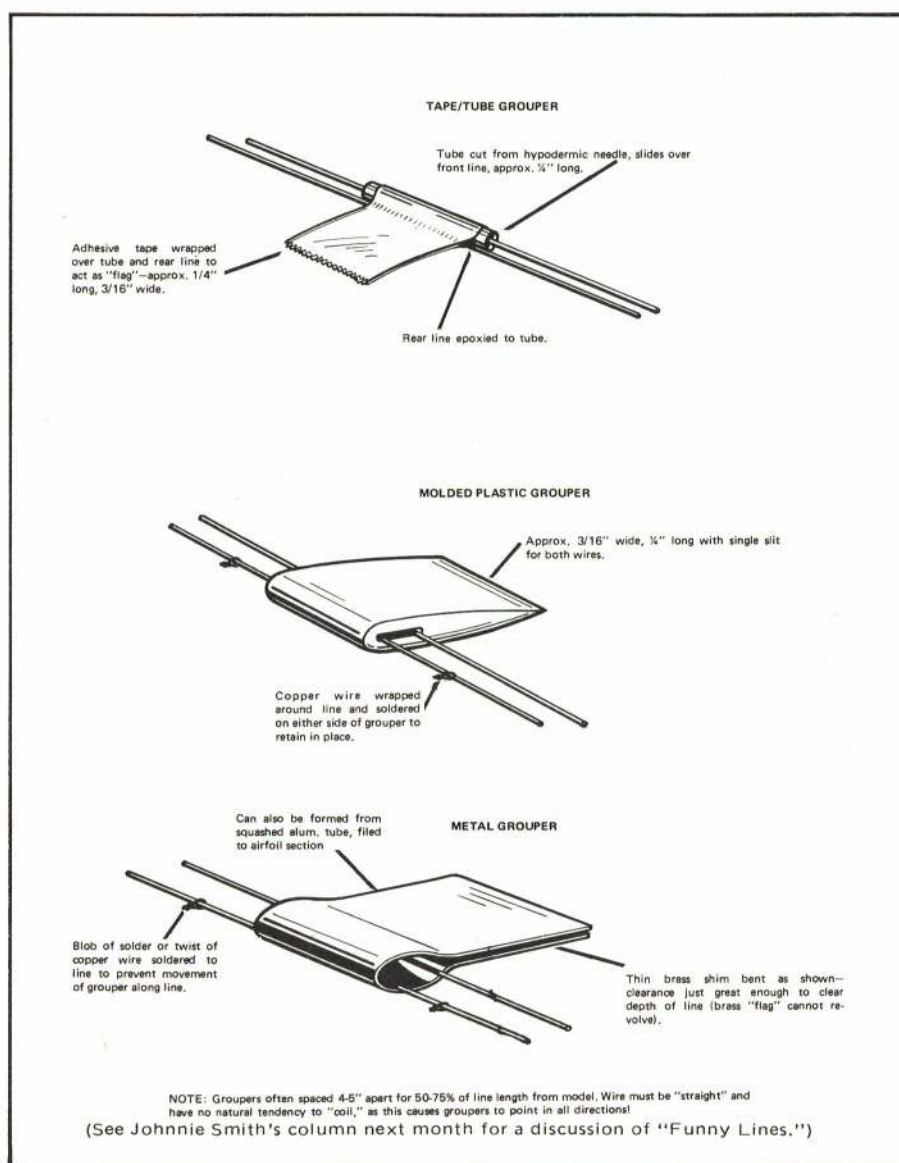
The old and new World Champions. Left is Giancarlo Ricci of Italy, the new champ, together with Ugo Dusi. Both used Rossi 15s (under the guidance of Ugo Rossi, himself). Asymmetric and conventional design both produced top speeds, so question of "best" is still unresolved!

ing the most disappointed. They recorded the fastest heat of the meeting at 4:04.5 (backed up with a 4:15.6), but in their semi-flight the "inboard" wing broke at the first pit stop. Local boys Trnka/Drazek were equally upset when Milan Drazek miscaught the model at a pit stop, neatly removing the tailplane; and Austria's Gurtler/Baumgarner were disqualified for having the wing tip off the ground during a pit stop, causing a line tangle.

Experienced Finnish fliers Nore/Ekholm seemed most likely to succeed with a Rossi, but at this crucial stage, they failed to find the right setting (the temperature was much higher than in their native country). Current World Champion, Russia's Plotsin (with new pitman Maslov), was short of range and needed an extra stop. Even so, he recorded a 4:15.1, but this was not good enough! Very fast Bulgarians Tinov/Rashov, using a Bugl 15, suffered an engine cut on a takeoff, which ruined their chances for a place in the final.

The finals thus lay among Russians Onufrienko/Sapovalov, using their 1972 model with new drum-valve TMA engine; Austrians Bugl/Straniak, using (naturally!) a Bugl 15 (in Paul's much copied and very basic, but beautifully engineered, model); and the Italians, Fontana/Amodio, also using Bugl power, but in a very light model featuring sheet-covered, built-up wings and tail.

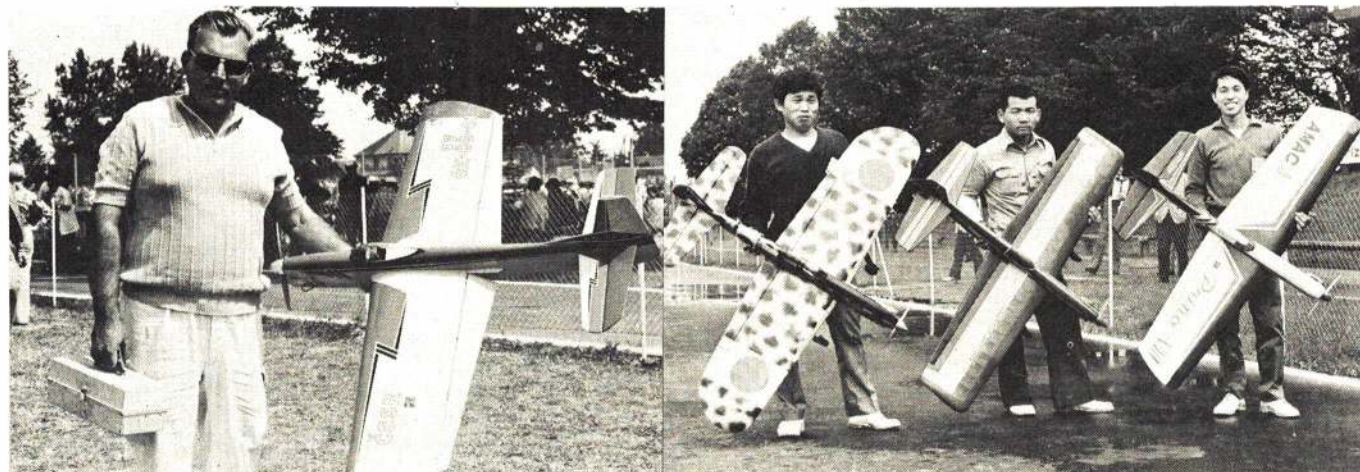
The race was a classic, with each team evenly matched for speed (the Austrians and Italians using line groupers), but the Russians had extra range—40 laps as against the others' 33



per tank. This enabled them to cut out one pit stop, and this proved the deciding factor. All pit stops bordered on perfection, and there were virtually no opportunities for overtaking, so evenly

were the models matched. The Russians finished in 8:26.1, with Paul Bugl trailing 16 sec. behind, and just a lap in front of the Italians.

What happened to the American



LEFT: Previous World Stunt Champ Josef Gabris flew his "old faithful" MVVS 35-powered Supermaster, but chances were ruined by an engine seizure in the first of his fly-off flights. RIGHT: Japan fielded a full Stunt Team for the first time. They are (left to right) Fujita with Tony, Yamazaki, who flew a Leona design, and Sasaki, who used a Prince. All used Enya 45s with O.S. silencers. Each model is due in kit form in Japan.



Bob Gieseke, flanked by (left) Werwage, second place, and Schaffer, sixth place.

teams? Highest placed (14th) were Hodgkins/McCollum with two very consistent times (4:22 and 4:23.2), using their Russian TMA engine. But this engine now seems rather worn, as it tended to be slow restarting and, in the second heat, was slightly over-compressed for most of the run.

Manns/Nelson used a K&B 15 (converted to diesel) in the first round, but disasters overtook them when Harry Nelson went to back off the compression after the first pit stop—and discovered he had the wrong size wrench to fit the Allenhead screw! In the second round, they used a diesel-converted SuperTigre X-15, but this appeared to run cooler as the race progressed, and they eventually recorded a time of 5:50. Overall placing was 38th.

The third U.S. team, Fischer/Osterle, were similarly unlucky with their Bugl 15-powered Turtle racer, which suffered from running over-compressed, and thus proved hard to restart in each of their heats. Their best time was 5:19.4.

All the U.S. team members were very disappointed with their showing,

which was way below their normal standard. However, it must be remembered that their biggest handicap is lack of *race* practice in the U.S.—with no real competition, they have no way of effective training.

AEROBATICS

With such greatly improved standards in the other two categories, it is a pity that the same cannot be said of Stunt, where it seems that the same

(Continued on page 95)



Highest placed Russian flier, Esjkin, with attractively, but very differently, decorated stunter. Tandem undercarriage used. Stunter was powered by Akrobat 40 motor.

RENO Air Races



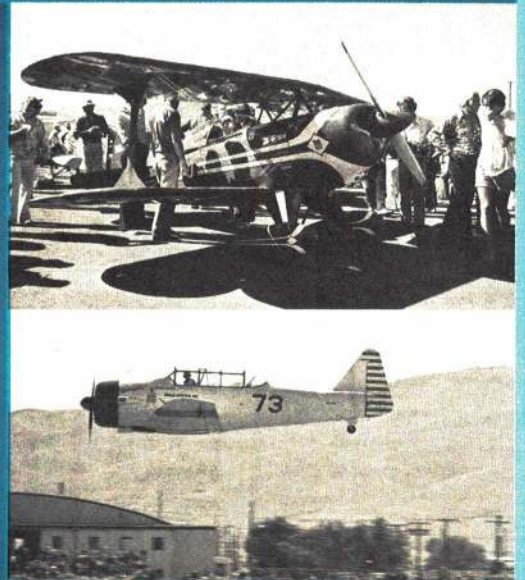
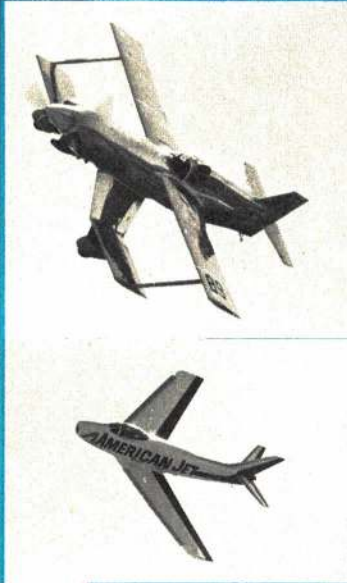
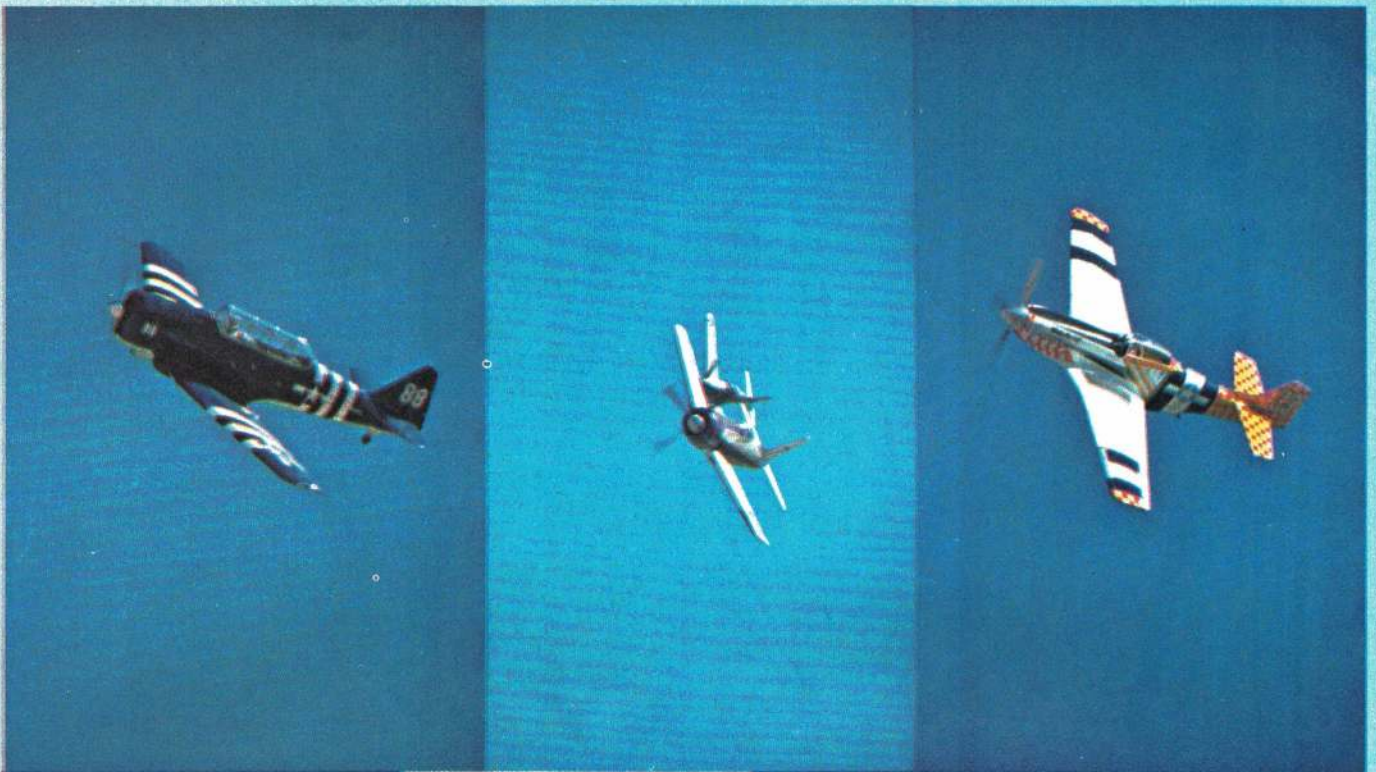
Only a week after American Aircraft Modeler opened its new offices in Reno, Nev., the entire staff was treated to what has to be the most spectacular aviation display in the country. Known as the Reno Air Races, this four-day extravaganza of air racing, aerobatics, ballooning, sky diving, and yes, even flying model demonstrations, captures the spirit of air-mindedness that pervades the community of Reno.

Nearly 60,000 came to "The Biggest Little City in The World" to pay tribute to Lyle Shelton, Bob Hoover, Art Scholls and the Red Devils (to name only a few), who put on aerial performances to dazzle the eye and mind. The races were a startling affirmation that Reno wears its wings proudly, and we're sure that AAM will secure a firm place for modeling here.

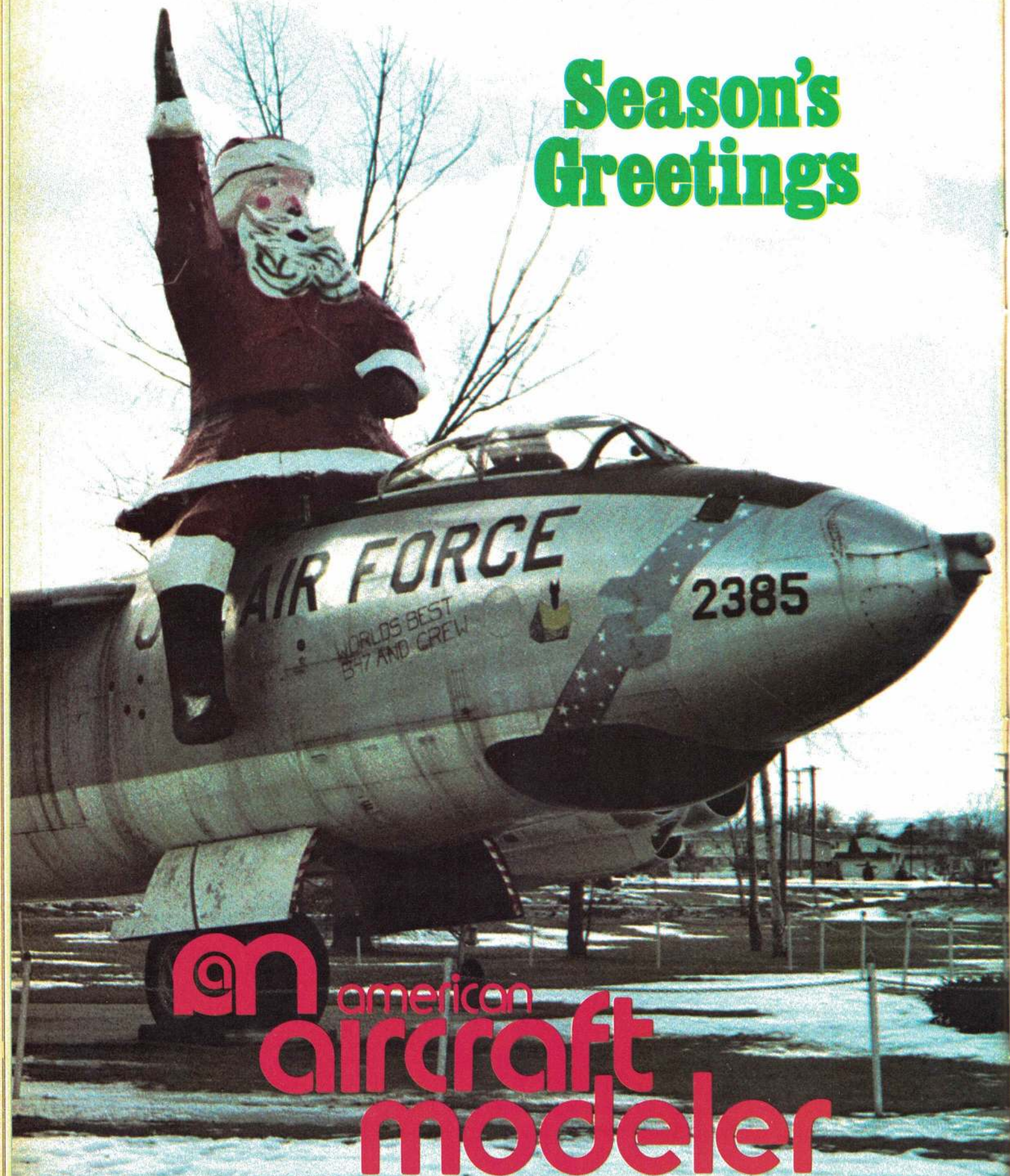
Put the Air Races on your calendar for next September and, while you're in the area, stop in and see our new offices.

We present here a photo essay of the Air Races to celebrate our relocation, as well as to give our readers some feel for one of the greatest monuments to aviation today—the Reno Air Races.

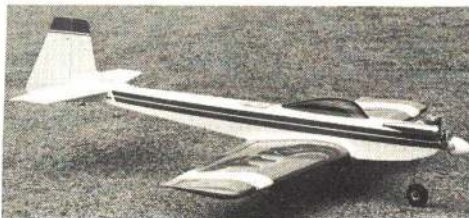




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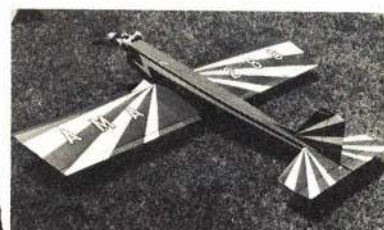
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Super quick to build, this plane is designed primarily for sport pylon flying, but it will also be an ideal ship for the Sunday flier. Wingspan 51 in. Engine 29-40; Wing Area 504 sq. inches; Four channel radio.

Super Kaos 60



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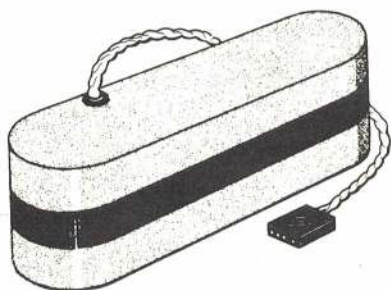
new products checklist

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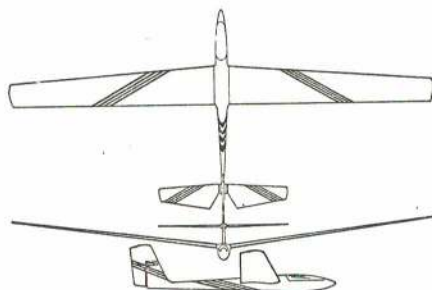
Eric W. Meyers



T&H/Gull. This 99" span, standard class sailplane is sure to appeal to modelers due to its light wing loading, good penetration qualities, and turning ability. The kit is fiberglass and balsa—the fuselage is a white fiberglass material, and the wings are built up from the sanded ribs and sheet balsa supplied. Plans and instructions are also included. Flying weight of this bird is approximately 32 oz., providing a 7 oz./sq. ft. wing loading. \$49.95. T&H Enterprises, 7025 Stevens St., Spokane, Wash. 99208.



Kraft Systems/Battery Pack. Overweight airplane? Lighten the load by using this small, lightweight battery pack, especially suited for pylon racers, sailplanes, and extra-small aircraft. The entire 450 milliamp pack weighs only 3.3 oz., and may be recharged with any standard Kraft charger. The miniature pack measures only 2 3/4 x 3/4 x 1 1/3" and sells for \$17.95. Kraft Systems, Inc., 450 W. California Ave., Vista, Calif. 92083.

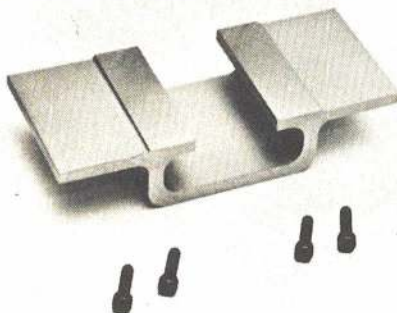


Hi Johnson/Saloma. The Saloma is a high-performance sailplane that is exceptionally good in light air. The unique kit has a foam

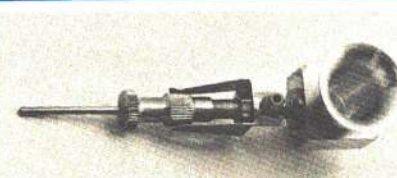
wing and stab, covered with high density foam skins. The molded fuselage is constructed of a special 1/16" thick A.S.A. plastic for ruggedness and low weight. Kit includes all balsa and pine pieces needed to complete the model, instructions, and full-size plans. Sailplane has a 100" wingspan, with 762 sq. inches of area. \$37.50. Hi Johnson Model Products, 11015 Glenoaks Blvd., Pacolma, Calif. 91331.



JCM/Car Muffler. For 1/8th scale RC cars, this special muffler has been designed for a Veco 19. It operates on a new concept, using a diffusion and opposed gases principle. Muffler works efficiently without creating a noticeable rise in cylinder head temperature, and also creates enough back pressure for good idling. Another feature is that, because the stack is so long, it will help to keep oil off rear tires. \$12.95. JCM Specialties, Box 194, Addison, Ill. 60101.



Octura/Omni Mount. The Omni Mount is designed to fit a variety of engines in all sizes. Mount can be used for engines ranging from 19 up to 65s. Although it measures 5" wide, it may be trimmed to 3 1/2" to be mounted on wooden beams or aluminum brackets. Fast engine changes are possible by removing the motor mount bolts instead of the engine bolts. This eliminates the need to remove exhaust stacks and other accessories. Made from high strength aluminum, mount comes complete with hardware, and sells for \$3.95. Octura Models, P. O. Box 536, Park Ridge, Ill. 60068.

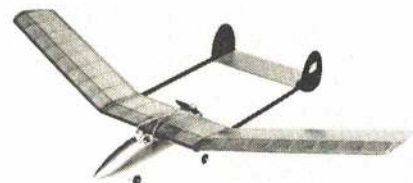


Theobald/Racing Carb. Well-tested throughout the '74 racing season, this replacement

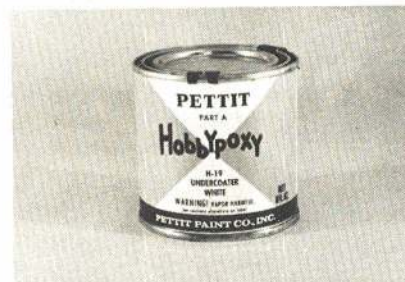
carb has proven itself capable of extracting extra rpm's on most K&B rear rotor engines. The carburetor has no spray bar; fuel enters the venturi via a special peripheral groove. The bell-shaped intake is specifically designed for the least resistant air flow. Naturally, the carb has an extra large bore venturi and incorporates a fuel cutoff. Carb price is \$6.95. Theobald/Hammons/Engineering, 1030 Bartlett Way, Vista, Calif. 92083.



J&J/A-7 Corsair. J&J Model Products is producing a stand-off scale model of the A-7 Corsair. Model is a semi-scale design, yet flies like a pattern ship. Kit features a fiberglass fuselage, with sheeted foam wings. A tandem recoil nose gear, wheels, spinner and nylon accessory package are included. Ship has 572 sq. inches of area, 50" span, and a 60-size engine will pull its approximate 7 lb. weight. Kit sells for \$89.95. J&J Model Products, 3919 Carleton Ave., Columbus, Ohio 43227.



Peterson/Baby Boomer. Free flight modelers will enjoy building and flying this twin-boom sport ship. One feature is a detachable fuselage, simplifying transport and storage. Model has all-balsa construction, and is powered by a 20 engine. Kit sells for \$7.95. Peterson Products, 44935 W. 10th St., Lancaster, Calif. 93534.



Hobbypoxy/Undercoater. A white epoxy filler designed to help achieve a smoother finish and provide greater adhesion, this white undercoater fills fast and sands easily. Although it cures quickly, the undercoater will not shrink or crack. \$2.00 per half pint. Pettit Paint Co., 3600 Pine St., Rockaway, N. J. 07866.

ROSIE'S R.C.

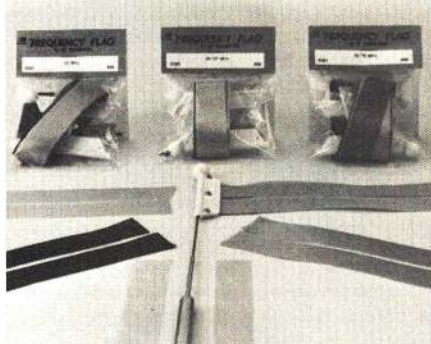
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Kroker/Mounting Bracket. For electric boat modelers, this bracket should solve overheating problems encountered in high speed operation. The water flows through the mount, acting as a heat sink for the engine, to prevent burned out bearings and motors. Weighing only 1 1/4 oz., unit is corrosion protected, and available for Kroker's Seawasp or Seapup motors. Price is \$11.50. A non-water cooled version is available for \$8.50, which later may be converted for \$3.50 extra. Kroker Engineering and Development, P.O. Box 14056, Albuquerque, N.M. 08711.



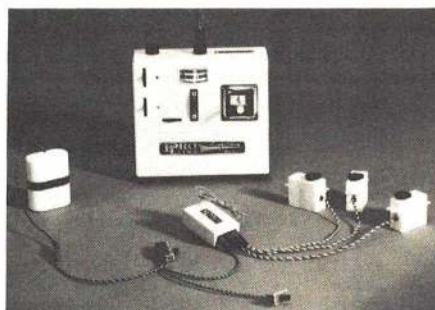
Sonic-Tronics/Frequency Flags. Sonic-Tronics recently put it all together, with three separate frequency flag packages—one for each band—and each containing all ribbon material needed for frequencies in that band. This eliminates the need to buy another flag if you switch frequencies, or if you have a dual frequency set. Flags are attached to the antenna with two shells, which will swivel around antenna to give wind direction. Shells are held together by three sheet-metal screws. Packages sell for \$.89, each. Sonic-Tronics, Inc., 2 South Sylvania Ave., Philadelphia, Pa. 19111.



MRC/Enya 40. After many years of making a 35 and a 45, Enya is producing this 40-size engine to meet current demands of the 40-sized airplane trend. The engine uses an Enya G-type throttle, and performs well on either a 10 x 6 or 11 x 5 prop. .9 horsepower is claimed over a range of 2,500 to 15,000 rpm. Engine weighs 10-1/2 oz. and should provide a modeler with plenty of trouble-free operation. \$62.98. Model Rectifier Corp., 2500 Woodbridge Ave., Edison, N.J. 08817.

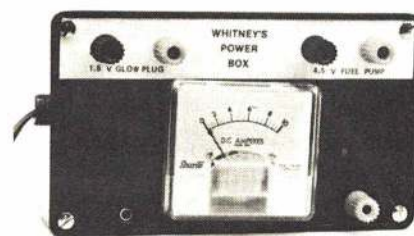


Aristo Craft/RC Motorcycle. Opening up a new dimension in radio control, this cycle has been in development for over two years. The heart of the cycle is a unique 19 dual shaft engine, and a driver figure. A servo is contained in the figure, allowing it to sway on turns, thus preventing the cycle from falling. Kit contains spoke wheels, fuel tank, display stand, and all drive components. Price is \$249.95. Aristo Craft Distinctive Miniatures, 314 5th Ave., New York, N.Y. 10001.



Pro Line/Three-Channel. Designed to meet the needs of the demanding sport modeler, this system features Pro Line quality and reliability in an economical package. Transmitter comes with open or closed gimbal sticks, and buddy box is standard. System has dry cell batteries, but NiCads are available. The small receiver has a CMOS IC decoder for accuracy. The unit has block connectors. A key feature of this radio is that it is interchangeable with all other Pro Line systems. Two servos are included, and the unit is available on all fre-

quency bands. Price to be announced. Pro Line Electronics, Inc., 10632 N. 21st., Suite 10, Phoenix, Ariz. 85029.



Whitney's Hobby Mill/Power Box. Why carry three batteries to the flight line when one 12-volt motorcycle battery can do it all? With this power box, the circuitry will provide power for a fuel pump, starter and glow plug. The valuable accessory also has an amp meter to show condition of the engine and glow plug. Power box sells for \$29.95. Whitney's Hobby Mill, 680 E. Greenbrae, Sparks, Nev. 89431.



Futaba/Six-Channel. A newly redesigned, six-channel system features a comfort-designed case, and many internal changes and options. The transmitter has a buddy box system, and plug-in crystals for an easy-change frequency setup. The compact, lightweight receiver has a three-wire, gold-plated block connector system for simple and neat wiring. The servos now feature a heavy duty gear train with double size Celcon gears. NiCads are provided. Other accessories included are external charger, neck strap and servo trays. \$319.95, with four servos. Futaba Industries, 630 W. Carib St., Compton, Calif. 90220.



R.N.S./Racing Engine Mount. Designed specifically for pylon racing airplanes, this lightweight mount is probably one of the best ever produced. Machined from bar stock aluminum, it is true and compact. The unit is available drilled for a K&B 40 rear rotor, or undrilled for all other racing engines. If you're a racer and haven't seen or used this engine, be sure and look into it. Mounts sell for \$14.50. R.N.S. RC Products, 5224 Teesdale Ave., North Hollywood, Calif. 91607.

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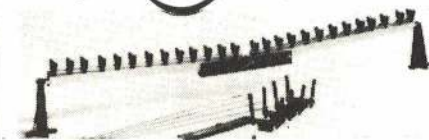
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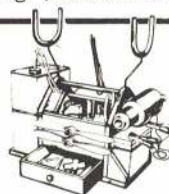
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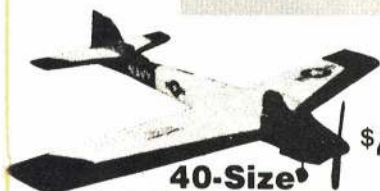
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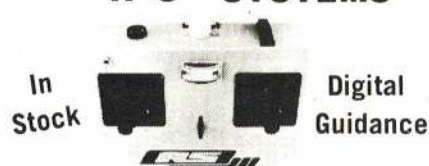
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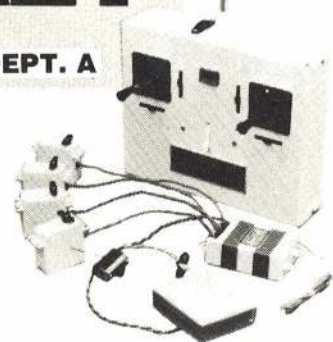


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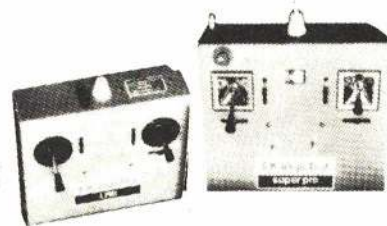
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THE HOBBY MARKET



LSF Tournament

by Patrick H. Potega (Preface by Paul Denson)

PREFACE

Way back when soaring was in its infancy on the West Coast, a group of hardy souls from the San Francisco area felt that it would be a good thing to introduce to the world a fabulous way to get people together for soaring fun. They organized the LSF.

The League of Silent Flight was formed to provide a collective identification for soaring enthusiasts throughout the world and to recognize their accomplishments through a defined program of performance with RC model sailplanes. LSF was not intended to be a club, but a group offering a chance for men and women to get together in sporting and competitive soaring activity.

There are no dues in the LSF; you cannot buy your way into this group. You must earn your way in and up through five levels by accomplishing a series of tasks which increase in difficulty.

The first tournament of this elite unit was held in 1970

(Aug. 29-30, to be exact). The Nelson family of full-size and model glider fame opened up their gliderport, "Hummingbird Haven" in Livermore, Calif., to 85 contestants. The North and South Bay Soaring Societies cosponsored the meet. Les Anderson walked away with the No. 1 spot in the No. 1 contest.

In 1971, more than 100 LSFers returned to Livermore for a second year. Would you believe that there was a five-way tie for first, until Rick Walters nosed out John Donaldson? Le Gray astounded the group with his rare wit and dry humor at the banquet. That is probably what got him elected the second president of LSF, following the able administration of Bob Andris. A new club appeared on the scene that year, represented by 12 members who drove all the way from San Diego to see how the big boys flew sailplanes. They were called the Torrey Pines Gulls.

In 1972, Womens Lib was becoming the big thing and Barbara Henon liberated the big hardware. Barbara's Club,

the San Fernando Valley Silent Flyers, ably handled the organization of this meet. This was the first meet to be held at the Mile Square site in Fountain Valley, Calif. The winning club was from the North again, as the South Bay Soaring Society took the laurels. Will the South rise?

1973 was the year for the South. The Torrey Pines Gulls took the Chicago Soaring NATS team award with Rod Smith, Mark Smith and Col. Bob Thacker. Then August rolled around, and it was LSF Tournament time again. Camarillo, Calif., was the host city, and the LSF had the entire Oxnard Air Force Base. This was the first time that speed was the big thing, and 8-10 lb. monsters were the rule. The little 5-6 oz. wing loaded (Standard Class) gliders should have stayed home. The Torrey Pines Gulls came to prove that they were big boys now. They won the first

three positions and the team award. Buck Faure, the Gulls' president, was No. 1 (King Golden Thumbs, as his daughter christened him). The Camarillo Flying Circus had this one as the best team. Who will forget the mountain of barbecued ribs we consumed at the banquet—Sunday between flights it was Roloids, Tums, Bromo and Alka Seltzer.

Here it is, the Fifth Annual LSF Soaring Tournament back at Mile Square, which is now under the control of the Fountain Valley, Calif., Parks Dept. For the first time, we had to pay for the privilege of admission to a soaring site. The half-dollar wasn't too bad, but at least they could have had the toilets less than three-quarters of a mile away. This tournament was hosted by a rather new group on the soaring scene, the Southern California Soaring Clubs, fondly known as SC². It is Aug. 24-25. . . .

Mark!

Winch lines whip off silent sailplanes, now freed to fly-timed-fly.

Mark!

Stopwatches snap at speedtraps as soarers slither through the sunshine-timed-fly.

Mark! the timer cries. "Mark your mark and make your target."

The hurly burly contest like slow motion—silent flight. Here in leagues, they fly—League of Silent Flight.

Mark! they cry. MARK! they fly.

Five score of pilots participate on the square mile of asphalt (circles on asphalt for soft landings)—"Slide an inch or slide a mile" says Schilling, half CD, while other half...the Henon half... draws diagrams on the chalkboard during the pilots' briefing—briefly all evening it took to register and be briefed. Why? Lots of questions. Must be sure, for sure, for this is a biggie—a tournament—the LSF Tournament. The mile (I'd walk a mile for a thermal) squares off against the soaring scores, while scores of soarers score...hit the

MARK!

"And who flew?" asks the chorus.

There was Rick Walters (Super Trash elliptically tipped), and Lemon Payne (Legion Air—superb new kit), and Rodman Smith (with Willow-Bee Wand in hand), and V-tailed Dale Nutter, and straw-hatted Col. Bob Thacker, and frumpy-hatted Dave Shadel, and of course, the man (and here he is folks, fresh from the S.O.A.R. Nats and AerOlympics)...

Mark.

And me, I flew too.

And curly haired dawn slumbered not long in her haste to spread light upon the firmament...exactly a mile

square of it. When lo, came the metal chariots carrying warriors (pugipilots) into the recreation center (a mile square arena) where gladiatorially they toted slender weapons which penetrated the air like machines of the gods. But what holds them back? Why tarry, brave men, bird men? Do they heed the Icaran warning with the rosy-fingered sun still so low?

Schilling, half CD, scurries helter-skelter with seine line slipping everywhere. He turns around, all akimbo, while the turnarounds fail. The auto mechanic acts instinctively and, before

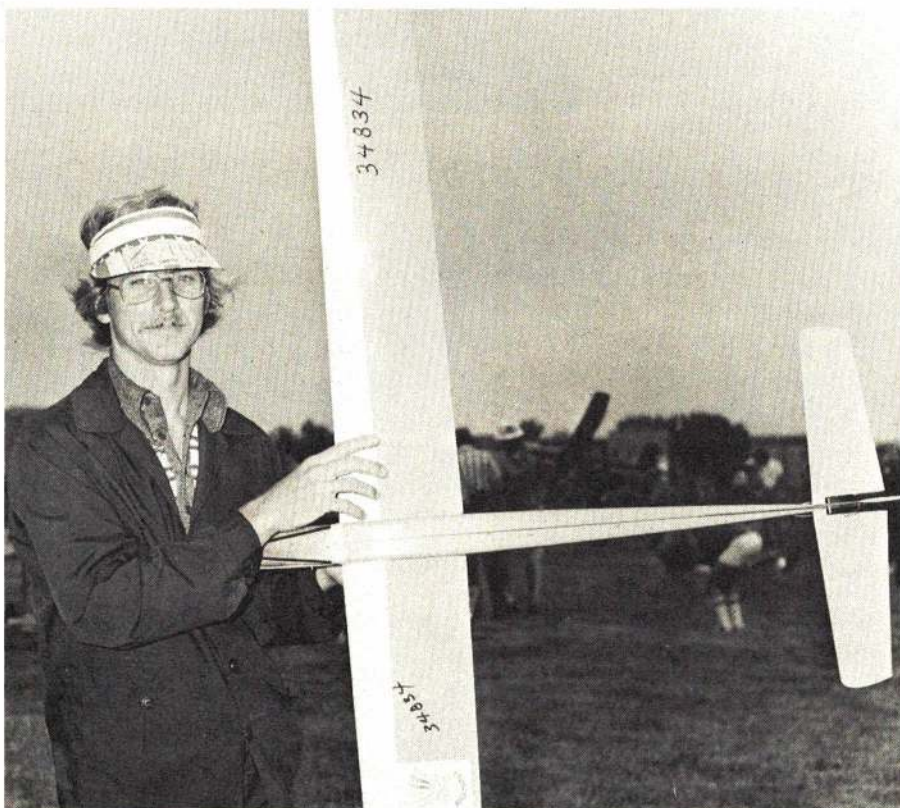
you can turn around, the turnarounds are fixed.

MARK! they cry, as the warriors fly.

"An aside from our on-the-spot correspondent. What? Not there yet? Still sleeping! Stay tuned for an in-depth analysis a little later in our program."

And me, I flew, too...after I awoke, later.

Now Zeus breathed life into the air (a square mile of air) and the lower gods (deities of the thermal) settled low upon the plain (and planes) of war and oversaw the combat. And Dale of the



"I've been flying LSF Tournaments since the one in '72...this was the first year that I placed at least in the top five," says Mark Smith. (Photo taken at the S.O.A.R. Nats by Bill Coons.)



The half CDs in a more relaxed moment. At the Chicago S.O.A.R. Nats, Dick launches Barbara's Cirrus. (Photo by Bill Coons)

Nutter did drink of the gods' cup and was justly rewarded with a MAX.

MAX/(macks) noun (abbrev.), a maximum score. Defined at the LSF contest under two categories. 1. A MAX of 10 minutes, by which the flier, or pilot, sustained flight with his aircraft for ten (10) minutes, after which a landing period of three (3) minutes was allowed. Cf. AMA task II. 2 A MAX of three (3) minutes, by which the flier, or pilot, maintained flight with his aircraft for three (3) minutes from time of tow release. . .

MARK!

. . .until the aircraft made initial contact with a ground-based object. See also: Object, ground-based.

Q. And who else may have, given the hypothesis that a maximum flight duration of ten (10) minutes was possible on Saturday Aug. 23, 1974 (during the hours of 9:30 and 3:00 p.m.), achieved the distinction of flying a MAX (use the dictionary definition of MAX)? Answer worth 25 points. ‡

A. To repeat all the names would be moribund. We can achieve an equitable realization of the factors, species and other things involved in winning the LSF Tournament only by citing a few significant names. These would be (not necessarily in any order): D. O. Darnell, Dale Nutter, Max Mills, Terry Malsbury and Smith.

Mark?

No. Rodman maxed.

By this time, the Olympiad sat silent, while silent flight occurred.

"And now, an interview by our crack reporter, who has just collared Schilling, half CD."

"Testing, one, two, three. Hello, glider guiders everywhere. Today we're at Mile Square Recreation Center in sunny Southern California. Dick Schilling, who, along with Barbara Henon, is co-Contest Director of this meet, is here with me. Hello Dick."

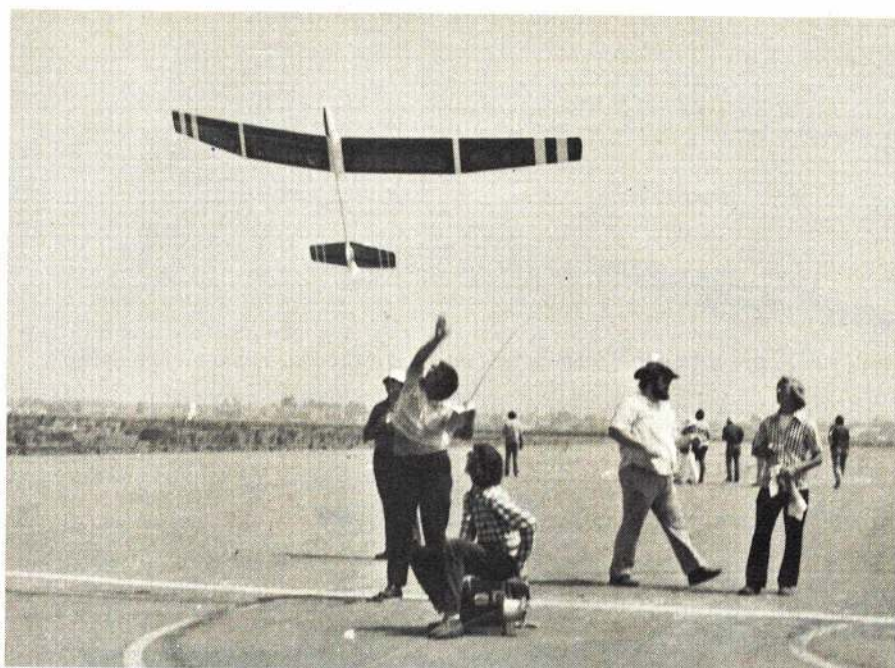
"Hi Pat."

"Dick, why did you opt for 10 minutes plus Duration and not the normally preferred task of 10 minutes on the spot?"

"When you're flying Precision,



Hugh Stock checks the controls of his scale Diamant. (Photo by Chris Adams)



ABOVE: Yes, Virginia, there is a thermal fairy. LEFT: Lemon Payne launches his Legion Air. (Photos by Paul Denson)



ABOVE: Buck Faure, the defending LSF Tournament Champion, couldn't get his stuff together this year. His PRESBYTERIAN design, so successful last year, will appear in a future issue of AAM. (Photo by Chris Adams) LEFT: Me, too, I flew. (Photo by Paul Denson)

you're flying Precision. When you're flying Duration, you're flying Duration. The landing was the tie-breaker."

"As you all know, the landing circle out here is a 25-foot circle with a nail secured in the middle. Two measuring tapes are marked in points... highest points closest to the nail. When you land, you measure with the tape, then get your glider out of the circle.

"Here's Mark Smith. Let's try to get a word with him. . . ."

Fair Zeus' rays shone now high in the heaven, as. . .

"We've lost contact with our crack. . . ."

the combatants added heavy objects to their vehicles, to make them more like Theban missiles. And they stood at the gates. . .

"reporter. Stay tuned for further reports."

raised flags and shouted. Like winged Mercury they flew. . .

MARK! the stopwatches clicked as the Speed Event began. This year, no monster KA6Es were present, each contestant apparently realizing the consequences of a poor trade-off in the all-important tasks of Duration and Precision.

"We interrupt this program for a candid interview with Mark Smith, which was previously interrupted."

"...think of the Speed Event."

"Well, Pat, the Speed Event simulates wind. It makes the winning airplane an all-around design. If you just had a straight 10-Minute Duration with a bonus landing, most obviously the best airplane would have a very, very large wing area; very, very slow sink rate, and to heck with the L/D. It would

be all sink rate—the slowest airplane to the ground would be the winner.

"So, if you had a person like Konrad Nierich who goes very, very fast all the time, well, his model (the Tern, as published in July AAM—*php*) has a good L/D but the sink rate's bad. So, when the wind blows he has a very distinct advantage over the Olympic-type airplanes, which have very poor penetration. So, when you throw the speed in there, it makes the airplane become an all-around airplane—fly good in wind, fly good in calm, and if the wind doesn't blow, the Speed Event creates the wind.

"How much ballast weight are you carrying for the Speed Event?"

"Twelve oz., which brings the total weight of my Windfree to 42 oz."

...like zephyrs across the course, both toward the sun and back, the glint

as they turned like fire on steel weapons in the air.

MARK! The Speed Event had just about concluded. Smith's time was the fastest, at 38 sec., with Rick Walters only a second behind. Lemon Payne was in the low 40s and...

Yes, me too, I flew fast! Beginner's luck, since I was so green to this event (my first try at it) that I had to have someone explain what I was supposed to do when I got off the line.

Q. If you were Dick Schilling, half CD, how would you define the term, "creative sandbagging?"

A. If I were Dick Schilling, half CD, I'd define the term, "creative sandbagging" by example. On Saturday, a certain well-known flier, with full knowledge of the rules for the Speed Event, which specifically stated that, once off the line, the plane was to make an immediate 180° turn (and not attempt to ride any lift in the vicinity), then fly back over the winches, and lastly to make a 90° turn onto the course, which was perpendicular to the towlines, utilized "creative sandbagging." Upon encountering up air off the tow, he made his 180° turn more a shallow slipping affair, which enabled him to fly with his maximum L/D in the thermal and slowly drift back (still in the thermal) into an advantageously high position from which to start his speed run. That's "creative sandbagging." Dick Schilling, half CD, expressed his admiration for this sort of thing, since it takes talent. Mr. Schilling and Ms. Henon ran the LSF Tournament in a wonderfully relaxed style, with no pressure on the fliers. This made it a really enjoyable contest.

"Well, the day's flying is over. This is your crack reporter signing off until tomorrow morning."

* * *

Dateline: Sunday, Aug. 24, Mile Square Recreation Center, Fountain Valley, Calif. Today, the LSF entered its second day of formal competition. With 125 contestants, the Tournament is second only in size to the Chicago S.O.A.R. Nats.

"And we now return you to our crack reporter. What's that? Still sleeping! Stay tuned for bulletins as they happen."

And rosy-fingered dawn stretched out her soft fingers through a veil of



Don Edberg flew a Duster in Scale. A new kit from Airtronics. (Photo by Chris Adams)

No, not with sailplane raised in victory, but rather a great catch of Pat Seal's Cirrus, which looped off the line. Fast reflexes! (Photo by Chris Adams)



haze. Their weapons in strong lines on the ground, the warriors stood ready to resume their battle. No champions stepped forward yet, and each man looked quietly toward the hazy sky.



Mark! (Photo by Chris Adams)

EDITORIAL

The position of this publication, like that of any news media, is that it is the primary function and responsibility of the press to be a critic, and often the adversary, of government. And, in years past when we felt something was wrong, we stated our opinion.

It is imperative that we must, at this moment, give pause for a thought which will have ramifications throughout the soaring world. Our topic is the proper definition of team entries in a contest of the caliber of the LSF Tournament. Reliable sources inform us that the winning team was not, as one would expect, made up of individuals who were members of the same AMA-chartered club. Regrettably, the first-place team consisted of three individuals who decided to make themselves a team entry only shortly before the contest began.

Even more appalling is the fact that at least four of the other so-called "teams" were not composed of individuals who were affiliates of a recog-

(Continued on page 102)

THE Record Speaks...

- 1970 JIM KIRKLAND
NATIONALS WINNER-PATTERN
- 1971 RON CHIDGEY
NATIONALS WINNER-PATTERN
- 1972 RON CHIDGEY
NATIONALS WINNER-PATTERN
- 1973 RHETT MILLER
NATIONALS WINNER-PATTERN
- 1974 TERRY NITSCH
NATIONALS WINNER-CLASS A PATTERN
- TONY HOWZE
NATIONALS WINNER-CLASS B PATTERN

RHETT MILLER
Nationals Winner-D
Expert Pattern-'74



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GALE HELMS
Nationals Winner-
Formula 1 Pylon Racing-'74



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WEIGHT: 1 Oz.
WINGSPAN: 21-1/2"

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SIG Contest Rubber Strip of Maximum Turns and High Flight Performance
Die-Cut SIG Balsa Parts
Covering Material

The '29

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SPAN: 20-1/2"
LENGTH: 16"
WEIGHT: Approx. 1 Oz.

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1st Indoor Scale Jr.-Rebecca Stark
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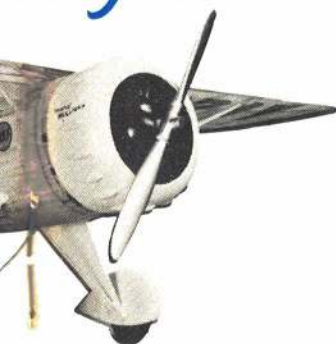
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29er



designed by PAUL McILRATH

Mulligan



designed by TOM STARK

WINGSPAN: 20"

New!

MONOCOUCPE

DESIGNED BY TOM STARK



LENGTH: 16"
 WINGSPAN: 24"

SIG
 FF-25
\$3.49

KIT FEATURES:

Complete Building and Flying Instructions
 Detailed Plans with Isometric Construction Views
 Formed Plastic Propeller
 Plastic Wheels Included
 SIG Contest Rubber Strip for Maximum
 Turns and High Flight Performance
 Die-Cut SIG Balsa Parts
 Covering Material
 Full Set of Decal Decorations

The '29er captures the familiar parasol look of famous aircraft in an attractive blend of lines and function. A particularly stable model because of the high wing position, the difficulties usually found in this type of mounting have been eliminated by a simple, effective construction procedure. Designer Paul McIlrath has written a comprehensive 8-page booklet covering all phases of assembly. The trimming and testing sections are an education in the basics of model flying. The '29er takes its place beside the Cabinaire as a top notch sport rubber-powered kit.

KIT FEATURES:

Complete Building and Flying Instructions
 Detailed Plans with Isometric Views
 Molded Plastic Propeller
 Plastic Wheels Included
 SIG Contest Rubber for Maximum
 Turns and High Flight Performance
 Die-Cut SIG Balsa Parts
 Covering Material
 Full Set of Decal Decorations

Winner of both the 1935 Bendix and Thompson trophy races, Mr. Mulligan was one of the most famous racing planes of all time. The attractive lines have made Benny Howard's classic creation a favorite of modelers everywhere.

This is a scale model that really flies and its contest-proven construction has built-in durability. Builders of the other SIG Classic fliers will have no difficulty with the scale structure of this racing beauty. The 8-page instruction book provides step-by-step guidance in building and includes tips for competition flying performance.

Sig's Classic Series kits give you three important features that assure you of successful flights:

- (1) A proven flyable design.
- (2) A reliable way to make flight adjustments.
- (3) Complete flying instructions.

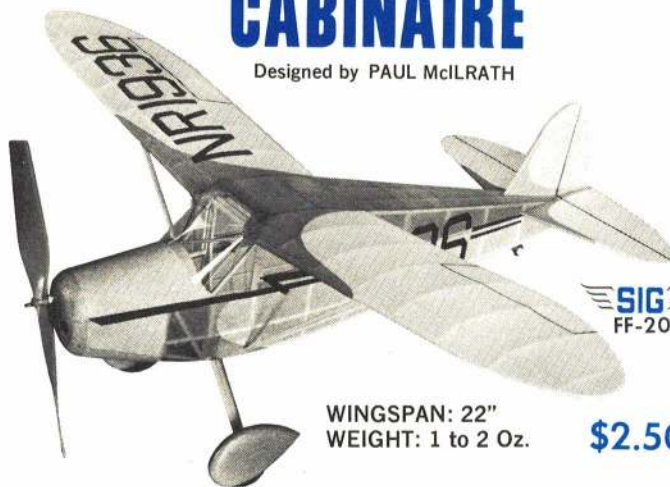
1973 NATIONALS WINNER

1st Place Free Flight Flying Scale Rubber

One of the favorite subjects for scale modeling has traditionally been the Monocoupe. The first full-sized version appeared in 1927, designed by Clayton Folkerts, an Iowa farmer, who later won fame as a racing airplane designer. The Monocoupe was always known for its exceptional performance. Tom Stark's model of this lightplane classic proved a winner from its first test flight.

CABINAIRE

Designed by PAUL McILRATH



WINGSPAN: 22"
 WEIGHT: 1 to 2 Oz.

SIG
 FF-20

\$2.50

KIT FEATURES:

Complete Building and Flying Instructions
 Detailed Plans With Isometric Views
 Formed Plastic Propeller
 SIG Contest Rubber Strip for Maximum
 Turns and High Flight Performance
 Die-Cut SIG Balsa Parts
 Covering Material

The unforgettable lines and appearances of the 1930's Golden Age high wing cabin airplanes have been blended into the Cabinaire. Designer Paul McIlrath is a nationally known specialist on small size scale-like sport rubber jobs. His experience and attention to detail is evident in the carefully developed structure of the model. Building instructions included in the kit are the most comprehensive available.

THE MODELS IN THE SIG CLASSIC SERIES

Handyman's Retracts

This pneumatic retract system is as reliable as commercial ones, yet it can be built cheaply in the workshop. / Gerald Hayhurst

In the past, I have tried retracts of several kinds, only to find that they were either too weak to stand hard landings and rough fields, or so expensive that I could not afford them.

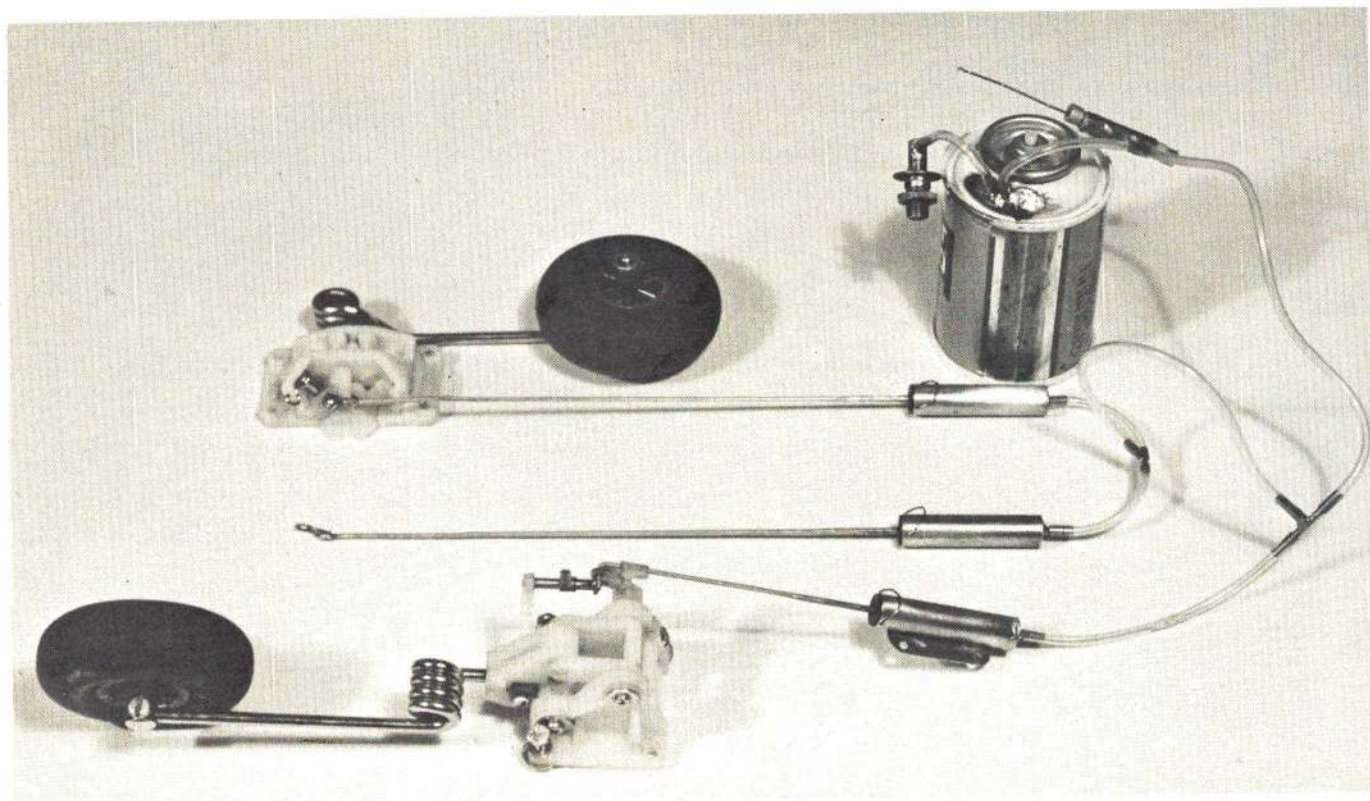
With the advent of the Goldberg retracts, we have a set that not only will stand hard landings and rough fields, but that do not cost an arm and a leg. With this attached to a hand-built actuator, the total cost is quite small.

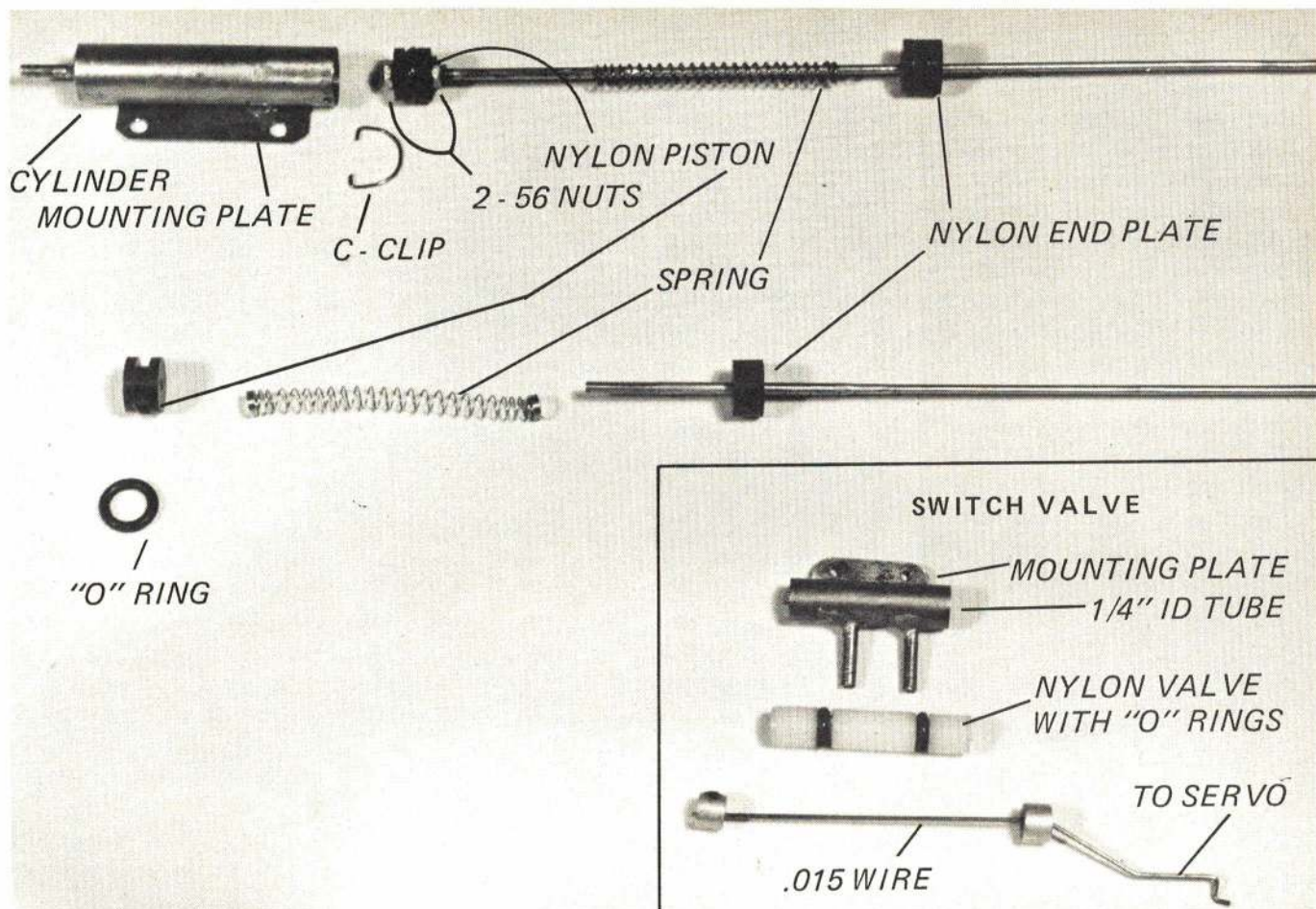
You can construct these pneumatic actuators with only hand tools, except for two parts. They are very compact and easy to install. In comparison to commercial systems, they offer the ad-

vantage of inexpensive operation (since they use air rather than Freon) and they have a built-in fail-safe—the gear cycle to the “down” position if pressure is lost. The entire system can be fabricated in a few evenings.

CONSTRUCTION

Cylinder: Cut three 1-3/4" lengths of 3/8" brass tubing. Make three mounting plates, as shown in the diagram, and solder these to the side of each cylinder.





ABOVE: Exploded view of the piston/cylinder assembly and switch valve.

LEFT: The three cylinders mount in even the smallest model. The aerosol-can airborne storage tank can be of any convenient shape. All tubing is standard clear fuel line.

RIGHT: The aerosol can must be totally empty before soldering on the line connectors. The filler valve is a tire stem.

Use only the best silver solder for all joints—cheap solder (or sloppy work) will show in broken joints later. Rough-cut three end plates and solder one to the end of each 3/8" tube. To the center of this, solder a 3/8" piece of 3/32" brass tubing. Drill a hole in the end plate (through the 3/32" tube) with a 1/16" drill. With a file or grinding wheel, clean the excess off the end plate to match the 3/8" tube. This completes the cylinder.

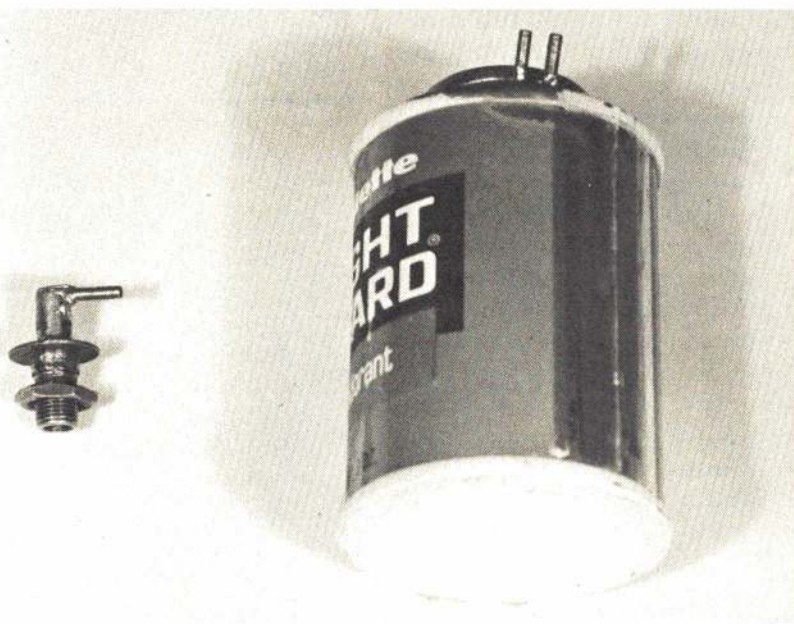
Piston: The piston and control valve are the only parts that you cannot make by hand. For these you will need a lathe. We made ours with a Unimat, but any metal lathe will do. Most of us have a friend or know someone who has such equipment. I need not describe the machining, for the diagram is self-explanatory. While you have someone making parts, you might as well have

him make the caps; however, they can be made by hand with a drill. Also, it is nice to have the filler valve turned down as shown, but this is not necessary, as you can solder the tube in the end of the existing valve.

Next, run a 2-56 die over the ends of three bike spokes. If you do not have a 2-56 die, you will find it worthwhile to buy one, for this is also the thread for

Kwik-Links and I find it most helpful for making pushrods. Set these parts aside and start the next step.

Switch Valve Cylinder: Cut a 1" piece of 1/4" brass tube and clean the burrs from each end. Cut and solder the mounting plate, as shown. Cut two 3/8" pieces of 3/32" tube and solder, as per diagram, and drill through. De-burr the hole. Hopefully, you had the switch



valve machined at the same time out of the 1/4" nylon rod, so put these pieces aside and go to the next step.

If you have gotten this far, I am sure you can make the two tees that you will need without further instruction.

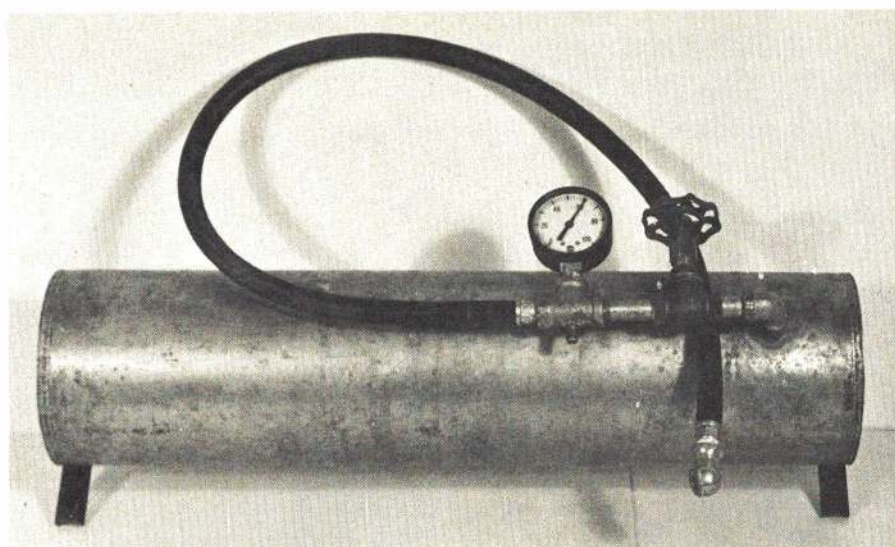
Assembly: Screw the three spokes into the pistons, being sure to use some sealant, like silicone, in the threads. Use a 2-56 nut as a lock. Place the three O-Rings on the pistons and the two on the valve, then slide on the springs, (ball-point pen springs will work, but I will describe another spring later), then the end caps. Lubricate all O-Rings well with Vaseline Petroleum Jelly. This is the only thing we have found that will work. Slide pistons and control valve into cylinders. Drill a small hole on each side of the caps and make a C-clamp to hold the cap on the piston.

Bleed all the pressure from a Right Guard can, or the like, and clean the paint from a spot at top for the two 3/8" pieces of 3/32" tube. Solder and drill, keeping the work pointed away from you. Make the filler valve and connect all, as per the picture, with small clear fuel tubing. Note that a commercial retract tank can be used also, since the deodorant can might be too bulky for some fuselages.

For the supply tank, most any tank that can hold 100 psi, with a capacity of a quart or more, will do. A quart-size propane torch works very well. Put a 1/2" pipe tee in between the valve and the tank. Place the pressure gauge on one side of the tee and solder an auto air valve on the other. Cut off the burner and place a hose with a tire outlet on it. I will say that the valve on this tank should only let a little air pass. You can put only 50 psi in the airborne tank, even though your supply tank may have 100 psi in it. Don't get carried away when putting air into the model, or you may blow the model into the air. A tire gauge is a helpful tool here.

Testing: Now you have it all hooked up. Put 50 to 60 psi of air in your supply tank either with a hand pump or at a filling station. Close the valve on the supply tank and then open it just a crack. Put the retract control valve in the down (off) position and put air in the supply can. Now move the control valve to the up position—the pistons will now shoot out.

To test, put all the airborne parts in



The field storage Reservoir may be any convenient quart-capacity air container. A soldering torch cylinder works well. Refills can be had with a tire pump—50 psi needed.

a bowl of water and look for leaks. Repair by re-soldering. You may find that one or more of the O-Rings will leak—try re-lubricating, and check sealant in the threads. Take apart and polish the cylinder with rubbing compound. Re-assemble and try again. If your system will hold air for two hours or more, it is safe to fly. I have found that the seals get better with use.

Installation: First take off the helper springs from the Goldberg retracts. Place the wing gear in place and make a mounting plate in the center of the wing for the actuators. Mount the cylinders where they are accessible for removal, since it is prudent to periodically inspect the O-Rings and solder joints for leaks.

Cut bike spokes to the approximate length and solder on the lug at the retract end. Thread the spoke onto the actuator and, with gear in down position, put some spring pressure on the

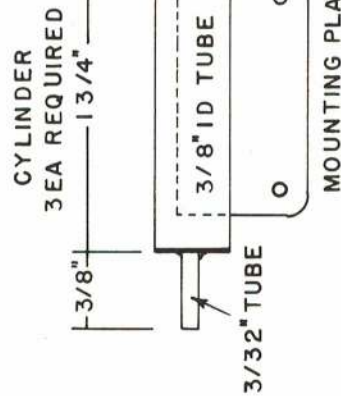
linkage and put in one screw through the mounting plate. Now try pressure and see if the wheel goes up and down properly, with a good lock on both ends. If it does not, adjust to a position where it will. For the nose gear, use the same procedure.

Spring: If you find the ball-point pen spring is not enough pressure to take the landing gear down, you can make a spring by winding .015 wire around a 1/8" bolt until you have a 1/2" length of spring. Stretch out to the proper length for a complete down lock without air pressure in the system.

Now you are ready to fly. I have found that, with a three-oz. tank, you get about 12-14 cycles. If you run out of pressure in the air, the gear automatically comes down—100% fail-safe. I'm sure that you will find this retract system comparable to many of the expensive commercial ones. Happy (gear up) flying!

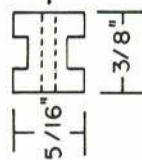
MATERIALS

| Quantity | Description | Source |
|----------|--|------------------|
| 3 | Bike spokes (tapered) as long as you can get them. | Bike shop |
| 1 | 3/8" ID brass tube | Hobby shop |
| 1 | 3/32" ID brass tube | |
| 1 | 1/4" ID brass tube | Plastic supplier |
| 1 | .015 music wire (36") | |
| 1 | 1/4" nylon rod (3-4") | |
| 1 | 3/8" nylon rod (3-4") | Auto supply |
| 3 | 3/8" O rings | |
| 2 | 1/4" O rings | Tire repair shop |
| 1 | Sheet 3 x 4" | |
| | .010 brass | |
| 1 | pressure gauge 0-100 psi | |
| 1 | Hose (2-3 ft.) with tube outlet | |
| 2 | Valve stems | |
| 1 | Right Guard can 3-4 oz. | |
| 1 | Valve for supply tank | |
| 1 | Tank | |
| | Misc. fittings for supply tank | |

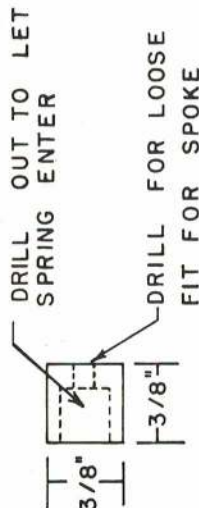


PISTON 3EA REQUIRED

GROOVE WIDTH 1 1/2 TIMES
O-RING WIDTH

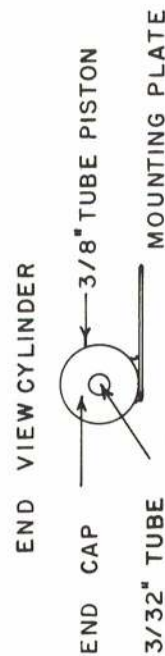


DRILL AND TAP
FOR 2-56

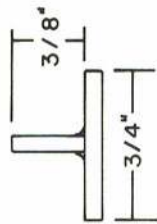


CAP 3EA REQUIRED

GROOVE DEPTH EQUAL TO
LOOSE FIT ON PISTON

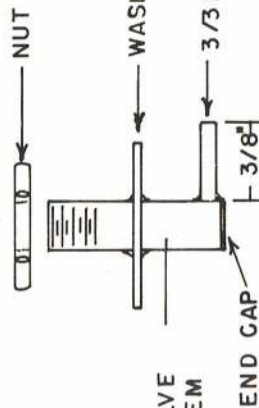


TEE 2EA REQUIRED



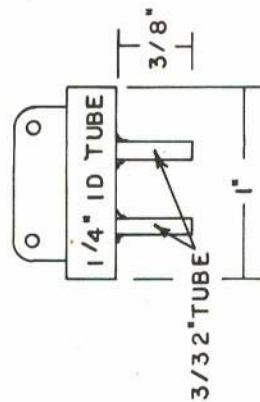
AUTO VALVE
TIRE STEM

FILLER VALVE

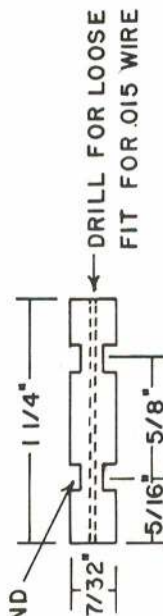


SWITCH VALVE

MOUNTING PLATE

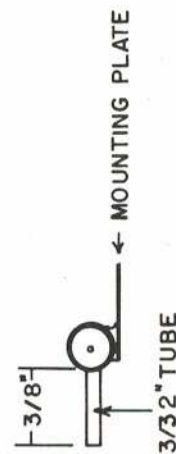


GROOVE DEPTH AND
WIDTH SAME AS
FOR PISTON



VALVE SWITCH CYLINDER
1/4" NYLON ROD

END VIEW SWITCH W/CYLINDER



MOUNTING PLATES AND END CAPS ARE .01 BRASS
SHIM STOCK.

MEASUREMENTS NOT GIVEN ARE NONCRITICAL.

FULL SIZE PLANS

PNEUMATIC RETRACTS
DESIGNED BY
B. HAYHURST & A. CARTER
DRAWN & INKED BY
B. HAYHURST

Whizard

DESIGNED BY OWEN KAMPEN



SPECIFICATIONS

Span--40 1/4 in.

Area--240 sq. in.

Length--30 in.

Power--.049 to .051.

Functions--Rudder-Only;

Rudder-Elevator; Rudder-Elevator-Throttle.

An ideal sport airplane for .049-.051 engines and single, two, or three channels. Features sturdy crutch fuselage construction, foam wing, band sawed parts, formed landing gear, and photo illustrated instructions.

Because the financial and emotional investment is low in the Whizard, you will find yourself doing more gutsy things flying this airplane and enjoying it more than ever before. Fun is the major characteristic of the Whizard.

13L105 WHIZARD KIT \$18.95

PACER

DESIGNED BY OWEN KAMPEN



AS PRESENTED IN
AMERICAN AIRCRAFT MODELER

Ace R/C proudly announces the PACER, a totally new concept in R/C model aircraft. It is a high performance 1/2A powered plane designed to have the fast speed, solid tracking, smooth maneuvering, and axial roll characteristics of modern pattern ships in a small, compact, economical package based on a Cox Tee Dee .049 or .051 and a two-channel radio with miniature servos and a small battery pack.

This airplane offers more excitement and ability-to-perform than ever seen before in its size class. All of the advantages of small airplanes are maintained: it builds fast, it is economical on fuel, it transports easily, it can be flown in the smallest of fields with no need for a runway. With all of these advantages, it still has the outstanding performance to challenge the best of fliers.

All parts are band sawed and precision sanded with foam wing.
(Ace has a 1 3/8" spinner available for this plane: 37L78--\$1.25.)

13L107--Pacer Kit
\$19.95

SPECIFICATIONS

Span--40"

Length--30"

Weight--Approx. 22 oz. all up

Engine--Cox Tee Dee .049 or .051

Functions--Ailerons/elevator or
coupled ailerons-rudder/elevator

ACE R/C INC.

DIGITAL COMMANDER

Retract Servo

A new addition to the Digital Commander series of kits is a powerful 180° retract servo kit.

It utilizes the sturdy and popular Goldberg mechanics which produces power plus for tri-gear systems with a transit time of about 3 seconds.

The amplifier is the same one used in the Digital Commander Bantam and Linear Servos modified to give 180° of travel. It has proven itself to be easily built and dependable in thousands of servos.

Because this servo is fully proportional and can be built with either 90° or 180° of total throw, it can be used in other auxiliary function applications where lots of power is needed and transit time is not critical: flaps, large spoilers, brakes, moveable canopies, and release systems are a few examples.

This servo may be used with any positive pulse system.



NEW!

14G24—Digital Commander Retract Servo Kit \$24.95



THIS SYSTEM WILL WORK WITH YOUR TRANSMITTER!



SERVO

1-8 RECEIVER

1-8 flite pak

An IC servo amplifier and the popular D & R servo mechanics combine to make a servo that gives superior resolution and rapid transit time. Will operate with 3 or 4 wire IC decoders with positive pulse output.

Available in Bantam (rotary output) which measures 1 1/2 x 1 7/16 x 3/4 in or Linear (linear or rotary output) measuring 1 13/16 x 1 7/16 x 7/8 in. Available assembled for an additional \$8.00.

14G20 BANTAM SERVO KIT \$23.95
14G20L LINEAR SERVO KIT \$24.95

ADD \$8.00 FOR ASSEMBLED UNITS.

This receiver features voltage regulated circuitry with AGC and double tuned front end. An 8 bit shift register in the IC decoder offers up to eight channel operation of positive or negative pulse servos with three or four wires.

Plastic case measures 1.45 x 1.72 in. Weight is 1.4 oz. Connectors are not furnished. Please specify frequency.

12G18 1-8 RECEIVER/DECODER KIT \$36.95
ADD \$5.00 FOR 72 MHZ.

The Flite Pak kits come with a 1-8 Receiver/Decoder, the number and style of servos specified, plus the switch and Dean's connectors necessary to make a complete airborne flite pak less batteries.

12G18-2 FLITE PAK w/2 BANTAMS \$79.95
12G18-4 FLITE PAK w/4 BANTAMS \$124.95
12G18-2L FLITE PAK w/2 LINEARS \$81.95
12G18-4L FLITE PAK w/4 LINEARS \$126.95
ADD \$5.00 FOR 72 MHZ.

THE ABOVE AVAILABLE ON ALL 27, 53, and 72 MHZ FREQUENCIES

WRITE FOR OUR COMPLETE CATALOG CONTAINING OUR FULL LINE OF AIRPLANES AND R/C GEAR. PLUS MANY OTHER MANUFACTURER'S ITEMS - \$1.00 (\$1.50 FOR FIRST CLASS MAIL RETURN)

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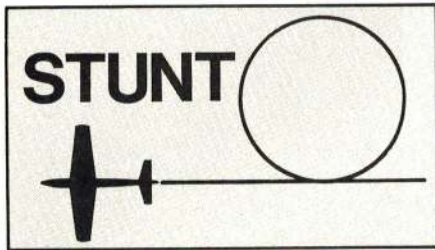
BankAmericard/Mastercharge Number _____

| QUAN | CAT. NO. | ITEM | PRICE | TOTAL |
|------|----------|------|-------|-------|
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ADD \$1.00 for handling on all orders except catalog.

ACE R/C INC.

where the action is



DON LOWE ON RC

Foot-in-Mouth Disease: For those of you who may have read my rantings (September AAM), you may recall that I stuck my neck out about 40-powered pattern ships. I said 40-powered ships aren't as good as their bigger brothers; I still believe that, but Rhett Miller III (the current National Champion) is making me eat some crow. It seems he captured the first annual Jim Kirkland Memorial RC Contest held at Eglin AFB, Fla., with an HP 40-powered ship he calls the "Gator-Flea."

According to a report from my good friend, Maj. Ron Van Putte, he defeated the likes of Jim Whitley, Don Coleman and Ron Chidgey with this ship. I've got a feeling Rhett could beat most of us with a Smog Hog! I understand that Rhett's ship is about an 85% sized "Compensator," with some modifications in proportions. Of course, the HP 40 is a real going engine, so it sounds like he has a ship that really works. Ron tells me it looks and performs just like the biggies in the air. While we're on the subject of the Jim Kirkland Contest, I'd like to quote from Ron's report:

"The first annual Jim Kirkland RC Contest was held at Eglin AFB-Field 4. The flights were run from three circles, each 600 feet apart. Contestants rode to flight lines via pick-up truck 'taxis.' Brief showers on Saturday and Sunday failed to dampen the enthusiasm. CD Dick McGraw announced over the PA system, 'I have directed that this rain will not be excessive!'

"The Saturday banquet at a local restaurant was a huge success. It was free to contestants and their wives, and consisted of boiled shrimp, ham, potato salad, cole slaw and a big keg of beer. Jim Whitley established a new record for shrimp consumption that will be hard to beat!

"Manufacturers and distributors were generous in their prize contributions and nearly everyone carried a prize away, since, rather than award all the prizes to the winners, most of the prizes were given away by drawings held during the contest. After each drawing the winner, the prize and the contributor were announced over the PA system.

"Mig Kirkland Hendrix graciously consented to award the trophies, which were presented for first through fourth places in each

event. Three special trophies were also awarded. The Perpetual Trophy (2½ feet tall!) was awarded to Rhett Miller, Jr. A trophy for the highest finish of a Jim Kirkland design went to David Wilson, who was third in Class A. Carl Von Seutter was awarded the Best Luftwaffe Entry trophy by Dick McGraw, who is a fanatic about World War II German items.

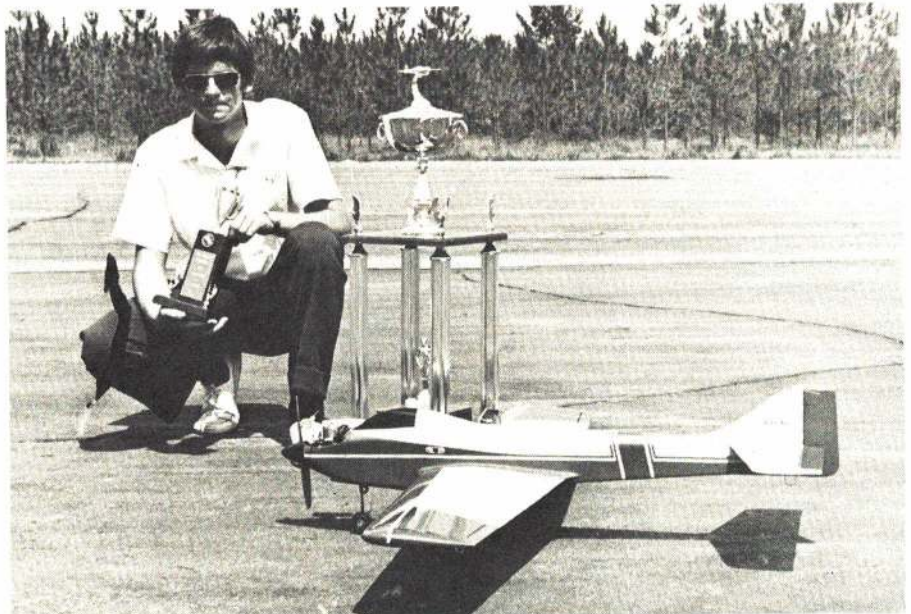
"The Eglin Aero Modellers are gratified by how the contest was received by the con-

testants and will rely on them to 'spread the word' so that the second Jim Kirkland Memorial RC Contest will rival any contest held anywhere."

Here are the winners of the several events: Class A—(1) John Clark; (2) Dale Cavin; (3) David Wilson; (4) Dewey Brown.

Class B—(1) Russell Spencer; (2) Tony Howze; (3) John Alexander; (4) David Constant.

Class D Novice—(1) Gary Martin; (2) Carl



Rhett Miller III and his 40-powered Gator-Flea. Young Rhett was the winner of the Jim Kirkland Memorial RC Contest, the first ever held. (Photo by Ron Van Putte)



Class D Expert winners at the Kirkland Contest were (left to right) Rhett Miller, Mig Kirkland Hendrix (who awarded the prizes), Jim Whitley (2nd), and Don Coleman (4th).

Von Seutter; (3) Don Rothman.

Class D Expert—(1) Rhett Miller, Jr.; (2) Jim Whitley; (3) Paul Verger; (4) Don Coleman. (Note: Ron Chidgey crashed and couldn't compete.)

Sport Scale—(1) Don Coleman; (2) Sam Pitchford; (3) Henry Waltman; (4) Robert Sholes.

Maneuver Sizing: Recently (September AAM) we talked a bit about the new AMA and FAI requirements on maneuver sizing. Basically, it amounts to a maximum of approximately 300 feet high, 300 feet out and a 45° maximum elevation. We discussed the difficulty of staying within this frame, particularly with the new FAI maneuvers.

Dick Patton of Birmingham, Ala., worked out a set of numbers to show the ground covered when flying at various speeds. For example, while traveling at 90 mph (rather common these days), the craft will cover some 660 feet while staying within a lateral 45°-45° segment, which some consider ideal. This is for a distance of 330 feet away. Rolling maneuvers are supposed to be a nominal five sec., which is 660 feet at 90 mph, so, you can see we are at the limit now. What do you contest fliers out there think about this? How about a little feedback?

Xmas=X-75: Christmas can be more than an RCer's dream this year. Instead of visions of sugarplums, how about a new radio? You can win a Christmas present of a seven-channel Orbit radio, or one of 100 prizes in the exciting "Name the Orbit \$1,000 X-75 RC System" Contest.

The contest is Orbit's way of introducing their new "super-deluxe" rig, which has over 25 dream features available. Many of these options (you can get any number of them for the flat \$1,000 price tag) have never been seen on an RC system before. For the first time, you can have your radio almost literally custom-made to your specifications. The radio will have an unconditional lifetime guarantee, i.e., all repairs, and even modifications will be done absolutely free.

The X-75, for want of a name (yet), has been under development for over two years. It can be considered as perhaps the ultimate radio and will be available (on special customer order) from your nearest authorized Orbit dealer. While you're there examining the custom features of this unit, pick up an entry blank and name the X-75. You could win: First Prize—Seven-channel Orbit Custom system; Second Prize—Seven-channel Orbit Sport system; Third Prize—Orbit Hawk/Hobby Hawk radio and sailplane combination. There are 97 additional Orbit "extra-touch" accessory prizes to be awarded.

The contest is already in full swing and ends Dec. 1 (so that you can get your present from the good guys at Orbit in time for Christmas). So get on over to your nearest Orbit dealer (or write to Orbit for an entry blank) and enter today.

The Last Laugh: Somebody slipped me a good one when I wasn't looking. It was so funny, I thought I'd pass it on. Most of you know that I designed and fly a bird called the Phoenix, now being flown in its sixth configuration charge. Here it is: Question—What is a Phoenix?

Answer—That's a dirty old bird covered with ashes and soot. This bird has bent wings and a big tail. He flies some, but spends most of his time having his number changed. His call is unusual—sounds somewhat like

MANEUVER SIZING

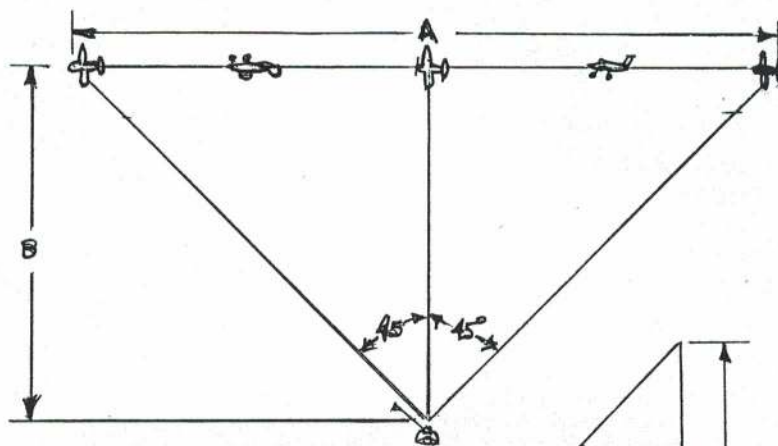


FIG I

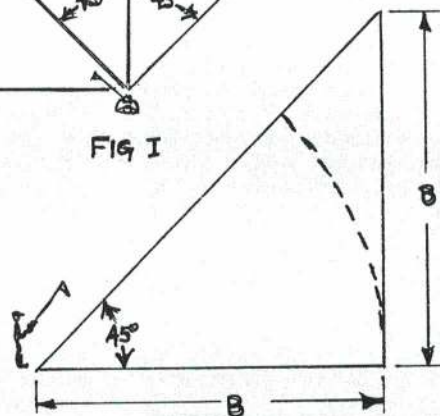


FIG II

| SPEED (mph) | SPEED (ft./sec.) | (1) ft. | (2) ft. |
|-------------|------------------|---------|---------|
| 40 | 59 | 295 | 147 |
| 50 | 73 | 365 | 182 |
| 60 | 88 | 440 | 220 |
| 70 | 103 | 515 | 257 |
| 80 | 117 | 585 | 292 |
| 90 | 132 | 660 | 330 |
| 100 | 147 | 735 | 367 |

ASSUMPTIONS

- (1.) Maneuver last 5 sec.
- (2.) Maneuver is started at 45° point and completed at 45° point.

"Gimmeaten." Rare species.

Author Anonymous (but I believe his initials are R. Van P.)

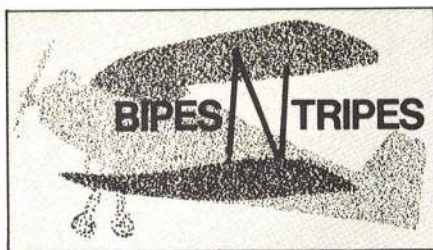
A Note of Warning: For those who may not have noticed, your expensive pattern engines are rusting internally if you use the synthetic lubricants without corrosion inhibitors in the fuel. I have seen some engines unbelievably bad, especially bearings and unchromed cylinder liners. I have replaced several bearings because of this. So, what to do? Do like your ukie buddies have done for years: Oil the engine after each flying session with a good oil, such as Wynns Friction Proofing, gun oil, hydraulic oil or 3-in-1 oil. If your engine starts to run ratty, or inconsistent, or if it doesn't idle well, there is a good chance that rust has gotten to the main shaft ball bearings, so beware!

Master's Tournament Results: Surprisingly enough, there are none! The whole contest was Kansased-out, i.e., the wind blew so badly that the contest was cancelled. It was called off in a very unusual way, one that perhaps might set a precedent (and perhaps a new tenor of contestant participation).

For now, let it be said that the fliers went on strike! There was a lot more wind between fliers and officials than was blowing across the prairies. The outcome, if we can call it that, was a postponement of the Master's Tournament until at least June of '75.

This will be somewhat of a precedent, in itself, since we will be choosing the U.S. Pattern Team only three to four months before the big show in Europe. To say the least, the winners should obviously be "peaked" for flying and chomping at the bit when it comes time to show the world that the U.S. is coming back strong on the international contest scene.

The RC Pattern Internats are tentatively scheduled for Sept. 8-13 in Switzerland. Frankly, I feel that having the Master's just prior to the Internats is a very equitable concept, but that's another story. Meanwhile, stay tuned next month for a complete story on the Master's Tournament (or non-Tournament).



O.L. (OLIE) OLSON ON MULTI-WINGED RC THINGS

Redesigning: Greetings again from the Biplane Capital of the World, home of the National Multiwing R/C Championships, Omaha, Neb.

One of the facets of this hobby wherein many of us find employment and satisfaction is in the creation, from a set of plans and a stack of balsa, of that 1/6th scale biplane which we cherish, fly and eventually destroy. Even greater joy can be experienced if one puts a bit of himself into those plans. Modifying, personalizing, even major redesigning of an existing design is not difficult. A little thought and caution is about all that is required. With the current shortage of good biplane kits and designs, this is indeed fortunate. Without those biplane lovers who make modifications here and there, we would all have a little trouble telling our ships apart.

We're going to sidestep, for the present at least, any discussion of redesigning that would affect the stability or flying characteristics of

the aircraft. Rather, let's take a look at a few of the things that we can do to personalize a given design.

A case in point is the Andrews Aeromaster as customized by Larry Quigley. Larry's first Aeromaster, after hundreds of flights, died of old age and a mid-air. After a suitable period of mourning—about two days—he initiated Aeromaster No. 2. To add a little extra interest and zest, he made a few changes.

Those of you who have flown an Aeromaster will agree that not too much can be done to improve it...except, perhaps, a faster roll rate. I promised not to get involved this month in any design modifications that would create major aerodynamic changes; however, Mr. Q *did* make one. You can see it in the photos. It does improve the flying of the bird. So, just for a moment, I'm breaking my promise. Ailerons were reduced in span on the bottom wing and new ones added to the top wing. If you're going to "do" or "redo" an Aeromaster, it's worth doing.

Be sure to seal the aileron hinge lines and keep the control system good and solid. A loose and sloppy system can undo what you just did, and add flutter to boot. As you will notice, new rounded tips have been added, rubber band hold-downs replaced with nylon bolts; streamlined "N"-struts have been securely mounted outboard. Since the upper ailerons are driven by pushrods from the lower pair, it's essential, if trim is not to be disturbed, that no shifting of the wings occurs.

If there is one design area with which the neophyte designer can experiment it's the fuselage. As long as the nose and tail moments are not disturbed, the sky is pretty much the limit. Change the fuselage profile enough and your friends will think you've come up with an original. Radial, cheek, or in-line engine cowl are all possible variations. One, open cockpit, or two, a bubble canopy, a turtle deck, or a headrest and fairing are a few more variables.

Lanky Larry happens to think (and so do I) that the original design of this particular fuselage leaves very little to be desired. He made only two very minor changes. He shaped the nose down and faired it into a spinner. When he covered the vertical stab, he allowed the covering material to form the fairing between it and the fuselage.

When drawing new lines and outlines for the empennage, remember to maintain the same rudder, elevator, and fin areas, and their relative locations. Alterations of shape and section (unless absurdly extreme) will have little effect on the airplane's flying characteristics. Our aircraft was subjected to a pretty thorough revamping of the tail feathers. It didn't make the ship fly a bit better (or worse) but, I think you will agree, the modification certainly changed the looks of the beast.

OK guys, get out your pencils and French curves and start redrawing those plans. Your friends may not like what you come up with. The original designer would probably have a small stroke if he were to see what you've done to his child. But, we don't care. It's a relatively free country and we're here to enjoy it.



CLAUDE McCULLOUGH ON RC

The Corsair Story: A place on the U.S. team at the Scale World Championships is the hope of every serious scale flier. It seems something very desirable—a peak of achievement and recognition in the hobby. But, along with the honor comes the pressure of the responsibility to turn out the ultimate model for the competition.

In Bob Karlsson's case, this meant hundreds upon hundreds of hours of work, building an entirely new F4U-I. A small head start was gained by using the basic design and flight-proven configuration of his 1973 NATS entry and the molds made for it. All for the good, since the intricacies of the rearward retracting, 90° rotation landing gear, the tail wheel and associated well cover doors burned up 200 hours alone. Then there are flaps—six of them, four of them curved, in the aircraft—another difficult construction and operation puzzle.

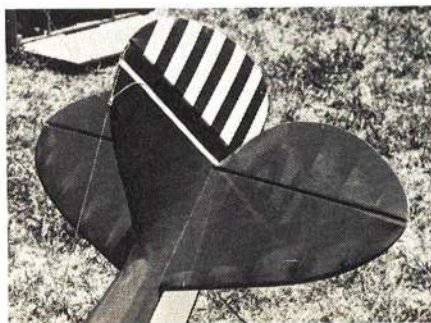
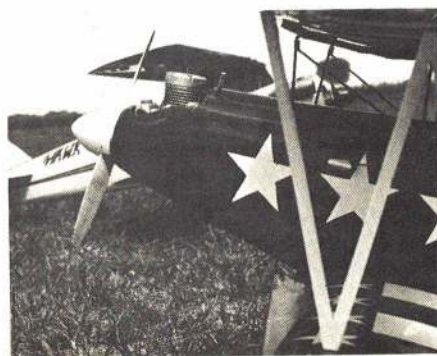
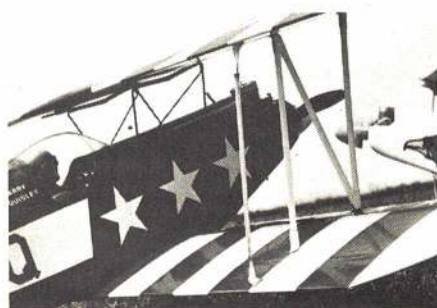
This is only the beginning of the list of time-consuming problems that had to be tackled. Not the least of these was the FAI 11 lb. maximum weight limit—with fuel. To keep check on this critical matter, Bob calibrated a set of scales to insure an accurate reading. Unfortunately, a big model does not sit squarely on the platform as a check weight and it was discovered late in the game that the model tilted in such a way that the reading was low by a half-pound.

The only place to shave weight was in the nose and, at the legal five kilograms with fuel, this resulted in the CG being 5/16" farther back than the 1973 Corsair. The solid flying characteristics of the predecessor made this seem acceptable.

Lou Ross had built a special rear rotor Ross 61 for the model and, using a special gasoline-base fuel developed by Jim Michaels, it turned up 1,000 more rpm than the O.S. 80 Bob had used in the old Corsair.

The takeoff roll took only 15 ft. and, after a few hairy moments due to overcorrection, the bent-wing bird settled down and climbed out. At 300 ft., flying straight and level, Karlsson retracted the gear. This shifts 1/4 lb. of wheels 7" to the rear. The CG change instantly snapped the model into a spin.

Correction with down elevator and opposite rudder stopped the spin and left the model diving. He pulled up elevator and had just brought it back to level flight when it





Bob Karlsson's Corsair: "If you fly them, you'll break them."

snapped again—this time too low to recover—and went in. It was repairable, but the weight dilemma couldn't be solved, and Bob had to retire from the team. Walt Moucha, the first alternate, was planning to be married and couldn't attend, so Bob Wischer took over.

Someone once said, "If you fly them, you'll break them." Those of us who scale-model can affirm the truth of that comment. So, knowing how he felt, after the hopes, and blood, sweat and tears had ended in a pile of broken dreams, let's all salute Bob Karlsson for his valiant effort. The breaks weren't with him this time, but his many friends still are!

Stretching It: A number of retract gear units of good reliability and ease of installation are available to the scale builder. Their universal limitation is inability to provide more than 90° of movement. Though this action can be adopted to operating scale-like gears that, in full-size, need more travel, it requires oddball angles in mounting the unit, with the gear leg bent in further juxtaposition.

Given this setup, there is no practical way that some of the associated lifting arms and levers can be made to operate in an exact scale manner. Often they are just left off, but at a sacrifice in appearance and scale points.

Mike Stott had this problem with his CL World Championship Tigercat. Since he used

the Rom-Air units that are also popular with RC fliers, the solution is equally applicable. Most full-size gears are pulled up by linkage arms (see arrow on picture.) In a typical model installation, the arm is directly in the way of the main gear leg.

On Mike's model, this is not a rigid member but actually a piece of neoprene fuel line. The end that is fastened to the gear leg has a fitting made from Plastruct tubing, of a size that will force fit into the tubing; and, pieces of ABS plastic to form the sides of the bracket that is used to attach the fuel line to the leg. The assembly is bolted together through the fuel line with 00-90 brass machine bolts.

The other end of the fuel line is fastened in the fuselage with just enough stretch to provide tension to keep it taut. On display and during taxiing it appears solid, but during the retracting cycle it collapses and falls harmlessly aside, away from the movement of the main leg.

Incidentally, the rest of the scale details covering the 3/16" music wire gear are made from Plastruct butyrate tubing pieces cut from various thicknesses of ABS plastic sheet and 00-90, 0-80 and 1-72 size miniature bolts. The advantage of Plastruct and ABS for detailing is the ease with which parts may be joined by welding them together with MEK, acetone or butyrate thinner. This combination has the added attraction of being light, which is always an advantage, particularly given the limited weightlifting capacity of retract gear units.

Wheelie: Tom Stark has a neat method of retaining wheels on an axle that anyone with a Dremel or similar electric hand tool can use. With the No. 409 emery cutting wheel, he cuts a groove completely around the wire,

about 1/64" deep, near the end of the axle. A hairpin shaped clip is then bent from 1/32" music wire with a pair of needlenose pliers. This snaps in place in the groove. Tom says they are light, easily removable and have never come off accidentally.

Incidentally, the 409 emery cutting wheel is one of the handiest attachments for a hand tool that a modeler can have. They will eat right through spring steel landing gear wire and leave a clean, flat end, unlike the haggled mass produced by filing a notch and breaking the wire in a vise. The wheel is also great for cutting brass or aluminum strips, for making slots in metal, and for shortening bolts. The tool can be worked down into the fuselage and other tight places. All in all, a motor hand tool with an assortment of grinding and shaping accessories will be an invaluable addition to a scale modeler's workbench—not only for routine construction but especially for rendition of fine detailing in the cockpit or on landing gears, in metal, wood or plastic. (Note: When using the Dremel Moto-Tool, especially with the emery cutting wheels, always wear safety goggles.)

A Radio For Scale: While not specifically designed for the scale flier, there is a new radio (available in late fall) which should solve the proverbial problems of the scaler. How many of us have scuttled projects because we ran out of functions, or needed features on a radio that were too complex for even the best

(Continued on page 124)

BILL BOSS ON CL SCALE

Control Line Scale at the World Championships: By the time this column appears in print you will no doubt have read several accounts of what happened at the World Championships at Lakehurst, N.J., during the first week in July. However, I don't believe a few more words will do any harm.

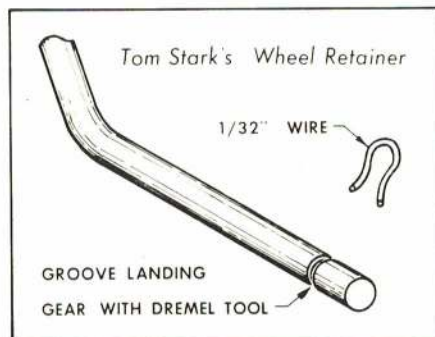


Valery Kramarenko (center) makes preflight adjustments to his AN-14M. The entire Soviet group pitched in before flights.

For those of you who are not familiar with how a World Championship Scale contest is conducted, using FAI Rules, I offer this brief explanation.

The first step in the judging process is to determine the weight and basic measurements (span, length, chord, etc.) of each entry. From these statistics the wing loading is determined to assure that each model is within

(Continued on page 81)

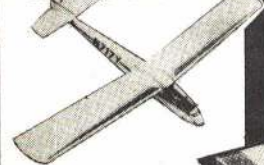


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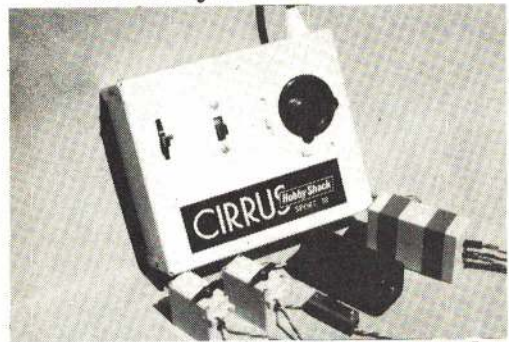
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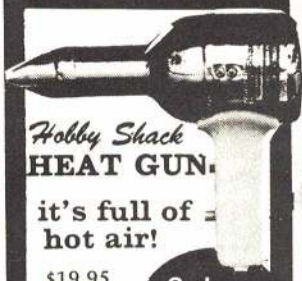
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ABOVE: The AN-14M had a programmed operations sequence, including cargo doors opening on about the 12th lap, and three parachutes deploying on the next lap. BELOW: Jerry Ostrowski (Poland) had the most detailed entry ever seen at a World Championships. A study of the nose gear on his P-38 reveals minute work, even to grease fittings.



(Continued from page 77)

limits for its class, single or multi-engine. These results are presented to a panel of five judges, who then score each model statically for Fidelity, and Craftsmanship (much as in AMA Scale Rules). However, a third category, Complexity, is also included in the static judging. In this, the judges score the various items, i.e., fuselage, wing, tail surfaces, etc., on the basis of difficulty in reproducing the items in model form.

After static judging is completed, a flying schedule is developed in which each contestant is permitted three official flight programs. The flying is usually done in "Flying Rounds," one round a day for three days. Each contestant is allowed two attempts to make one official flight in each round.

What are the models like that are entered in a World Championship? I must admit that I had a very different idea than what I saw. I had always imagined each model to be the utmost in workmanship, and, of course, all of super detail. After all, a World Championship should have the best possible entries from each country.

What I saw at Lakehurst certainly did not conform to these ideas. The quality of the models varied much the same as at good local scale contests, or at our NATS—that is, from planes we would call fair, to the two or three that were super-detailed.



ABOVE: Mike Reeves' (England) Zlin Akrobat is great example of the kind of model required to score high flight points in FAI competition. With retracts, flaps and good aerobatic capabilities, it could have placed higher than it did except for the low static points it received. BELOW: A6M5 Zero, by Bill Harney, was third in static judging, with its exceptional cockpit and authentic weathering. Poor flight points kept it down to seventh place.



The size and weights of the models also varied considerably. The largest plane was the twin-engine AN-14M entered by Valery Kramarenko of the USSR. The AN-14M had a wingspan of 87", length of 50", and weighed in at 14 lb., 9½ oz. The smallest plane was the single-engine Fokker EV, entered by Horace Venables of England, which had a span of 48", length of 34" and weighed 4 lb., 6 oz.

The 12 planes entered in CL were split evenly as to engine class—six were single engine types and six had twin engines. In order to present a little better picture of each type, I averaged all the measurements for each engine type (single or twin) and came up with the following composites. The twins averaged 12 lb., 2 oz., had a span of 71", and length of 51½", while the single engine types averaged out at 7 lb., 2 oz., had a span of 58 3/4" and length of 44½".

The three most exciting planes from the standpoint of detailing (and those obtaining highest static scores) were the AN-14M by Valery Kramarenko (U.S.S.R.), the P-38L-50 by Jerzy Ostrowski (Poland), and an A6M5 Zero by Bill Harney (U.S.A.).

All three planes, as varied as they were in type, also were varied in the special detail presented on each plane. The winning AN-14M, in addition to having a fine finish, featured specially built engines that fit into extremely slender (about 3" dia.) turboprop nacelles. The engines were about .60 in displacement and featured a prop shaft that was mounted on the bottom of the crankcase, which was connected to the engine crankshaft via a 1:1 bevel gear drive, thus producing an engine about 7½-8" long. (See Don Jehlik's report in November AAM.) The AN-14M also featured computer-like programming for all its operating features, which included retract gear, flaps, operating fuselage cargo doors, jettisonable parachutes (on about the 13th lap) and,

finally, the closing of the doors and extension of the landing gear.

Ostrowski's P-38 featured superb craftsmanship and detailing in its mechanical features, firing rockets, flap actuation, and superchargers. The landing gear was detailed right down to the grease fittings, and the supercharger fans would turn with the slightest application of breath to them. Even the wheel wells were complete with hatches and panels. When the flaps were extended, the exposed edges of the surfaces were finished to the last detail.

Bill Harney's Zero was an excellent example of the weathered, dirty look. Every scratch, oil spot, or mark put on the real plane during maintenance and flight operations seemed to be present. The Zero also featured one of the most detailed cockpits I have seen to date. Two of the instruments I saw work were the turn and bank indicator and artificial horizon. Both were actuated by a series of pendulum actions.

Still on things technical, Mike Stott and Mike Gretz used a new control system for actuating landing gear, flaps, throttle control and the like on their F7F Tiger Cat and Zlin entries at the AerOlympics. The system employs the encoder and decoder sections from a digital proportional radio to drive standard servo mechanisms. This system, if marketed as indicated by Stott, should be a boon to all scale builders, as it offers smooth positive control without the cumbersome multi-wire harnesses between control handle and plane.

Another major advantage of this system is the weight reduction in the plane by the use of small RC servos instead of heavy electric motors and the batteries needed to drive them. Stott has promised to let us know more about the new system in the near future.

(Continued on page 125)



BOB STOCKWELL ON RC

Book Review: In a column with this title, you wouldn't expect to find a book review, would you? But a book review it's going to be. It's a very special book, one which has not received nearly enough attention, and which can take the heat off me by reducing the demand for building tips and speed secrets. (Some people think I should provide more tips in my column; I don't put them in because I don't know any.)

The book is the *NMPRA Pylon Racing Book*, an official publication of the National Miniature Pylon Racing Association. I have mentioned it before, but just in case you haven't seen it, or perhaps think it's already out of date, I'll give full rundown on it.

Let's consider first its decorative aspects. It contains scale three-views (in fact, five-views: top, bottom, both sides, and head-on)

NMPRA



on 17 Formula I machines—beautifully drawn and detailed by R.S. Hirsch. The DeNight, Cassutt, Shoestring, Bonzo, Midget Mustang, Pogo, Little Toni, Ole Tiger, Shark, Miss DARA, Miss Dallas and LR-1A are all presented.

There are numerous photos of well-known figures in pylon racing, including the NMPRA Champions 1968-1973 and various past and current NMPRA officers. There is an interview with John Brodbeck about full-scale Formula I Racing in which John, who was deeply involved with it from its early years, provides a feel for and insight into the event that can't be found elsewhere. There is a piece of third-rate poetry by your present writer which you have my permission to ignore.

So much for the cosmetics. The serious content of the book is what matters, and it is good. With no reflection on any other contri-

butor, I think the article by Clarence Lee on racing engines is worth the price of admission all by itself. If anyone knows how to set up an engine, it's Lee. Just remember that those fast K&B's flown by Kent Nagy, Bob Smith, Larry Leonard, Don McCan, and Charlie Shaw, among others, are Lee engines. This is a long and generous article—the longest in the book, and Clarence is completely honest and open about what he does with engines. He also has some useful tips about propellers and fuels.

Cliff Telford, another first-rate engine expert, has also written an article about engines, props, and fuel. If that's not enough, Bill Wisniewski has one on FAI alky burners, and George Aldrich on pressurized fuel systems. These are four of the most knowledgeable engine men in the country.

A second group of articles deals with the characteristics of the airplane. There is a technical article by Ed Rankin on stability and control (I confess I don't have any idea what he's talking about: I think you have to be an aeronautical engineer); and another by Jack Fabbri on airfoils which you *don't* have to be an engineer to understand. There are two very neat articles on construction and radio installation by Dave Lane and Cliff Weirick, and finally, three excellent pieces on finishing techniques by Terry Prather, Bror Faber, and Ray Downs. (These three may be the only outdated articles in the book: Our experience with K&B Superpoxy has suggested that nothing else is nearly as good.)

For the beginner, there is some sound advice on getting started, by Bob Upton, and there are three historical articles on the beginnings of RC Pylon, FAI Racing, and QM Racing by Ed Shipe, Betty Stream, and John Elliot, respectively. Finally, there is a list of Pylon specialty producers—where you can get those pylon items you can't find at the corner hobby shop, and a list of manufacturer's addresses.

The spark plugs firing this whole undertaking were Terry Prather and his father Al. You can order the book from Prather Products, 1660 Ravenna Ave., Wilmington, Calif. 90744, or from the Secretary of the NMPRA, Bud Anders, at A&L Distributors, 16509 Saticoy St., Van Nuys, Calif. 91406. Not one penny of profit will go to any private individual: it all goes into the NMPRA treasury, to help improve pylon racing all over the country.

Now, I don't like to complain, but when you want to know where to go for information about pylon racing in the future, just go buy this book and read it—it's better than anything I can do to help you. Believe me, you'll like it.

SMITH ON CL SPEED

Party Time: Did you ever attend a party that gave you the feeling it was scheduled for next week, and you were seven days early? That was the feeling I got when I pulled into Lake Charles for the NATS on Sunday, Aug. 4. A large field full of "empty!" While things don't really begin to swing until Monday, usually the NATS is really under way the day before. We checked into the camp ground, (we were the second ones!) and looked the flying area over. As far as one could see, a beautiful cement/blacktop, runway-ramp area. All the room one could ask for. Three speed circles complete with pylons, (good ones, too, for the

first time in many years) stuck far enough in the runway that the strongest pulling airplane couldn't move them. Lots and lots of room for Rat, Goodyear Scale Racing and, if you wanted to test fly, step right up and take your pick.

Truly the best setup for control line that has been available for a long time. By evening, a few more contestants arrived. Many who camped in years past decided to spend their cash to stay in nice air conditioned rooms.

But a lot of them could have saved their money, because the weather was great, except for 1/2A day—it always rains on 1/2A day, doesn't it? The bugs were sparse. . . Glenn Lee sez the snakes ate 'em all, and I think the noise drove off all the snakes.

So the stage was set. All we needed were contestants. And it is said, "Fire up an engine and contestants shall appear." Someone did, and they did, and the '74 Lake Charles NATS were under way.



Ten-year-old Becky Snyder in the speed pylon. The handle has a ring that slips over the pylon fork to take the pull of the model.

Most people spent Monday and Tuesday test flying. Wednesday, everyone was ready, or at least said they were. In the speed circles, only enough officials were there to time on one circle. Lucky that they weren't really rushed with too many fliers, or it might have gotten to be a bit of a problem. (Later in the week, when they were needed, fliers helped out at a second circle to take the load off an already overworked, and sometimes unappreciated, crew from California. More on these guys later.)

Anyhow, this being 1/2A day, the rain started. Only 14 Juniors signed up for 1/2A Profile Proto (way down from past NATS) and, at the end of the day, Jimmy Clem showed everybody the way it's done with an 85.03 mph flight, just a snick off the record. In Junior Proto, Rick Westbrook turned 93.47; Senior went to Mike Langlois, (Mr. 200 mph), at 95.45; and Open was taken by the Bartley/Garner/Huff Team at 97.05 mph.

Usually 1/2A day has the guys coming out of the woodwork, but not this year. This trend was seen all through the week, as all event entries were down. Thursday was 1/2A Speed day and the Louisiana weatherman looked down on us through a bright sunshine.

Again it was fly when you wanted to, no lines in the pit, very relaxed. Rick Westbrook took another first in Junior with his fine 100.97 mph flight (record), while Brian Pardue took Senior with 103.41, and Tom Hartvigsen topped the open group with a 111.62 top end. Open had the closest times, with only 1½ mph separating number four from the top place.

Open Rat was flown on Wednesday while Open Scale Racing (Goodyear) was run on Thursday. In Open Rat, Norris Sparks and his Boss Rat Team took all the marbles with a good 4:49.4. Bill Keller was seen beaming since almost all the equipment used by Sparkie was from Bill's Boss Rat line. All except "Big Jawn" Ballard's patented "Heavy Arm." In Scale Racing, it was Bud Harris all the way with a 6:28.15. I think Bud won it all last year too.

The rest of the Speed events were reversed for the remainder of the week. Whereas C was always flown on Sunday, this year it was moved to Friday and was run, as usual, with Jet. Mike Langlois stirred things up with a 205+ Jet flight that was shot down with a whipping call. (Sharp eye, there, Bev.) The remark from the pilot? "Yeah, I was on it." He redeemed himself later with a very for-real 200.59 mph run, which was backed up for a new record.

In C Speed (Open) it was Dick Shannon all the way with his VHP powered model at 198.16. This engine is now starting to show it's potential after a lot of hard work and sometimes frustration. Charlie Anniston, who flies with Phil Bussell, had his problems in C when, on launch, their airplane started to "look at him." As he backed up, he sez he fell over a teeny, weeny ole yellow line painted on the runway. The airplane and engine re-kitted itself as Charlie watched helplessly over his shoulder while lying on his back. Ya gotta get more style, Charlie!

Junior C was taken by Glen Van Sant with 150.06 and Mike Bussell, Phil's son, took Senior with a good 161.66 flight. In FAI Team Racing, the Jolly/Kusik Team took the finals with a time of 9:06.9. Dunkin/Wright took second with 9:13.85 and Dodge/Nelson took third with a 9:47.4 clocking.

Saturday, the area filled up faster, as B Speed, B Proto, Formula 40, and Junior and Senior Rat were on the schedule. Only five Open guys got officials in B Proto (Remember when there were 30-40 Proto ships at a NATS?). Back to the action. In Rat, it was Doug Harris with a 5:18.6 in Junior and Bill Meredith with 5:21.6 in Senior.

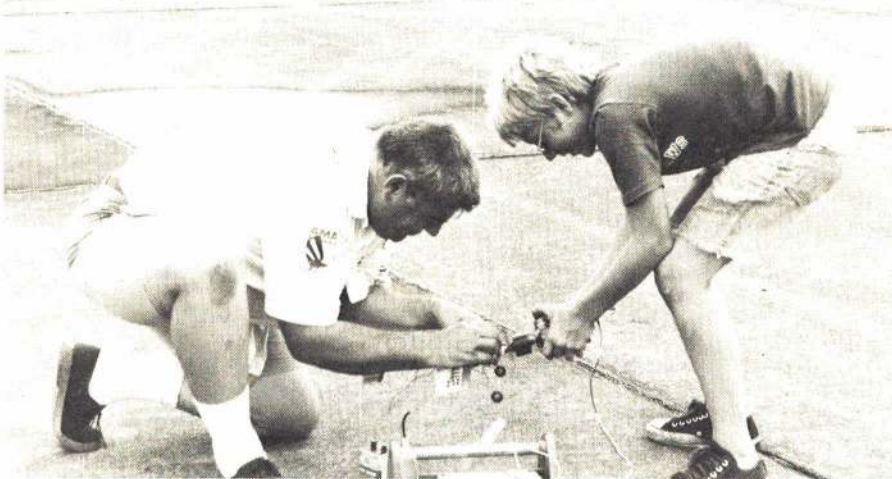
Meanwhile, back at the speed circles... Formula 40 (J-S-O Combined—why must we combine event ages like this at a NATS when we are trying to get contestants?) was taken, at 141.62 mph, by Tom Blankman. Junior B Speed was won by Mark Siegler at 173.34 mph (mighty fast for a Junior), and Mike Bussell took Senior with a 169.9 run. Mike's dad, Phil, took all the gold in Open with 187.23.

B Proto Junior was won by a gal, little Becky Snyder. She turned 136.46 and used a handle which locked onto the pylon, so all she had to do was drive. But drive, she did. Right into first place. Her dad worked all week as a Speed Official, but he got time off to give her a couple of pretty good needle settings in other events, too, where she placed in the top five. Senior B Proto was won by

(Continued on page 85)



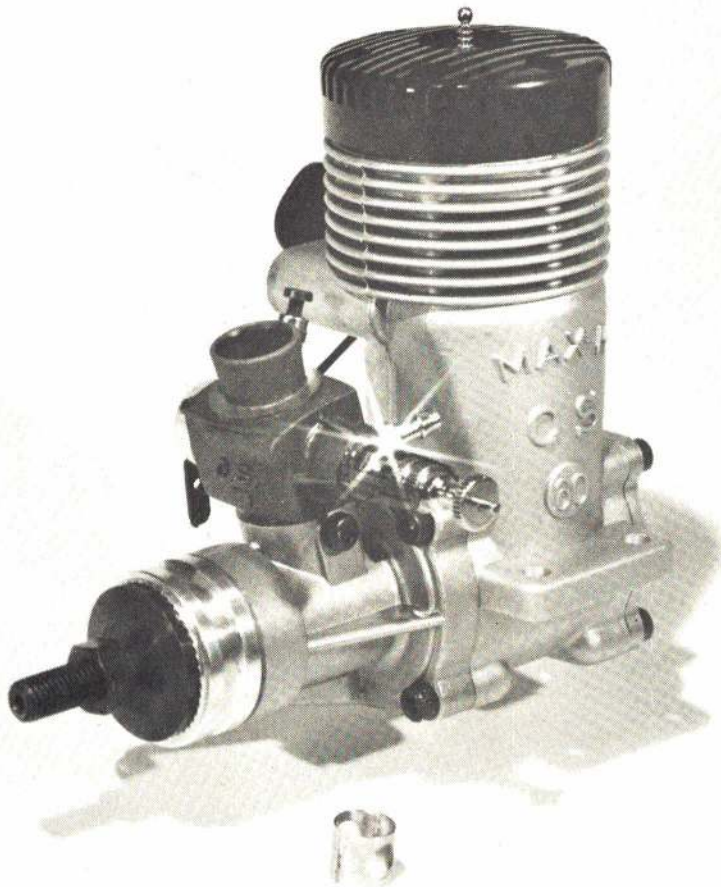
ABOVE: The elite corps of the AAM 200 mph Club (in uniform) are (left to right) Jay Marsh, Mike Langlois and Charlie Schubert. They went so fast that they put the shirts on backward! BOTTOM: Johnnie Smith tweaks the needle, as son Chris hits the starter.



Rick Westbrook with his proud father, Clarence, and his Junior ½A Proto Speed model.

(All photos taken by Glenn Lee)

OS Black Head
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O. S. BLACK HEAD .60 MORE PORTING — CHROME LINER

The OS factory in Osaka, Japan has for the last few years dedicated most of their research to the development of the OS Wankel engine. Recently they have turned their attention back to piston engines. A few months ago it was our pleasure to introduce the new Schnuerle ported OS Max 40SR. The first of these engines did rather well coming in second in rat race at the King Orange. Considering that it was a one-of-a-kind entry against a large field—over 25—it's performance was an outstanding success.

The writer of this ad, John Maloney, recently returned from Japan and I brought back a sample of the OS Black Head 60. This is the engine that appears in the above photograph. The new OS Black Head 60 features a chrome sleeve which is the outstanding change in the engine. In addition to this, there are more porting windows in the sleeve than on the OS Gold Head. Also, the carburetor is equipped with an insert. The insert can be seen in the foreground of the photo-

graph. The insert is intended for use if the model builder elects to run without pressure. If, on the other hand, the model builder is using pressure (probably from the muffler), then the insert can be omitted to give a larger venturi diameter. Tests at the OS factory on no nitro fuel indicated a pick-up of about 500 rpms by the elimination of the insert and the use of pressure. The engine is now done up handsomely being put together with socket head screws, both on the head, front plate, and back plate. The new carburetor supports a much classier adjustable stop collet than did the older carburetor. The new anodized Black Head is a touch of class.

One other bit of good news is that the price will remain the same—at least for the time being at \$74.95.

The companion muffler for the OS Black Head is an OS #704 muffler retailing for \$10.95.

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(Continued from page 83)

Mike (there's that kid again) Bussell. Mike turned a 143.38 and Open Proto was won by Dubb Jett with his DJS-powered ship at 157.62 mph (record).

Since only five guys got officials in B Proto, I think recognition should be given to my old buddy Mike Neeson, and his brother Charlie. They scorched in a 107.64 mph run for fifth. Actually, they didn't really scorch it. Charlie (dial-a-prayer) Neeson, the needle man, burned it down on the ground and Mike flew it, hoping some air time might cool it down! Their sister, Peggy, should get some kind of an award for her week at Lake Charles, if only the Good Housekeeping Award for gathering up after Mike.

Sunday is usually the day you can't wait for, but when it's over, you find yourself wishing it was all just starting—FAI Speed, A Speed, and Junior/Senior Scale Racing. Let's look at the Scale Racing first. In Junior it was Doug Harris (again) with a time of 6:54.9. Senior was won by Arnold Kosby, the Technamics man, with 7:39.4 run in the finals.

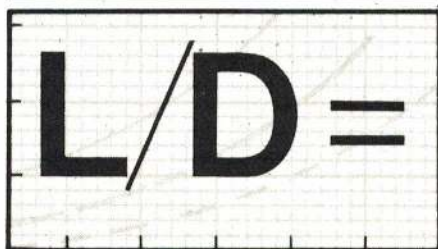
Over in the speed area, the most exciting thing was Carl Dodge's "funny wires." Carl uses "groupers" to tie the lines together, one behind the other, so the back wire "drafts" the front wire, decreasing the drag to that of one wire or less. The Europeans have been doing this for some time in FAI, but this was the first time that any one had done it in the U.S. Carl figures he gets 15-18 mph from this setup. However, his time wasn't "funny" as the timers called out a 155.56 mph run for a first place and a new U.S. FAI Record (Carl has since upped this to over 157 mph).

Charlie Lieber turned 121.64 for a top time in Senior, while Glen Van Sant turned a 113.03 in Junior. The whole impact of the small number of contestants flying this year was brought forth when, on Sunday (A Day), there was *one* plane in the pits at 4:30 in the afternoon! Think about it....

While at the NATS, members of the CL Speed Advisory Committee met and made suggestions for rules changes in the '76-'77 rules book. These will be covered in a future column.

Looking back: Why was registration down at this year's NATS? Maybe the advance AMA publicity had something to do with it. The talk about snakes (we didn't see any, or talk

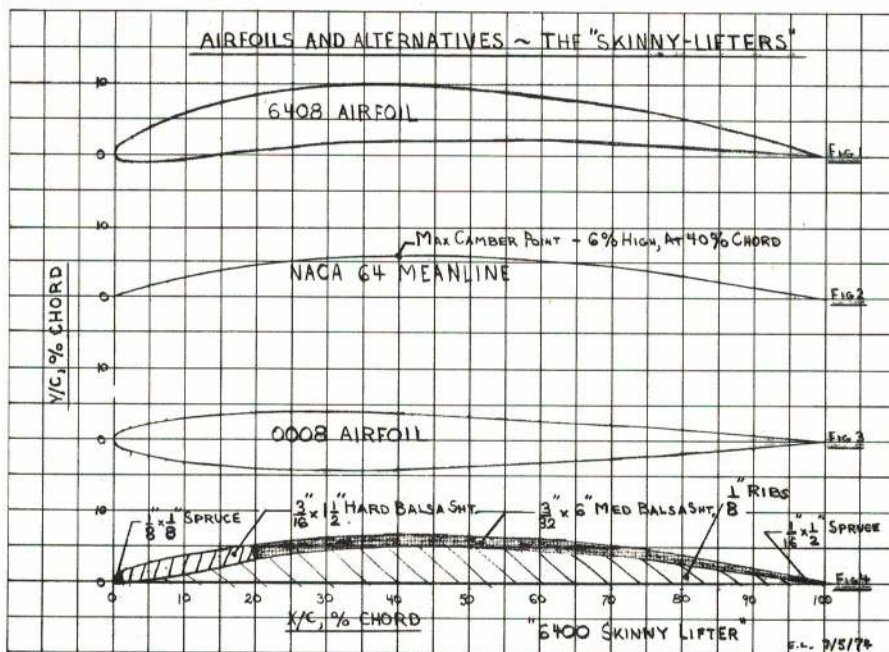
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AIRFOILS AND ALTERNATIVES—THE "SKINNY LIFTERS"

ERIC LISTER

This month's column was born on a beach. You're expecting maybe a few words on slope soaring? Sorry, the real origin of this month's effort is due to bikini watching. Plain and simple, the message this time is that the thickness of an airfoil is really like a bathing suit—both are used to cover the structure. And neither



adds to the performance of the curved section.

To prove the point aerodynamically, we'll produce a new airfoil that could be used as a substitute for the NACA 6408 or 6409. It will have all the good lift characteristics of these sections, but much less drag. To prove the point anatomically, we'll have to wait until AAM comes up with a centerfold (*We're working on it. All interested females drop the Editor a line—phpl*).

The vehicle for explaining how we can do this will be the NACA four-digit airfoil series. I picked this group because of its extreme flexibility and the fact that almost everything you read here can be verified from NACA information.

Let's run through the NACA numbering system. All airfoils in the NACA four-digit series have, naturally, four digits as their title. The first number gives the amount of max camber in percent chord. The second gives the location of the max camber point in tenths of chord length. The last two digits give the max thickness in percent chord.

NACA 6408, for example, would have 6% max camber located at 40% of the chord from the leading edge, and would be 8% thick. Fig. 1 gives a sketch of the airfoil. Fig. 2 shows the meanline of this section. Remember that the meanline is the curved line that goes right through the middle of the airfoil. Note that, as advertised, the NACA 6408 meanline has a max height of 6% of chord length which is located at the 40% chord location.

So much for the four-digit numbering system. Now comes the meat. During the past few months, this column has been making new airfoils by modifying older proven ones. I've talked about splitting airfoils up into meanlines with thickness distributions, altering the max camber and the max thickness, and adding them back together again to get the new sections.

The problem has been that this is about as clear as mud unless you've had some experience at it. Since the basic aim of AAM is to explain, not mystify, this month we'll take the space to lay out how it is actually done. This will accomplish two things: first, you'll be able to make your own airfoils, and second, you'll get some understanding of why

the "Skinny Lifters" ought to work out and how to make them.

Let's start with the NACA 6408. There are tables available in the four-digit series that give coordinates for the meanlines, depending upon where the max camber is located. In the master tables, all are given with a 6% camber. For modelers, the ones of interest are those ranging from 30% to 50% chord for the max camber location. This means the 63, 64, and 65 meanlines. The master tables, as I call them, are included in this article.

Here's where the flexibility comes in. Suppose that what you want is an airfoil with a 44 meanline instead of a 64. To get the 44 meanline all you do, if you don't mind the effort, is to take all the height coordinates of the 64 and multiply them by the ratio of the desired camber divided by six. For example, at the 20% chord location, the 64 meanline height is a 4.50%. Multiplying 4.50 by 4/6 gives 3.00 as the height of the 44 meanline at the 20% chord location. If you really want to get into the design of things, the design lift coefficient, moment coefficient, and design angle of attack (lowest drag) are also found by multiplying the 64 values by the same ratio of 4/6. If you wanted to make a 74 meanlined section, you'd multiply the 64 values by 7/6.

The point is that the meanlines of the NACA four-digit sections can be raised or lowered by simple multiplication. It takes effort and patience, but it's no big technical problem. Worth noting here is that once you know what your meanline is going to be or is, this is what describes the lift characteristics of the airfoil.

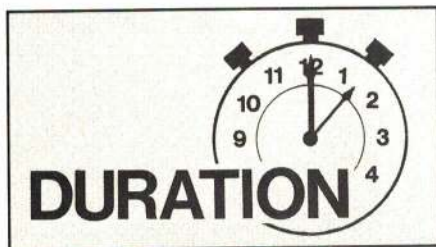
If you look at the meanline of the 6408 section in Fig. 2, it's simply a line. If you could build an airfoil of sheet metal and hold that shape, you could place it on any wing using an NACA 64 meanlined airfoil. You wouldn't have to change angle of attack, or anything. The airplane would just fly flatter in the glide, or faster if it were a powered ship. The catch in this, of course, is that you can't build a zero thickness airfoil (on outdoor ships anyway). The bather usually needs a bathing suit, right?

Our aerodynamic bathing suit is the symmetrical airfoil. It's used to keep spanwise

spars and struts covered, because they would really be drag-makers in the open breeze. To avoid interfering with the airfoil lift characteristics, the way the symmetrical section is put on is to numerically add the upper half to the meanline, then subtract the lower half from the meanline. For lift purposes, you've done nothing to the airfoil. But, you have increased the drag, as compared to that curved sheet metal meanline that would do the same job.

To illustrate quickly how this is actually done, let's take the NACA 6408 at the 20% chord location again. The meanline height was 4.5%. From the tables in this article, the 0008 airfoil has a height of 3.83 or 8.33%. The 6408 lower surface becomes 4.50 minus 3.83 or .67%. (Author's note: For modeling—such as under one foot in chord length—this method of constructing an airfoil is accurate

(Continued on page 130)



CARL MARONEY ON SOARING

LSF Tournament: Through reliable sources we've learned that Mark Smith of Escondido, Calif., has won this year's LSF Tournament title (see complete coverage on pg. 60 of this issue). Smith competed against some of the toughest sailplane pilots in the country and challenged them with his standard class design, Windfree.

I learned from Mark's father Rod Smith, during the S.O.A.R. Nats this summer, that Mark's models, namely the Windfree and Windward kits, are not to be misconstrued as beginners' kits. These machines are designed for the seasoned competition pilot. They require the expertise and experience of the seasoned pilot to get all the performance that is designed into the machine, providing you know what you're doing. By next month I will have more detailed information. (Both kits are good trainers, though, especially if trimmed slightly nose-heavy—php.)

Membership Renewal Time: The October issue of AAM featured an article about the newly formed National Soaring Society (NSS). If you haven't joined for the 1974 season under the reduced rate, why not get on board with a full year's membership for 1975? Dues are \$10.00 for individual, \$15.00 for family, \$20.00 for clubs, and \$5.00 for juniors. Membership includes 12 issues of the monthly journal, *Sailplane*, involvement in RC soaring policy-making by presenting your viewpoints, new ideas, up-to-date soaring info, meeting and making new friends and, last but not least, becoming part of a fraternity of serious soaring pilots. Drop a postcard with your name and address to the NSS Secretary, Clive Sadler, 46 Oakcrest Drive, Dover, Del. 19901, and receive the Special Edition of *Sailplane*.

1975 Circuit: The NSS is soliciting clubs interested in RC Soaring, to cosponsor a 1975 soaring meet under the NSS program. These

contests will be held on Saturdays or Sundays, and are great opportunities to compete and meet soaring enthusiasts from your locale. A meet information guide, outlining how to organize and run your meet, along with score forms, are supplied free to participating clubs. If you want additional information, contact the NSS secretary at the above address.

Heithecker Wins Dart Contest: Many competition fliers wish Otto Heithecker would change hobbies, because he seems to clobber them with tough competition, meet after meet. Adding another notch on his transmitter, Heithecker captured Open Class first place on



Otto Heithecker launches his Challenger at the DARTS contest. (Photo by Jim Mills)

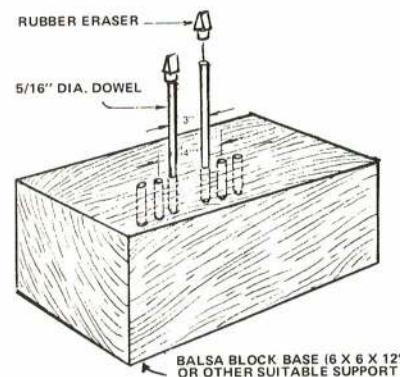
both days of the recent Dayton Area Thermal Soarers (DARTS) contest. Holding a commanding lead with a 4.0 record in the NSS point system, Otto is bound to become, for the third year in a row, the Grand Champion.

Hi Aspect: That's the name of a new quarterly newsletter that's published by the Harris Hill Lift Over Drag Soaring club, based in Elmira, N.Y., (the center of full-size sailplane activity in America). Under the editorship of James Gray, *Hi Aspect* is supported by a dynamic group of local soaring enthusiasts who have undertaken many experimental projects, and who hope to beat the world's distance record. This will surely be a group of soaring enthusiasts to watch for some new developments. I understand they are currently working on a thermal sniffer idea.

Windrifter: Rick Pearson, flying a new design, set an unprecedented winning record during a six-week period. Things began happening in July when Pearson won first place at the Soaring Union of Los Angeles (SULA) meet, then went on to the Pasadena Soaring Society meet to bag second place.

In August, it was a repeat at the SULA contest; fourth place was achieved in the Southern California Soaring Clubs (SC2) meet; and second place at the San Fernando Valley Silent Flyers meet. The best was yet to come as Windrifter, piloted by Pearson, entered the 1974 LSF Tournament. There he took first in Standard Class Precision, second in Standard Class Speed, third in Standard Class overall, and finally, sixth place position in the overall tournament standings. What more can I say? Windrifter is a standard class sailplane with a wingspan of 99.8 inches; wing area, 916 sq. inches; and a total lifting surface of 1,051 sq. inches. It all comes out to a surface loading of five oz./sq. foot. Excited? I'll bet you are; and the best part is that it's being kitted by Craft-Air, 5651 Kelvin Ave., Woodland Hills, Calif. 91364. The kit contains fully machined parts and cost \$37.95 which, if prepaid, brings the kit shipped via air postpaid.

CG Locator: Corning Glass patent attorney James Gray designed a simple balance jig which you can construct in your shop. Use your workbench or a base block as a support. Next, mount two 1/4" or 5/16" dia. dowel

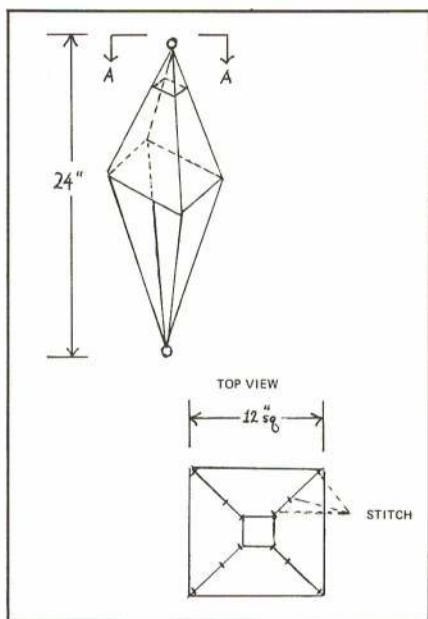


rods into the bench surface or block by drilling two holes approximately three inches apart. Now drill several sets of 5/16" dia. holes, three inches deep (these are to accommodate the various widths of fuselages) in a 6 x 6 x 12" balsa block. At the tip of each dowel, place a rubber eraser, preferably the wedge or chisel-shaped type. These may be obtained in most stationery or drug stores.

The linear tip portion should line up along a wing tip-to-wing tip line. For convenience set your jig to support the model at about eye level while it is sitting on the bench. Now the model may be placed on the rubber tips and will not slide, slip or skid. The tips are slightly flexible and cannot in any way scar the finish. A couple of adjustments and you're finished. Simple, eh?

Simple Chute (from Cas Pels, AAM's Midwest soaring correspondent): From Racine, Wisc., comes one way to pare down soaring costs (no pun intended). Here's how: Cut a 12" square template of Masonite. Now, replace the tip of your soldering gun with a 1/16" dia. wire. Then place the template on rayon or nylon and cut around perimeter with the red hot wire... the result, a frayless square.

Next, a three-inch square in the exact center of the cloth. Now prepare two lengths of plastic coated fish line approximately 48" long. These are the shrouds. Now we are ready to thread the two lines through a ring and secure in place midway (24") on the two lines. This leaves four shroud lines 24" long. Insert the ring end of the lines through the



square opening in the rayon approximately four inches. Stitch each shroud line as shown in Fig. 1. Gather the four loose ends, attach another ring, and secure firmly to the ends. Ah, so! A serviceable winch or hi-start chute that has been field-tested with gratifying results.

Hawk on the move: The Hobie Model Co., manufacturer of the Hobie Hawk sailplane, has moved to expanded facilities. Hawkophiles, note the new address: 2026 McGaw, Irvine, Calif. 92705.

New World Distance Record: Jerry Krainock, from North Hollywood, Calif., has just set a new World RC Sailplane Distance Record of 27 miles. Jerry flew a model of his own design, and the course was laid out in the desert. Jerry has written an invaluable article on going after world records, which will appear in a future issue of AAM.

BOB MEUSER ON FF

FREE-FLIGHT TEAM-SELECTION FINALS FOR THE 1975 WORLD CHAMPIONSHIPS

After a series of qualification and semi-final meets, 98 of the country's finest free fliers converged on Taft, Calif., for the grueling, three-day Finals. After seven flights in each event, the responsibility for representing the U.S. at the 1975 World Free Flight Championships, in Bulgaria, rested with the following teams:

Power: Frank Wolff, Richard Lyons, David Rounsaville.

Rubber Power (Wakefield): Robert White, Jon Davis, Willard Smitz.

Towline Glider (Nordic A/2): James Walters, Robert Isaacson, David Chancey.

Team Manager: Bill Bogart.

The weather and terrain were the best of any Finals in many years. The wind was almost zero during the first two 1½-hour rounds, increasing to an average of 4-6 mph in the afternoon, with peaks seldom exceeding 10 mph. The temperature was around 70°F at the 6:30 a.m. starting gun, peaking at 95-99°



The 1975 U.S. Free Flight Team (clockwise): Willard Smitz (Wakefield), Jim Walters (Nordic), Bob Isaacson (Nordic), Don Chancey (Nordic), Jon Davis (Wakefield), Frank Wolff (Power), Bob White (Wakefield), Bill Bogart (Manager), Dick Lyons (Power), Dave Rounsaville (Power).

in mid-afternoon, with the relative humidity a dry 20%.

The launch area was clear of brush, and flat. The downwind landing area consisted of rolling dunes pocked with sturdy desert flora. Thermals were seldom strong; the strongest occurred during the Towline Glider event on the last of the three days, when several gliders were sucked up over 1500 feet within their three-min. max.

In the Power event, for which the performance potential is the greatest of the three events, 31 of the 33 contestants made their required three-min. maxes in the first round, in the still, dawn air. From then on, performance depended more upon finding thermals—or avoiding the downdrafts between thermals—than upon pure performance, and a third of the contestants missed their maxes in each round.

All models were driven by Rossi R-15 engines—probably the hottest two-stroke engine ever developed—and all employed clockwork-timer-operated tail surfaces to aid their transition from a screaming, near-vertical climb, to a circling, floating, glide. Most models were of the "pylon" configuration, with minor differences in the shapes of the various parts: differences which were more aesthetic than functional. Notable exceptions were Doug Joyce's pusher canards, and Bill Gieskieng's models sporting wing flaps.

When the seven rounds were over, four had perfect scores, and 12 had missed perfection by one flight. Of the latter, John Warren, top man at the California semi-finals, came closest to making seven straight maxes, and a possible spot on the team. In the sixth round, John went up in what seemed like "good air," followed immediately by a half dozen others. None maxed, with John missing it by a scant three sec.

Of the four with seven straight maxes, one had to be eliminated by a flyoff. Lots were drawn to determine the order of flying, then the contestants were lined and sent off in succession, each being allowed two min. to get airborne. The laws of chance and nature shined only dimly on George Versaw, and he missed his bid for a team spot.

In the Wakefield rubber power event, Walt Ghio, who was first in line for Round One,



Ed Carroll puts up a flight with his FAI power model in the buoyant pre-dawn air.

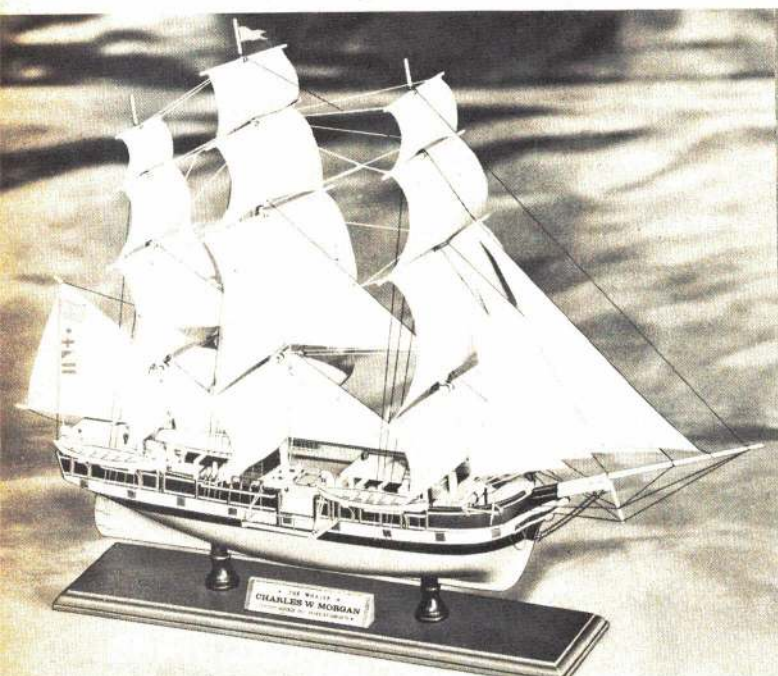
weighed in and wound his motor as quickly as he could, ran out to the starting area, and launched, a scant seven min. after the start. Most of those who launched early maxed, but within the first half hour the "good air" had deteriorated, making thermal hunting a necessity; by 7 a.m., five already had failed to max. Of those who chose to fly toward the end of the round, Struck, Rivers, Smitz, and Xenakis fared better. In Round Two, Xenakis wound his motor and held it for a full 40 min. before launching...he maxed.

Round Five saw a shift in the wind from the east to the south, and the fewest maxes of any round in either Power or Wakefield up till then. Xenakis made his first miss, landing

(Continued on page 89)



Two new exciting ship model kits with carved wood hulls, cast metal fittings and cloth sails.



CHARLES W. MORGAN

HISTORIC WHALER

Built in 1841, the Morgan was typical of the New England whalers upon which Melville based his classic, "Moby Dick". Hunting the seas for often 4 years at a time, the Charles Morgan returned more than \$2,000,000.00 in whale oil to her owners. The original ship is now permanently displayed at Mystic Seaport, Connecticut.

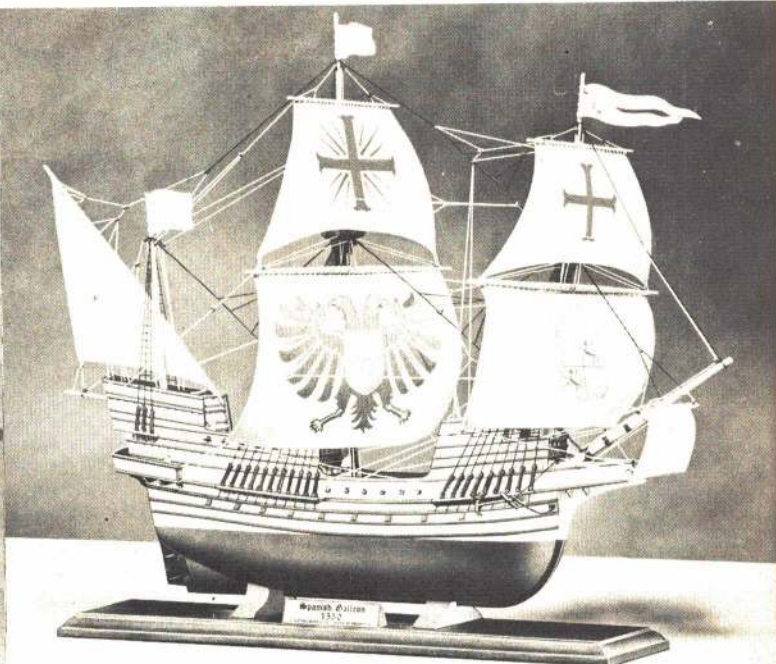
With traditional Scientific care to details, this kit contains only the highest quality components including:

- Carved wood hull
- Cast metal fittings
- Tapered hardwood masts and yards
- Pre-ruled basswood decking
- Furniture quality wood display stand
- Mounting pedestals and screws
- Glacé finish rigging cord
- Handsome metal name plate
- Antique finish cloth sails
- Complete, step-by-step drawings and instructions

KIT 183,

\$24.95 Length 17½"
Height 12½"

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This authentic, museum quality replica kit contains only the finest materials including:

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- Pre-ruled basswood decking
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- Tapered hardwood masts and yards
- Exclusive glacé finish-cotton rigging cord
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KIT 184,

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Hardy Brodersen shows how he launches his distinctive Saltpeanuts power model.

short of a max by a scant three sec. But, it was that three sec. that made a fly-off unnecessary, as only three remained with perfect scores by the end of the round.

By then, rubber motors were hardening up and bursting with great regularity. Jon Davis broke three in preparing for one flight, and was using borrowed motors. Round Six saw the greatest number of maxes, and no change in the positions of those in contention for team positions.

The final round showed a typical mass launching into a big thermal, with Smitz, White and five others in the air at once. They all made maxes, and Xenakis maxed too. Jon Davis' model had stalled and crashed on his first attempt early in the round, but the flight lasted less than 20 sec.—so he was allowed, by the rules, to repeat the attempt.

Jon's second attempt was the crucial flight of the meet, for if he maxed he would be on the team; if he missed, Xenakis would be on the team, instead. Jon's self-appointed helpers used every thermal detector known to man, including a bubble machine, cattail seeds, and a "goat"—a model launched upwind of Jon's position. He maxed easily. He quite probably could have done so without all that help, but he was denied the opportunity to prove it.

The first few minutes of the Towline Glider event made it clear there would be no fly-off. Marty Thompson was first off. He towed and released smoothly, and was down 25 sec. short of a max. A group that followed him fared no better. Isaacson towed upwind of the rest of the group, launched from high ground, and maxed. Mateer went up early and kept his model up on the towline for a full 40 min., using the Russian circle-tow technique, but he never found lift. Many waited for better conditions, which never came.

Toward the end of the round, Chancey towed to the side of the rest of the pack, circled a few times before launching, and maxed. Only two maxes in the first round of a Nordic glider meet at Taft must be some sort of a record.

Paul Crowley, a member of the 1973 team, and a recipient of an NFFS Model-Of-The-Year Award for his outstanding, solid-wing Happy Hooker design, would have re-



Wallace Johnson's flag-motif power model.



Rode Anderson anchors for the youngest contestant of the meeting, Peter Lewis.

ceived the Hard Luck Award if there had been one. Paul cracked a bone in his foot earlier in the year, as a result of a spill taken while towing a glider, and was in a cast for awhile. Then he lost his best glider in a practice flight before the finals. Despite a limp, he managed to keep his glider on the line for half an hour in Round Two.

In Round Six, his foot wore out after he had been towing for some time, so he brought his model to the ground with the line attached. But only one aborted attempt is permitted, so the next one had to be good. After a short rest, he towed up again, and *again* towed his model into the ground. Paul hadn't noticed that the towline had fouled in such a way as to prevent it from releasing as a result

(Continued on page 130)

WALT MOONEY ON FF

(This month's guest columnist is Dave Stott, one of the originators, along with Bob Thompson, of Peanut Scale. Both fliers are members of the Flying Aces Club.)

What is a scale model? A faithful reproduction in miniature of the full-size airplane is a pretty adequate definition that will arouse no violent response. But what is a flying scale model? The turbulence that query can cause!

Well, this writer is not going to fly into that flak, but he is going to describe the viewpoint one group of rubber scale modelers holds.

The group is the Flying Aces Club of Connecticut. Since 1967, they have been using a set of rules at their meets that are rather unusual and which certainly bring a wide variety of model types into competition that otherwise might not even have been built.

These clubsters felt that the long line of high-wing cabin types monopolizing the winner's circle had become monotonous. (We all know those high-wing jobs really go with a minimum of effort.) They also felt that coloring, marking, and static details went further in producing interesting scale appearance in a flying model than scale proportions ever could.

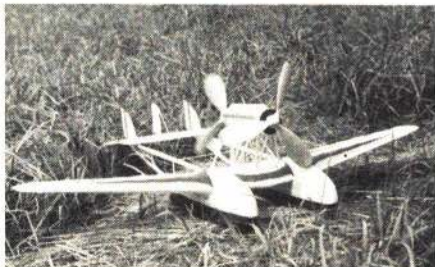
Another thing that disturbed this gang was that the ROG requirement in the outdoor rubber scale rules seemed to cause more crashes on hard runways than to inspire competition. What about those short-legged Aeronca C-3s, Heath Parasols, and neat seaplanes like the Supermarine S-6B? Shouldn't these cloud cuddlers be allowed a pass at some of the gleaming hardware awarded to winners? You bet! And that is why all models are hand launched over grass under rules which the Flying Aces Clubsters call "Handicap, Representative Rubber Powered Flying Scale Rules."

We won't go into detail, but will hit the high points to give a bit of the picture as to what these rules do. First off, there is no requirement that any model entered must be endorsed by a three-view. If it looks like a Humbley-Pudge Horsley, it is a Humbley-Pudge Horsley!

Coloring and marking are accentuated.



Biplanes like the Avia shown here would earn 10 bonus points as an equalizer.



Bob Jespersen's bead chain drive Savoia-Marchetti S-55 has its motor in the wing. Plenty of bonus points under the FAC rules.



Pres Bruning's Wight Quad got 20 points to make up for all the drag and effort.

You must admit, a Fokker DVII with a bit more dihedral and fin area, but with lozenge camouflage, bristling Spandaus, and a dummy Mercedes sure looks more like the real thing than would an exactly proportioned, all red one which was rather devoid of details. And the detailed craft might outperform the stark one.

As far as the added dihedral and tail area go, there is no penalty for this "poetic license" as long as it is not carried to the point where it will destroy the appearance of the model.

There is a bonus system for the more difficult to trim and fly models. For instance, a low wing monoplane receives a 15-point bonus on its flight score. A P-38 gets five points for being a shoulder-wing, and 25 more for being multi-driven by two props outboard of the center line.

Workmanship points have been kept on the low side to encourage modelers who might think their building capabilities are not good enough for scale to give it a try.

Much to the agony of some scale purists, the FAC rules even permit a modeler to enter a jet bomber or transport with a prop in a non-scale position on the nose or tail! "Why not," they ask? "Most conventional scale jobs require a prop many times the scale proportion anyhow!"

A setup for aerial freaks? Not at all. The winners of past meets have included a good share of the ever-faithful high-wing monoplanes, as well as a goodly batch of low wings,

(Continued on page 130)



JOHN BURKAM ON HELICOPTERS

WORKS Helicopter Event: Out in Dayton, Ohio, the annual Wright Brothers Memorial contest was won by three Sharks and a Polecat. Pilots were, in order, Bob Bently, Dave Gray, Ron Wiensch and Dave Keats. Each helicopter was timed from first takeoff to final landing, after performing four simple maneuvers with a landing between each. The maneuvers were Figure 8, 100 ft. square, fly to a point 200 ft. away and return, and fly around the entire course. During the contest, the wind steadily increased. Dave Keats, last man, flew in about a 25-knot wind and had to point the helicopter's nose down about 45° to make any headway.

212 MOD: It is reported that Graupner Bell



Mike Bosch, Kavan's test pilot, drops an Eldon glider from his Jet Ranger.



Thomas Herr tweaks the needle of his Superbird.

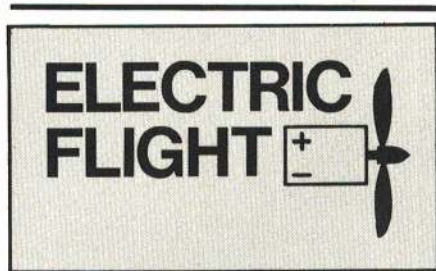
Robert McCann's mods to an AAM Superbird capture the looks of the Hughes 300.



212s are chopping off their own tailbooms on tail-first landings. The company solution (modification kit available) is to raise the rotor several inches higher above the fuselage. Perhaps a more elegant solution is similar to that used on the Bell 47 helicopters, called dynamic flapping stops.

Inside the gimbal on the rotor are two cables, each in series with a spring. These cables run from points on opposite sides of the shaft to points on the hub about 45° behind the feathering axis of the nearest blade. Thus, when the rotor teeters beyond a certain angle, a cable tightens up and pulls down on the hub at a point which tends to *increase* the pitch of the high blade. This puts a moment into the stabilizer bar and raises the side ahead of the high blade.

(Continued on page 130)



MITCH POLING ON ELECTRIC FLIGHT

(This month's guest columnist is Henry Pasquet. Mr. Pasquet has been one of the pioneers in electric RC, and has worked closely with Astro Flight in testing and evaluating their units.)

Protect Your Motor: One of the nicest features of electric power, instant starting, can also create a problem. If the motor is accidentally turned on with the prop stalled, the motor can burn out in just a few seconds. This would also be true if the airplane crashed just after takeoff. The solution is an in-line fuse holder from Radio Shack (Cat. No. 270-1281) which costs \$.95. It weighs less than an ounce and can hold any size fuse. It is best to place it between the + side of the battery and the switch, since it will safeguard the motor if it is stalled, and will safeguard the battery if the wrong charge voltage is applied. Use 10-15 amp fuses with 550 mah batteries and 15-20 amp fuses with 1 Ah batteries.

Astro-25 Super: The Astro-25 performs best with a Top Flite 9 x 7 wood prop, which turns 8500 rpm at 14 amps on 19.2V. This rpm is a little low for optimum performance. Add four additional 1-Ah NiCads for a total of 10 (24V), and the motor will really come alive. The same charging procedures are used, with an additional 6V added, for charging a total of 30V. The Astro-25 will then turn an 8 x 6 Top Flite prop at 11,500 rpm at 14 amps, or an 8 x 4 Cox prop at 13,200 rpm at 9.5 amps. The 8 x 4 Cox with 550 mah NiCads is an excellent combination, yielding higher performance with less weight than the stock Astro-25, but with slightly reduced running time.

Modified Electra Fli: The Electra Fli, which was designed for the Astro-10, flies beautifully with the Astro-Pup. Wrap two strips of wing saddle tape around the motor and it will fit nicely into the motor tube. The radio

should be mounted as far forward as possible to compensate for the lighter motor. The wing can be left at 45°, or shortened by one or two ribs on each panel. It is a floater with the 45° wing, and very sporty with the wing shortened.

Motor installation and Kit Modification: Most balsa and some foam kits designed for gas engines are easily modified for electric flight. Electric motors can be mounted inside hollowed-out balsa blocks, bolted on, strapped on, glued in with clear silicone seal, or whatever way is most convenient. However, be *sure* that adequate ventilation is provided for motors such as the Astro-10 and 25. Air must flow through the motor to an exhaust hole for cooling the armature and brushes.

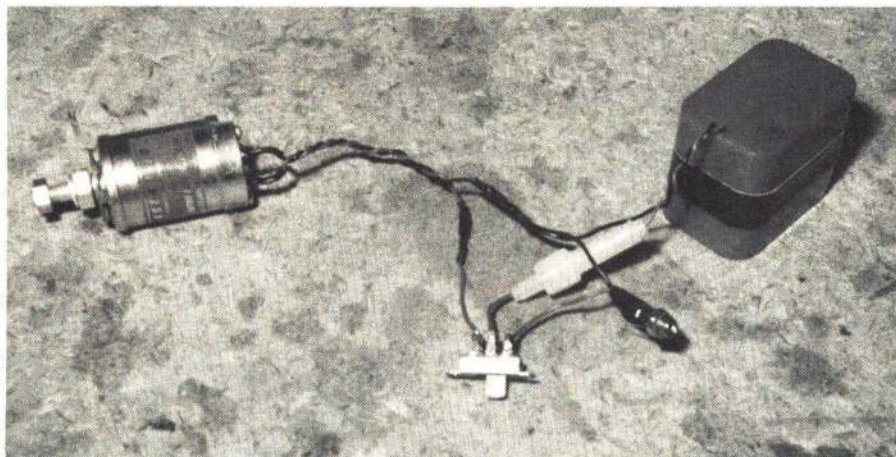
The battery is the most critical and often the most neglected portion of the installation. The battery compartment should be fairly well sealed with the inlet and exhaust vents forcing air through the battery packs around each cell. Use your own imagination in building the air scoops (the air scoops used on the Fournier RF-4 are available from Astro Flight for a nominal cost). If the airplane is flown more than two or three flights with no cooling time in between, the batteries will be damaged.

Astro-15 and Fournier RF-4: The Astro-15 will be on the market by the time you read this. It uses the same basic case as the Astro-10, but has a slightly longer armature and uses 19.2V (16 cells) with 550 mah NiCads. The system weight is 26 oz. It is designed to use the same size props as the Astro-10, but turns them 1000 rpm faster. The prototype is turn-

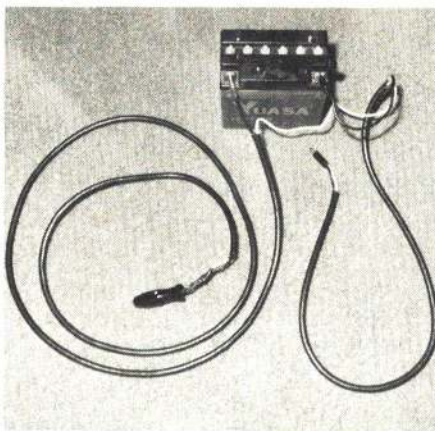
ing an 8 x 4 Cox gray prop at 12,000 rpm (10 amps) and a 7 x 3½ Cox at 14,000 (7.5 amps).

I have been flying it in a Fournier RF-4 and am impressed with its performance. Average flight time is 10-15 minutes, with the longest duration of 18 minutes. It gets more than twice as much altitude as a hi-start will give, and lift can be located during the climb-out. When lift is found, the motor is turned off by a third servo, saving the batteries until needed again. It is a good after-work airplane, since it can be flown in a nearby schoolyard without the time and effort of setting up a hi-start. It combines the fun of sailplanes with the convenience of power.

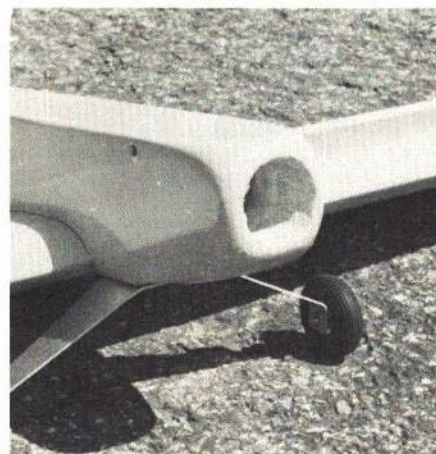
Charging Shortcuts: Most people drive to flying fields, even when they are nearby. Your car has the best 12V DC power source for charging you could ask for. Astro Flight makes a simple charge cord that plugs into the cigarette lighter for \$5.95. The deluxe version, the rapid charger, also includes an ammeter and timer/cutoff. These items can also be used to charge other systems by cutting one wire and installing alligator clips on each end. The clips can be connected to each other for 12V, or connected to a 6, 12, 18, 24V source to give a charging voltage of 18, 24, 30, 36V. For example, the Astro-15 will require a 24V charge source. A 12V motorcycle battery (the battery for your electric starter will do) connected in series with the car will provide a cheap, convenient charger for this system. An alternate method is to cut the cigarette lighter adapter off and replace it with alligator clips.



An Astro-10 with an in-line fuse holder and charging jack spliced into the power lines.



Modified Astro Flight charge cord connected to a 12V motorcycle battery for charging the Astro-15 and Astro-25 units.



The author's Toad has a hollowed-out nose block to accommodate an Astro-25.

SAILFISH

One of the prettiest Sailboats you ever saw either Free Sailing, or R/C. Construction is simplicity itself. Die Cut Frame, features Plywood for strength and long life. Printed-planked Deck is Die Cut and ready to slip into rub rail, molded into Sleek Plastic Hull. Kit is unusually complete with Die Cut Mahogany Cabin, Brass Chain, Many Cast Metal Fittings, CLOTH SAILS, Rigging cordage, Mast & Boom Material stamped Rudder and Keel with INTEGRAL LEAD BALLAST, Step by Step Plans show simple assembly. Base shown not included.

HEIGHT 32½"
LENGTH 24"
BEAM 5"



Kit B23

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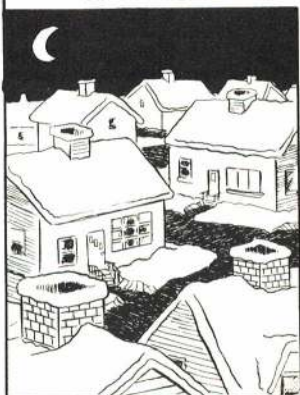
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'ACE'

BY DAVID ILLSLEY



What's a

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If you are a Sport Flier or a newcomer to R/C then this is your ship. It's a good looking plane that builds easy — goes together fast — plenty roomy for any equipment — rugged for hard use — flies comfortably . . . and is just the right size for a .60.

... AND ABOUT THE KIT ITSELF . . . Fuselage sides are one piece with ply doublers back past the wing. Only a few bulkheads and a shaped top make for almost "instant fuselage." Torsion main gear & sprung nose gear (or fly it as a tail dragger). Aluminum

engine mounts, etc.

The complete wing is built on the work bench without having to remove it which eliminates warps — All parts are die cut, carved, etc. Balsa sheet cover keeps warps out and makes for a tough wing . . . Tapered Strip Ailerons are simple to install. Wing is installed just like the low wing jobs, using dowel pins and nylon-screw in maple nut-block, like it ought to be. No rubber bands to deteriorate or slip or tear up.

Elevator and Rudder are sheet. Stab & Fin is built up and sheet covered to keep it flat . . . so that's it, a fine kit of a fine ship.



\$49.95

PAUL HARVEY VIEWS

(Continued from page 18)

informality of a smaller town, but for a hobby flier it does have drawbacks.

In Breckenridge, the nearest hobby shop is 60 miles away. "I buy two of most things and 12 of some things," Bob says.

And in Breckenridge there is no one with whom to share his interest— yet he continues to fly—perhaps more than do you and I. Why?

"I can't answer that question beyond saying I love it. I'm not a good pilot. Even flying three and four days a week, the aging reflexes would classify me as nothing more than a 'Sunday flier'."

"Besides," says Bob, "one of the disadvantages of flying alone is that there's no one around to make your sloppy roll look sloppy."

And with no one to learn from, "flying continues to be a trial-and-error proposition, with most mistakes costing a hundred bucks or more."

"Sometimes," says Bob, "I'll drive a hundred miles to fly for a few hours with an old friend."

At the moment the Lone Eagle is spending most of his time with an old Taurus and a new sailplane. Of the soarer he says, "It's slower, more relaxed— and maybe my interest harkens back to that boyhood fascination with free flight. I really enjoy watching that graceful bird sitting up there, floating on a thermal, knowing I can summon it back to roost at my feet."

Also, west Texas winds are friendlier to sailplanes.

There are other compensations for the small town's inconveniences. For example, the easy accessibility to flying sites.

Often the local airport will grant permission to use their parking apron or taxiways, or the school its playground. And in west Texas there is always level pastureland within minutes of home.

Of course, a loner misses the fellowship and the shared building and the competition and the small talk and the big talk and the somebody to whom you can say, "Remember when..."

But Bob has a ham radio rig with which he has located other fliers who are hams...

(Aren't we all?)

"And we get together on short wave and talk flying for hours at a time."

MULTIWING CHAMPS

(Continued from page 8)

Roger Schlenker (Des Moines, Iowa).

Why do some of us get off our "patios" and put on meets, fun-flies, contests, and even Multiwing Things? I guess that it's just because we like RC stuff that goes through the air and the people who put it there. It's fun mixing them thoroughly and cooking up an organized activity that makes an enjoyable hobby/sport even more so. Enough philosophizing. On to the subject at hand.

The dust has settled. The last roll has been snapped, the last pylon turned. The Second Annual National Multiwing R/C Championships is now history. I don't know if we proved very much, except that contests can still be fun to fly—and even to watch. We tried to offer a competition format that was appealing not only to the current crop of contest fliers, but to the majority of the fraternity—the sport fliers.

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68" Super Fledgling for 60's

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One new event was introduced this year which, though hardly what I would call a competition purist's delight, met with great acceptance. This was the High Noon Barnstorming event. A trophy was awarded each day to the Norman Cassella came all the way from New Jersey to fly his Pulsaire bipe.



"Show-off" who most impressed a panel of three persons selected at random from contestants and spectators.

No entry fee was charged. The first 10 contestants to sign up each day were allowed five minutes each, during lunch breaks, to dazzle the onlookers with whatever spectacular and death-defying stunts they could come up with.

We may expand on this event next year. It appears that one of the most appealing facets of the Omaha Multiwing Thing is that this is *one* event which allows the participant to pretty much do his "own thing," and do it under a minimum of competitive pressure.

Not only were the comments about the National Multiwing Championships unanimously in accord that it was the greatest thing since the N.S.P.A., but the number and variety of aircraft were a significant declaration that Omaha had again defended its title as the Bipe Capital of the World. Fliers walked away fulfilled, and spectators left content. As the sponsoring clubs policed the area in the warm evening air of the final day, I felt true sense of accomplishment. . .we had done the right thing.

CZECH MATE

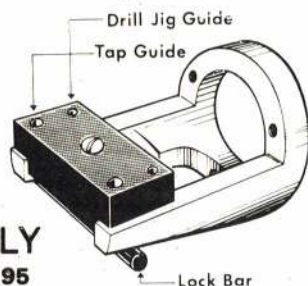
(Continued from page 51)

old models are flying to the same standards as they have in previous years. Even the judges were "old faithfuls," and perhaps this all adds to the stagnation of the event. This, of course, is not to detract from the superb performance put in by the best fliers, but it does appear that Aerobatics could do with a little enlivening. After all, the winning model was based on a 1952 design!

The Americans were expected to field a strong team and they certainly did! Bob Gieseke has been so close to winning this event for so long that he deserved to win—and win he did! None was happier than Bob, who later ceremoniously broke his pipe and buried it in the soil of the stunt circle! He used his usual modified Nobler, this one being based around a 1968 wing, but with new fuselage and tail, plus an immaculate metallic red color scheme. Current World Champion Bill Werwage used his Helsinki model, U.S.A. 1, to place second; and Gene Schaffer placed a very creditable sixth in his first World

(Continued on page 97)

Have you tried our Motor Mount Drill Jig? Mr. Bruce Merrill did, here's what he says about it.



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I just had to let you know how impressed I am with your new motor mount jig. I just completed using it to mount my O.S. 60 Goldhead and it really works great!! I used it on a Kraft mount and for once the holes were straight and true. I've been known to mess up a few of these mounts and from now on, your jig will really pay for itself. I also own a new Ross 61 and hope you will consider making a jig for this engine.

Thank you for making a really useful product for us modelers who are not too accurate with the old drill. It's a pleasure to see a company turn out good quality products and I hope you keep it up. Thanks again.

Sincerely yours,
Bruce B. Merrill
Palatine, Ill. 60067



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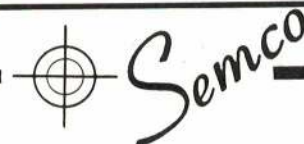
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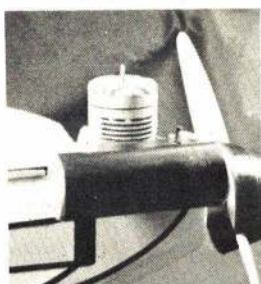
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The Super Expansion Features a downward exhaust to help keep your airplane clean. Use standard Semco adaptors. The ultimate in silencing with a minimum power loss. Available in the following sizes.

| Stock No. | Engine Size |
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| 201ES | Small .15 thru .25 |
| 202ES | Medium .29 thru .40 |
| 203ES | Large .45 thru .80 |

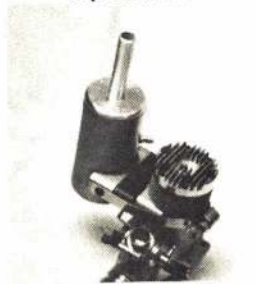
Boat & Scale Side Exhaust



The perfect set up for boat car or scale airplane uses standard Semco adaptors. Features side exhaust and pressure fittings. Available in the following sizes:

| Stock No. | Engine size |
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| 201BCS | Small .15 thru .25 |
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| 203BCS | Large .45 thru .80 |

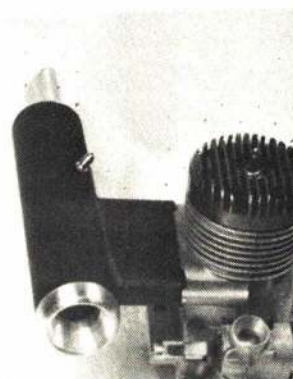
Boat & Scale Top Exhaust



The perfect set up for boat car or scale airplane uses standard Semco adaptors. Features top exhaust and pressure fittings. Available in the following sizes:

| Stock No. | Engine Size |
|-----------|---------------------|
| 201BCT | Small .15 thru .25 |
| 202BCT | Medium .29 thru .40 |
| 203BCT | Large .45 thru .80 |

Bolt On Mufflers



These new mufflers have the same design and construction as our Super Muffler except they bolt directly to the engine. Available for the following engines:

| Stock No. | Engine Size | Stock No. | Engine Size |
|-----------|-------------|-----------|------------------|
| 203SW | Webra 61 | 203ST 51 | S.T. 56-60 (new) |
| 203SG | S.T. G60 | 202SW | Webra 40 |
| 203SR | Ross 60 | 203SF | Fox 60 (new) |
| 203V | Veco 61 S72 | 203SM | Merco 61 |
| 203ST 46 | S.T. 46 | 201ST23 | S.T. 23 |

6" Long Drills

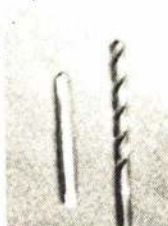
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| SD6E | 3/16" Drill 6" long |
| SD6F | 7/32" Drill 6" long |
| SD6G | 1/4" Drill 6" long |

Tap & Drill Sets



Each set consists of a tap and correct size drill. Made of highest quality tool steel. Available in 8 popular sizes.

| TD | Thread | Price |
|---------|--------------|--------|
| TD2-56 | 2-56 Thread | \$2.49 |
| TD3-48 | 3-48 Thread | 2.49 |
| TD4-40 | 4-40 Thread | 2.49 |
| TD5-40 | 5-40 Thread | 2.49 |
| TD6-32 | 6-32 Thread | 2.49 |
| TD8-32 | 8-32 Thread | 2.98 |
| TD10-32 | 10-32 Thread | 2.98 |
| TD4-20 | 4-20 Thread | 2.98 |

Semco Model Engineering Co. Inc. 14 Water St. Waltham, MA 02154

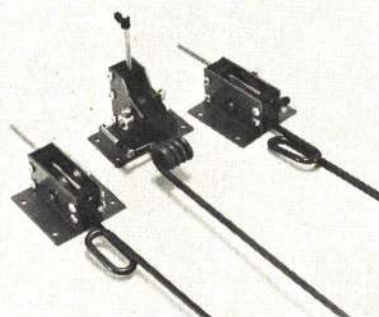
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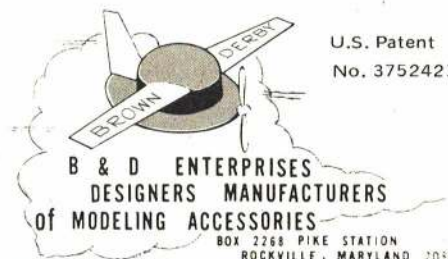
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The roto lock is now made of glass filled nylon for extra strength. The struts are of heat treated music wire.

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Installation is easy — conventional flanged mounting with non-critical linkage requirements and small size.



U.S. Patent
No. 3752421

BOX 2268 PIKE STATION
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(Continued from page 95)

Champs event with his equally immaculate (22 coats of finish!) 58 oz. design.

This performance also brought America the team prize by a very good margin. Not only was this team's flying performance excellent, but so was the standard of finish and preparation of the models. In short, they even looked like winners without actually flying!

With the fly-off system used (the top 16 from the first two rounds flew two more rounds to decide the result—with both of these fly-off rounds counting), one could not afford a mistake. Unfortunately, two fliers did err, one being Czech Josef Gabris, an ex-World Champ and always among the leaders, who suffered a seized engine after the reverse wing over; while Italy's Rossi clipped the ground to spoil his chances. Japan fielded a full Stunt team for the first

(Continued on page 98)

FINAL RESULTS

SPEED

| Order | Country | Name | 1 | 2 | 3 | Max speed |
|-------|---------|----------|-----|-----|-----|-----------|
| (1) | Italy | Ricci | 274 | 279 | - | 279 |
| (2) | Italy | Dusi | 266 | 279 | - | 279 |
| (3) | USA | Schuette | 253 | 206 | 266 | 266 |
| (4) | BRD | Frohlich | 230 | 230 | 266 | 266 |
| (5) | USA | Spahr | 235 | 257 | 260 | 260 |

AEROBATICS

| Order | Country | Name | 1st Fl. | 2nd Fl. | 3rd Fl. | 4th Fl. | Score |
|-------|---------|------------|---------|---------|---------|---------|-------|
| (1) | USA | Gieseke | 2727 | 2631 | 2647 | 2726 | 5373 |
| (2) | USA | Werwage W. | 2595 | 2575 | 2645 | 2632 | 5277 |
| (3) | CSSR | Jurecka B. | 2245 | 2514 | 2570 | 2641 | 5211 |
| (4) | France | Billon G. | 2562 | 2529 | 2642 | 2536 | 5178 |
| (5) | USSR | Jeskin V. | 2544 | 2504 | 2624 | 2540 | 5164 |

TEAM RACE

| Order | Country | Name | 1. | Results | 2. | 3. | Final |
|-------|---------|------------|--------|---------|--------|--------|-------|
| (1) | USSR | Onufrienko | | | | | |
| | | Sapovalov | 4:17.2 | Disq. | 4:08.5 | 8:26.1 | |
| (2) | Austria | Bugl | | | | | |
| | | Straniak | Disq. | 4:09 | 4:05.5 | 8:42.5 | |
| (3) | Italy | Fontana | | | | | |
| | | Amodio | 4:29.6 | 4:07.3 | 4:12.5 | 8:44 | |
| (4) | England | Heaton | | | | | |
| | | Ross | 4:15.6 | 4:04.5 | Disq. | | |
| (5) | Finland | Nore | | | | | |
| | | Ekholm | 4:19.7 | 4:08 | 4:31.8 | | |

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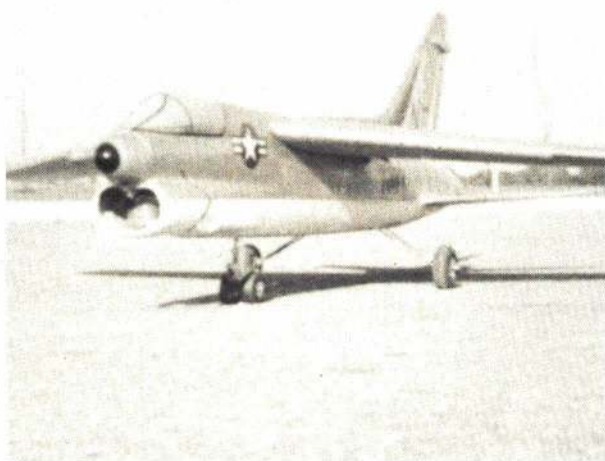
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TEAM RESULTS

| Order | Country | Time |
|-------|---------|---------|
| (1) | USSR | 12:48.3 |
| (2) | Austria | 12:51.5 |
| (3) | England | 13:20.6 |

TEAM AEROBATICS

| Order | Country | Points |
|-------|---------|--------|
| (1) | USA | 15,889 |
| (2) | CSSR | 15,521 |
| (3) | USSR | 15,258 |

SPEED

| Order | Country | Speed | Scoring |
|-------|-------------|-------------|---------|
| (1) | Italy | 279 257 255 | 791 |
| (2) | Switzerland | 260 251 241 | 752 |
| (3) | BRD | 236 266 233 | 735 |

(Continued from page 97)

time, and they could well prove a real challenge soon. T. Fujita flew very well with an Enya 45-powered semi-scale Kawasaki Tony design, to place 12th overall. The model was really impressive, with its slow engine run and smooth maneuvers. The Japanese surprised the world in RC aerobatics, so who knows. . .

In general, the trend is still toward large models, powered by 45-49 motors (the SuperTigre 46 being especially popular), with many using silencer-pressure to obtain even runs from the fuel tanks. Often, it seems, greater emphasis is given to smoothness of maneuvers than to accuracy (How many square corners were really square?), and the judges certainly preferred to see a relatively small pattern.

SUMMING UP

Thus, while the U.S.A. did very well in FAI Aerobatics, bad luck caught up with the Speed Team. The American Racing Team could use some practice—the message being that more contests are needed to keep these guys "peaked."

The '74 World CL Championships were an exceptional contest, held at one of the finest facilities ever constructed. While we misplayed many pawns at Hradec Kralove, perhaps two years hence we can have our Czech Mate in world competition.

(*According to Dr. Laird Jackson, who supplied some of the photos of Bob, Gieseke has smoked a pipe for years, and uses the puffs of smoke to tell wind direction while flying. His habit was getting worse and his wife, Anna Mae, was nagging, so he promised to quit if he won. This explains Bob's strange ritual after the contest.)

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EDSON Socket Head Hardened Bolt Set

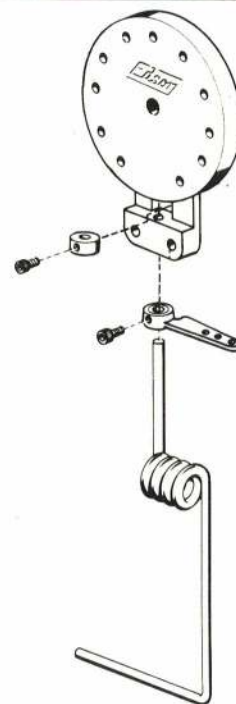
EDSON recommends our
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Package includes four bolts, four serrated washers and four lock nuts, and one Allen wrench. Available in two sizes; Edson Series HD-5 (5-40x1" lg.) or HD-6 (6-32x1" lg.)

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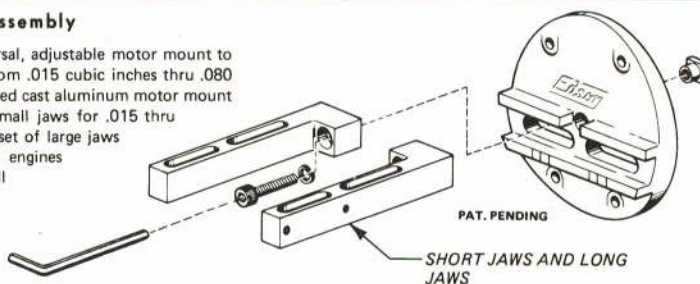
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0744/PHONY FOLKERTS—FAI Pylon Racer. This speedster resembles its 1937 prototype from only a great distance, but its looks are more in line with contemporary styles. Plans include four landing gear configurations, including fully enclosed retracts. Foam wing cores and fiberglass fuselage commercially available. **\$5.50**

0743/PHONY FOLKERTS RETRACTS—Plans show complete details for installing fully enclosed retracts on not only an FAI racer, but on any model. All details profusely illustrated. Setup requires 180° retract servo. **\$2.00**

BOTH FOR \$6.95

OUR BEST TRAINER

0942/AEROSPORT—RC Trainer and Fun Flyer. Ruggedly constructed, large (62" span) and easy to fly, this model makes an excellent first or second ship. Semi-symmetrical wing keeps zooming and stalling tendencies to a minimum, while allowing basic aerobatics. Forty five to 60 engine and four-function radio. **\$5.25**

THIS MONTH'S PLANS



0941/LEPERE L.U.S.A.C.-11—Scale WWI biplane. Large size (1580" sq. wing area), exact scale model can be built with military or civilian trimming. Fully enclosed engine (60-71 size) in a uniquely molded metal cowling. Model corresponds to a full length AAM article on the full-size plane. Four-function radio. Two large plan sheets. **\$10.00**

0843/SAAB—Stand-Off Scale. This WWII Swedish fighter is a pusher, with twin tail booms. Of all balsa construction, the plane can be built in two sizes, for either a 35 or 45 engine. A good choice for getting started in Stand-Off Scale. Four-function equipment. Two plan sheets. **\$4.95**

0712/BONANZA/DEBONAIR—Build either V-tail or conventional version of this popular, fast, light plane for full-house radio and a strong 60. Fine-flying ship, foam wing construction. **\$5.00**

0242/PAZMANY PL-I—A great scale subject from Nick Ziroll. Formerly a military trainer, it features all-moving stab and all-balsa construction. Uses 45 engines. Two plan sheets. **\$6.00**

OUR BEST HELICOPTER

0825/S.S.P. RC HELICOPTER—Gene Rock's very successful large trainer helicopter needs only 40 size engine. Designed for home builder with minimum machined parts, gyro-stabilized tail rotor, all belt drive, four-channel radios. **\$6.00**. Also recommended is Plan No. 0826 with full-size drawings for all special machined parts. **\$2.00**

BOTH PLANS—\$6.95

PATTERN

0842/PACER—049-powered Pattern ship. Capable of good pattern performance, this design, by Owen Kampen, uses Ace foam wings. The Pacer has enough maneuverability to qualify as a small field ship for even the most discriminating flier. This sleek low-winger has all the good looks of a pattern design, too. Two-function radios. Tee Dee 049-051 engines. **\$2.50**

1142/LEW'S AKROMASTER—CL and RC Stunt and Sport. Designed by top CL competition flier Lew McFarland, this design can be flown either CL or RC. Built with either a foam or balsa wing, it can be made as a one-piece plane or with removable wing. Lots of personal creativity. Forty engine, and four-function radio for RC version. **\$4.00**

0531/FRIEND SHIP I—Streamlined RC Pattern ship for 60s, retracts. Uses foam wing and fairly simple balsa fuse construction. **\$4.75**

1241/MISS PARANOIA—Styled after the P-51, this fiberglass and foam, QM racer emphasizes clean aerodynamics. One of the fastest QMs around, this model uses coupled ailerons and rudder. Three-function radios required. Hot 15 engines, with throttle. **\$3.50**

1242/CONFIGURATOR III—RC Pattern Ship. With lines reminiscent of Jim Kirkland's famous Intruder, this model is the pinnacle of design evolution. The fuselage is balsa construction, while the wing is foam. One of the smoothest flying ships on the pattern circuit. Retract-equipped. Five-function radios. Sixty engines. **\$6.00**

SCALE

0741/EL TIGRE—AMA Pattern Ship. A pronounced vertical fin gives the fuselage a streamlined, "flaired" look. Semi-mid-wing (foam cores commercially available) is based on Jim Kirkland's Triton for smooth, reliable maneuvers. Four-to-five-function radio, with retracts. Sixty engine. **\$5.00**

0944/YANKEE—RC Pattern. Emphasizing soundness, honesty and smoothness, the Yankee is designed for functional flying. No gimmicks or tricks, this is a pattern ship that will give consistent performance. Foam wing and stab, with balsa fuse. FAI-style lines. Retracts and side-mounted engine. Large, well-detailed plan sheet. **\$5.25**

0643/NOVI ARROW—FAI Pattern ship. Designed by John Brink, twice winner of the South African NATS, and noted Internats competitor. Large 70" elliptical-winged model emphasizes light wing loading for smooth maneuvers. Large plan sheet is highly detailed. For retracts and 60 engine. **\$6.00**

0541/FAKIR I—Pattern ship. Winner of AAM's Super Design Contest. Plane has received accolades for its clean lines and striking looks. Well-engineered plan set includes hints on construction and installations. Sixty engine. Four-to-five-function radio. **\$6.00**

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1974 RADIO CONTROL PRODUCTS DIRECTORY

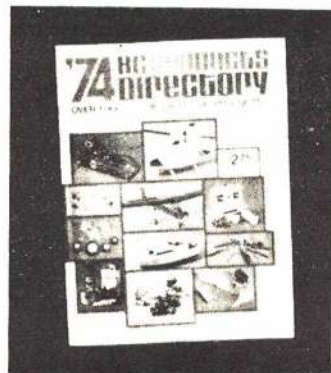
By Eric Meyers, Products Editor for American Aircraft Modeler, Sport Modeler and Model Dealer magazines. The Directory contains over 1000 listings of radio control products in 25 major categories. Each listing includes full description of item, photograph, and price. It is your buying guide for 1974. \$2.75.

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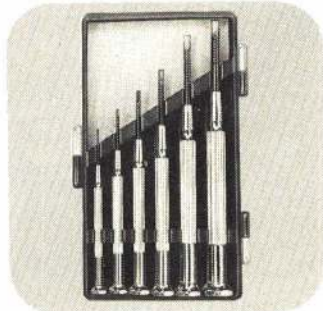
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LSF

(Continued from page 64)

nized club, but rather what we must assume to have been convenient alliances of compatible (and, of course, skilled) fliers. This is wholly out of the accepted context of team competition and it is hoped that the LSF, or the CDs for the '75 Tournament, give serious consideration to regulating closely the requirements for a team entry.

MARK!

Sailplanes were a-flying now, the tarmac aglow with pretty rays of soft sun. Thermals afoot across the towlines, like silent bubbles. All was sweetness and harmony in gliderland.

"In retrospect, our object in the contest was to have a contest where skill would count, where the best fliers would win, and where luck wouldn't count.

"I think that the contest...the way we designed it, the best fliers came out on top." Quote from Dick Schilling, half CD.

MARK!

"And here's our crack reporter, awake and aware."

"Hi there!"

By now, all fliers had completed their 10-Minute Duration and Three-Minute Precision. Jim Wiseman pretty well had Precision in the bag, while Oklahoma Dale Nutter V-tailed it into the top spot in Duration.

What about Standard Class?

The magazine litany of the winners:

Pre-ci-sion

Rick Pearson

Dave Thornburg

Richard Barker

Du-ra-tion

Rodman Smith (the Father)

Max Mills

Terry Malsbury

Amen.

"Hello, there!"

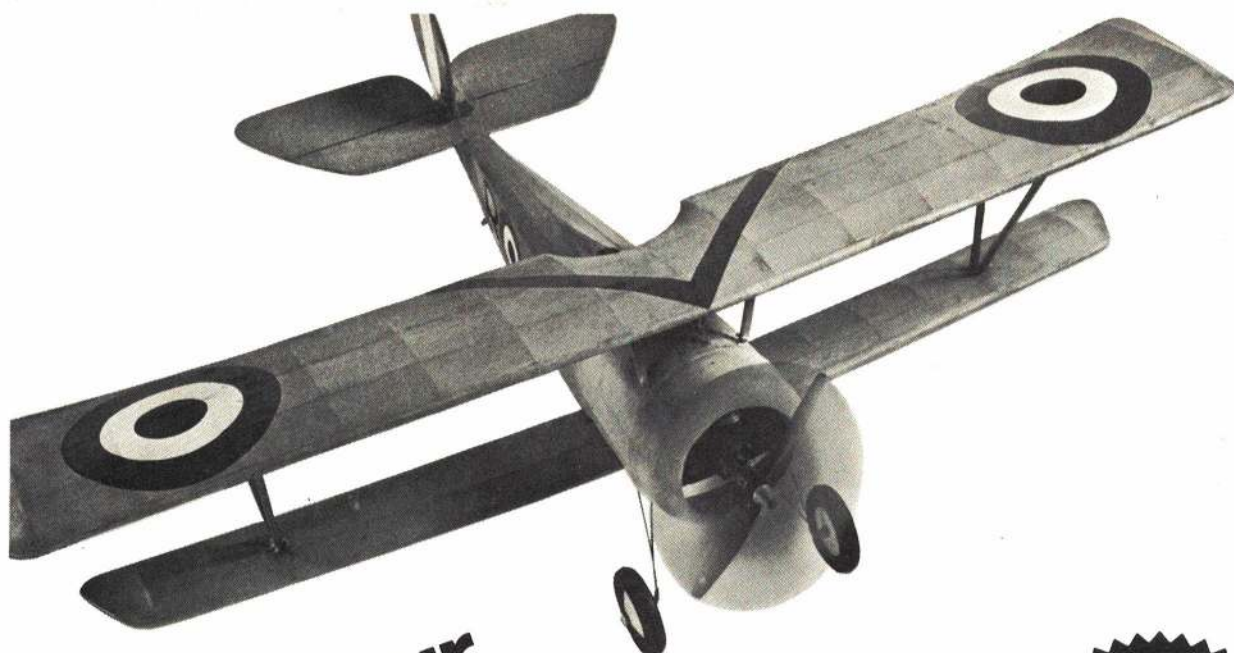
Speed got off at 3 o'clock.

A perfect score folks! Rick Walters (Remember him from Paul Denson's preface above?) astounded the sports world, as well as a few modelers, by zinging a stupendous 2000 points in Speed (calculated at 39 and 40 sec. on the timers' watches...Mark!).

Lemon Payne flew that lightly loaded (5 oz. sq. ft.) Legion Air fast enough through the traps to secure second place.

And third place was captured by... Me too, I flew!

(Continued on page 104)

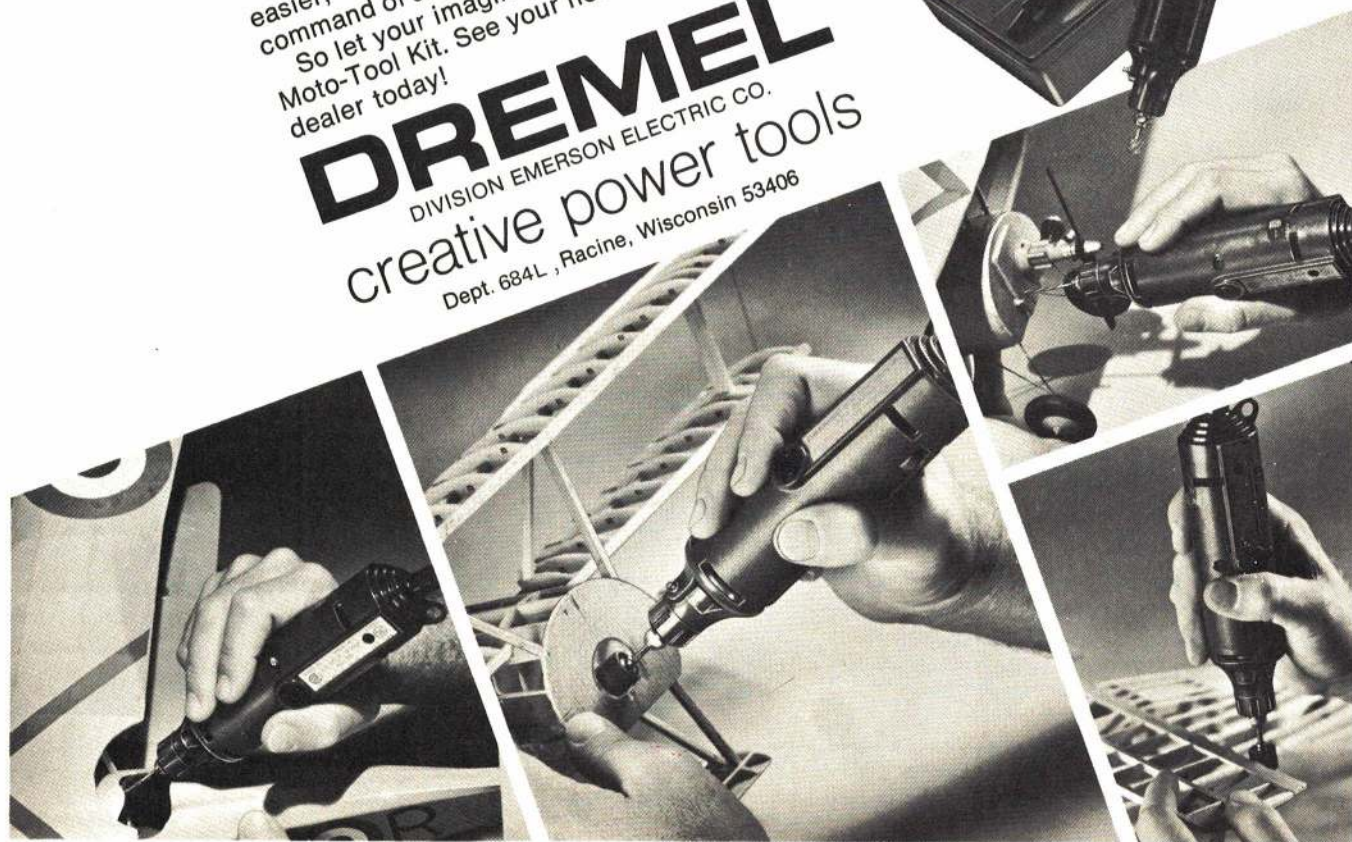


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| 3 | 1¾ to 1¾ in. | 30/100 oz. | 8 oz. | \$2.00 |
| 4 | 2 to 2½ in. | | | \$2.00 |
| 5 | 2¼ to 2¾ in. | 35/100 oz. | 10 oz. | \$2.40 |
| 6 | 2½ to 2¾ in. | | | \$2.40 |

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| 10-G | 3½ in. | 2 oz. | 10 to 12 lbs. | \$6.00 |
| 11-G | 4½ in. | 3 oz. | 12 to 15 lbs. | \$7.00 |

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LSF/(Continued from page 102)

"Hi there! Mark my words, I'm here awake and aware to tell you about the Scale sailplanes. I timed a beautiful flight for Hugh Stock, the eventual winner. His Diamant (a SoarCraft kit, of course) was launched into some tricky air. There was a long-standing thermal to the left of the runway and about a quarter of a mile out. Hugh got off the line...

"Mark," I shouted.

"... and headed for the leftward lift.

"After only about three min., the lift started to get sketchy, and Hugh, with my verbal assistance, opted for what looked like a good piggyback spot to the right of the runway.

"Yes, he was getting pretty low, too ... maybe only 400 feet or so. Across the sink he slid, losing more ground in an attempt to get to the lift. Those blokes were really pretty far out, maybe even to the edge of the field, and Hugh was getting really low by now. As he crossed the edge of the runway, some minor lift was encountered.

"Now only at maybe 200 feet, things didn't look so good for Hugh's Diamant. He flew really well, though, in the spotty lift, and soon the halfway point (five min.) was passed. But another full five min. from 200 feet in thermals so small that turning inside them was impossible?

"But moustached, amiable Stock is a real champion, and he flew that sailplane as smoothly as a greased billiard ball on a pool table.

"Finally, hearts in throats, the Diamant was so low that the cockpit detail was starting to show ... and there were still two min. left. At almost nine min., there just wasn't anymore lift to be had,

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Dave Stott/Page 90

and Hugh came in for a good landing off to the side of the runway. (No precision landing at all was required for the scale models. After all, why jeopardize them on the concrete?)

"When all was said and done, Hugh emerged victorious, with 14,034 total points; 163 static and 1722 flight points.

"D. O. Darnell was second by only eight points with his Glasflugel 604, and Lee Renaud flew his attractive new Duster design (soon to be an Airtronics kit) to third place.

"And that is what happened in Scale."

As our crack reporter rides off into the sunset, the 1974 LSF Tournament is at an end.

"And who won the title of LSF Tournament Champion," asks the chorus.

Mark!

MODELER MAIL

(Continued from page 4)

stop him from using that stopwatch which always goes to 2 or 10 minutes when the stop button is hit!—php

Sailplane Sale

I am really stoked about the soaring scene that's been going on in the recent issues of AAM. I have noticed, however, that the price for your sailplane plans is exorbitant in comparison to those of other types of models. I really want to hack balsa for an Astro-Jeff, but \$16.95 is a heavy price for a set of plans.

From what I've heard of the Astro-Jeff design, I finally decided to cough up the dough. Enclosed is my remittance for a set of Astro-Jeff plans, but I sure wish I could put part of these finances into something more than three sheets of paper.

My compliments to AAM for being right on with their sailplane designs.

Bart Call
Orchard, Calif.

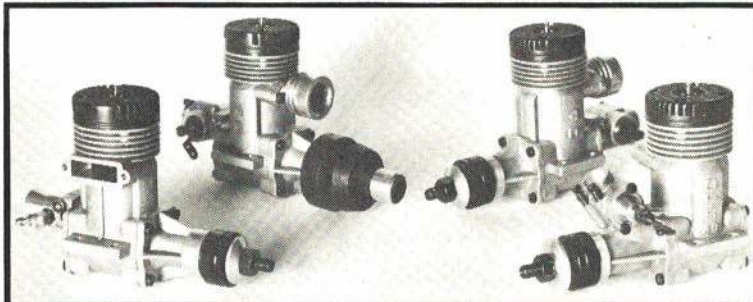
AAM Sudden Service Plans are priced per sq. ft. The Astro-Jeff plans, being slightly over 45 sq. ft., would have been in the \$25.00 range if we had used our normal price factor. Prior to publication, we reduced the price of these plans to \$16.95 to keep them within the scope of other plans. It should be noted here that one look at the Astro-Jeff

(Continued on page 106)

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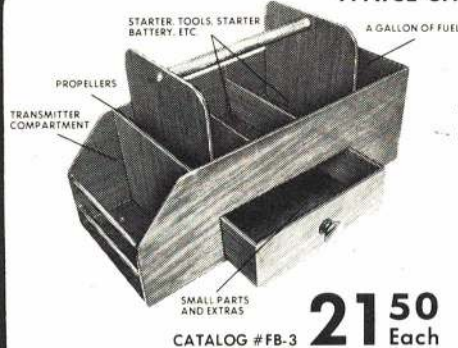
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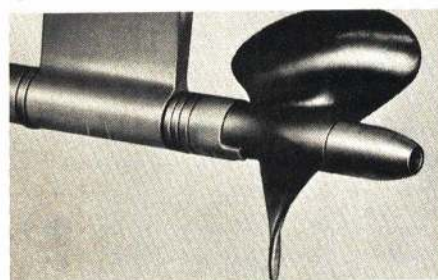
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(Continued from 105)

be some of the most highly detailed and well-presented engineering drawings ever produced in a magazine.

After publication of the original article, it was discovered that most builders would not need the third plan sheet (for construction of the balsa fuselage). In the September issue of AAM, our Plans Service page indicated the price of \$13.95 for the plans necessary to build the fiberglass version of the Astro-Jeff (an excellent epoxy

glass fuselage is available from Jeff's Models, 6730 Halyard Rd., Birmingham, Mich. 48010).

After seeing the phenomenal interest and success of the Astro-Jeff not only at the Lakehurst AeroOlympics, but also at the S.O.A.R. Nats, we decided to "stoke" even more modelers by reducing our plan price to cost. The plans for the fiberglass version of the Astro-Jeff (AAM Sudden Service Plan 0841B) are now available for \$11.00.

(Continued on page 108)

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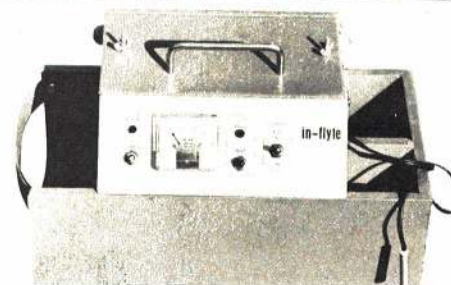
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MAIL/ (Continued from page 106)

We should also add that many other popular AAM plans are on special sale. See our Plans Service page for further details.—php

Buddy Box Blast

This is just a question I would like an answer to, which I am sure a lot of other RC beginners would be interested in.

Why is it that none of the big name radio manufacturers sell "buddy" boxes?

Their story is, "You can buy our training cord and plug into your instructor's radio." All that means to me is that I will have to buy a top-of-the-line radio (\$400.00 or \$500.00) to have buddy box capability. Then, I can go out to the field and hope someone shows up who can instruct and has my kind of radio.

Now we both know what the answer is—\$\$\$. If buddy boxes were around, people could learn how to fly first, and then buy a radio without buddy box capability (not top-of-the-line). Right?

The manufacturers, who claim to be friends of the modeler, are just two-faced grubbers. I know you will side with the manufacturers because you have sold your soul to them for their ads in your magazine. Just another rip-off nothing can be done about. (This all began when I started looking for a buddy box, after I lost a \$50.00 model—my instructor couldn't get the radio in time to make a save. His radio has no buddy capability either.)

Charles Blackburn
Orange, Calif.

No, Mr. Blackburn, we won't "side" with the manufacturers. I often wonder, if I had a soul to sell, would I try and peddle it to the manufacturers? Let the answer to that be that our Advertising Offices are in Springfield, Va., while our Editorial Offices are in Reno. As Editor, my job is not to solicit ads, but to present a worthwhile editorial package each month.

Nor will I side with you. However, the facts are that radios aren't "top-of-the-line" because of their dollar value.

(Continued on page 117)



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Details may be had by requesting
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The Show Team Flightline

How "Show Biz" Helps You

by Robert Lopshire,
AMA PR Director

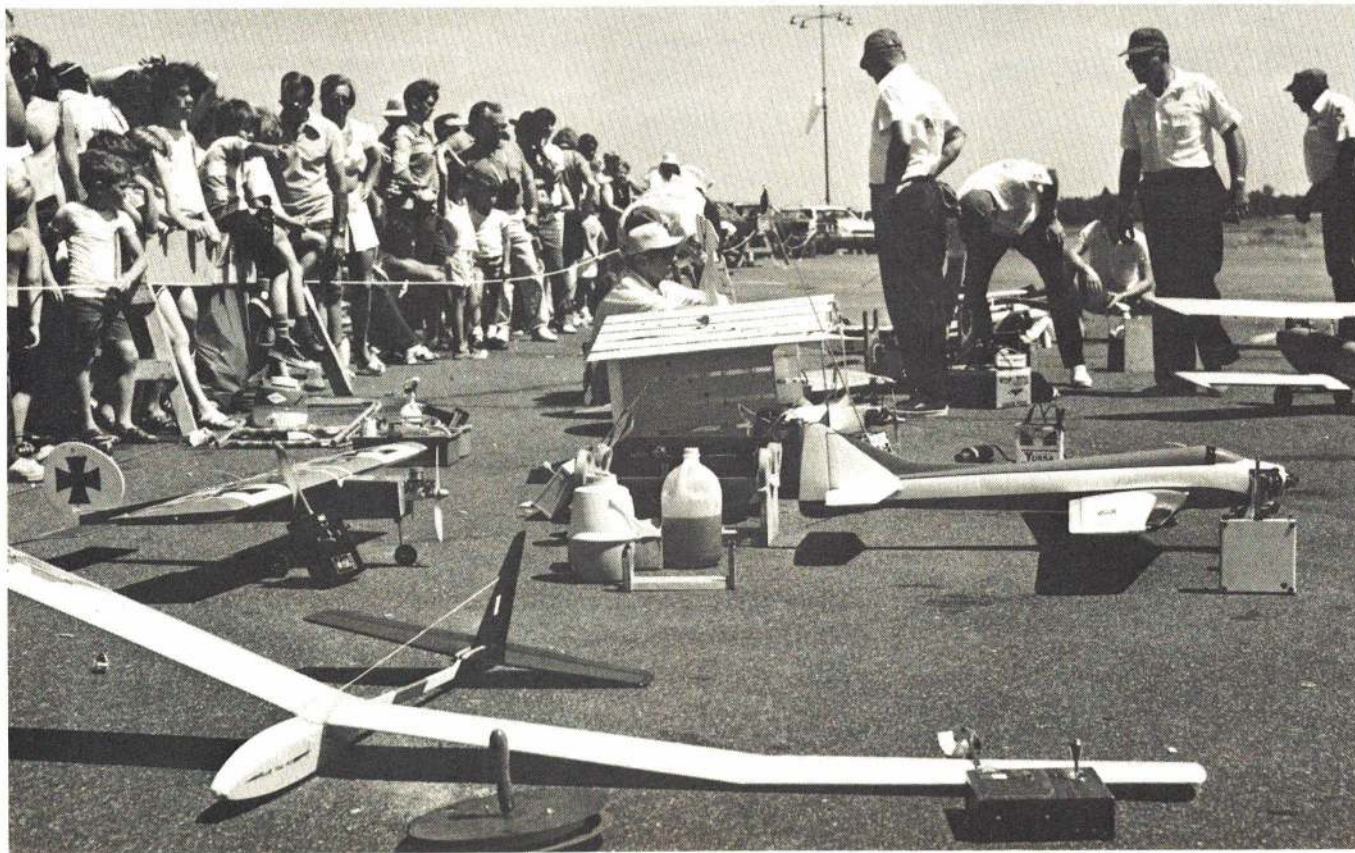
Just as competition has perfected better products for the Sunday flyer, the razzle-dazzle gang, called the "AMA Show Team," has come up with some ideas and devices that are bound to be of interest to a number of other flyers around the country.

The concept of a Show Team and how it could promote modeling, had been with me for a long time. The idea of taking

Jim Walker's showmanship and updating it to promote model aviation seemed long overdue in the light of Radio Control advancement in recent years. It wasn't until AMA was called on to "do something" at Transpo '72 that an opportunity presented itself. AMA Executive Director John Worth contacted me and expressed the idea that we had to gather together some sharp flyers and let them do their thing. He had several in mind, perhaps I could corral a few more. I was ecstatic!

I saw the appearance at Transpo as more than just a gaggle of flyers doing their thing. I'd seen too much of that at the

Nats and local contests: dull to all but the guy flying. I saw instead a tightly timed show where we displayed fast versus slow, new versus old; we showed a crowd things they'd go away and talk about...and remember. After the 10 days of Transpo cleared away, we'd done just that, and we emerged as almost the only ones to get a favorable press out of the entire multi-million dollar adventure. It was a 10-day "blood bath" for all who came to fly, but it was the beginning of the show team concept, and it laid the groundwork for the present team, which is now in its second year of existence. *(to next page)*





At Transpo, the original group fought my concept of timing at first. . . "Whaddya mean a TWO-minute flight?!!!" Within two days they settled into two-minute flights as though they'd never flown any other kind, and with a tight FAA-directed schedule, 26 flights were up and down in a 10-minute period—three and four times a day for the final eight days. Ah, sweet show biz!

In '73 I asked that the concept be carried forward and that I be allowed to work up a permanent team to be on hand for any show that cropped up in the future. Permission was granted. . . gingerly. . . and rightly so. We'd had one big whopping success, but so do a lot of Broadway shows. Like the shows, we could wake up to an empty theater the next day.

In 1973 the team appeared before well over a quarter million people, including a stint at the Cleveland Air Show. Purchase of radios, transportation to Cleveland, team shirts, and miscellaneous odds and ends cost AMA roughly \$2,900 for the 12 men involved. In contrast, the 12 men on the team spent in excess of \$4,000 of their own money to keep the effort going because they firmly believed in it. Their "sell" of model aviation was solid beyond any accounting.

While I had an idea, the men on the team deserve *all* the credit for what has

NO. 1 IN A SERIES: LEADING EDGE PROTECTION

Wing leading edges, subject to constant run-ins with ground obstacles, often become battered, bruised, and less efficient as a result of their encounters with unexpected objects. The show team method of quick and easy protection of these edges is to strip them with "3M Plastic Tape." The tape is a protective edging that absorbs punishment and can be easily replaced when damaged. For Scale buffs, the black tape of this type exactly duplicates the rubber "de-icing" boots used on many full-scale aircraft. The 3M tape is highly compatible with all model coverings and finishes; it adheres well, and is easily removable. For those who care less about "de-icing" boots, the tape is available in a multitude of colors for a protective, but colorful, *trim* leading edge.

The tape also makes a good decorative striping material where stripes of $\frac{3}{4}$ " to $1\frac{1}{2}$ " are desired, and to use to form letters or numerals.

now become something Jim Walker would stand back and applaud with gusto. They run tightly timed shows with the precision of a Marine Drill Team; they create, they think as a family, and they are now fully trained to work in any air show, anywhere. . . a feat few modelers have been able to accomplish. FAA controls air shows with a rigidity of timing that few newcomers can fathom. Ten minutes of air time is TEN minutes, not 10 minutes give or take a few seconds.

If I sound like someone disgustingly proud of a group, please accept the fact that I am, even though this appearing in



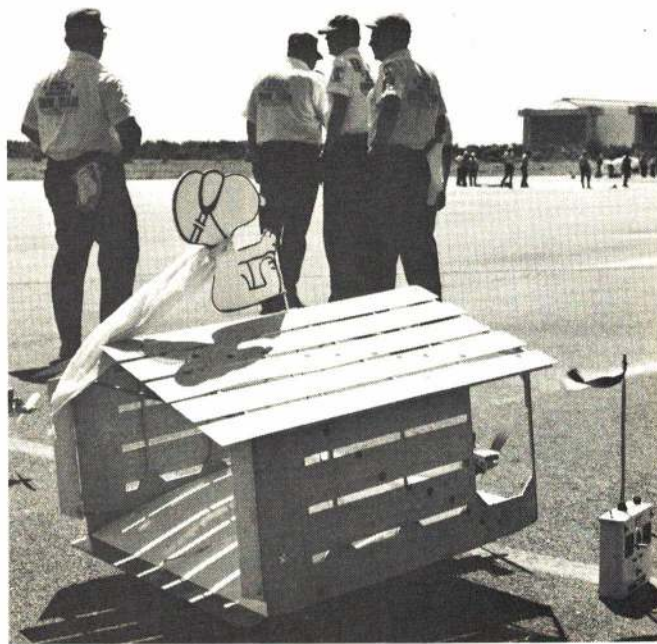
print will destroy my image as a brow-beating ogre with the team. I've pounded, cajoled, sweet-talked, and nudged them all. They've alternately hated and despised me as a result. . . but I think they're the BEST show team ever seen, anywhere, and I love every one of them.

For every challenge thrown them, they've come up with an answer within two weeks. "I want rockets *fired in sequence* so a crowd can see the second one if they miss the first!"—"You're out of your tree!"—"Try it!" We have it. Perfected by Norm Evans, (who just returned to his native England for an indefinite stay at a large university where he will do further teaching in mechanical engineering), this feat is now performed by Tom Knerr, firing them from his Delta Hustler.

"I want a smoke layer with smoke ignited in the air." "Impossible!"—"Try it. . ." And Tony Wilford did it, and does it with great regularity at every air show, as do all the others who now do their things by the clock. Many modelers write to AMA and inquire about. . . "I saw the AMA Show Team, and I'd like to know

(to next page)

In photo at top right, Gene Soucy of the World Champion U.S. Aerobatic Team (full-size) tries out RC under guidance of AMA Air Show Team members—at Cleveland Air Show last year. Other pictures show the team and team models ready to begin flight exhibition.





Aeromodeling Is Just for Fun

PRESIDENT'S MEMO

As a change of pace from my usual serious articles, I thought you might enjoy sharing a bit of humor and a little philosophy which might put a touch of extra fun in your modeling.

When you see a model airplane that is a complete mess, remember that it probably still took a lot of hard work and long hours—and a total disregard for quality!

Sign on a hobby shop delivery van: **Hobbies Will Drive You Sane.**

Smile at your enemies—it'll drive 'em crazy!

In aeromodeling we keep talking about "Sunday Flyers." Heck, we all are basically Sunday Flyers, but some of us seem to be a bit more serious and competitive than the rest.

AMA safety hint: Avoid Accidents! (They cause us too much paperwork.)

In the crash of a model airplane it isn't the terrible fall that does the damage. It is the sudden stop when it hits the ground!

Don't forget, "The Other Guy" thinks that **you** are "The Other Guy."

In the building of model airplanes, using poor or cheap equipment is like trying to applaud with one hand.

Have you cleaned up your work area lately? It is the greatest discipline practice in the world. And to make it even more effective, make sure someone else is watching!

Learn to **face facts**—and to **face your problems**—because it is very hard to express yourself while yelling back over your shoulder!

Have you ever figured out why, when you are flying your model plane upside down, it seems to have a tendency to crash **up** into the ground?

With the wonderful advancements of modern technology, haven't you noticed that our problems now last much longer?

A modeler announced at a club meeting I attended that his romance, which we all had been watching with interest, was over.

He said, "It never would have worked anyway. I'm a Capricorn, and she is a Weirdo."

People good at making excuses are seldom good at making model airplanes!

From experience I find that the plastic model plane coverings such as MonoKote and Solarfilm offer multiple blessings. Often in crashes I was able to carry everything home in a "plastic bag" without even picking up little pieces.

In life it is each person's own responsibility to find fun. Aeromodeling is an excellent start!

In getting along with others, don't call anybody names! They may not have thought to call you any until you remind them! Besides, you will have tipped your hand that you are an expert on the subject.

Our nation's greatest loss—**apathy**. Don't contribute to this cause!

They say that when you have built model airplanes for as long as I have, there are three basic changes that gradually come over you. The first is that you lose your memory—and I can't think for the life of me what those other two are!

Owning a hobby shop, I have learned that when you own your own business you have the privilege of working as late as you wish!

Hey, if sleep is so good for us, how come we look so bad when we wake up?

Even if we were to hold all model airplane contests by mail, there still would be a few who would send in their protests in advance!

Flying model planes helps get you out-of-doors. Remember, statistics show that it is not healthy to die in the house!

If you are really an avid model builder you had better ask yourself, have you taken out your wife lately? (If she finds her way back, take her out again!)

Sometime when you are cleaning up your workbench, try gluing all your scrap together into one unit—then you can throw it all away at once. Or you might spray-paint it gold and sell it as modern art!

President John Clemens' lighter moments, such as this month's column, blend nicely with his usual more serious writing. This picture of Clemens fits well, too. It's from the 1951 Plymouth International Contest.



I had a crack-up once where the front of the plane really wasn't hurt much until the back end came along and stomped it!

In today's puzzling world you usually are offered two choices in everything—Take It or Leave It!

And how come it takes millions of laws to enforce just ten commandments?!

This article is probably the last in a series of one. I hope you enjoyed it!

*John E. Clemens
AMA President*

just how Graham Lomax manages to tow that huge sign at the end of the show...."

Those letters, and the great number of requests from people in crowds where the team appears, prompt the writing of this monthly column. The team is making appearances to promote model aviation in the most exciting manner possible, but part of the "spill-off" of their effort is that they are also developing new concepts of fun and technology that will be made available to others in the hobby.

The Space Program had side benefits to all mankind. The AMA Show Team has some to offer to modelers. Some will be small items that seem disgustingly obvious...but never thought of until the hectic scheduling and fast need of repairs confronted the team—the same thing that might face anyone traveling the contest circuit. Others will be ones devised to astound and/or amuse crowds—the sort of stuff that will also astound and/or amuse the local club flyers.

Watching the team make frantic landings and takeoffs, often with five planes at a time, I observed something that was happening to a number of planes—something that also happens to the average flyer in less hectic situations—dinged wing leading edges. The team is now using a simple method of protection and instant repair. Perhaps you, as a Sunday flyer, will benefit from a team-learned "gimmick" about leading edge protection on the opposite page.

Albert L. Lewis 1915-1974

The second AMA president, executive director of AMA in its early days, member of the Model Aviation Hall of Fame, Hobby Industry Association Meritorious Award winner, editor of *Air Trails* (from which the current *American Aircraft Modeler* grew) and most recently managing editor of AeroFile Books, Al Lewis died on August 16 at the age of 59.

Probably no one has done more than Al for the AMA. Because of his early interest and direct participation, AMA got through its growing pains and emerged as the national association for all aeromodelers. The fact that AMA now is the world's largest sport aviation organization may be traced directly to Al's work in the forties as president and executive director.

Lewis was raised in Boston, Mass., where he became interested in modeling following Lindbergh's flight to Paris. When the Jordan-Marsh Department Store and *Boston Traveler* joined hands to form a Junior Aviation League in 1929, he lost no time in joining; with an interest in journalism, he became editor of *Wing Overs*, the league's weekly publication, in 1934. Three years later he took employment in Jordan-Marsh's advertising department while simultaneously attending classes in journalism at Boston University. Exemplifying the boundless energy which was Al's all during his life, was that he also continued his work with the Junior Aviation League plus free-lance writing for the *Christian Science Monitor* and other publications such as the *Boston Herald-Traveler*.

Al was elected AMA president in 1938 and moved to Washington in 1939 to become executive director. He served in the U.S. Army during World War II, ending up in North Africa. After the war he returned to AMA HQ employment for a short while, but then moved to New York to become advertising manager of Polk's Model Craft Hobbies.

In 1949 Lewis became editor of *Air Trails* Magazine which subsequently went through several changes of ownership and title to emerge as the current *American Aircraft Modeler*. Many of today's relative 'oldsters' know and respect Al most for his stints with AMA and *Air Trails*, where he developed a reputation as an innovator, pace-setter, worker of long hours, and a wonderfully interesting man to know. He also was editor of *Air Trails Annuals*, which now are collector's items, and in recent years he was editor of *Air Progress*. His magazines always were the envy of competitors.

Al leaves behind for all of us a great example of creativeness, leadership, dedication and inspiration.



Upper Left: Al Lewis announcing model meet in New England during the thirties. Above: Portrait of Junior Aviation League leaders (L-R) Lewis, Bruno Marchi, Ralph Brown. Left: Lewis at AMA planning conference (extreme right), about 1949. Others are Willis Brown, Carl Hopkins, C.O. Wright, Russ Nichols, V.A. Luce.



Upper picture from 1960 was at end of industry fund drive for Air Youth State Championships. Shown: Jay Cleveland, Al Lewis, Cdr. J. L. Allridge, Nat Polk, Albert Redles, Sylvan Sidney, Matty Sullivan, Russ Nichols. Below: Many former AMA presidents were on hand in May of 1969 to present astronaut Col. Frank Borman (first AMA member to go around the moon) with the AMA Distinguished Service Award. Present: John Worth, Al Lewis, John Patton, Borman, Walt Good, Willis Brown, Maynard Hill, Howard Johnson, Frank Bushey.



Time for AMA Renewal

Most AMA members for the calendar year 1974 will have received their renewal notices and bills for 1975 membership by the time of receiving this. Please respond promptly to insure uninterrupted service, and while you're at it take time to vote if you're an adult AMA member.

The only change to the dues concerns the option for *American Aircraft Modeler* subscription—that's increased by \$1 for all age classes. This comes about because of gigantic increases in paper prices, postage, etc., and the need to charge more for magazines just to maintain a status quo position. Have you noticed that the cover price of many of the magazines, including this one, recently went from \$1 to \$1.25?

But subscribers to *American Aircraft Modeler* through AMA membership still are getting a terrific bargain. AMA's contract with the magazine provides for paying 50% of the cover price for AMA member copies, adjusted for preparatory work done by AMA HQ, with the actual rate being fixed in the year before its effect. Because of this AMA members who chose the magazine option had a nice bonus in 1974 when the cover price was increased in mid-year.

The publisher couldn't continue with this low rate in 1975, however, thus the \$1 increase for those wishing the magazine—from \$9 to \$10 for Juniors and Seniors, from \$16 to \$17 for adult members. This still is a great bargain—less than the magazine can be obtained through any other means. Actually the publisher could have asked for 50¢ more per year within the current AMA-AAM contract, but according to their spokesman this would have been much more of an increase at one time than they envisioned at original contract signing time, and they preferred to pass on the saving to AMA members.

New for 1975

AMA officers constantly are on the lookout for ways of making membership more worthwhile. Two major benefits have been added for 1975, and the especially good part is that they are being included without any increase of dues (made possible by making subscriptions to *National AERONautics* optional).

Comprehensive Accident Medical-type Insurance will be provided to all AMA members beginning in 1975. This is in addition to liability-type protection, currently with \$1,000,000 upper limit, which has been provided with AMA membership for many years.

Basically the new insurance acts when the AMA member, himself, is injured in connection with model flying activities

conducted in accordance with the AMA Safety Code, either through his own actions or through the actions of others, to the policy's limitation of \$1,000 per accident. This insurance is different from (but a useful addition to) liability protection because the latter depends upon the possibility of one person being sued by another—awkward in the case of member-to-member accidents in which the victim must wait for claim action by the member whose model caused the accident. The new insurance, thus, should result in a marked speed-up of settlement when the AMA member is the injured party, and financial protection not heretofore provided will exist if the AMA member's injury is the result of his own doing.

Monthly Mailing in 1975 will be distributed to all adult AMA members (those who pay \$12 or \$17 dues). Previously this publication was distributed only to AMA officers, chartered club officers, Leader members and newsletter editors. All who received it were asked to spread the word, but the information frequently was not filtering down to the rank-and-file member.

The increased circulation of *Monthly*

James F. Herren photo



Melvon G. Hart photo

50,000th Member for 1974

This milestone in AMA membership statistics was reached on July 23 when the application by Robert A. Lockwood of Napa, Calif., was processed at AMA HQ. He's been sent a special certificate as a memento of the occasion.

At the end of August 51,649 members had signed up. With another thousand or so likely to join before the 1974 issuing year ends at the end of September (applicants after that time are issued 1975 memberships) it seems that the all-time record for 1974 will be about 53,000.

Mailing will be a big step in improving communications among the membership. It contains up-to-the-minute information on AMA programs and services—and even problem areas. It regularly airs new program and policy ideas, providing opportunity for members to comment to officers before they act. The AMA president usually has a page or more devoted to his personal insight on modeling affairs of the day, and many of the 11 district vice-presidents avail themselves of space to report on AMA modeling in their respective areas.

Monthly Mailing is particularly valuable because it has such a short production schedule (about a week from copy "freeze" to being in the mail vs. about a month for this "AMA News" section) that it is a "hot-line" service with virtually unparalleled timeliness.

The Message: Renew your AMA membership as soon as possible (by using the bill for dues mailed to 1974 members) to receive continuing benefits without interruption, plus new ones. If you weren't a member for 1974, now's the best time to sign up; you'll receive full benefits for 1975 plus the remaining time of 1974 (except publications which begin in 1975); use the application card which is bound in the magazine.

Rapt attention of the St. Louis Cardinals, above, resulted from CL and RC demonstrations in Busch Stadium by the Greater St. Louis Modeling Assn. Al Signorino, flying his famous RC Doghouse, left, was one of those who amazed the crowd. Interesting GSLMA trophies, below, were designed by Gus Vogele and donated by Ozark Air Lines—scrapped turbine blades form the central theme.



Jack Baugh

Profile of a Life Member

by Jim McNeill

The sign in front reads "Almahurst Farm. Part of an original land grant to James Knight 1750-1831 for his Revolutionary War services. Famous horses bred, foaled, and raised on this farm. GREYHOUND—World Champion of all time, PETER VOLO—Founder of the great trotting family, EXTERMINATION—Known wherever thoroughbreds are raced."

A quiltwork of olive meadows laced with oak trees and freshly painted fences, Almahurst Farm lies in the heart of Lexington, Kentucky's fabled blue grass region. The largest harness race horse farm in North America, it has become the leading breeder of average money winners per starts in the United States, and breeder of two world champions in 1972.

I asked if the owner Jack Baugh might see me for a moment. Ushered through sterile-clean stables to the main offices, they explained this was the front door for everyone. Could Jack take a minute to reminisce? We talked of model airplanes of another day. His favorite engine was the ignition Delong .30. With a far off look he told me of his Sal Taibi Power House, Arden powered, of his Custom Cavalier, Buzzard Bombshell, his Zippers, and stagger-wing Beech. In a flash the interview was over, Jack had to be in New York in a few minutes. Did he have time for a picture? Just one maybe, and don't forget the horse. Before I could close the polaroid this warm and pleasant southern gentleman had already scurried away to board his personal jet.



Jack Baugh, right, AMA's first Life member, took a minute from busy schedule to pose for this picture, and had Albert Adams bring along his famous thoroughbred, High Ideal.

Still young, Jack has already lived a storybook life. A native of Charlotte, N.C., he graduated Dean's List from Duke in 1954, having edited the DUKAKET, earned the Air Science Leadership Medal. Commissioned in the U.S. Air Force, he graduated first in class at Graham Air Base, rose to Captain, served 2 years as a jet fighter pilot.

In 1956 he became Executive Vice-President of Baugh and Mouchet, and Vice-President of Quaker Meadows Mills as well. In 1960 he organized Kimberly Yarn Mills as President and then merged all 3 companies into P. J. Baugh Industries. Other enterprises were added including Almahurst Farms and Arlington Aircraft Research Co. This latter aircraft firm of Jack's built the famous all metal SISU 1A Sailplane. The SISU 1A recaptured the World's free record of 646 miles from Germany and the World's

distance to a predetermined goal record of 490 miles from Russia. This craft now hangs proudly in the Smithsonian Institution in Washington D.C.

His government service includes 2 terms in the N.C. House of Representatives, 2 terms in the N.C. Senate. He enjoys flying real Sailplanes and family activities with his wife Patricia and their 4 children.

Somewhere along the way Jack got a distress call from a proud old society. The Academy of Model Aeronautics was in deep financial trouble, could anyone help? He responded immediately with a thousand dollar contribution and was the first to do so. There was no thought of reward. Life numbers were unheard-of. For his unselfish 1963 donation the Academy has subsequently issued and reserved forever the unique AMA membership number L-1, its FIRST Life Member.

Jack proudly lists LEADER MEMBER Of AMA beside other activities such as member of the New York Athletic Club, President of the Duke Alumni Assoc., Director of the United States Trotting Assoc., Director of the Lexington Trots Breeders Assoc., and more others than there is space here to list. He is one of our heroes and we wanted you to meet him.

Wanna see a picture of a millionaire? Look again at the one on the left. No, not him, the extreme left, The HORSE! He is High Ideal sired by Bret Hanover. Bret Hanover holds many Canadian and U.S. world records and is generally regarded as the greatest sullying horse of all time. High Ideal, shown here, is a 3 year old at stud and valued conservatively by his owner at one million dollars.

Quest Continues for More RC Frequencies

AMA efforts to obtain more RC frequencies continue steadily, witness the following comments filed by AMA's attorney earlier this year concerning FCC Docket No. 20004. It should be recognized that progress oftentimes seems slow, but an unrelenting effort is likely to impress the Commission as to our needs and eventually bear fruit—as in the past when AMA obtained approval for RC use of 27 and 72 MHz frequencies.

This particular effort was a followup to broaden the possibilities for telemetering, currently a highly restricted and sophisticated practice of some RC Soaring enthusiasts. Telemetering uses a small transmitter aboard the model to signal the presence or absence of lift—vital information for Soaring. A receiver on the ground indicates to the pilot whether the model is in lift or sink so that he can steer and stay in lift as much as possible. The availability of additional frequencies for telemetering would open up this activity to more people.

But perhaps more important, in the long run, is the fact that the FCC proceeding provided another opportunity for the Academy to strengthen its position of need with additional official comments for the record, with the intent that those needs not be forgotten. AMA's effort, therefore, while in this case focused on a small but significant segment of RC activity, is part of a bigger and longer range program to benefit all areas of RC aeromodeling interest.

1. On April 16, 1974 the Commission released its Notice of Proposed Rule Making in the above-captioned proceeding proposing to make frequencies in the bands 40.66-40.70 MHz and 216-220 MHz available for the tracking of, and telemetering of scientific data from, ocean buoys and animal wildlife. In that Notice the Commission noted the increasing demand for the use of radio for telemetering and tracking purposes in connection with scientific studies in the fields of wildlife biology and oceanography. The Academy of Model Aeronautics, Inc., by its attorneys, hereby files its Comments in this proceeding.

2. The Commission has repeatedly recognized that model aircraft flying is a

scientific hobby of substantial social value and public significance, and has allocated a number of frequencies for this important activity. These frequencies, in the 27 MHz and 72 MHz bands, are most suitable for modeler use in view of the relatively low cost of the equipment in this band, thus making it available to the many young people whose interests in aviation are fueled by model aircraft activities early in life. Unfortunately, the 27 MHz band frequencies are adjacent to those used by the Class D Citizens Radio Service, some of whose members have engaged in the sport of "shooting down" radio controlled model aircraft, resulting in very substantial monetary losses for the modelers and creating a potential danger to spectators when radio-controlled aircraft go out of control. The modelers are therefore turning to the 72 MHz frequencies, but there are inherent limitations in that band because of the use of adjacent frequencies by television stations on channels 4 and 5. These problems have been fully explained in the Academy's Comments in FCC Docket No. 19750 and are incorporated herein by reference.

3. In short, in many areas of the country aircraft modelers are having increasing difficulty in pursuing their activities in a safe manner on the frequencies now available for their use and the only practical solution appears to be access to other frequencies which are not subject to the difficulties now encountered. The Academy was therefore most interested in the Commission's proposal for low-powered radio telemetry operations for private, although scientific, purposes and hereby requests the Commission to permit aircraft modelers access to these frequencies, also.

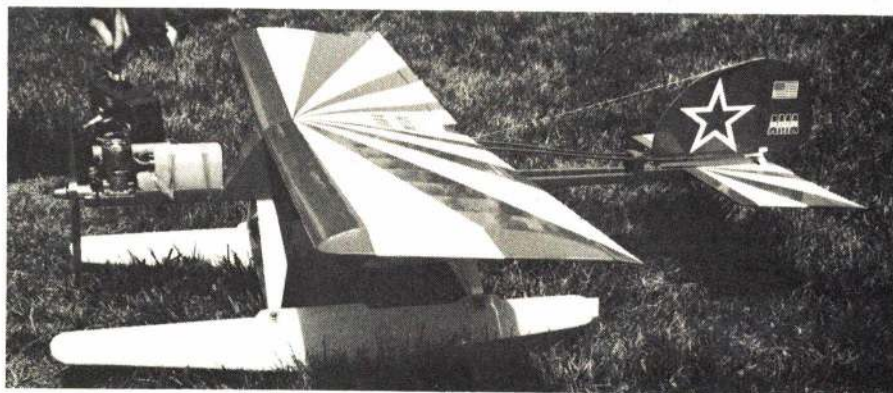
4. The Academy believes that allowing aircraft modelers to have access to the frequency bands 40.66-40.70 MHz and 216-220 MHz would have no detrimental effect on the scientific endeavors for which the Commission has proposed the allocation; and, indeed, the joint use of the frequency bands should be highly compatible. As noted previously, the activities of the aircraft modelers are also scientific in nature even though sometimes classified as hobby activities. There would, furthermore, be a natural separation between the activities of persons using the frequencies for tracking of wildlife or ocean buoys and those of the aircraft modelers since the activities of the former group would be limited, in almost all cases, to remote areas while the activities of the aircraft modelers would normally be conducted near population centers where the modelers live.

5. The Academy fully realizes that the frequencies proposed for allocation in this proceeding are primarily U.S. Government frequencies and that all operations would be secondary to those of U.S. Government stations. This does of course

present a problem with regard to coordination of the frequency usage; but the problems should be no more significant than those which the Commission has already considered with regard to use of frequencies for wildlife tracking and telemetry from ocean buoys. The benefits to the nation in having a cadre of young people trained in aerodynamics and radio control should far outweigh any slight detrimental effects which may be encountered by the low-power (10 milliwatt) operations proposed herein. Furthermore, aircraft modelers have had an outstanding

record of complaint-free radio usage on the frequencies now allocated; and there is no reason why this performance should not be repeated if these additional frequency bands were opened up for aircraft modeler use.

6. Accordingly, the Academy of Model Aeronautics petitions the Commission to permit aircraft modelers licensed in the Class C Citizens Radio Service to use frequencies in the range 40.66-40.70 MHz and 216-220 MHz for radio control and telemetering operations in the remote control of model aircraft.



Adding floats provides new dimension to RC flying—when suitable water is available. Model is Harold Berggren's Quick Stik.



Above: CL Combat flyer Marvin Denny's daughter Nikki poses with Berryman-designed Super Twister. Below: Flight demonstrations for the Elk River District Cub-O-Ree appropriately were piloted by Cub Scout Wayne Culpepper (at controls) and Boy Scout Jim Fitch—sons of Coffee Airfoiler members who organized the demonstrations and also a static display.



Fourth-grader Meredith Leuken's airplane model display, themed Flying is Fun, was first in the hobby show put on by her class—taught by Mr. Daub, also in picture.





Strong teams were chosen over Labor Day weekend at Taft, Calif., to represent the U.S. in the 1975 Free Flight World Championships planned for Bulgaria in July. Top: Power Team members Dick Lyons, Libertyville, Ill.; Dave Rounsaville, Milford, N.J.; Frank Wolff, Massapequa, N.Y. Middle: Nordic Glider Team members Jim Walters, Seattle, Wash.; Don Chancey, Richardson, Tex.; Bob Isaacson, Westminster, Calif. Above: Wakefield Rubber Team members Willard Smits, Kenosha, Wisc.; Bob White, Monrovia, Calif.; Jon Davis, Albuquerque N. Mex. Wolff, White and Davis are repeaters from the 1973 teams. Bill Bogart, who administrated the AMA Free Flight Team Selection Program, has been named team manager. Photos by Dave Linstrum and Bob Meuser.

| CONTEST | | | | |
|---------|----|----|----|----|
| | 1 | 2 | 3 | 4 |
| 7 | 8 | 9 | | 13 |
| 14 | 15 | | 18 | 19 |
| | | 24 | 25 | 26 |
| 29 | 30 | 31 | | |

Official Sanctioned Contests of the Academy of Model Aeronautics

Note: For quick response and as a favor to those staging, administering and directing the contest, be certain to send a stamped, self-addressed envelope along with your request to the listed Contest Director (CD) for additional information.

Nov. 2—Huntsville, Ala. (A) Huntsville Aeromodelers RC Glider Event. Site: Old Huntsville Airport. R. Deep CD. 8620 Valley View Dr., SE. Huntsville, Ala. 35802. Sponsor: Huntsville Aeromodelers.

Nov. 3—Valkaria, Fla. (A) Valkaria RC Meet. Site: Valkaria Airport. W. Williamson CD. 8300 NW 38th St., Coral Springs, Fla. 33065. Sponsor: Indian River Control Society.

Nov. 3—Sacramento, Calif. (AA) Northern Calif. FF Council FF (Cat. I) Meet. Site: Waegell Field. R. Douglas CD. 5303 Calderwood Ln., San Jose, Calif. 95118. Sponsor: Oakland Cloud Dusters.

Nov. 3—Livingston, N.J. (A) The District II CL Racing Championships. Site: G-V Controls. C. Schaefer CD. 514 N. Chestnut St., Westfield, N.J. 07090. Sponsor: Livingston Flying Tigers.

Nov. 10—Greenville, N.C. (A) Fall RC Pylon Meet. Site: Stokes Farm. W. Waggoner CD. Rt. 1, Box 221T, Bethel, N.C. 27812. Sponsor: Greenville Flight Club.

Nov. 10—Visalia, Calif. (A) Sky Kings FF Meet. Site: Manzanillo Ranch. S. Sciacca CD. 1631 S. Burke, Visalia, Calif. 93277. Sponsor: Sky Kings.

Nov. 10—Knoxville, Tenn. (A) KC/RC Fall 1/4 Mid-get RC Rally. Site: Knoxville. J. Tudor CD. 109 Chatham Ln., Oak Ridge, Tenn. 37830. Sponsor: Knox County RC Society, Inc.

Nov. 16-17—El Monte, Calif. (AA) RC Pattern & Sport Scale Meet. Site: Whittier Narrows. D. Burkhalter CD. 6130 Monterey Rd. #15, Los Angeles, Calif. 90042. Sponsor: San Gabriel Valley RC League.

Nov. 17—Sepulveda, Calif. (A) San Valeers Monthly FF Contest. Site: Sepulveda. R. Ohly CD. 9425 Olney St., Rosemead, Calif. 91770. Sponsor: San Valeers M.A.C.

Nov. 23—Rutherford, N.J. 3rd Annual RC Turkey Fun Fly. Site: Rt. 3. E. Janss, Jr. CD. 48 Emeline Dr., Hawthorne, Calif. 92706. Sponsor: Bergen County RC, Inc.

Nov. 29-Dec. 1—Miami, Fla. (B) NMPRA RC Championship Fly-Off. Site: Richmond Naval Base. W. Williamson CD. 8300 NW 38th St., Coral Springs, Fla. 33065.

Nov. 29-Dec. 1—Tucson, Ariz. (AA) RC Winter Nationals. Site: Marana Air Park. R. Angus CD. 6640 N. Columbus, Tucson, Ariz. 85718. Sponsor: Tucson RC Club.

Dec. 1—Canoga Park, Calif. (A) San Fernando Valley Silent Fliers RC Meet. Site: Pierce College. T. Koplan CD. 13914 Hartsook St., Sherman Oaks, Calif. 91403. Sponsor: San Fernando Valley Silent Fliers.

Dec. 8—Dallas, Tex. (AA) 4th Annual FF Pearl Folly Pot "74". Site: Dallas. D. Horn CD. 3915 Boca Raton, Dallas, Tex. 75230. Sponsor: Dallas Cliff Cloud Climbers.

Dec. 8—Visalia, Calif. (A) Sky Kings FF Meet. Site: Manzanillo Ranch. D. Adam CD. 624 S. Velie, Visalia, Calif. 93277. Sponsor: Sky Kings.

Dec. 8—Elsinore, Calif. (B) Thermal Thumbs FF Wakefield Annual Meet. Site: South Side. A. Payne CD. 2337 Ewing St., Los Angeles, Calif. 90039.

Dec. 15—Sepulveda, Calif. (A) San Valeers Monthly December '74 FF (Cat. II) Meet. Site: Sepulveda. G. Weissenberger CD. 17776 San Francisco St., Fountain Valley, Calif. 92708. Sponsor: San Valeers M.A.C.

Dec. 15—Lake Elsinore, Calif. Annual Jumbo & P-Nut Rubber Scale Meet. Site: Lake Elsinore. C. Hatrak CD. 3825 W. 144th St., Hawthorne, Calif. 90250. Sponsor: Rockwell International Flightmasters.

Dec. 28-Jan. 1—Winter Park, Fla. (AA) Tangerine Int'l RC Championships. Site: R.C.A.C.F. Field. W. Schoonard CD. 2080 Sharon Dr., Winter Park, Fla. 32789.

AMA OFFICER DIRECTORY

The most recent complete directory was published in the September *AAM*, page 101.

They're better because, among other things, they offer versatility which the less expensive brands cannot. You get a buddy box on a \$500.00 radio because it's the buddy box (and other deluxe features) which make it a \$500.00 rig.

According to the trade winds, most manufacturers have decided that the trainer system (an approximate \$20.00 item) could be eliminated (or made optional) in the face of rising material and production costs. That's why radio prices have remained relatively stable for the last few years. Also, the trainer cord seems a dead horse. I have personally only seen perhaps six of them in use during the last three to four years!

And I'll probably never know what you have against top-of-the-line radios. After all, you just spent \$50.00 more on your radio because of the lost model. How much will your radio be worth by the time you learn to fly? Perhaps you'll have crashed \$400.00 to \$500.00 worth of equipment through your haste to save \$\$\$ on a radio.

A moot point, perhaps, but tell your instructor to stand closer, make you keep the model higher, and stay awake. Don't blame him, don't blame us, and don't blame the RC manufacturers. You apparently knew when you bought the radio that you weren't getting a potential "safety" feature. What you pay is what you get.—php

Intercontinental Intrigue

I am sending you a picture of my one model. It's not the latest, but my favorite—all balsa, covered with Mono-Kote, O.S. radio and HB20 engine. It's a

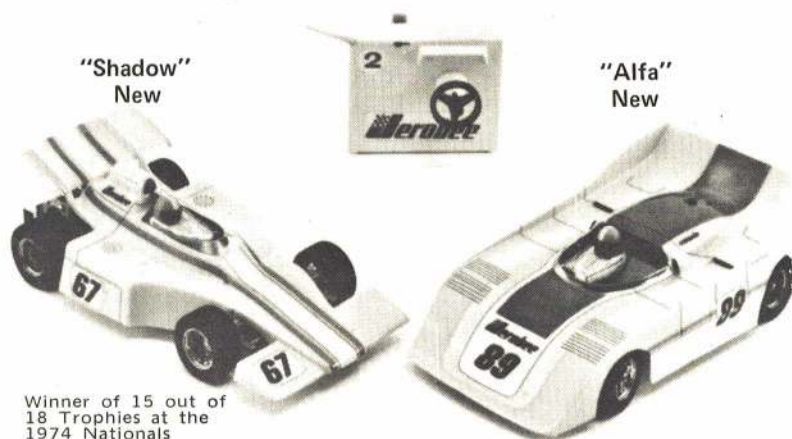


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Stanislav Kacirek
Baghdad, Iraq

(Continued on page 118)

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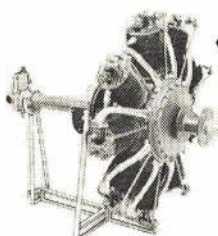
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Birmingham, Ala. (UPI)—Sheriff Mel Bailey's department has purchased a model plane with a six-foot wingspan that can carry and eject a hand grenade or a smoke bomb for use against snipers on tall buildings.

Bailey said that the remote-controlled plane could also carry an explosive charge to demolish doors. He said the \$300 plane can fly at 60 mph.

**Jack Fraher
Riverdale, N.Y.**

In a forthcoming editorial, Mr. Fraher will present his own philosophy regarding the current status of model aviation, as well as its vehicle of communication and dissemination—the model magazine.—ph

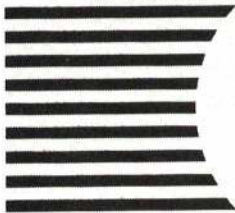
—Harold Cunningham's AIRPLANE SAVING BOOKS

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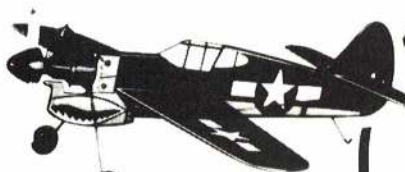


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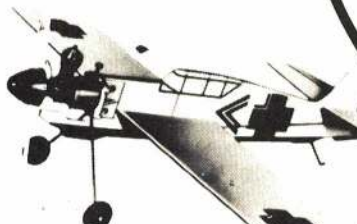
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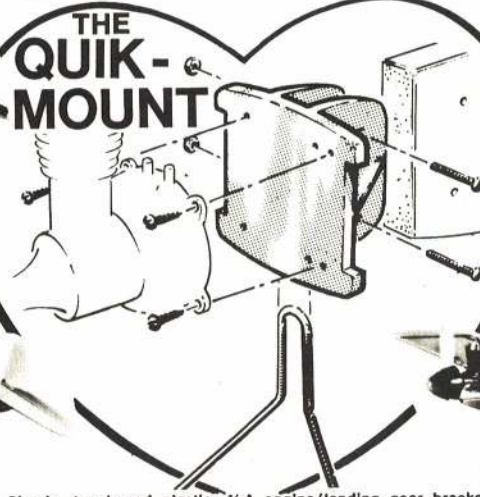
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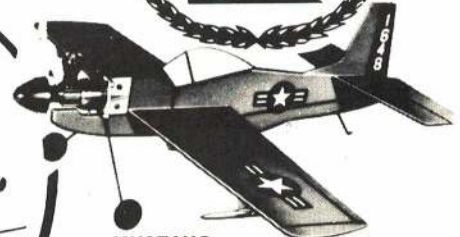
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P.D.Q.-2 Build a full-size aircraft using foam wing construction, same as R.C. Snowmobile engine. See AAM Dec. 23, 1973, page 39. Detailed plans \$20.00. Information free. Wayne Ison, 7 Alpine Lane, Elkhart, Ind. 46514.

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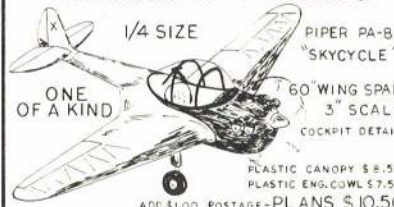
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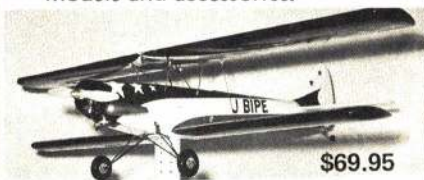
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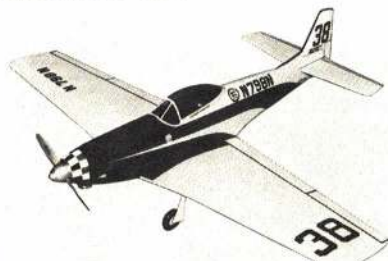
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MCCULLOUGH ON RC

(Continued from page 77)

custom units? The answer is Orbit's new X-75 radio.

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preparing a kit of Dave's NATS winning F.W. 190 D-9. To be available late this year, the prototype scored an amazing 98 static points and 82 flight points. Dave notes that, due to a temporary materials shortage problem, the first run of the kit will be on a limited-availability basis. So get your dealer to order one now.

BOSS ON CL

(Continued from page 81)

Moving from static judging and things technical to the flying field, we see how the seemingly unimportant models can come alive to challenge these with super detail.

The AN-14M, in the capable hands of Kramarenko, put in a great flight to maintain its first-place position by more than 700 points in the final standings. On the other hand, Ostrowski made only one flight with his P-38 (landing gear problems), leaving him in a precarious second place. Mike Reeves and Mike Gretz, both flying Zlins, put in excellent flights, moving them from fifth and sixth places after static judging, to third and fourth places in the final standings.

An analysis of the scoring shows that Reeves and Gretz overcame more than 600-point differences in static scores between Ostrowski's P-38 and their Zlins on the flying field, finishing 47 and 92 points, respectively, behind Ostrowski. Had Reeves been awarded only one more point, or Gretz two more points by all judges during their flight programs, either could have taken second place.

Bill Harney, who had the third-best plane statically, wound up in seventh place in the overall standings. His Zero just didn't have it

(Continued on page 128)

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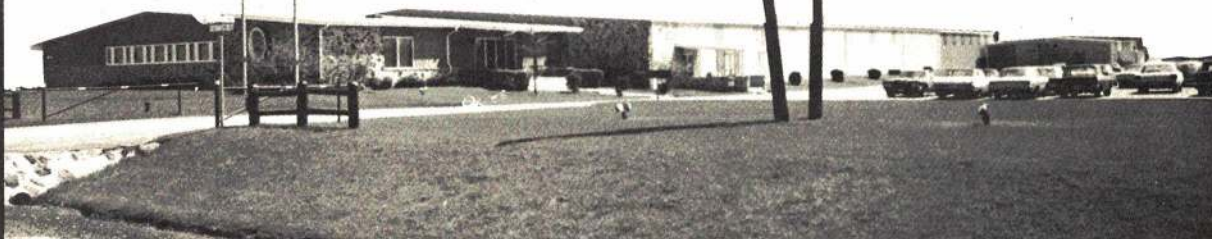
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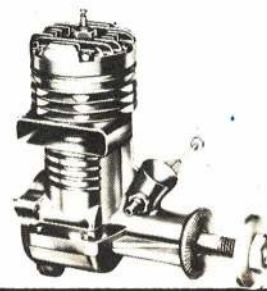
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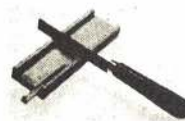
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BOSS ON CL/ (Continued from 125)

on the flying field—ground handling was poor, its flight was not too stable and his gear would not retract.

You might be asking yourself, What is the point of all this talk about flight vs. super-detailing? Well, it appears that, except for the Soviet AN-14M which was able to put it all together, we saw two types of models: those that could fly well, and those that were great statically. Perhaps somewhere in between is the right combination. I know that, after seeing this World Championship, if I were ever to attempt to build for this type of competition, I'd really consider all angles before selecting a subject.

Before closing, I would like to express my thanks to Pete Bianchini who helped me direct the CL section of the competition; and to Irene and Bill Knepp for their superb efforts at the desk keeping track of all the static and flight scoring. One last note: If we ever have the Scale World Champs in this country again, make every effort to see it. It can be a great modeling/learning experience.

SMITH ON SPEED

(Continued from page 85)

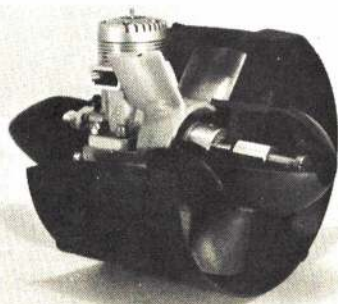
to anyone who did) may have scared some fliers off. There was no bug problem in the camp area. There was plenty of water, and a beautiful pool on the base—some nights only a half dozen or so people were using it. Great weather; more room to fly than we could possibly have used; all in all, one of the best NATS sites we could ask for.

And those LARKS—what a job they did! These guys, and there aren't a real big bunch of them, took on a job that the Navy used to do, and pulled it off as well or better. And they smiled the whole time! Thanks guys, we all appreciate it and hope to see you again next year. Some contestants have been spoiled rotten by having the Navy do it all. Pull your heads out of the sand! The LARKS took the bull by the tail and faced the situation! Ask to help out; you can be used someplace.

A note to AMA: for flying space and lay-outs, we never had it so good. The flying schedule could stand some revision—maybe start a day earlier and split up B-Speed, B Proto on one day, and Formula 40 on another. And put three age divisions in Formula 40. The trophies this year are better than last, but still aren't "NATS Quality." Plaques with the "hanging hole" on the wrong

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end don't show much concern ("Heck, these guys are model builders, let 'em put the hole where they want it," must be their feelings).

Roses to Bev Wisniewski and her timing crew. She again had the family with her to help out. Someone sprung for all new stopwatches, so a big problem of the past has been solved. Bev should have gotten a Purple Heart early in the week, when the only wind we had blew a blackboard over on her. She was down, but not out for a short time. Thanks for the good job, gang. We all appreciated it.

How about the gang from Cleveland that drove down in an old Corvair Van, only to have a wheel bearing go out "somewhere in Mississippi" and, after scrounging one from a local native (for \$30.00), still got there too late to process for the events they came to fly?

There were no new trends in design this year. It seems as if no one has challenged that guy, who in 1946 said, "speed ships should look like this." Proto ships are about as far from the original rules intent as possible...so what else is new? We still have to get younger fliers interested. Almost without exception, the Juniors flying today are the sons and daughters of someone who is, or has been, active in CL Racing.

A new and elite club was started at this year's NATS. That club, the American Aircraft Modeler 200 mph Club, inducted its first three members on Aug. 9. They are Mike Langlois, Jay March and Charlie Schubert. Membership in the club can be had by anyone who flies a CL Racing model at least 200 mph in official competition. Shirts were awarded to the charter members on the speed circles. Wear 'em with pride guys. You have worked hard to earn them. (When you hit the magic 200 mark in official competition, send your name, address, the contest dates and sanction number to American Aircraft Modeler, and we'll send you an official "AAM 200 MPH Club" shirt. php)

It would have been nice if the chairman of the CLCB could have made the Contest Board Meeting, since he was in the area at the time. (It would have saved some letter writing after the NATS, if nothing else).

Those who were there had a great time. Those who didn't make it missed another great NATS. It wasn't that far from anywhere, and the trip both ways was very enjoyable. Hope to see more of you at the NATS next year. Now if that guy will only start that engine on Saturday...

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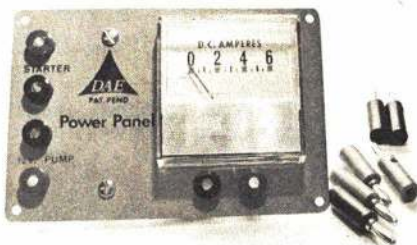
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LISTER ON L/D

(Continued from page 86)

to within 1/32". For super-accurate work, which is beyond most model building tolerances, the symmetrical section's coordinates should be laid off perpendicular to the meanline. At any rate, that's how I do it and most of my ships fly without any drastic alteration required for trim.

For what it's worth, one more point of NACA four-digit flexibility should be noted. The geometrics of symmetrical sections are all directly proportional to each other. By getting the coordinates on one, you can calculate exactly the coordinates for any other thickness. The height values of the 0006, for example, can be obtained simply by multiplying all the values from the 0008 by the ratio 6/8.

Now for the "Skinny Lifters"—or how to fly with hardly any bathing suit at all. A "Skinny Lifter" is simply a meanline made from sheet material in the middle with hard leading and trailing edges to avoid the rat-nibbled look. A section made this way is unlike a Jedelsky, in that the sheet is curved by tossing in ribs every three to four inches. The "6400 Skinny Lifter" shown in Fig. 4 is an attempt at an NACA 6400 airfoil. This section would be a good substitute for any 6409 airfoil. Its profile drag should be about 40% less than that of a 6409 and its installed performance might be good enough to give you a sailplane with 20% or so longer endurance.

If you wanted to try for a 6500 series section, for example, just use the 65 meanline shown in the chart. The important thing is to preserve the meanline shape by making the sheet of a thickness so that it just brackets the desired meanline.

MEUSER ON FF

(Continued from page 89)

of the first landing.

Second in line for the Hard Luck Award was Vince Croghan, also a member of the 1973 team, who poked the front wheel of his motorcycle into a camouflaged hole during practice, and ended up with the motorcycle landing on his foot. Another Nordic flier, George Lewis, received Honorable Mention; he threw his back out of kilter while straining to catch a power model...his son Peter proxied for him.

Chancey and Isaacson, by virtue of their maxes in Round One, led the pack until Round Three, when Chancey fell 27 sec. short of a max. That dumped him into third place, a position he was to hold until the end. Isaacson yielded first place to Walters in Round Five when he launched low and missed a max by 21 sec. But, going into Round Seven, anything was possible; a slight goof by any of the top three could put him off the team.

Isaacson and Chancey went off into the same thermal and both maxed; Walters towed up a short time later, and decided to bring his model down for another try. Walters towed up again, ran quite a way upwind, and launched so fast his wings fluttered. He maxed handily, and the Team Selection Finals were all over.

Thanks to the organizers, Contest Director Sal Taibi, Event Directors Bill Hartill, Al Hotard, and Andy Faykun, and the many who served as timers, checkers, and recorders, the City of Taft, and the Standard Oil Co., which made flying there possible, the 1975 Team Selection Finals will be long remembered as one of the most successful.

MOONEY ON FF

(Continued from page 90)

bipes, tandem wingers, seaplanes, and multi-motored models which the rules were designed to bring to the fore. And this event still attracts more entries than the Peanut events. So there must be something to it. Anyone wanting a set of these unique rules can get them simply by sending a self-addressed, stamped envelope to FAC GHQ, 66 Bankside St., Bridgeport, Conn. 06606.

One last comment. These rules were devised for outdoor use only. They have been used indoors a few times and are not effective.

BURKHAM ON HELICOPTERS

(Continued from page 91)

Gyroscopic precession causes it to displace upward 90° later, which is directly over the point where the low blade was lowest. The result of this is to put up-cyclic pitch into the blades 90° before they pass the lowest point. Now, if the tailboom gets pushed up toward the rotor disk in a tail-first landing, the dynamic flap stops come into action and very rapidly put cyclic pitch into the blades to get them out of the way of the tail boom.

A variation of the principle was used successfully by Gene Rock on his BO-105, the rotor of which is very close to the fuselage. On the bottom of his Hiller-type universally mounted hub he fastened a special washer. The inside of the washer has flats filed in it which are angled so that when one blade is pushed down the flat contacts the shaft and slides in the direction to reduce pitch of the blade which went down.

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blade 90° before it passes the down position. A brass bushing on the shaft acts as a roller, helps the cam to deflect and prevents scoring of the shaft. Gene says he has bounced the model all around on landing and hasn't yet damaged the tailboom.

A letter asks why we don't put the cyclic pitch directly into the blades, instead of into the paddles. No space to answer that now, but I recommend the book, *Aerodynamics of the Helicopter*, by Gessow and Myers, published by Ungar.

Take Your Choice: I can't think of any direct solution to ARCHA vs. NRCHA, two rival groups organized for the promotion of model helicopter flying and technology. Each group has a lot to recommend it. How about everybody joining both groups, selecting the best features of both and eventually forming one

large independent organization, under AMA?

I like the idea of pilot proficiency ratings as an incentive to practice and as a measure of progress. As for what maneuvers to use in contests, it is good to have a set of well-known standard maneuvers, both timed and judged, with emphasis on flying skill.

At this early stage of the game, however, I plead strongly for allowing two or three optional maneuvers in every contest. These allow the pilot to show off his helicopter and his ingenuity to the best advantage, advance the state of the art and create the most spectator and contestant interest. I plead further for recognition and encouragement of scratch-built helicopters. If technological advancement is left to the three or four kit manufacturers in this country, progress will be very slow.

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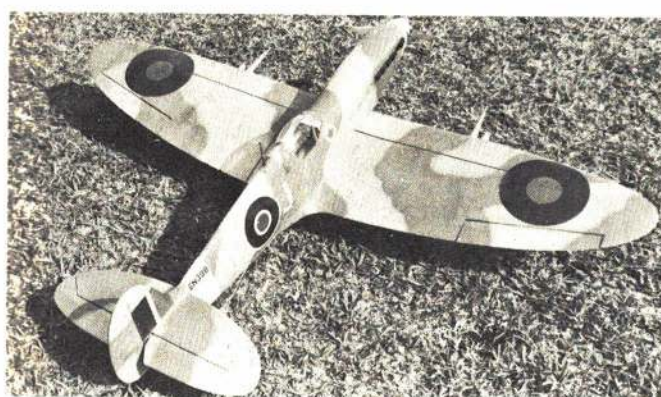
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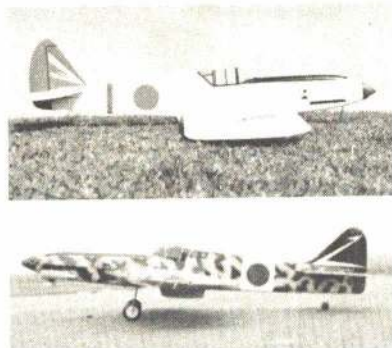
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