

1980 NATS: C/L Stunt, R/C Soaring, F/F

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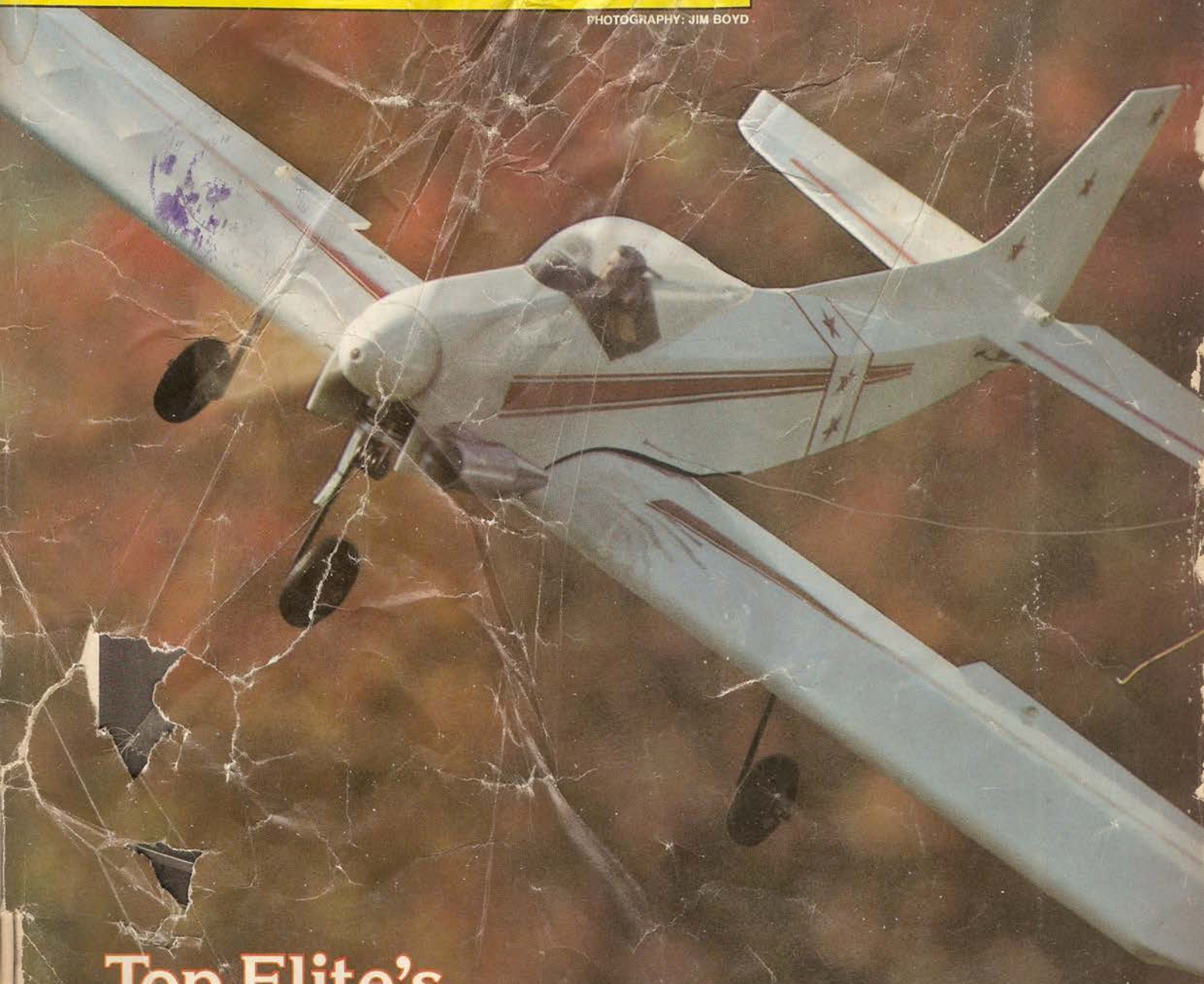
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FLYING
MODELS

*fly***ing**
models

PHOTOGRAPHY: JIM BOYD

R/C Boating



Top Flite's

Contender 40



A few words about me.

I am Electronic Engineer and this is my day job.

From tender age two things attracted my interest and I managed to have them in my life.

The first was electricity and the second the bluesky.

I've found the model airplanes hobby in October 1973.

I love the wooden structures from scratch airplanes and boats also.

I started collecting plans, articles, books and anything else that could help the hobby of many years ago and have created a very large personal collection of them.

Since 2004 I became involved with the digitization and restoration of them and started to share the plans from public domain with my fellow modelers.

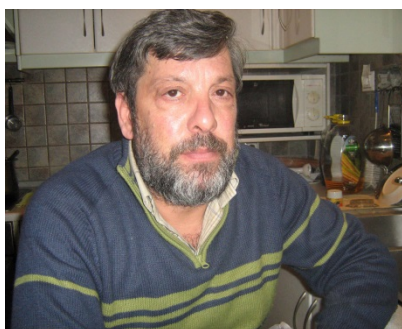
Now after all this experience I have decided to digitize, to clean and to re publish in digital edition and free of all issues RC Modeler magazine from 1963 to 2005 and others books and magazines.

Certainly this will be a very long, difficult and tedious task but I believe with the help of all of you I will finish it in a short time.

I apologize in advance because my English is poor. It is not my mother language because I am Greek. I wish all of you who choose to collect and read this my work good enjoyment and enjoy your buildings.

My name is Elijah Efthimiopoulos. (H.E)
My nickname Hlsat.

My country is Greece, and the my city is Xanthi.



Λίγα λόγια για μένα.

Είμαι Μηχανικός Ηλεκτρονικός και αυτό είναι το αληθινό μου επάγγελμα εργασίας.

Από μικρός δυο πράγματα μου κέντρισαν το ενδιαφέρον και ασχολήθηκα με αυτά.

Πρώτον ο ηλεκτρισμός και δεύτερον το απέραντο γαλάζιο του ουρανού και ο αέρας αυτού.

Το χόμπι του αερομοντελισμού το πρωτογνώρισα τον Οκτώβριο του 1973.

Μου αρέσουν οι ξύλινες κατασκευές αεροπλάνων και σκαφών από το μηδέν.

Ξεκίνησα να συλλέγω σχέδια, άρθρα, βιβλία και ότι άλλο μπορούσε να με βοηθήσει στο χόμπι από τα πολύ παλιά χρόνια.

Έχω δημιουργήσει μια πολύ μεγάλη προσωπική συλλογή από αυτά.

Από το 2004 άρχισα να ασχολούμαι με την ψηφιοποίηση τους, τον καθαρισμό τους αλλά και να τα μοιράζομαι μαζί σας αφού τα δημοσιοποιώ στο διαδίκτυο (όσα από αυτά επιτρέπεται λόγω των πνευματικών δικαιωμάτων τους).

Σήμερα μετά από όλη αυτήν την εμπειρία που έχω αποκτήσει, αποφάσισα να ψηφιοποιήσω, να καθαρίσω και να ξαναδημοσιεύσω σε ψηφιακή έκδοση και ελεύθερα όλα τα τεύχη του περιοδικού RC Modeler από το 1963 μέχρι το 2005 και κάποια άλλα βιβλία και περιοδικά.

Σίγουρα είναι μια πολύ μεγάλη, δύσκολη και επίπονη εργασία αλλά πιστεύω με την βοήθεια όλων σας να την τελειώσω σε ένα καλό αλλά μεγάλο χρονικό διάστημα.

Ζητώ συγγνώμη εκ των προτέρων γιατί τα Αγγλικά μου είναι φτωχά.

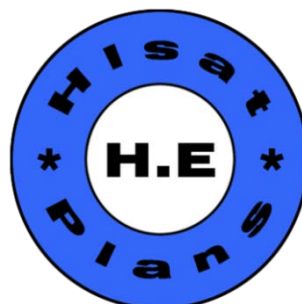
Δεν είναι η μητρική μου γλώσσα γιατί είμαι Έλληνας.

Εύχομαι σε όλους εσάς που θα επιλέξετε να τα συλλέξετε και να τα διαβάσετε αυτήν την εργασία μου καλή απόλαυση και καλές κατασκευές.

Το όνομα μου είναι Ηλίας Ευθυμίουπουλος.(H.E)

Το ψευδώνυμο μου Hlsat.

Η χώρα μου η Ελλάδα και η πολη μου η Ξάνθη.



Flying Models Magazine Editing and Resampling.

Work Done:

- 1)Advertisements removed.
- 2) Plans building plane removed and hyperlinked.
- 3)Articles building plane removed and hyperlinked.
- 4)Pages reordered.
- 5)Topics list added.

Now you can read these great issues and find the plans and building articles on multiple sites on the internet.

All Plans can be found here:

Hlsat Blog Flying Models Magazine (Covers - Plans - Articles).

<http://www.rcgroups.com/forums/showthread.php?t=2445105>

AeroFred Gallery Free Plans.

<http://aerofred.com/index.php>

Hip Pocket Aeronautics Gallery Free Plans.

http://www.hippocketaeronautics.com/hpa_plans/index.php

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Editing by Hlsat.

Thanks Elijah from Greece.

flying models

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1924



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on the cover

Les Hoffman's Contender 40 makes a simulated approach for a landing. This ship is flap equipped and is a spirited flyer. An HP .40 powers this new addition to the Top Flite line of fine kits. Kodachrome by Jim Boyd.

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Competition - for fun

In conversations with sport flyers, I've often been asked why I continue to compete. The term "competition" to many of these modelers conjures up images of an excruciating ordeal that is in no way relaxing or fun. Those of us who have been both sides of the modeling scene, sport flying and competition, know that for the most part these images are not accurate.

The sport flyer will argue that competition flyers take their hobby too seriously and cease to enjoy day-to-day flying. I'm sure that in some cases this is all too true. I've known many contest flyers who are perpetual nervous wrecks due to the pressure that they put on themselves to be successful, at all costs, in competition.

There is a large group of contest flyers who have learned to have fun while they are competing. These are the modelers who have a love for their hobby first and a need to compete second. Winning for them is very important, but not as important as having fun and associating with other modelers with the same outlook.

I am not suggesting that all of us, in order to enjoy our hobby, must compete. I am saying that to refrain from any form of competition because of fear of becoming too involved is a waste of an opportunity to learn and to expand upon one's own horizons in the hobby.

The type of competition that I'm referring to is the "fun type." Many clubs hold novelty meets or fun-flys that have some sort of low-key contest events. Spot-landing, Balloon-bust, Limbo, LeMans Start, Orange Crate Derbys, etc., are examples of the types of events that challenge people's skills without the need for weeks, months or years of preparation. With these types of events, the danger of taking it all too seriously is non-

existent. Can you get overly involved with a contest that requires you to build a flyable airplane from a scrap orange crate and then fly it, all within a few minutes? I think you would agree that this is one type of competition that won't ruin your "Sport Flyer" rating. I also think you would agree that it sounds like fun.

There are always new events surfacing at sanctioned contests that are designed for the sport competitor. The sport competitor is a person who wishes to compete in formal contests but not in events that require super, sophisticated equipment. Examples of this type of event are Quickee 500 R/C Pylon Racing, Stand-Off Scale, Novice and Pre-Novice R/C Aerobatics, Profile Carrier and F/F Penney Plane.

Unfortunately competition in any form tends to breed sophistication. Because of this, many of the "less competitive" events become just as demanding as the major events in a few seasons. New events of this type continue to surface and are fun for a while. Give them a try.

Even the hardcore sport flyer will engage in some form of competition. It may be a contest against the clock to see how long his latest F/F rubber ship will fly, or even a duel against the rising cost of the hobby to see how little he can produce a new sport design for.

Whatever your motivation or interest, try some form of competition soon. Just remember to keep it enjoyable.

What do I answer when I'm asked why I complete? *Because it's fun!*—BOB HUNT

Air Mail

readers' forum

Term paper

I would like to suggest a permanent department or column containing a glossary of modeling terms and their meaning.

As an "old timer", who recently returned to modeling, I am sure that others beginning the hobby as well as myself would find such a column very helpful.

FRANK EVRAIRE
Ontario, Canada

Get your peanuts here

I read about a book called "Peanut Power", by Bill Hannan, in the Flyin' Things for Fledglings section of your October 1980 issue. How can I obtain a copy of this book?

ARTHUR J. BURKHARD, JR.
Milford, Ohio

Bill Hannan's book, *Peanut Power*, is perhaps the best source of information on this rapidly growing event, which explains why we carry it in our retail book department, The Book Hangar. See page 51 of this issue for a complete listing of modeling and full-scale aviation books—ED.

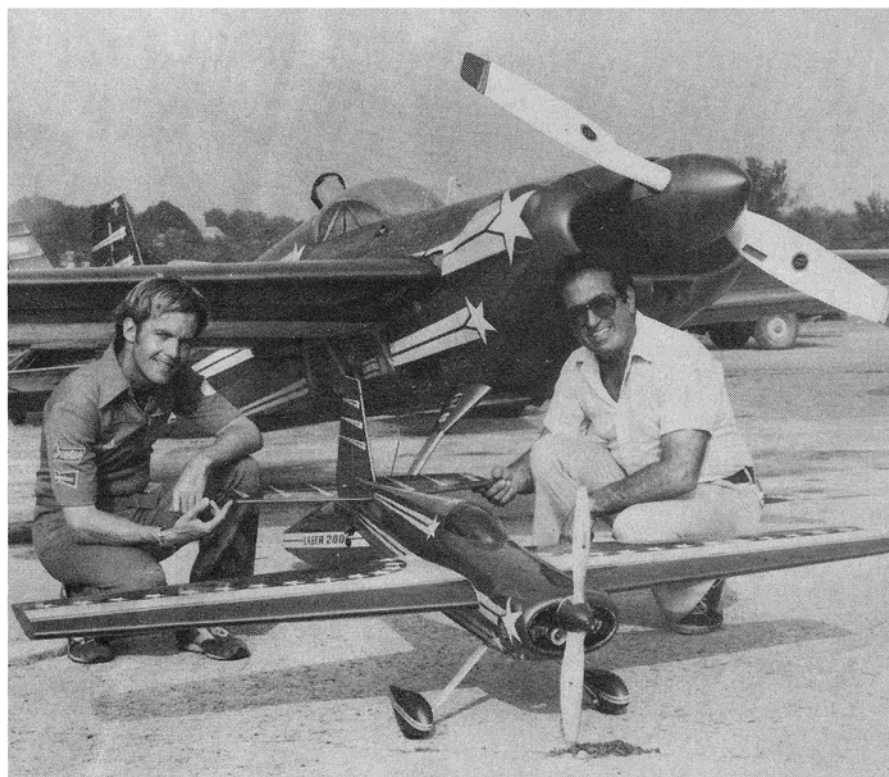
Likes the Luscombe

I would like to ask your help in locating a set of plans for the Luscombe Silveira Model 8. I am familiar with a kit of this model from a company in England but I would prefer to build a larger version than they offer. I own a full-scale Luscombe and am anxious to build a large, scale model of it. Any help that you can offer will be appreciated.

JOSEPH PEREZ
906 S. Highway 359
San Diego, TX 78384

Flying Report

news and comment



Leo Loudenslager (left) and Norm Cassella were two of the featured performers at the 1980 Sussex Air Show. They are shown in front of Leo's Laser 200 aerobatic monoplane with Norm's Quarter Scale Laser.

In the early years of aviation, air shows captured the imagination of a very naive American people. World War I had ended and many former military pilots found employment by buying old Jenny aircraft and barnstorming at air shows around the country. These were carnivals of acrobatics, parachuting, wing walking, hot air balloons, clown acts and sound.

This year I rediscovered airshows. While in my early teens, my Dad was the manager of an airport. It was a small private base and I would work there each spring and summer mowing the tie-down lots in return for some flying time. In 1962, the CBS Sports Spectacular program came to our aerodrome for the purpose of filming a one-and-a-half hour segment on Bill Sweet's Airshow.

To a young boy, interested in aviation, this was to be an experience to remember for a lifetime. Featured on the bill were Aerobatic greats Rod Joycelin, Bill Adams, Charlie Hillard and Harold Krier. The premiere dare-devil of the era Red Grant was also on hand to thrill us with his wingwalking, skydiving, and car-to-plane transfers. A bonus was the appearance of Gregory (Pappy) Boyington. Modeling was well represented also, with Larry Scarinzi, Red Reinhart and John D'Ottavio performing during lulls in the full-scale show.

I came away from that experience with enough heroes to last the rest of my young life.

These were the recollections I had this past summer when I was asked to perform at two local airshows.

The first of these shows was the Shriners

1980 Hot Air Balloon Race and Airshow in Danbury, Connecticut. The featured performer at this show was Jim Parker. Jim, who hails from Warren, Vermont, flew a Pitts S-2A Biplane in a most unique routine. All of Jim's maneuvers were done "on the deck" with some of his pullouts being performed as low as a C/L Stunt flyer's would be. Perhaps the most exciting portion of Jim's act was the "Double Inverted Ribbon Cut" in which the tiny Biplane flew inverted between two twenty foot high poles that were supported by the ground crew members. Strung between these poles were two ribbons that were spaced apart vertically by five feet. The lowest ribbon was a mere fifteen feet off of the ground. The object of this maneuver was to cut the lower ribbon while leaving the upper one intact. Jim performed this amazing feat twice in the two days of the show.

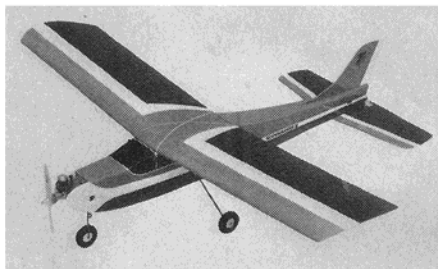
Many area modelers were present to display and demonstrate most of the facets of our hobby. Among them was Norman Cassella, noted designer/flyer and owner of Cass Engineering in Rutherford, New Jersey. Norm had just finished a quarter scale version of Leo Loudenslager's Laser 200. This model was built from a Mallory Models kit and was powered by Norm's own prop drive unit.

A few weeks later Norm and I found ourselves at another airshow. This time the scene was Paul Styger's Sussex Airport, New Jersey. The very special featured performer at this show was the newly crowned World Aerobatic Champion, Leo Loudenslager. Leo flew the same routine that captured the

world crown for him. The sleek Laser 200 was much like a model plane in construction and was tailor fitted by its owner to his precise demands.

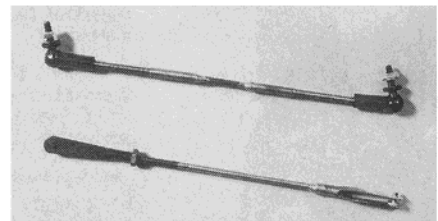
It was quite a sight to see Leo and Norm Cassella posing together with Leo's full-scale Laser 200 and Norm's exact scale model.

The feelings from my childhood are still the same—the "Heros" are all that's different. Go see an airshow next summer and leave your earplugs at home—BOB HUNT.

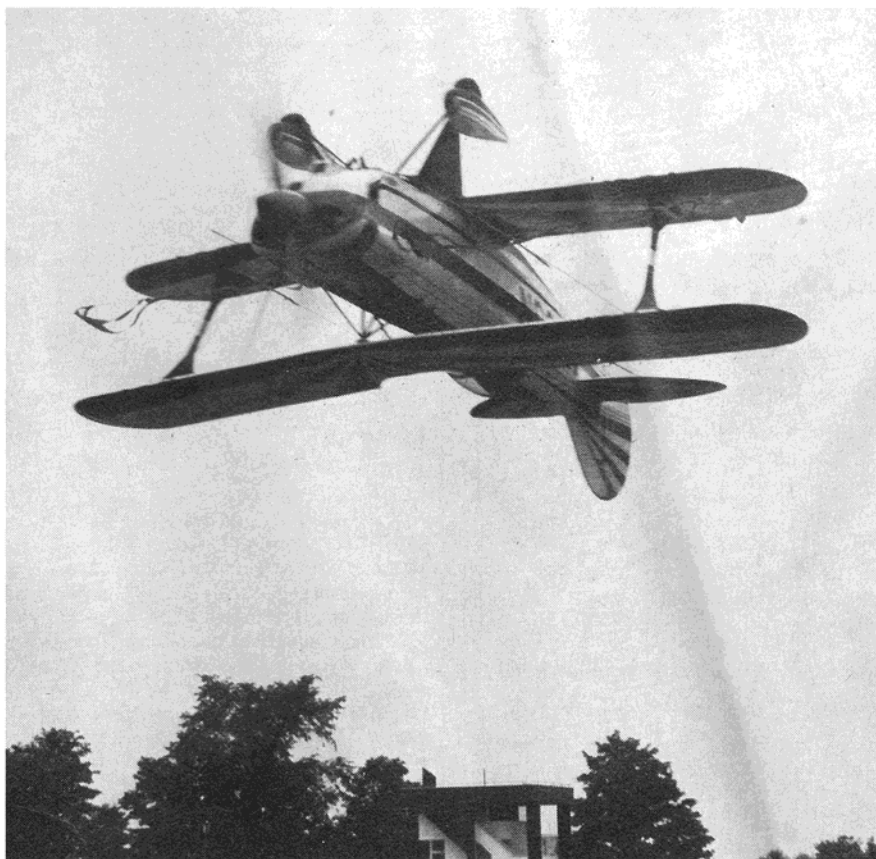


TOP FLITE MODELS INC., 1901 N. Naragansett Ave., Chicago, IL 60639, introduces the new Schoolmaster IITM R/C trainer, a redesign of the aerodynamically proven Schoolmaster. According to the Chicago based company, the Schoolmaster II is the first in its TRAINAIRE Series designed for the beginning R/C modeler. Top Flite's construction and attention to the needs of the new modeler make the Schoolmaster II ideal as a first R/C airplane. It is a stable, easy to handle aircraft and, with new, preformed, wide-stance landing gear, take offs and landings are easier to accomplish for the beginner. The Schoolmaster II can be flown with rudder and elevator controls and a third channel can be added for the throttle control. The model features a large radio compartment for today's radio equipment. The plane can be flown with a .049 to .09 engine and is suited to small field flying. It has a 39" wingspan, 292 sq. in. of wing area, is 32½" long and weighs 19-26 oz., depending on engine size.

For ease of construction the Schoolmaster II features machine finished, shaped leading edges, beveled balsa wing tips, "D box" wing construction and one piece fuselage sides that are printed for easy and accurate assembly. The kit comes complete with detailed, full size plans highlighted with step-by-step instructions and a hardware package with all necessary screws, nuts and nylon fittings. Top Flite's simplified all balsa construction features precut parts clearly marked for easy identification. Write to the above address for more information.

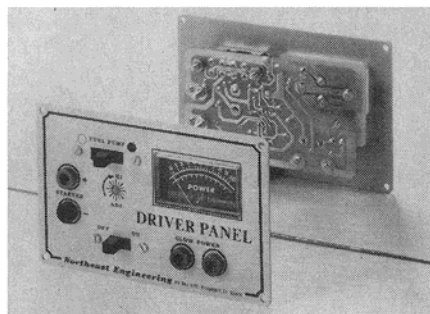


BOLINK CHAMPION, P.O. Box 80653, Atlanta, GA 30366, offers two different versions of adjustable tie rods. Number BL-70 using quick links is easy to adjust in and out without bending any wire. The other version features a balljoint and adjustable length.



Jim Parker is shown here performing the "Inverted Ribbon Cut" maneuver in his Pitts S2-A. The scene is the Shriners 1980 Hot Air Balloon Race in Danbury, Connecticut. Jim's an exciting performer.

These units fit all cars using Jomac type chassis and also 1/12 scale Latrax cars. Send \$1.00 to the address above for a complete catalog.



NORTHEAST ENGINEERING, P.O. Box 6201, Bridgeport, CT 06606, announces the all new "Driver Panel." This new design retains the best features of the popular Plug-driver[®] and for the first time makes it available in a convenient panel form. The Driver Panel satisfies three basic needs; first, a 100% solid state "driver" for hot plugs and fast starts; second, electric power outlets for your 12 volt starter; and third, a reversing switch control for your electric fuel pump. Now the driver will light all 1½ volt glow plugs without the need for adjustment. A front panel screwdriver adjustment is used for lighting higher voltage plugs (such as an OPS or Glo-Bee), or for lighting 2 plugs at the same time (Yes!, 2 plugs at the same time!). And it does this with no power-robbing dropping resistors to heat up, and quickly run your battery down. This transistorized unit

will light a glow plug all day on a single battery charge, and it will keep the plug lit even if battery voltage drops from 12 all the way down to 7 volts. This is a good feature when using an electric starter. The precision, high quality power meter provides clear indication of plug condition, and the on-off switch eliminates tedious disconnecting and re-connecting of your glow plug clip; makes tuning a snap! The power connections are custom made 20 amp banana jacks providing full torque power to your electric starter. Neat 12-volt fuel pump connections are provided at the rear of the panel. The fuel pump reversing switch has three positions; spring return from "Fill" side, center "Off", and stays in "Empty" position freeing hands for tilting the model to empty the fuel tank. Heavy 12-gauge hook-up wire is provided, as well as all color matching banana plugs and all hardware for a complete package. A tight fitting plastic case covers and protects the glass epoxy printed circuit board. The front panel is heavy gauge aluminum, brushed and gold anodized for a beautiful appearance. Suggested retail price is \$50.00. Write to the above address for more information.

ROBART, 310 N. 5th St., St. Charles, IL 60174, is now producing Hinge Point Pockets. These pockets are designed to mount into the wooden surfaces of a model airplane and accept Robart Hinge Points. The pockets have a set screw in the bottom that can be loosened to allow the hinges to be removed for painting or replacement. Also available are Flat Hinge Pockets that have the same features except that they accept all popular flat hinges. For more information write to the address above.



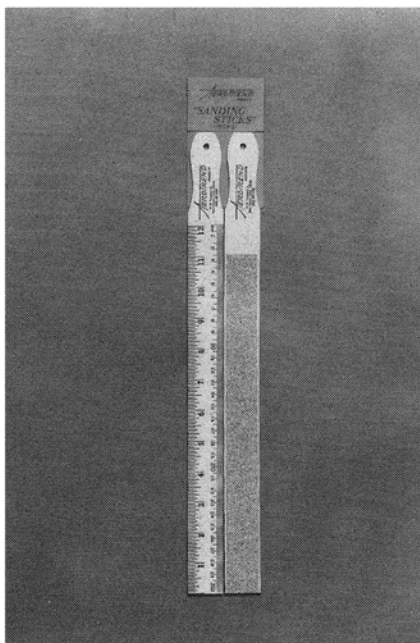
HOBBY HIDEAWAY, RR 2 Box 19, Delavan, IL 61734, is producing "My Tee-Shirt", in Children's sizes 6-8, 10-12 and 14-16 for \$5.80 each postpaid or in adults sizes, S,M,L or XL for \$6.00 each postpaid. These shirts feature the Laird Super Solution outlined in green on a yellow shirt. For more information write to the above address.

CARL GOLDBERG MODELS, INC., 4734 West Chicago Ave., Chicago, IL 60651, introduces their new Precision Balancer. The balancer is designed to balance planes and boats quickly and accurately. It is convenient and easy to use leaving hands free to shift radio gear or weights to achieve perfect balance. The Precision Balancer is priced at \$5.95. For more information write to the above address.

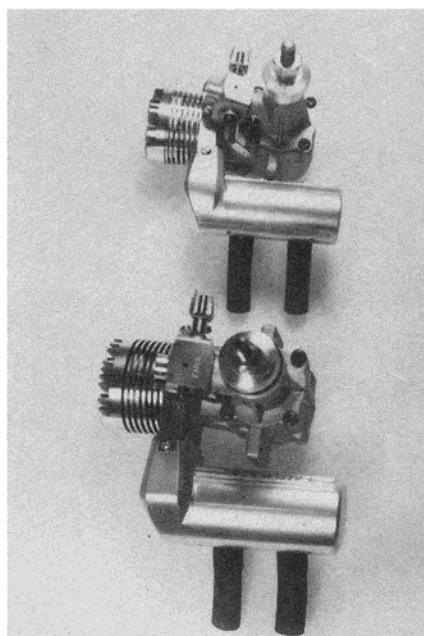


MODEL RECTIFIER CORPORATION, 2500 Woodbridge Ave., Edison, NJ 08817, introduces their off-the-road Baja Buggies, the Sand Scorcher and Rough Rider. These are 1/10 scale models that are powered by a .05 electric motor. They feature: two forward and reverse speeds, four adjustable heavy duty shock absorbers that are actually filled with oil, special tires that are designed for extra traction on rough ground, 4-wheel independent suspension and a sealed metal transmission box that keeps mud and dirt out. Also featured is a waterproof radio/battery box with cam locks to keep the radio system dry. This feature allows the buggies to operate in and around mud and water. For

more information write to the above address.



AEROTREND PRODUCTS, 44 West Prospect St., New Haven, CT 06515, introduces their Sanding Sticks. Top quality 3M production sand paper (1 strip of 80 grit for shaping and 2 strips of 150 grit for fine sanding) applied to a straight flat surface with a handle. One sanding stick has a 12" rule on the reverse side. Sanding Sticks are just the items to help you get into those hard to sand places. There are two sticks per package at a retail price of \$1.69 per package. For more information write to the above address.

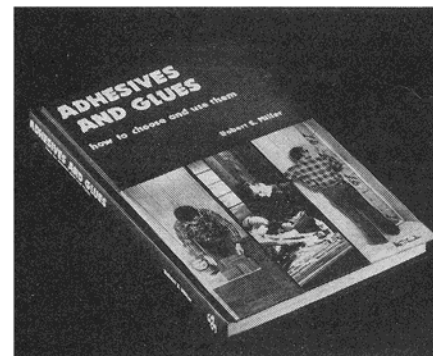


TATONE PRODUCTS CORP., 1209 Geneva Ave., San Francisco, CA 94112, now has available two new mufflers for scale aircraft such as the Pitts, Cessna 150, Skybolt and etc. These mufflers are designed for side mounted engines and have two angled exhaust tubes to exit out of the bottom of the cowl. The mufflers are light weight alumi-

num and machined to fit most of the currently popular engines. An adjustable screw strap clamp provides easy and positive attachment to the engine. Two neoprene tubing exhaust extensions and nylon tubing clamps are included with each muffler. Catalog No. TT-40 for .29-.40 is \$15.50, Catalog No. TT-60 for .45-.80 is \$16.50. Specify engine and size when ordering. These mufflers are now available at most hobby shops or can be ordered direct from the address above.



JEMCO, 1305 Foothill Dr., Vista, CA 92083, introduce their new Master Scale Series kits. The first in this series is the Douglas Dauntless SBD-5. This kit is priced at \$165.00 and features perforated flaps and dive brakes, individually molded five piece canopy for exact scale, colored four views, four 36" x 48" blueprints which illustrate the many scale items pertinent to the SBD-5 and also show how to actuate the flaps, dive brakes and bomb release with one proportional 180° servo. The ship spans 64" and is designed for .60 to .90 engines. A complete information packet is available for \$3.00 (refundable upon purchase of the kit), which includes four color pictures of the model, iron-on jacket patches, in depth pictorial catalog and line drawings. For more information write to the above address.



FRANKLIN CHEMICAL INDUSTRIES, INC., 2020 Buck St., Columbus, OH 43207, has released a complete and comprehensive book called Adhesives and Glues, How to Choose and Use Them. This book, while not being primarily for the modeler, has information that the do-it-yourselfer as well as the modeler should know about adhesives. The author, Robert S. Miller, has over 28 years in the adhesive industry with Franklin Labs. This book stems not only from Bob Miller's personal experience but with the cooperation and advice of Franklin Lab personnel. For more information write to the above address.

An FM Product Review: Heathkit "Thumb Tach"



A tachometer can be extremely helpful for the modeler who wants to become more objective. It's a big step beyond "faster" or "slower" because a tach can tell you just how fast or slow your engine is turning. Recent magazine references to tachometers reminded me that the Heathkit Thumb Tach (TT) is still available. It's an item that's been around for quite a while, and it's still a helpful tool (my recently purchased kit includes an instruction manual that was copyrighted in 1969).

Assembly of the TT kit is quite easy. I've had a little experience in electronic kit assembly, but I think even a first time builder could put this kit together in three or four hours with few problems. The kit includes all parts required for assembly except for a nine volt transistor radio battery. It even includes the correct type (resin core) of solder. Very complete instructions are provided and a small brochure describes proper soldering techniques and required tools. Heathkits are noted for their very comprehensive kit manuals. So, I won't cover the how-to here because it is handled very well in the manual.

In use, the TT is held (or placed on the ground in front of the model) facing the turning prop. Distance from the prop is not very critical and it's not necessary to be right up against the prop disk.

There are two areas that a tach will be helpful—establishing and maintaining performance standards, and experimenting for better performance. In order to have consistent airplane operation, you need to eliminate as many variables as possible. In the case of the engine, that means trying to ensure that the engine will operate in a predictable manner. A base r.p.m. figure should be established for each engine by testing it under known conditions. Also use a new or known good plug, fresh fuel, balanced prop, and check all screws or threaded joints for tightness. Weather conditions during the test should also be recorded. Then, each time you go out to fly, the r.p.m. should be checked—if it doesn't match the standard, then you must find out why. Over short periods of time weather conditions can almost be disregarded, but over a longer period, weather changes will introduce a new variable. With the mechanical features (plug, prop, threaded parts and screws tight) all constant, the fuel type becomes a variable which allows some experimentation to achieve the standard r.p.m. under varying weather conditions. Other factors to check are the type of plug and the head spacing (more or fewer head gaskets). It would be a good idea to keep the test prop separate from those used for flying, because even two props of the same type, diameter and pitch can give slightly different results due to manufacturing tolerances. A tach also allows checking

idle speeds of throttle equipped engines. A good point of reference here would be published engine tests.

A tach provides the measurement tool to evaluate experiments with fuels, plugs, pressure fuel systems, props or engine modifications when you're searching for more performance. Use of the tach will verify whether a change is faster or just sounds that way. Of course, the true test of change is in airplane performance, but you'll find that an objective bench test in which a tach will save time and fuel.

The TT operates by sensing interruptions in the flow of light entering the case. These interruptions can be due to prop blades or a strip of white paint on a flywheel or car wheel. The TT is not very sensitive to the amount of light involved, with the instruction manual stating that if there's enough light for flying, there's enough light for a reading. Under low light conditions a light source could be placed behind a prop, but I'd suggest being extremely careful when operating an engine under conditions that dim.

Calibration of the meter is one of the final assembly steps. The TT is aimed at an incandescent light bulb and one control is adjusted until a particular reading is attained. It's really very easy. Another reading is provided if a three bladed prop is used.

Battery life is estimated to be 40 hours, which is an awful lot of engine testing. It might be advisable to take a look at the battery every six months or so to make sure it's not leaking.

The Thumb Tach and a large collection of other kits, including R/C systems, are available by mail from Heath Company, Dept. 081-702, Benton Harbor, MI 49022, or from Heathkit retail stores. The price of the TT at this time is \$32.95, but it would be worthwhile to take the time to send for a free catalog to check the latest information. If you really would like to know more about engine operation, you should consider the purchase of a tach. The TT fulfills that need at a reasonable price, plus a few hours of your time. From the point of view of safety and convenience, I'd recommend the TT over the tachs that require contact with the engine shaft or the vibrating reed type which requires operation with two hands—AL LIDBERG.

Timetable

coming events

CLUB SECRETARIES: Items for the FM Timetable are welcome. Submit items typed, double spaced and with necessary information plus contact for complete data and entry blank. Specify AMA, FAI, NAMBA, IMPBA, AMYA, ROAR, etc. Include information on rules and classes to be run. Items will not be picked up from club bulletins to be run; they must be sent to this column.

R/C Boating

DOVER, FLORIDA—December 13-14. NAMBA Heat Racing for electric only, hosted by Miss Budweiser Racing Team at Dover District Park. Contact: Herb Stewart, Rt. 2 Box 220-5, Thonotosassa, FL 33592. 707/994-6643.

DOVER, FLORIDA—January 17-18. NAMBA Heat Racing for electric only, hosted by Miss Budweiser Racing Team at Dover District Park. Contact: Herb Stewart, Rt. 2 Box 220-5, Thonotosassa, FL 33592. 707/994-6643.

Orlando, Florida—January 17-18. IMPBA Florida Winter Nationals for all classes Hydro and Mono. Multi Racing, hosted by Orlando Culvert Dodgers. Contact: Joe Trexler, 7163 Rose Ave., Orlando, FL 32810. 305/299-8604.

FM Clinic

readers' questions

staff tips

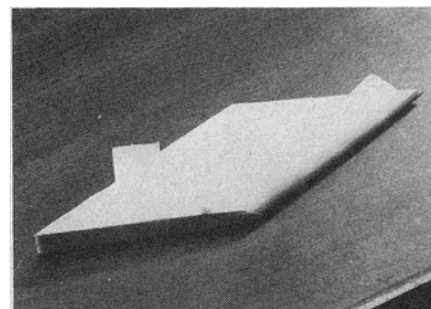
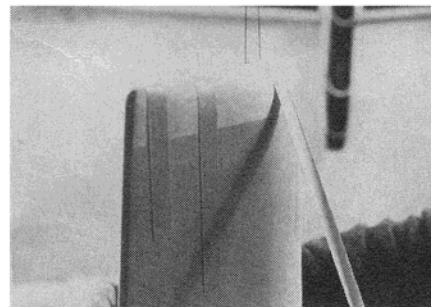
readers' tips

Contributions to *FM Clinic/readers' tips* should be sent to FLYING MODELS, P.O. Box 700, Newton, NJ 07860. \$1.25 per column inch (\$5.00 minimum) will be paid upon publication.

Staff tip:

Building with masking tape

If during construction, you've been using pins to clamp two parts together until the glue dries, then you're probably aware of the drawbacks of this procedure. Loose seams and ugly holes to fill are common with the pin method. When constructing the next ship, try using masking tape if possible to clamp parts together. One advantage of tape will result in seams that are extremely tight and in need of less filler. Another big advantage will be the freedom from the need to fill those small holes left by pins.



After glue has been applied to a part being joined to an assembly, position the part and clamp it in place with a strip of tape. Be sure to pull very hard on the ends of the tape before placing them down. An indication of a good seam is when the glue is forced from the joint. Use several strips of tape along the assembly to insure a tight seam in all areas. When the glue has dried, remove the tape and block sand the seam to remove any adhesive that was forced from the joint.

Examples of areas of construction that tape can be used in are, wing tip to wing joints, leading edge to wing joints on foam wings, blocks to fuselage crutch joints and laminating and tack gluing operations.

There are areas that tape cannot help, but its use in as many areas as possible will cut down on the amount of finish work and add measurably to the strength of the airframe—BOB HUNT.

1980 Nats Coverage



Controline Aerobatics results

Junior

1. Jim McClellan	Burlingame, Ca.	772.75
2. Steve Siefert	Philadelphia, Pa.	635.50
3. Chuck Mulidoro	Meadville, Pa.	144.50

Senior

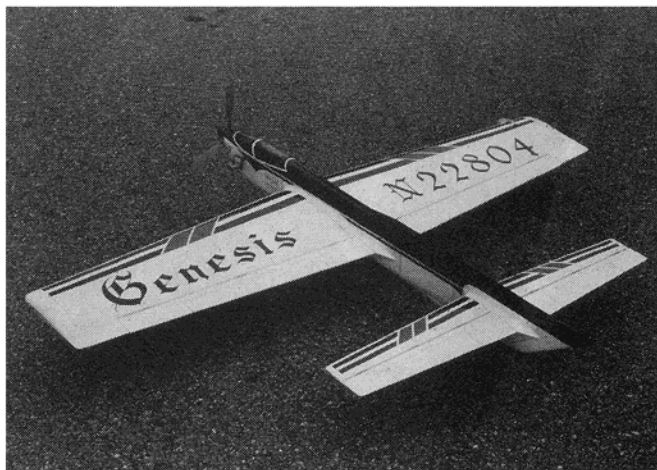
1. David Fitzgerald	San Mateo, Ca.	955.66
2. Dan McClellan	Burlingame, Ca.	906.00
3. Andrew Blank	Pomton Plains, N.J.	870.34

Open

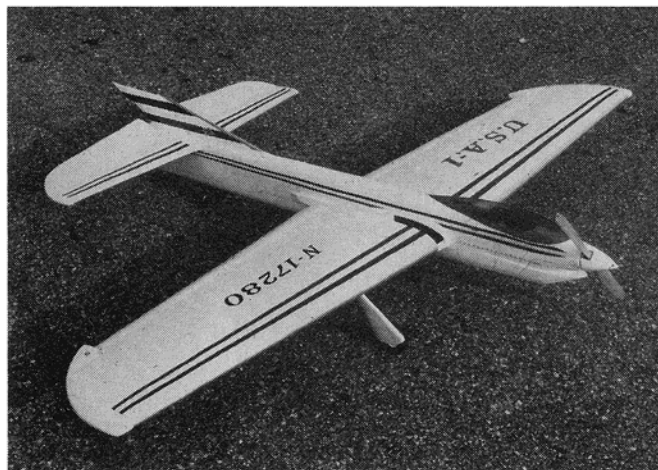
Les McDonald	Miami, Fla.	1035.00
Bob Hunt	Newton, N.J.	1019.75
Bill Werewage	Berea, Ohio	1017.25

C/L Stunt

The PAMPA group once again ran a memorable event. C/L Stunt is in good health/**Bob Hunt**



Bob Hunt's Genesis .40 design was flown to a second place. The model features an OS .40 FSR engine. World and National Champion, Les McDonald with his Classic Stiletto (top). A Stan Powell K&B .40 for power.



The U.S.A.-1 design by Bill Werewage was used to win the 1970 and 1972 World Championship Stunt title. Bill placed third at this years Nats. Shown here is the latest in the series of jet-like stunters. An OS .40 FSR.

The year 1980 will be remembered by C/L Stunt flyers as the year that Les McDonald completed the "Grand Slam" of the event by winning the 1979 F.A.I. Team Trials in Dayton, Ohio, the World Championships in Czesocowa, Poland, and the 1980 Nationals Championships in Wilmington, Ohio. This achievement has been equaled by only one other person in the Stunt events history when Bob Gieseke tagged all of the bases in 1974.

Les's win was a very popular one as he has been close to winning this title several times, only to see it slip away at the last minute.

The plane used by Les was the 1976 World Championship winning Stiletto 660 powered by a Stan Powell Custom K&B .40. Although this plane is several years old, it still has one of the most beautiful finishes of any of the ships flying today.

The Stunt event at the 1980 Nationals was once again administered by the Precision Aerobatics Model Pilots Association or PAMPA (as it is known by the flyers). Started in 1973 at the Nationals in Oshkosh,

Wisconsin, PAMPA became the style setter for other special interest groups to follow according to the A.M.A.

Lanny Shorts volunteered to be the Event Director. This was a more or less thankless job and Lanny deserved more than mere thanks for his tireless attention to detail in carrying out the duties of this post. Assisting Lanny was Bill Howe, whose mild manner and easy going attitude became a calming influence on all the competitors.

Another of the thankless jobs at a Nats was the position of "Stunt Judge". This year ten unselfish individuals gave up their time and in some cases chances to fly, in order to be judges. The judges this year were, Art Adamisin, Chuck Delano, David Fitzgerald, Bill Fitzgerald, Bob Gieseke, John Laws, Lee Lorio, Dan McClellan, Joe Reinhardt and Bill Zimmer. For John Laws, this was the 8th straight year that he served as a National's Stunt Judge.

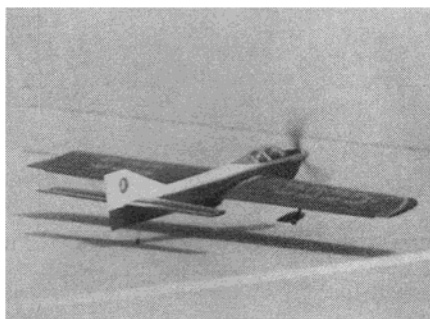
For the most part, participation was up in stunt. The exception would be the Junior division which had only four entries. The Se-

nior division had its largest turnout in recent years with 21 entries and open had 55 entries. Californians, Jim McClellan and David Fitzgerald were the big winners in the Junior and Senior divisions respectively. For David winning has become a habit. He now celebrates his fifth straight Nationals Stunt victory.

If you have followed the Stunt event for awhile, you know that the top five Open flyers and the Junior and Senior winners meet on the final day of Stunt competition and fly three rounds to determine the overall National Stunt Champion. This is known as the Walker Cup Flyoff and is considered among the most prestigious of titles to win in this event in the world.

The final order of finish in Stunt at the 1980 Nationals was, Les McDonald 1st, Bob Hunt 2nd, Bill Werewage 3rd, Bob Baron 4th, Ted Fancher 5th.

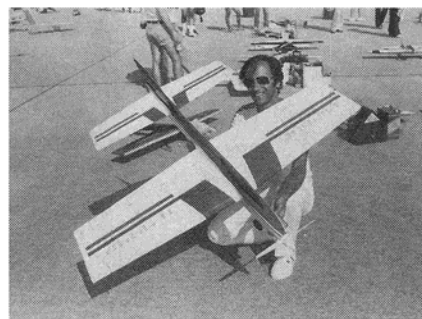
If you have an interest in C/L Stunt, why not join the PAMPA organization? Simply write to Wynn Paul at 1640 Maywick Dr., Lexington, KY 40504, for information. ☐



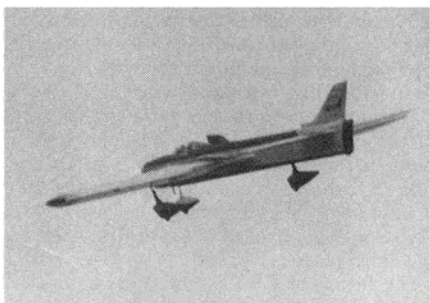
Arlie Preszler's built-up version of the Excitation design, lifts off. An ST .46 for power.



A happy Andy Blank with his original design Pegasus. Third place in Senior. An OS .45.



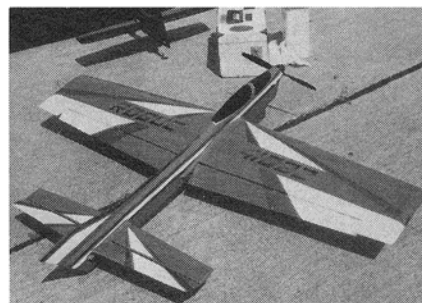
Co-titleist in the "Rookie of the year" award was Lou Wolgast. 14th place with Mirage original.



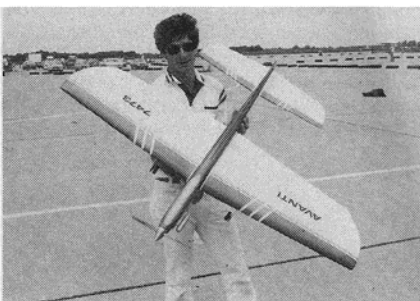
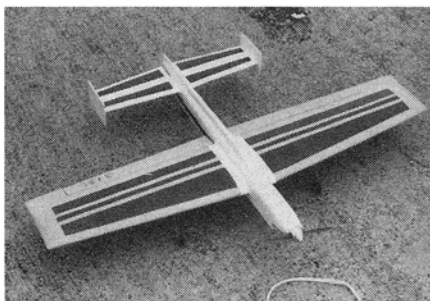
Windy Urtnowski showed up after a fifteen year layoff. His Sweeper was largest stunter at the Nats. An OS .61. Wynn Paul's winning 1/2A stunter (**below**). 1/2A was very well attended this year.



Californian, Bob Whitely and his Derringer original. An ST .46 for power and a foam wing. Bob Baron flew his Avanti design to a fine fourth place finish in the Open Stunt event (**below**).



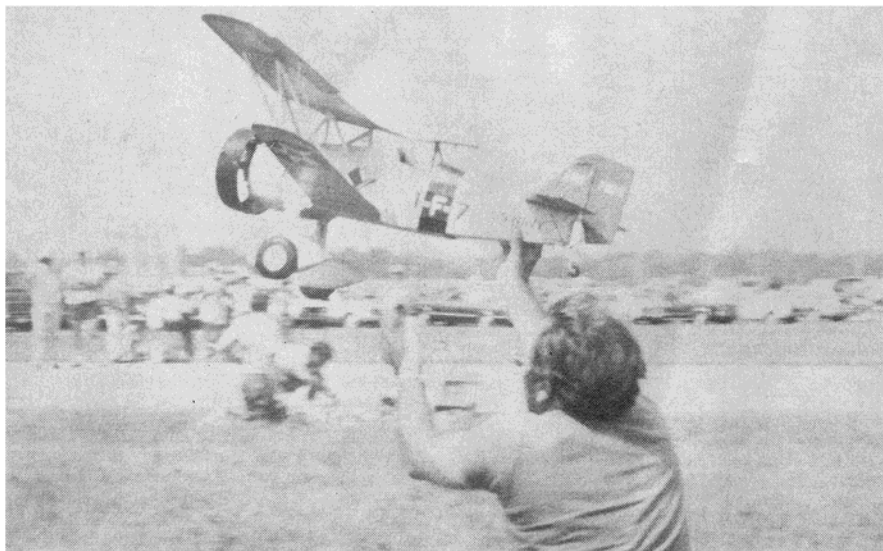
Bill Simons' Rogue featured an OS .45 FSR for power. Bill placed eight with the foam-winged ship. John Poynter qualified for the first time this year. His original features an ST .46 (**below**).



Michigans Dennis Adamisin flew to a fine tenth place finish in the Open Stunt event. Dennis's designs are unique in the Aerobatics event, with very high-aspect-ratio wings. An OS .35 powers the Eclipse.



Last years Rookie of the Year, Bob McDonald with his latest design, the Ceres. Bob had some problems when a crankshaft broke and took off the front end of his ship. Some quick repairs had it in the air again.



PHOTOGRAPHY: JOE JOHNSON

An unidentified flyer launches an F-11C in the Free Flight Scale event. Dave Rees' gorgeous Bellanca "Skyrocket" is shown here (below). This plane is powered by an OK Cub CO₂ unit. Made from a Flyline kit.

Free Flight / Joe Johnson

Wright Patterson Air Force Base, Dayton, Ohio, was the scene of the outdoor portion of the Nationals Free Flight competition this year, while the University of Cincinnati field house played host to the indoor portion. Numerically, the 1980 Nats were the largest since 1976 when the contest was also held at WPAFB.


Outdoor fliers found a much improved site conditions over last year at Lincoln, and although Cat. III rules prevailed, there was little grouching heard from contestants, the majority of whom recognized common site problems. Likewise, indoor contestants seemed to adjust to the incredible humidity of the U of C field house which turned spars

to spaghetti and added measurable weight to gossamer winged craft.

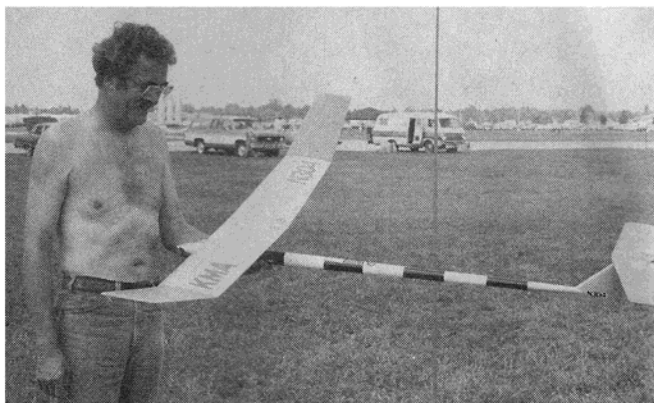
Changes in Free Flight were more obvious in equipment and designs than in startling innovation. As an example, more electronic thermal detecting equipment was set-up for 1/2A gas this year than used to be evident in FAI. Engines with Schneurle porting were almost universal, and aircraft design parameters seemed to be relatively standardized. The pessimist would've said that Free Flight was stagnant in terms of design development; the optimist would've said that Free Flight had reached a plateau of refinement. Whatever the perception, it certainly was evident that designs were much more sophisticated. From Stan Stoy's folding-wing HLG, to torque-actuated variable pitch props in rubber, new technology made the unusual look commonplace. Not only were ships with sophisticated refinements showing up with regularity, they were also winning.

Participation from the younger set was still a problem, but the gap was showing up more in the senior age group than in the junior group. In several instances numerous trophies went begging simply because there were not enough entries to fill first, second and third places.

The future of Free Flight could be easily foretold simply by doing a demographic study of the age of competition-oriented Free Flighters over a five year period. Free flight is far from dying, but it is most assuredly getting along in years.

On a more positive note, the consensus seemed to be that AMA had paid some attention to the needs of Free Flight this year and did not relegate it to the hinterlands. In these times of economic uncertainty and outrageous travel costs, all concerned apparently did the best they could under difficult conditions and came up with a winner. 





Hardy Broderson is shown here holding his FAI Power entry. This ship features a fiberglass, balsa, Kevlar composite fuselage. Note "T" tail.



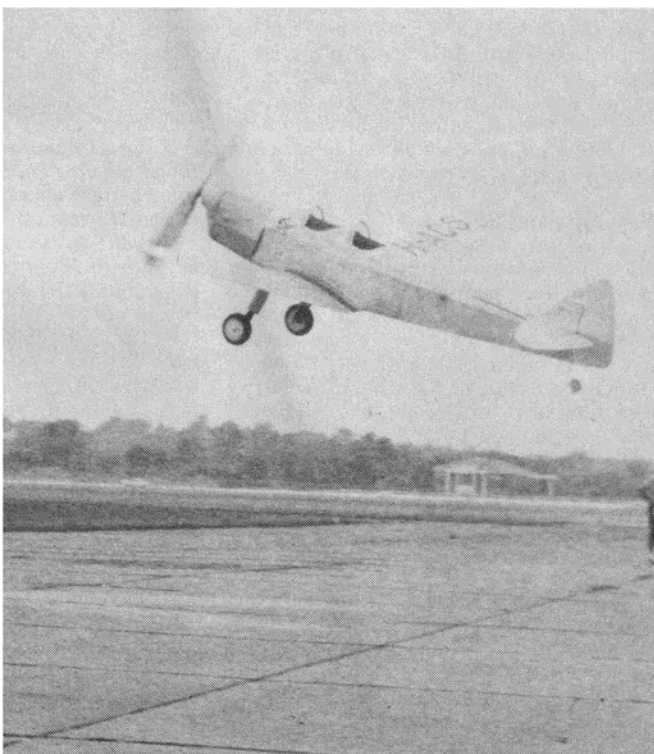
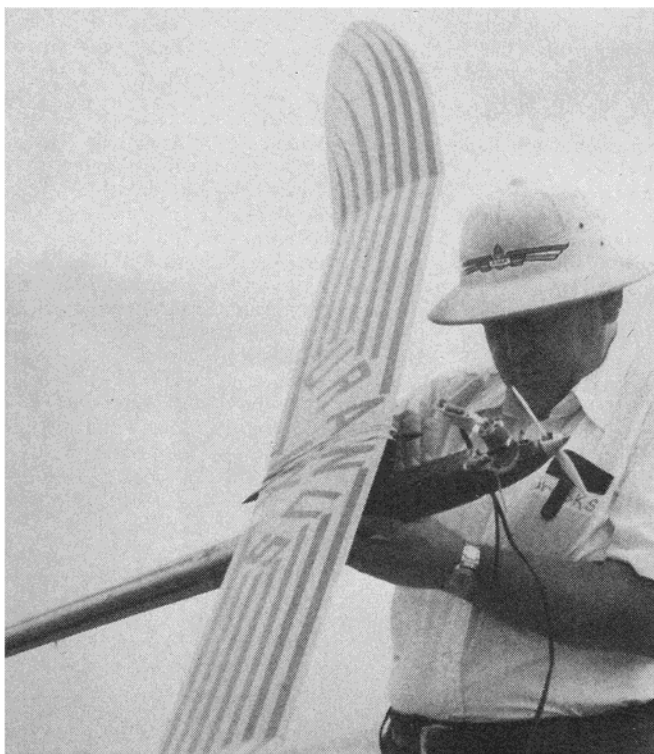
Rudy Kluiber checks the mylar streamers before flying his Jetex entry. The design features thrust through the pylon and tip plates.



Jack Marsh and his hybrid, "Spanish Flea" design. It started life as an A-1 Nordic. Brooks Goodnow readies his "Uranus" FAI power design (**below**).

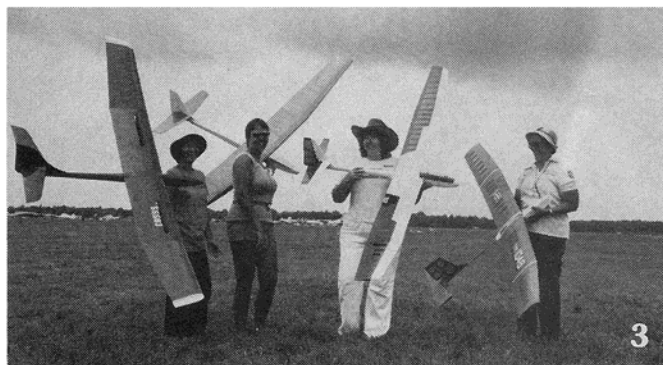


Al Bissonnette heaves his "95 + 5" toward a "max". Al's a former FAI Team member. Leon Bennett's Jumbo Scale "Moth Minor" takes off (**below**).





R/C Soaring / Dave Elias



With 224 R/C Sailplane entries comprising over 27 percent of all Nationals' Entrants, Contest Director, Gordon Pearson, had his hands full. After four days and more than 1200 flights, all those involved were impressed with the contest management but not with the weather and the lift conditions. The following are some of the winners and the highlights of this years Nats. . . .

Nats Soaring Photos

1. Jim Ealy from Pottstown, Pennsylvania, launched his natural finish Granau Baby ZA. This beauty was truly one of the most realistic scale ships flown at this years Nats.

2. The stock Drifter II was flown by Huntsville, Alabama, flier Tom Killough to a first place in Open Z-Meter. Now you know why he is so happy.

3. WINGS, The Women in National Gliding Society, gathered under the threatening skies for Friday's flying. From left to right are Susie Lipp, Barbera Robinson, Helen Olsen, Organization President, and Lila Stamm.

4. The Open Unlimited winner was Bob Baugher from Waynerboro, Pennsylvania. His highly modified "Maestro" design used a flat bottom Eppler 385 section with flaperons. The highly loaded plane (12½ ounce per square foot without ballast) was especially helped by the flaps both during launch (with

the use of positive flaps) and during many of his long distance flights (using negative flaps). Baughers aggressive flying technique, was a dramatic lesson for those fliers who launched and just flew on the bottom side of the wing waiting for lift to pass through.

5. Robert Summers from Enon, Ohio, had the most inventive idea at this years Nats, a solar battery charger. The twelve volt cell, charging system weighs only .75 ounces and allows the flyer to use a 100 ma battery to save weight. Summers says, that after a full days flying the battery still provides 5.3 volts.

6. The Sport Scale winner Helen Olsen, from St. Louis, Missouri, had her model Cadet built from an Airtronics Kit. Helen not only scored well in static judging but also had two perfect flights with over two-and-a-half minutes and a landing in the prescribed circle. This wasn't an easy task with a 62 inch model flown in overcast, low-lift conditions.

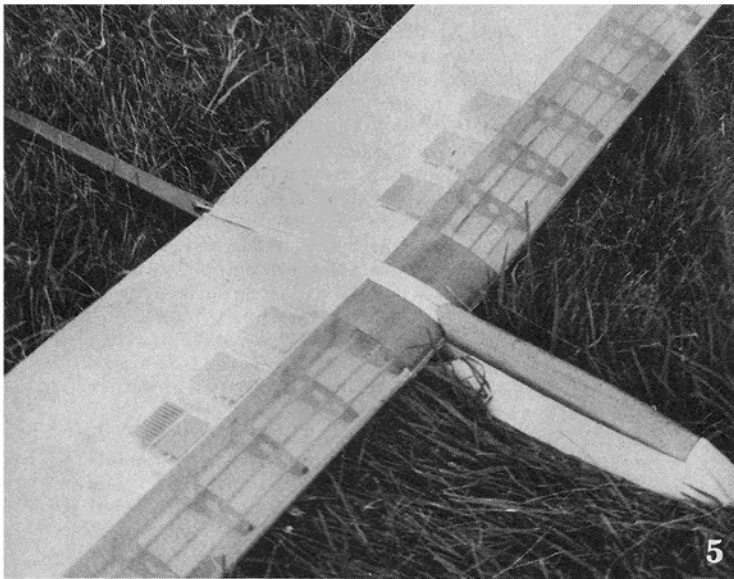
7. The highest placing original design in Open Unlimited was the Durex V, flown to fifth place by Bob Hansing from Minneapolis, Minnesota.

8. "Now if I could only launch that high, a 2:30 max. would be no sweat." That seems to be what Gene Shelkey from Scottsdale, Pennsylvania, is saying while holding his superb, third place, Schweitzer 2-33A scale ship the most detailed entry this year.

9. From Theodore, Alabama, came F.C. "Charlie" Waller to win the Open Modified Standard Class. His modified Oly-11 has been developed over the past five years. Some of his modifications included, adding wing sheeting over the original ribs on the top of the wing and then back to the spar with cap strips which continued to the trailing edge. This produced a thickness greater than ten percent. The bottom of the leading edge had a 1/8" x 3/4" strip built in to allow a generous "Phillips" entry similar to the Eppler 205 airfoil section. Vertical grain 1/4" shear webs are used in the center section and only the Wing attachment and rudder configuration were based on the popular "Bird of Time" design. Waller's win demonstrated a very important competition, Sailplane lesson: To continually fly the same design with only slight personal modifications, is the best way to improve your contest record.

10. The "Florida Flash" John Gussallus from St. Petersburg, Florida, has his ten foot Span "Free Spirit" designed by Leon Kincaid. Note the extremely large wing tips which help John to fourth place in Open Unlimited.

To assure his high placing, Gussallus had a truly amazing last flight in which he converted a landing approach at three minutes into an eight minute max by circling at less than fifty feet while the other planes were falling out of the sky.



5



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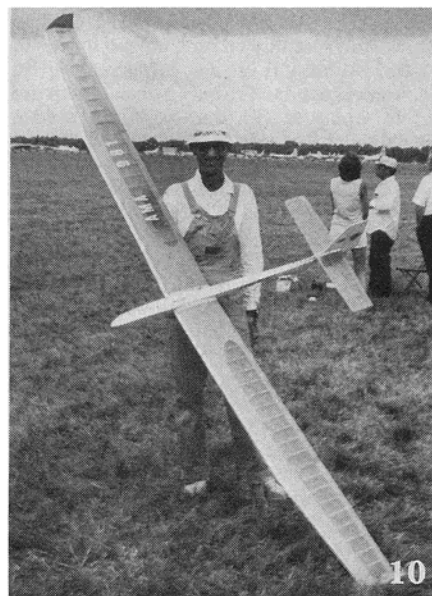
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1980 Nats Soaring Results

Two Meter

Jr. Chris Ruth	Seffner, Fla.	945 pts.
Sr. Thomas Croft	Manchester, Mo.	1124 pts.
Op. Thomas Killough	Huntsville, Ala.	1340 pts.

Standard

Jr. Chris Ruth	Seffner, Fla.	2899 pts.
Sr. John Graham	St. Louis, Mo.	3231 pts.
Op. John Wolff	Toledo, Ohio	3093 pts.

Modified Standard

Jr. Jim Ealy III	Pottstown, Pa.	3341 pts.
Sr. Thomas Croft	Manchester, Mo.	3427 pts.
Op. Charlie Walker	Theodore, Ala.	3183 pts.

Unlimited

Jr. Dan C. Wells	Greenbelt, Md.	2716 pts.
Sr. Tony Rogers	St. Louis, Mo.	3156 pts.
Op. Bob Baugher	Waynesboro, Pa.	3547 pts.

Sport Scale

Combined-Helen Olsen	St. Louis, Mo.	174 pts.
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We do recommend MonoKote—ours is done in transparent blue on the fuselage and vertical tail and is trimmed in red. All red is nice for lightness or how about yellow wings and blue fuselage. Make it dark though, because this crate can go to the moon. We have golden trim arrows on the sides to flash in the sun during soaring turns.

Now let's get into stuff no one has ever told you. Begin with the aircraft profile and side thrust. On a pylon model, or any high-wing cabin job with considerable profile area above the thrust line, (which is rather low on this one) the corkscrewing affect of that prop slipstream, forces the model into a right turn. Remember, this is a contest-type cabin free flight, and Wally did it on purpose. If you are a Sniffer lover, you won't mind living with this problem. But it is a problem with a silver lining, so to speak, because it makes possible some very effective strategy for soaring flight while under low power.

Consider a .35 on four ounce tank. It is frequently possible to obtain 18-minute-plus engine runs at moderate throttle, and glide periods of up to an hour or more. (We brought it down at the end of one hour if we encountered lift). Even at six pounds, the ship easily takes off the ground at $\frac{1}{2}$ throttle without control of any kind, and that is on grass that has not been manicured for a month or more. For that reason, our models sport giant, William Brothers Vintage wheels. They cut through grass more readily and don't hang up on sharp runway dinks. The easiest take-off occurs if you hold a spot of up just until the

The first step in building this model was to bow to the east (we should say west) and render homage to one of the greatest designers of the ages: Wally Simmers (now the S in K&S). He was remembered by pedigree oldtimers as the creator of the Gollywock and Jabberwock, and by mere oldtimers for his postwar $\frac{1}{2}$ A Sniffer. That was a truly mass built charmer of a cabin model which cleverly incorporated pylon characteristics and so outflew everything—but the pylons.

You don't know this, but, Frank "Big Stoop" Garcher (who built the Midwest Empire) was a partner of Simmers in the old days. At the National site hotels, before the War, they hung crude signs in corridors which said, "Midwest"—with a big red arrow. After encountering these signs at both Detroit and Chicago, we finally got the point that if you needed sticks, you followed the red arrows.

When Wally sees the Golden Sniffer he will sing "Look What They've Done To My Song Ma". Forgive us, Wally, but we changed a "few" things. Look at it this way, R/C is a nasty task-master. What did we do to it, Wally? Glad you asked that question.

First of all, we were after a strange breed of cat, a model that could soar with the buzzards, yet be purposely heavy and strong; to be tossed around like a hot sport model and fly in the gales which harrass all modelers. We quickly learned not to toss this plane around close to the ground. It has a mischievous streak. But, when one guy gave it a catapult launch he threw it in to the ground in a full-bore cartwheel. Nothing broke. When it got caught in a rolling wind cloud in a freak summer storm, we dived it like a stone and landed within 50'. Meanwhile,

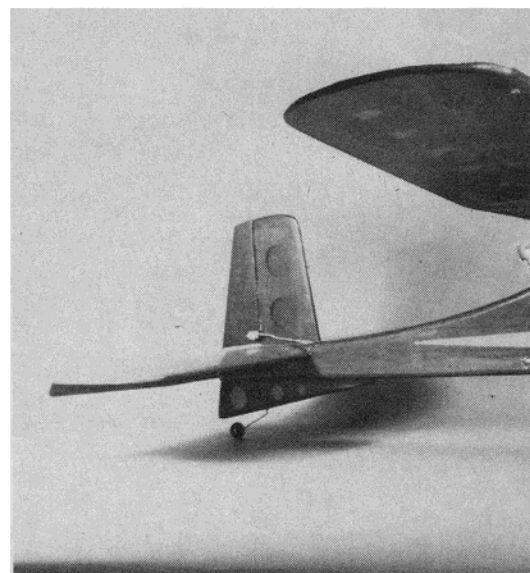
John Worth's ancient Bombshell (a light-weight) went squirrely and blew away for two-and-a-half miles. The radio fought valiantly on the burning deck, as its world came unglued.

The Sniffer had huge decalage, (yes—you engineer pests, we do know what that is) modelers call that angular difference, we cut that in half. Corkscrew vertical climbs were out. The negative stab was put at zero and the thick stab lifting section drastically reduced. It was $\frac{1}{8}$ " thicker on the plan for a higher speed, level cruise. We took out a good bit of dihedral and knocked the poly in half. It came in at six pounds on less than six square feet of area, and was motivated by an OS .35. The OS is a premier sport engine. Quick starts, stingy on fuel, able to rotate an 11-3 or 3 $\frac{1}{2}$ prop, it idled so low one often did not know it was still running until late in the "glide" approach. (Incidentally, Wally used a Clark Y bottom and an RAF 32 top for the airfoil).

To F.M.'s kind-hearted readers, we "re-designed" on paper the plans you see here. The plane now is lighter, has a bit less center dihedral and more poly to look more Snifferish. It isn't tested in this light form on a range of smaller engines from Veco (K&B) 19 to Supertigre .23 or .25 Schnuerles. But if you cannot handle that, we'd be surprised. This is not a beginner's crate. It is not a paper napkin floater—but oh, how it will soar. The heavier .35 powered machine is great for any practised three-channel pilot. Perhaps, we are too cautious. Bob Aberle flew it once and said that if beginners cannot learn to fly with the sniffer, they cannot learn to fly at all.

This is not a step-by-step thing. You are on your own as to construction. We are all big boys now and can tackle projects like these.

Golden



ship has gained some momentum—say 10 to 15 feet in front of you. As soon as the sniffer is off and safely on the way begin the climb-out. Keep coming back on throttle feeding it down trim occasionally until the climb is at a shallow RC sport plane angle and the high air speed is reduced for a comfortable feeling.

Rudder-guide it on a straight path until 150 to 250 feet out, and set up the slightest turn right that will result in a wide circle without passing behind you. Once safely positioned, allow it to free flight. Thereafter, you can play with all three trims, rudder first, power second, elevator third. Underway, the Sniffer will stand a good bit of down trim for flatter flight and to avoid a free flight type of climb. During that stage, power is reduced until a slight climb remains. After this, control is almost entirely rudder and engine trim combinations.

Now, let's consider that thrust offset question. When first tested, the ship has two degrees right thrust, as well as two degrees down thrust. On climb-out it leans slightly to the right due to the prop slipstream against the high fuselage side. We take out the right thrust, naturally. The ship becomes virtually unmanageable on the first hand launching and leans wildly to the right, not the left. So why not left thrust? That would be disastrous since the angle of the slipstream striking the fuselage side and fin/rudder change with offsets, and our right thrust really is the "apparent" effect of left thrust. Slipstream is far more powerful than thrust offsets.

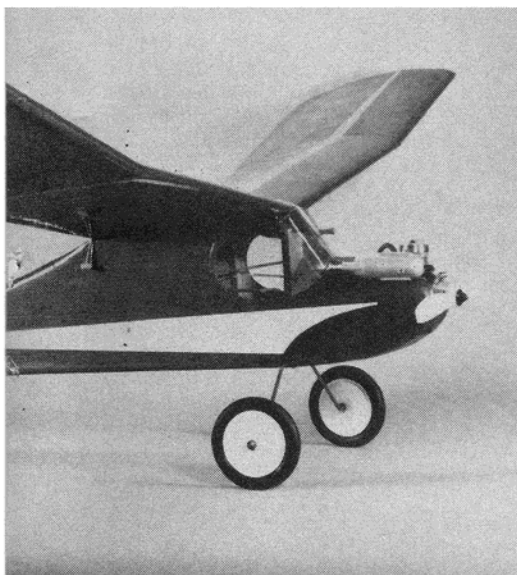
Opening the engine makes the plane turn



PHOTOGRAPHY: JOHN PRESTON

Sniffer

An update of an old F/F favorite to R/C/**Bill Winter**



right, with more power, it achieves steeper right turns. Throttling back far enough so the ship flies straight is usually a tip to us that the engine is dead. By adjusting the clevis, we set the rudder before flying with about $\frac{1}{8}$ " left at its trailing edge. When hand launching, we trim slight-up at the transmitter, get rid of it as the climb-out steepens. You never heard of left-rudder take-offs? During the throttle-back, turning climb, (about 200' circles in calm air or slight wind) we permit the ship to go free flight. To occasionally tighten the turn we add a click of right, sometimes two. Circle like that and the lift will find you—you won't search for it. Long, low-power runs give you hover time to spare.

Now, if you add a click of power, the right circle tightens and you'll trade off with a click of left rudder. Take-off power, and you trade click for click with right rudder. Sometimes it is two rudder clicks for one on power. The entire flight, unless it is a windy day, (or you wish to reach a different area) is made, once set-up, with nothing but trim movements—for an hour or more. Beginners heed, adding even a click tightens the turn and requires a click of left rudder if the plane is flying to the right. The throttle stick is essentially a thermal sniffer and when it is all the way back and the plane is climbing, it is in good lift.

As the dead-engine approach period starts, fly the rudder with the stick, and pass down wind for the long approach, position rudder for neutral and a straight glide, at the transmitter trim. It is smart to feed in a tiny bit of rudder trim in the direction of the intended cross wind left turn onto final—so you don't get boobytrapped in late sun conditions, or when far out as a silhouette. When

you start your turn into final, that trim assures the ship will keep coming toward you, and won't fade imperceptibly into an opposite, going away turn. As you get closer on final, take out the slight rudder trim or just fly with stick.

I make the final with sufficient down trim to avoid bobbing. The plane comes in a bit fast and can "reach out". About two feet off the ground add slight-up with the stick and increase the up as you skim the ground. It settles on like a real plane.

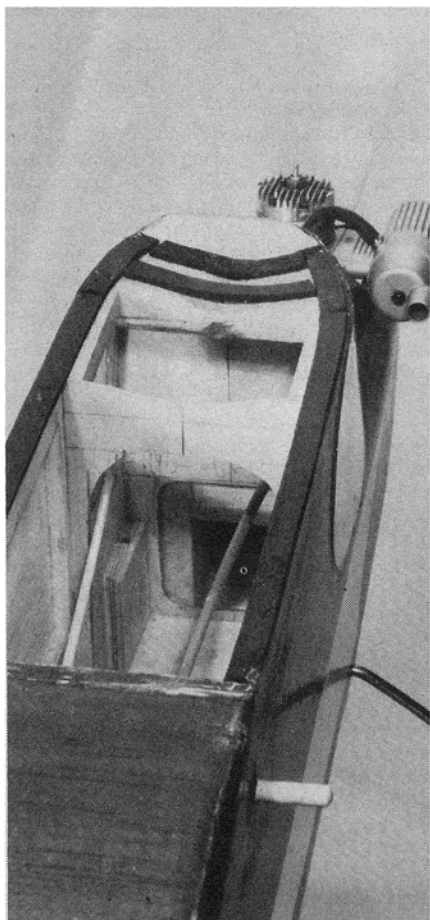
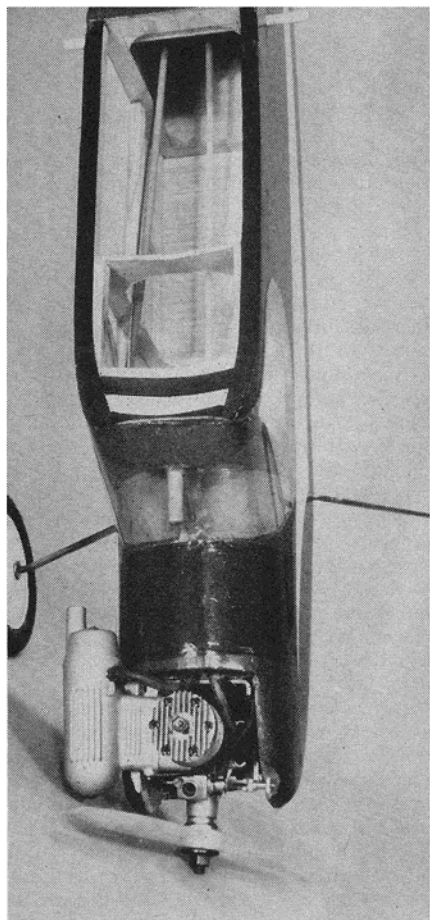
Normal planes have one natural cruising speed at an appropriate throttle setting and according to any elevator trim you are carrying. A pattern job is neutrally stable and has no such characteristics. But the big Sniffer flies like a Cub or Champ. It is ridiculous to expect your normal sport model not to lose its cruise settings when you change power. And, a model cannot be designed (except Pattern and perhaps Pylon) which won't challenge your flying technique as you alter power and controls. Sometimes that level-flight cruise point comes at rather a slow airspeed with fairly low power. Adding power causes climb and rudder and/or elevator control (staying on the sticks to maintain an apparent groove.) If you trim down and add power you can find a faster straight and level cruise speed. It is good for our purposes to get the ship flying at its cruise—which gives you an exact idea of the throttle lever position. Then you add power, a click at a time to obtain the rate of climb desired. To establish a wide climbing turn add another click or two of power.

This six pound ship flies at $\frac{1}{2}$ throttle in no lift conditions and maintains altitude, if it's not a slight climb. With general lift about, it climbs on $\frac{1}{4}$ power, and in lift will spiral-up

on idle. Soaring turns should be fairly fast, nose level, not up. Slowing the glide causes sink, and the ship settles out-of-lift because of the poor L/D. The O.S. Max .35 is shown. But, with a lighter ship, you need to be an expert "rudder Man" to handle things at full bore without excessive stresses. This plane takes off and climbs well enough with a Veco (K&B) .19 or the Supertigre (or Similar) .23 and .25, the prop spins faster, there will be more noise, but the ship is more "obedient". What we have done is reduce the slipstream volume striking the fuselage and its area of impact, thus, we reduced power-change variations.

The plans show a more forward location for the airborne system (this to maintain CG position as called for on the plan). The plane must be balanced as shown. We suggest leaving in the right thrust, which is restored on the plan. If the ship glides cleanly, without slow-flight sink, (or has an extra fast glide), then play with down-thrust only for fore and aft trim under power. If the glide trim is not right—that is too tail (or nose-heavy) move back the battery pack to slow it up, or add ballast to speed up glide if elevators are set truly neutral.

This is a real aircraft, and like all aircraft it has its own performance envelope and its own flying characteristics. It differs from the others. For what you want, if you are indeed a pilot who understands big machines, you accept the envelope and those individual fo-



The windshield is made in two pieces from medium thick butyrate sheet, joined on 1/4" sheet support above and below 3/8" hold-down dowel (left). Note the use of muffler pressure. This is recommended for easy starting. The plywood landing gear box is visible in this photo (right). The front bulkhead is shown on the plans with more of a lightening hole and thinner doublers to save weight.

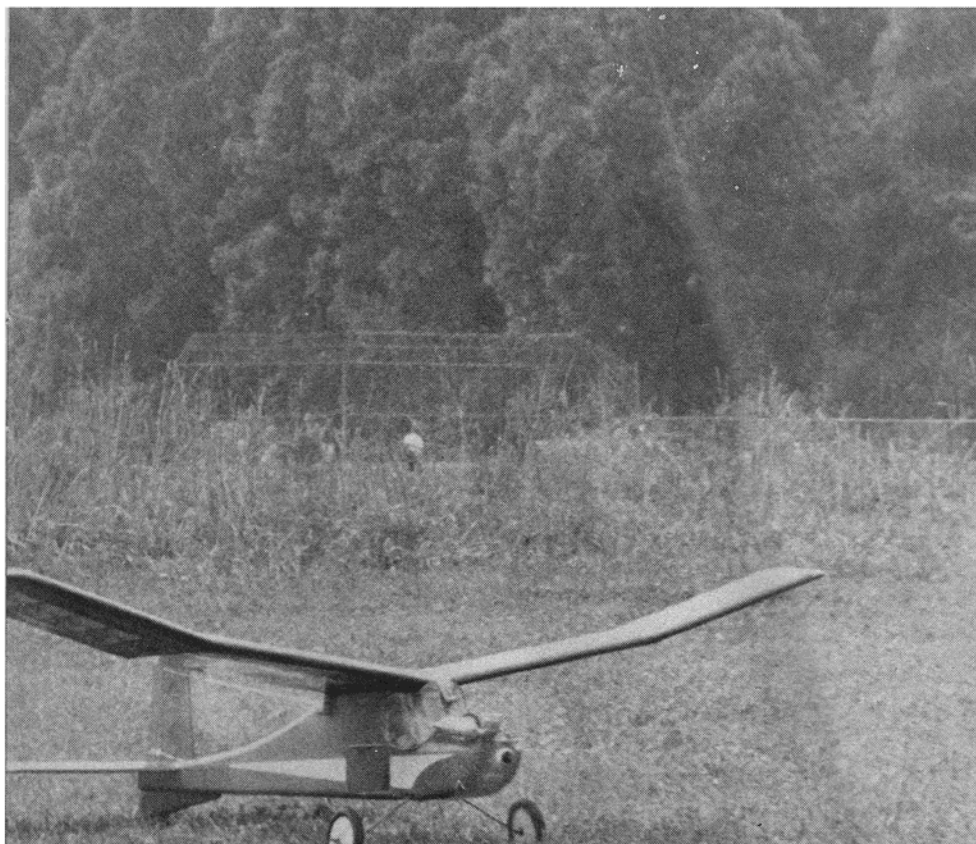
Golden

bles subconsciously. It is much easier to live with them than try to eliminate them. The game is to use them and make them work for you. The Sniffer has a strong character. When you have a firm tendency of a free flying model to seek a natural turn, you have a wide variety of things to play against it, until you get exactly what you want. The Sniffer is a phenomenal soarer on all warm days and when there is hot sucking lift it will stay with the great sailplanes.

A last word about props. Don't use the prop specified by the engine maker. He is telling you what gives max r.p.m. and thrust for his engine. None of these guys dare do otherwise. The prop must be matched to the plane. If you can fly this lighter bird with that big OS .35—you must know what you are doing. You have a bigger disk area on the prop, and a bigger volume of air blast (and those funny adjustments we described). Compared with an 11-4, a 9-4 is like a sport car pacing in a lower gear ratio or an economy auto engine without enough muscle.

Here is a specific example. My son's Concept Models Aero 15 is a swell cabin sport. The engine maker recommends an 8-4. You should hear the plane scream. When a small prop screams, the crate is rigid and groovy in flight. Rigid is the word really. His Aero makes a hell of a lot of noise, flies like a bomb. Who wants that in a nice cabin model like the Aero 15 (an Owen Kampen design, which is the best you can get). We installed a 9-4. The OS Max 15 turned that without a quiver. The plane became "loose" and free in the air.

Here is another example. We once had a Live Wire on an old Veco .29. With an 11-3, the hand launch was miserable. The Live



Sniffer

Wire had rotated tail and wing angles to provide incredible downthrust. At low speeds downthrust was effective especially with low pitch props. As speed picked up, the wing lift took over as do all control responses. So the ship swooped at the ground after a mighty heave and gradually came out of it to climb rigidly. In a similar situation, a Royal Rudder Bug would mush all day on its prop—a dragger. But, on cool days we could turn a 12-5 on that .29 on the Live Wire. Then the hand launch was like an R.O.G. model. We didn't move. The plane floated off the hand and bobbed lightly, then climbed sky high—light on its feet, a creature of the air. You didn't want Pattern model rigidity—you weren't after trophies.

The six pound Sniffer flew well on either a 10-6 or an 11-3½ or 11-4. No. it didn't die in the air with low pitch, or scream to remain alive and buoyant.


Fly wide open and waste expensive fuel—and you'll find out you have a tiger by the tail. This model moves out. You'll suffer some loss in agility with a 10-4 on the .23 or .25, (yes, we said 10-4 not 9-4) but if we could get away with it, we'd try a 10-6. I use nylon props. Boil them before you use them and occasionally thereafter. My rule is: no nylon above a .35.

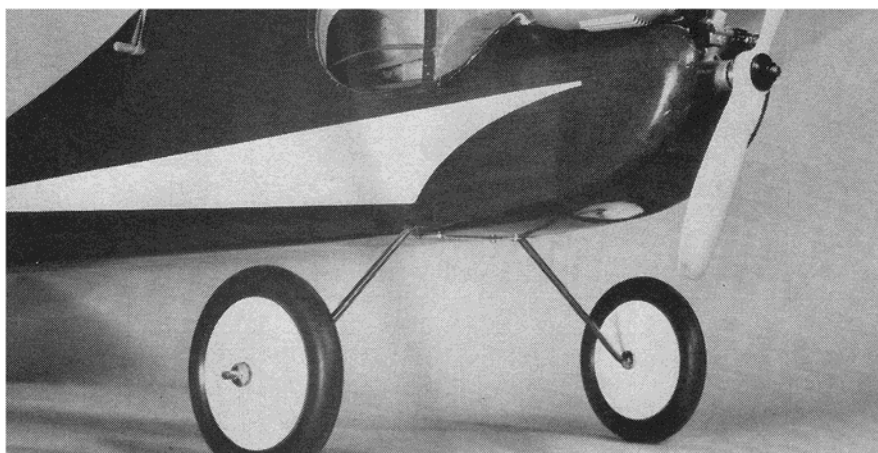
For fuel try low nitro blends. Five percent is best. A high oil content is desirable—like Duke's Fuel. A designer should consider people in other parts of the country. If you live in a higher altitude you will need a .35 perhaps a .40. If you live in hot and especially humid climates, you can't go under the .35. So, in cold climates or spring and fall in other areas, up to 10 percent nitro won't hurt. In cold weather a hot fuel works fine because the engine can cool.

Just yesterday, we flew a ship on grass in 90 degree temperatures with a "moonshine mix" of old fuels and apparently too much nitro. It took the entire strip to get off, and the engine had to be run rich to avoid over-heat failures. We switched to K&B 100 at that point and the improvement was obvious. Remember, engine performance varies greatly with big temperature and humidity variations.

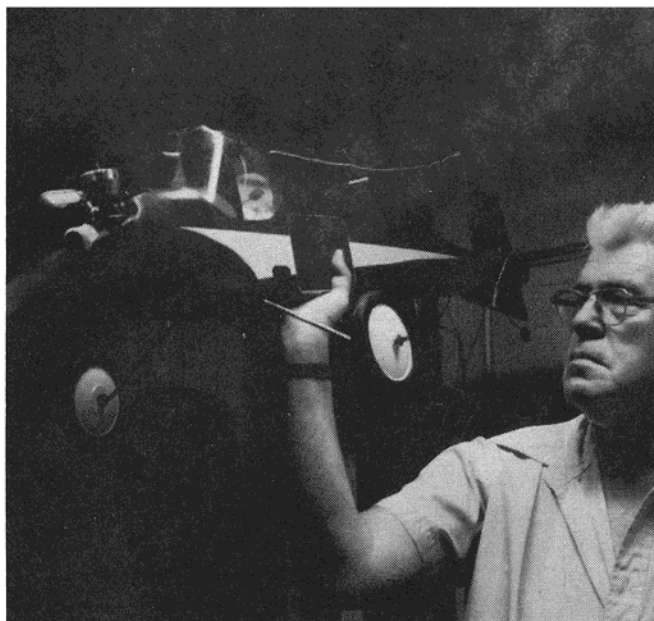
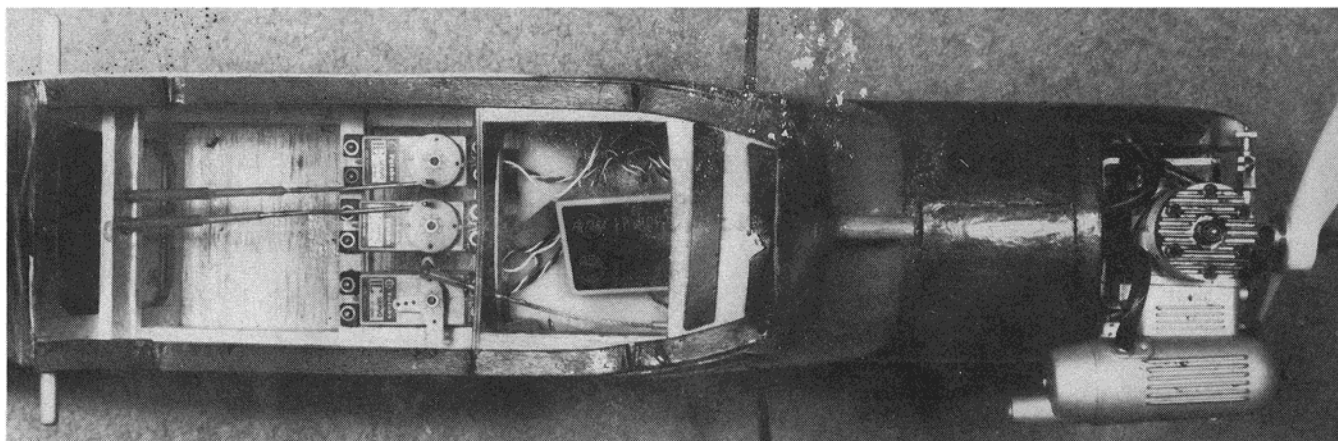
In your area you may have to go with a slightly smaller prop. The crossover seems to come at about 85 degrees and high humidity but (or closer to 90 degrees with low eastern humidity) this can be as wet as a sponge to a guy living in Arizona.

We have cans of FAI fuel—no nitro. We mix this with a bit of our ten percent nitro fuel for good idle and dependable low-motor approaches. Bury the fuel tank forever, but use black neoprene fuel tubing, the heavy wall stuff. Pin holes don't exist. Always use a fuel line filter.

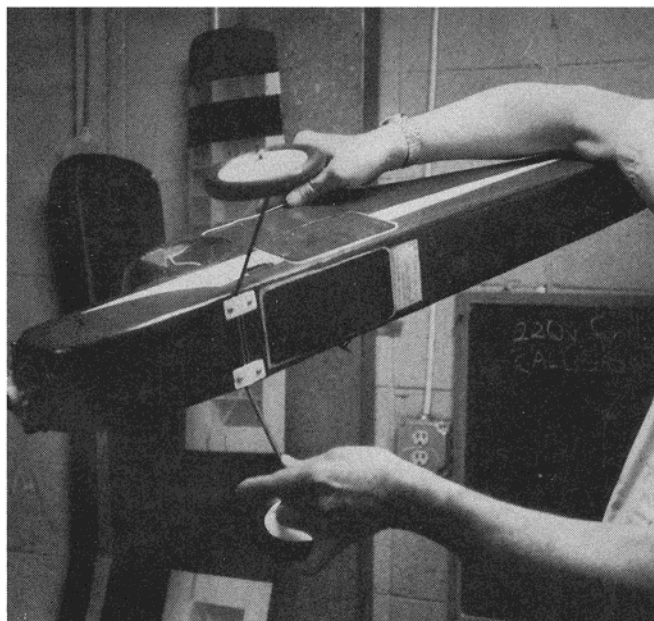
I laid something on you with the design changes. They are the changes I would make the next time around. You can handle it. Only a controlled free flight can be steered around and touched-up a bit with elevator trim. Learn more about flying machines than you thought possible. Get to know your airplane and never expect any plane to do absolutely everything perfect. They say that people tend to look like their pets. Perhaps you'll get to look like your Golden Sniffer. 



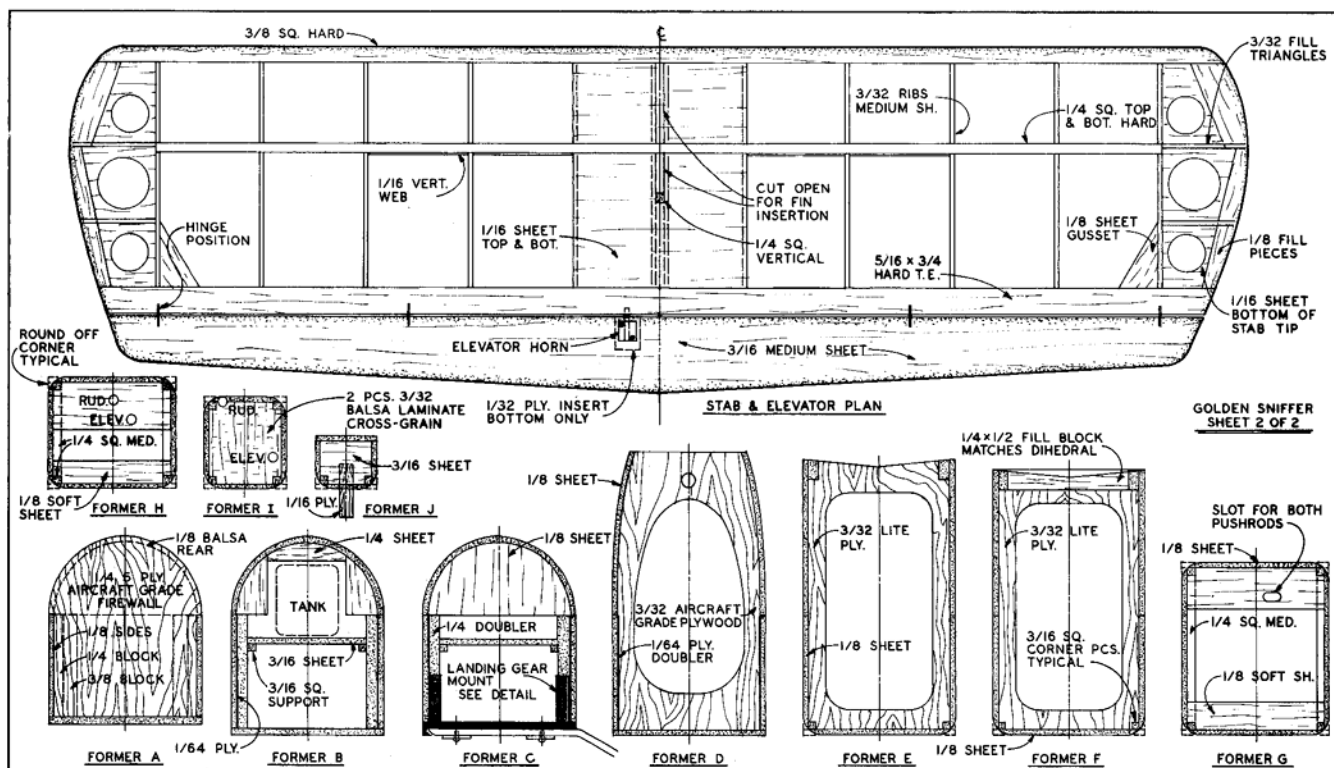
The Sniffer is shown here inverted on the bench. Note the landing gear struts partially inserted to show the torsion bar principle. By careful measurement in early construction stages, pilot holes are drilled to properly align with internal plywood boxes. The finished landing gear installation (above). The landing gear legs are made from 3/16" music wire. The white spot under the nose is an unfinished ballast box.



Bill shows the best hand position for consistent one-hand launches of big ships in heavy winds. This is also good on slippery fuselages.



The landing gear hold-down straps can be seen here. Note the large Williams brothers wheels. The servo installation (top). A ship for fun.





The engine tests in this series have to date taken a look at products which could be considered in the outer fringes of the huge range of model engine sizes and performances. The time seems right (your editorial staff sacrificially offered an engine for the purpose) to undertake a formal test of a more "normal" engine.

However, the engine they sent turned out to be the latest Fox 10cc R/C motor, and there seemed to be no way that the engine from the prolific (seemingly tireless) Duke could ever be "in the common mold". Characterized as they are by that huge individuality, has made them an apt expression of the American scene.

In this latest case, the unit looks more aggressively "motor" than many other more sleekly, manufactured affairs.

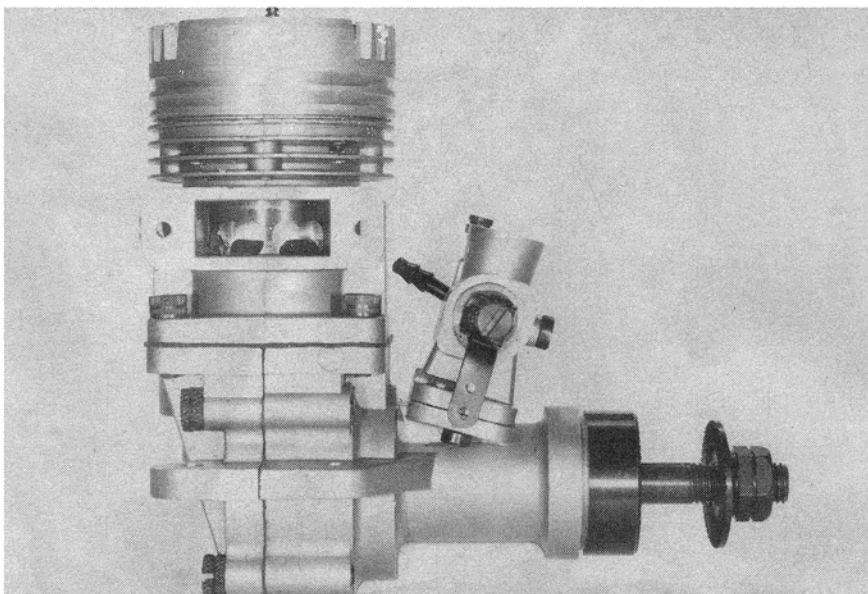
In addition to providing more substance to this report, both the side exhaust unit and the rear exhaust unit were jointly tested, with the findings shown on the graph. The first impression is that these most recent Fox products show evidence of those engineered requirements for ruggedness accumulatively tested over many years.

Mechanicals

The three-part diecast alloy cylinder/crankcase (reminiscent of the 1940's Hornet and others of that period) atavistically signals a return to the tuned pipe era. Mechanical splitting allows the rear of side exhaust mode (used by appropriate machining of the bottom part) to be correctly aligned with the usual Schnuerle transfer passages. The built-up construction has also worked nicely with the structural layout of "big brother", the Fox 20cc horizontally opposed twin. The three pieces form a well fitted unit on the firm base and bottom two parts are attached accurately by four bolts in closely fitting holes. The top alloy cylinder section, in turn, is then held down to the solid base by four substantial allen bolts.

Although the Transfer passages in the upper cylinder unit are cast-in, their continuations down into the bottom end are milled out individually. So once committed in this way to either the side or rear exhaust styles, the motor should remain so. The resultant two main jointing faces are separated by gasket material and it seems advisable when bolting the three-part unit together to do so gradually using all eight bolts sequentially. Even though there really should be none in the bottom half, this is to avert any possibility of slight misalignments. The liner (mild steel carbon-nitrided and .078" thick) is quite long and substantial consequently it plays its part in firming up the whole multi-part engine assembly. Honing is undertaken to give a "waisted" effect in the port belt area (a truncated hour-glass in Duke's words).

The boost ports are effectively larger in area than the transfers due to the shrouding effect the transfer passages have on the two side ports. Externally, the cylinder gives the impression of having massive side transfer passages, when in fact, their combined widths are just equal to the one boost passage. In the side exhaust motor, this relative bias of the boost side together with the unusual shape and high angle (30°) of the combustion chamber (virtually no flat squish either) results in a somewhat different look to the whole transfer and combustion set-up. It looks like another area in which the Duke would not follow the fairly tedious (but effective)



PHOTOGRAPHY: MIKE BILLINTON

An FM Engine Review:

Fox's Eagle II

Our engine expert reviews both side and rear exhaust types/**Mike Billinton**

tive) norm. Oddly then, the rear exhaust motor uses a fairly normal flat squish of .15" width with a hemi bowl, but (unbowed). Fox then gives it an unusually large squish clearance of 40 thousandths.

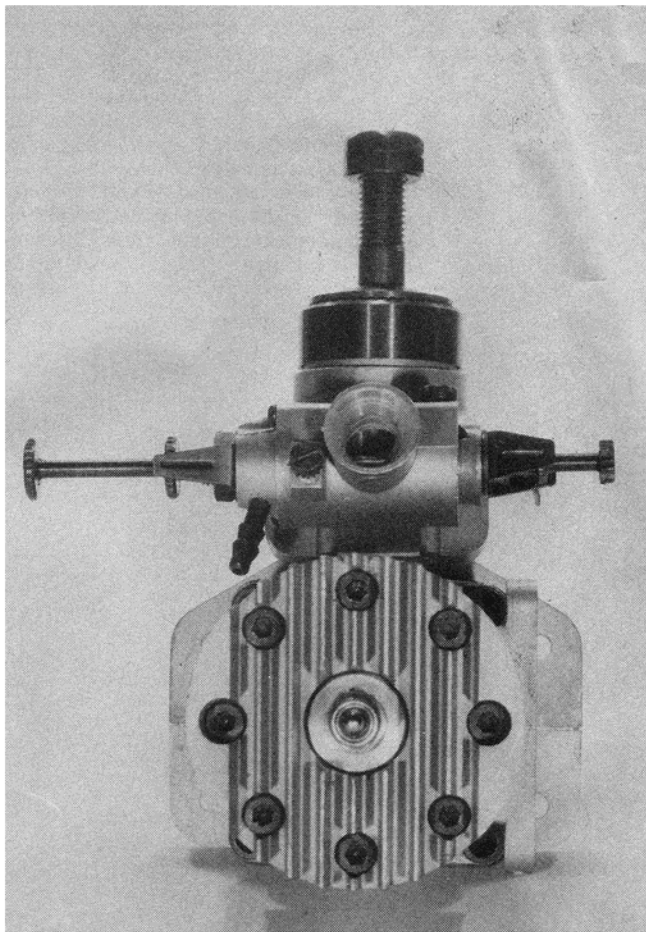
The side exhaust timing is 142° which in standard form is more suited to open exhaust or normal silencer operation. For more effective results on tuned pipes the rear exhaust motor with its higher standard timing of 150° is more appropriate and factory recommended. The timings are advanced for the transfer and boost with the latter given 28° extra compared with the side exhaust motor. As photos show, the cylinder head is the two-piece variety with the turned aluminum alloy "button" being held down onto the liner tip flange (a thick ⅛") by a large, strong, upper head casting having deep widely spaced fins. The X-section of these is tapered in the classically correct manner.

The long piston (resulting mainly from the undersquare bore/stroke ratio of 1:03) provides a larger than average bearing area and is made of a high 22 percent silicon aluminum casting. Because of the aluminum's low heat expansion rate, it makes a more sensible route to go when associated with a ferrous liner. The older method of using hi-temp, hi-strength (but high expansion) alloys is increasingly being abandoned in model engines because of the adversely larger piston/liner clearances necessary and with consequent rocking pistons, lesser heat transfer, and pumping losses on the debit side. (Hot fuels and tuned pipes have been two of the

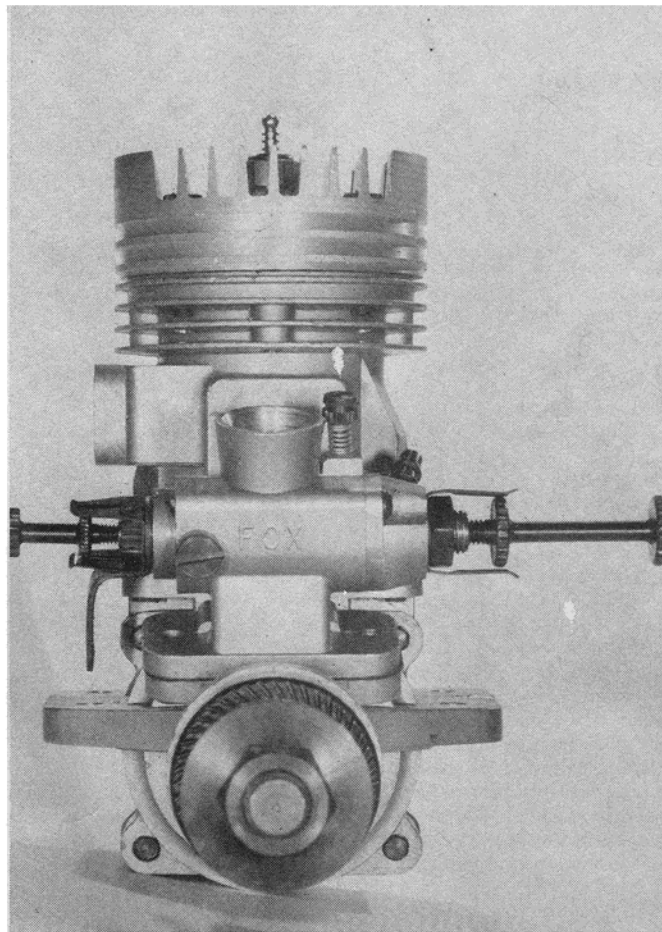
spurs to action here). It happens that the high-silicon alloys provide more reliable bearing surfaces in any case. So fortunately, the problems of producing this allow, (even at higher percent of silicon) and the subsequent difficult machining problems have been overcome. As recognized in the full-size work of racing motorcycle two-strokes, the combination of close-fitting, high silicon piston/piston ring/steel liner is gaining acceptance in the model world as one of the more superior combos possible. However, it still takes a backseat to the non-ringed ABC style on the grounds of performance, and is also likely to maintain a longer useful life than the ABC by virtue of the single (non-Dykes) hi-compression pinned ring.

The very solid 2024 aluminum con-rod (typically lengthy at 1.75" centres) features thin wall bronze bushings (giving consequently greater strength to the big and little ends) and an interesting, small 44 thousandths lubrication hole drilled to the high pressure zones of each end. Traditional practice often places such holes/slots at the opposite low-pressure side. The thinking is that oil is ingested more easily there because the larger clearances and lower pressures on each revolution drags oil around to the high-pressure zone where it's required. It looks like Fox doesn't believe this happens adequately; so they're drilling straight to the source of greatest need.

An interesting sidelight, during one tuned-pipe run a propeller became detached due to sudden reversals of rotation. The



This is a top view of the side exhaust version of the Fox Eagle II .60 engine. A side view shows the three-way split case (**opposite page**).



This is a front view of the side exhaust Eagle II. Both the side and rear exhaust models of the Eagle II are reviewed here. An angular look.

subsequent high speed shaft run for several seconds resulted in no failure of any sort under conditions where other con-rod layouts might well have been less forgiving. Following these occasional reversals on tuned pipe, securing the propeller more firmly was advisable and eventually the writer opted for a very small touch of Loctite on the shaft threads to prevent the nut from free-running backwards and jumping off. Thereafter I had no problems.

The piston pin is drilled almost through and is held floating in the piston by flat snap rings (not the usual wire circlips). The massive twin ball bearing crank at 15mm shaft diameter and 10.3mm bore is of 8620 hardened carburising steel and looks to last for ever. The inner bearing is one of those small ball/slender track jobs.

The final angular appearance of the motor has certain distinct architectural overtones and is so individual that no imitations seem likely to follow.

Tuned-pipe points

Since there wasn't much information on the formal testing of tuned-pipe motors, some anguish seemed in order if the results were to have any significance. After much discussion with interested parties, it seemed clear that the earlier idea of optimising the pipe's many parameters for each r.p.m. point (the hoped for torque curve was neither sensible nor relevant) would be a hopelessly long-winded affair with the likely misleading result of a very flat curve. We didn't ad-

just our port timings in this way, nor the other myriad built-in features that can affect power at differing r.p.m.'s. Again, to do so would have resulted in a recognizably "manipulated" torque curve.

The argument then really boiled down to, how simple and easy to adjust was the particular variable provided by the manufacturer? Traditionally only fuel/air mixtures, compression ratios in diesels and variable ignition timing (where provided) were optimised during power tests, virtually all other parameters were taken "as is". The manufacturers tests determined the whole r.p.m. range by using the above adjustments. The tuned-pipe fell awkwardly between the two stools—we could adjust it—but not that conveniently. (In the air it would be even more of a task).

It seemed to the writer very difficult to attempt to escape the inevitable sharp peaks, even multi-peaks, which the likely alternate outcome of full r.p.m. range testing of a tuned-pipe motor with a fixed pipe length. The method revealed any advances being made in flexibility resulting from new pipe designs. Continual adjustment of the pipe's parameters during tests largely obscure this point.

Moving forward is now a matter simply of optimising the pipe's length (the most normally used and major variable) using the maximum diameter to the piston face (L) as our measurement. The optimising means getting the maximum. r.p.m. gain at a previously determined r.p.m. area. This area

could be that based on a desire to operate the motor (albeit less efficiently) at a low quiet r.p.m. or at the motors known maximum BHP peak. Where the pipe wants to be the motor will surely follow.

Power Tests

Having arrived at a fixed length, full power tests were conducted as normal over as wide a range of r.p.m. which seemed sensible (results are shown in the graph). In reality though, (because some users may well operate motor, manifold and pipe in their unadjusted state) one of the curves relates to the over-length situation of L and equals $13\frac{1}{2}\%$ approximately. This refers to the side exhaust motor with Mac's quiet tuned-pipe 60 size. A further set of figures was obtained for the rear exhaust unit (using again this over-length pipe). We omitted this information, since the curve was similar to the "pipe optimised at 11", but it displaced about three thousand r.p.m. lower.

The width of operable r.p.m. is an important factor for many users. If you want r.p.m. band-width you have to sacrifice maximum power. The Mac's quiet pipe seems a good compromise and the revealed width of around three to four thousand r.p.m. band should be sufficient for most users.

In all runs on the pipe a pressure tapping from the manifold to the fuel tank was used. This made pipe response less extreme and allowed for forcing more fuel into the engine. The immediate pressure rise inside the pipe was transferred directly to the fuel tank.

There were power output differences between the rear and the side exhaust units. The 90° rotation of the upper cylinder changed gas flow internally. The rear exhaust had a longer cylinder port timing. Also, the rear had a compression ratio of 6:8 and the side exhaust ratio was 9:6. The torque curve of the rear exhaust unit (when on open exhaust) showed a steeper decline than did the side exhaust engine.

The side exhaust unit experienced a power loss (due to an 80 square mm outlet area) past 14 thousand with a standard muffler. Using the Windsor Master 11X7 (quiet pipe L equals 11") the 25 percent nitro gave 14,400 r.p.m. and peaked at 16 thousand.

Final reservations

With a tuned-pipe of fixed length r.p.m.'s rise with progressive load reductions. Plus temperatures increase to sometimes destabilize the tune of the pipe.

The Mac's Quiet pipe set-up was fairly predictable over much of the r.p.m. range, and only infrequently did anomalous results appear. By comparison, the open exhaust motor was far easier to deal with. Adjustments in pipe length to within ¼" were usually precise.

Tuned pipe response (as some readers may already know) can be more weather dependent with open exhaust motors. Hence, the results obtained here are unlikely to represent the very best figures possible. It is better to obtain good results, than work away for final optimum weather/equipment combinations which may return infrequently in the engine's life.

The manufacturer's figure of 1.9 bhp was not quite realized but almost certainly would be closely approached given enough time to get the right conditions.

The Fox/Mac's pipe combination showed resiliency and consistency in the results obtained. As an indication only two glow plugs (Fox R/C idle bar long reach 1½ volt) were consumed during the 120 separate runs necessary to establish the various torque curves (virtually all flat out at maximum power-on nitro).

Mark X Carburetor

Even with the profusion of jets, needles, passages and linkages, the new Fox carburetor impresses the writer as simple to understand. There are two separately operable needles working with one spray-bar, plus, the rotating air control barrel attached to the slow running needle and that's all. The combination of fuel/air mixture strength in R/C motors is an area in which simplicity in the adjustment is a shining virtue. This new carburetor is soundly constructed, smooth and foolproof in operation. Idling and pick-up is adequately reliable on open, silence or tuned-pipe operation. On all these types of operation long-term idle is only possible above 2,800 r.p.m. when using an 11X7 propeller. Lower idle is achieved with a larger kinetic energy propeller of say 14" in diameter. On the tuned-pipe the dynamic difference between this slowest idle and the maximum "on pipe" setting is very large. The carburetor however, remains capable of handling this differential.

The existence of two needles on each side of the carburetor makes any question about rotation irrelevant. The small carburetor throat area of 57 square mm contrasts well with the authors severely opened out OS-61VRM at 180 square mm which assisted it to 2.9 bhp.

This proves that induction restrictions do force reductions in power. One wonders whether correction factors should be applied to all H.P. figures to account for the variations in induction area between motors and power. Generally though, there seems scope throughout both these motors for increase of power with extra breathing.

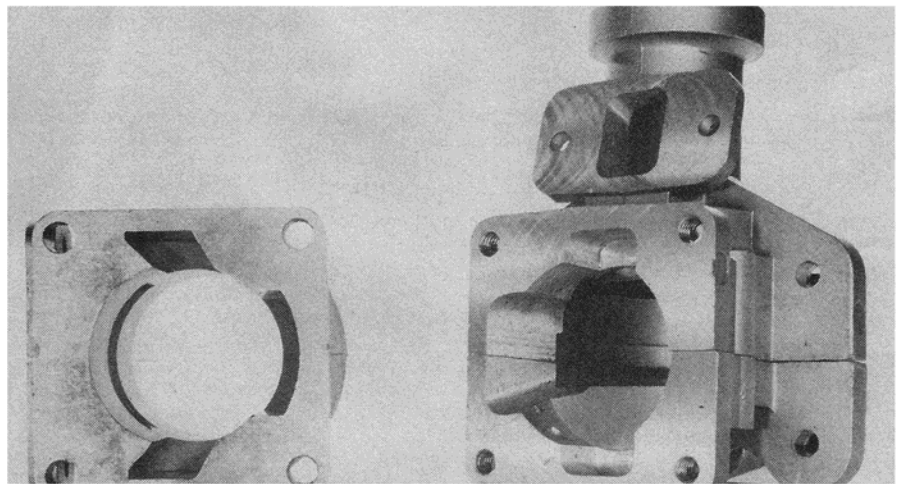
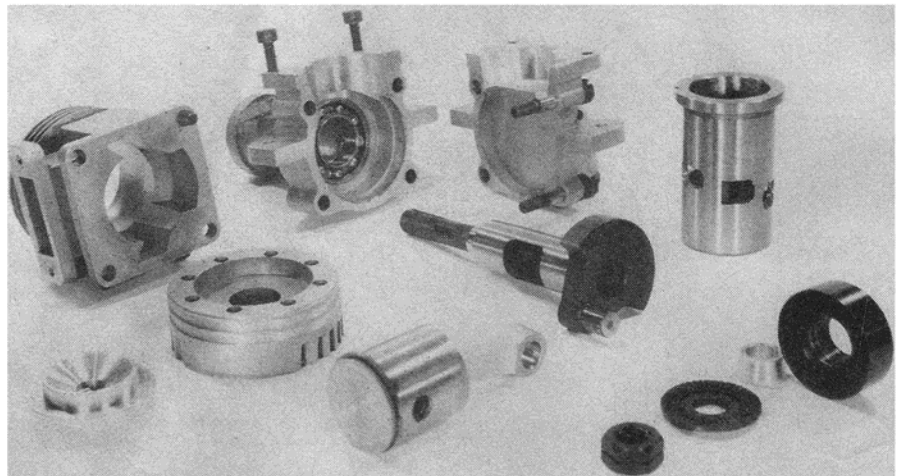
Summary

The various curves arrived at are an attempt to give a broad span of information and shouldn't be read as a means of comparing

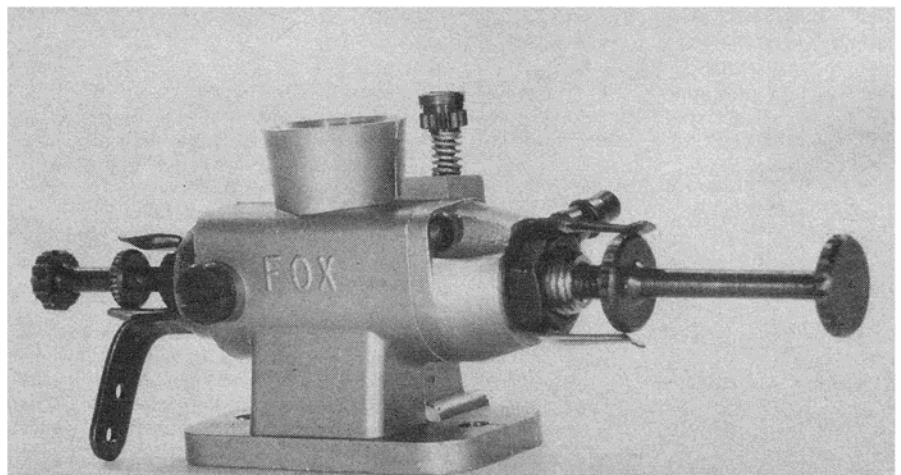
one motor against another. With existing model layouts in mind, one should proceed with personal preference as a guide for engine selection.

The Mac's Quiet pipe forms a strong flexible combination which will stand up to rugged conditions. The shaft and liner in particular appear extremely durable.

Finally, the writer must admit to a sneaking regard for the apparent determination Fox Manufacturing has not to follow prevailing trends too closely. There is much virtue in the variety such attitudes encompass.



Three pieces together form the crankcase of the side exhaust motor. The side exhaust breakdown shows the straight taper combustion chamber at bottom left in the photo (top). The MK X carb (below).



Years ago everyone worried about the reliability of radios. It was so marginal that anyone who did not lose or smash an airplane or two, or three, in a season just wasn't trying. Progress was measured by an almost imperceptible reduction in the horrendous attrition rate. Today, radio systems have become so reliable that electronics is just about taken for granted. We seldom lose an airplane into the wild blue yonder, however, we still crash, though not so frequently. Why?

Batteries you guess. Well, sometimes. Inference. Guys can do stupid things at the field—like forgetting to turn off a transmitter (we've seen experts do that seven times in the first eight months of 1980). But, in the

overwhelming majority the culprit is the servo or the installation of the servo which causes many battery failures."

Even if you have perfect servo installation, regular maintenance is a must. Many accidents could be avoided with simple but regular checks. If you cannot perform these equipment checks yourself, have a qualified factory representative do so.

Now, for the darkside of the servo picture. Let's say you innocently install an engine servo in such manner that the servo arm or disk (whatever) has not reached its limit of travel by the time the throttle is fully open or closed. The resulting jammed servo can draw over 400 ma. Picture that while the plane is in a throttled back approach from a 450 mah

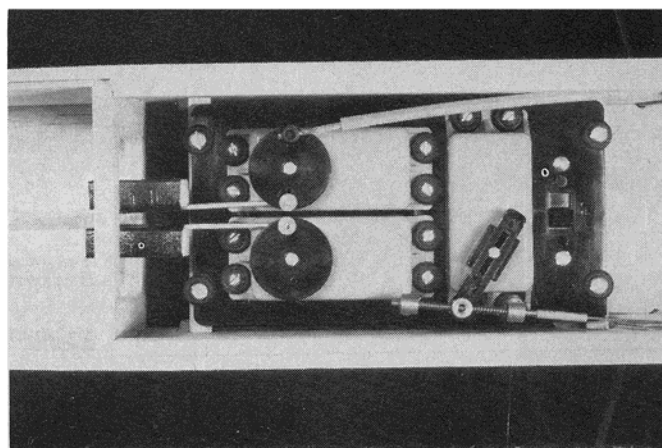
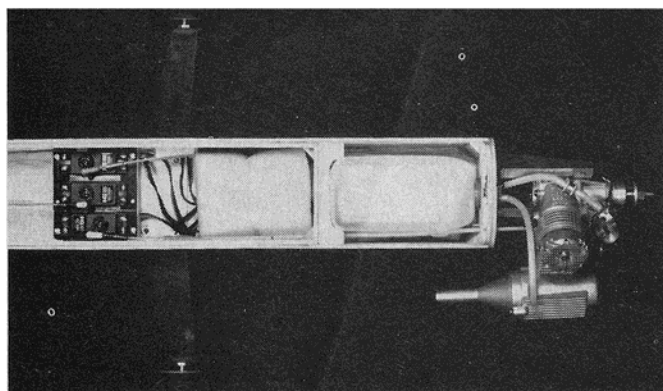
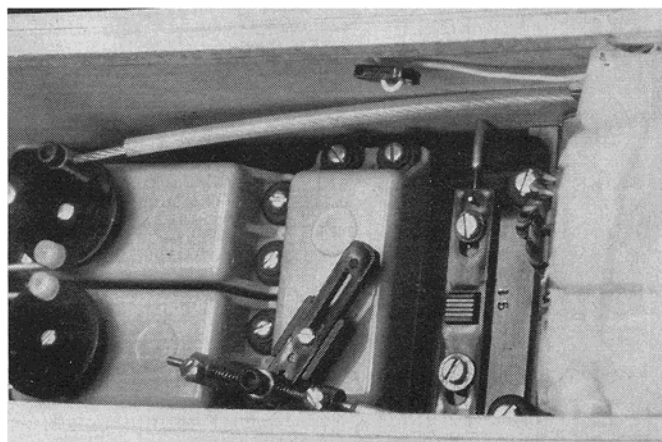
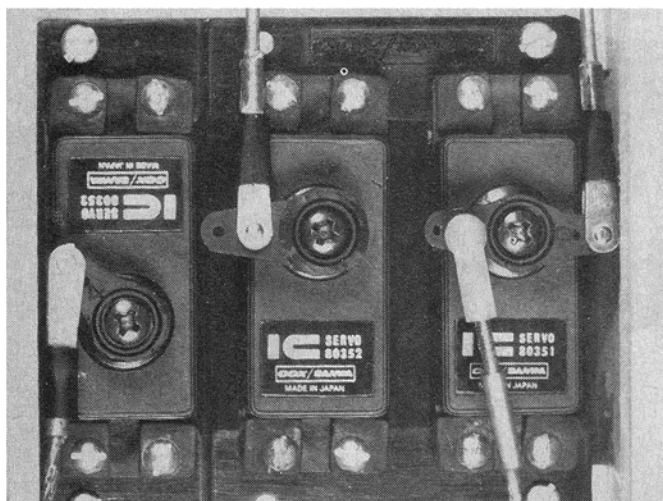
battery pack. We have seen even experienced fliers install all four servos so that they jammed. It is highly risky to think that the expected five flights on Sunday can be achieved without catastrophic interruption under such circumstances.

It is also, the height of folly to assume that because a servo manufacturer announces that his servo can pull 4 to 6 pounds, that your servo has the muscle to overcome all your transgressions in pushrod installation. If you were able to insert a milliamp meter between your battery pack and receiver as you operate the servos, you would quite possibly see stratospheric drains at the end of the servo travel. But, hardly less important, you would also see jumps in current (as this

An FM How to:

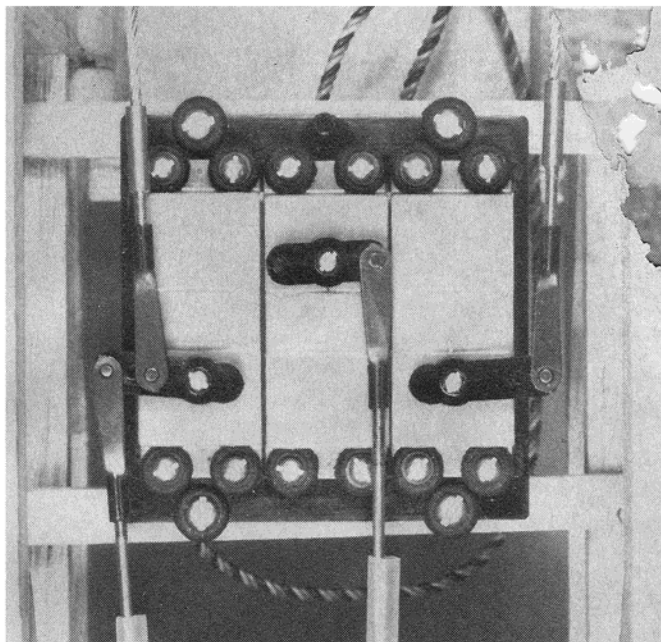
Servo Installation

The servo installation is the heart of a radio control airplane. Getting it right the first time can save you time and money/**Bill Winter**

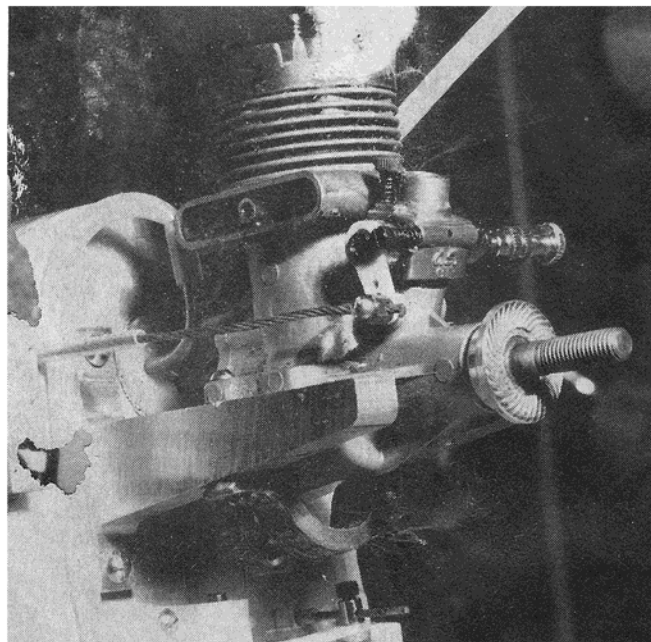


This photo is of an installation of a Cox/Sanwa radio in a Sig Kavalier. Note that the battery is far forward and is hidden in this view by the tank. The foam-wrapped receiver sits behind the tank. Highly advisable is the straight line runs of the nose wheel steering pushrod and the throttle linkage. This is a close-up of the same installation (top). The three side-by-side installation of the servos is recommended but not always possible due to narrow fuselages. Note that two servo arms have been removed to avoid conflict when operating, and that one servo, right, is turned around. The steel, rudder, pushrod clevis in the far left hole is soldered to the pushrod wire. Nose wheel steering is via flexible cable.

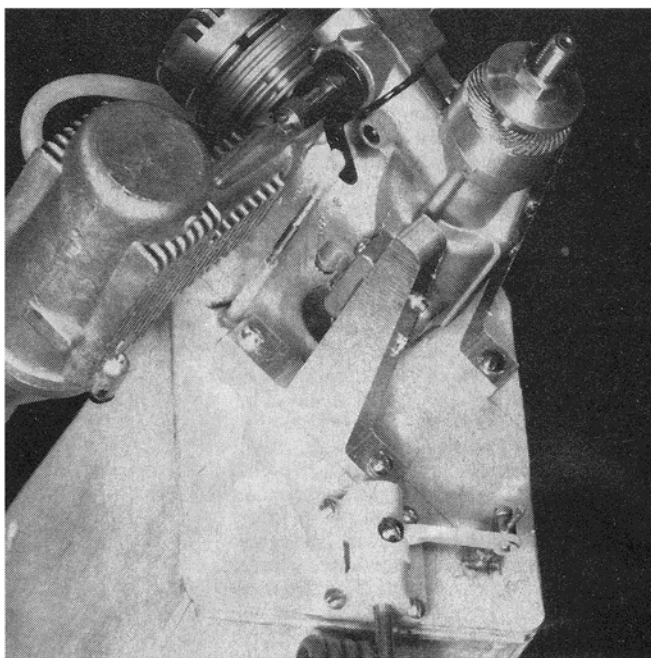
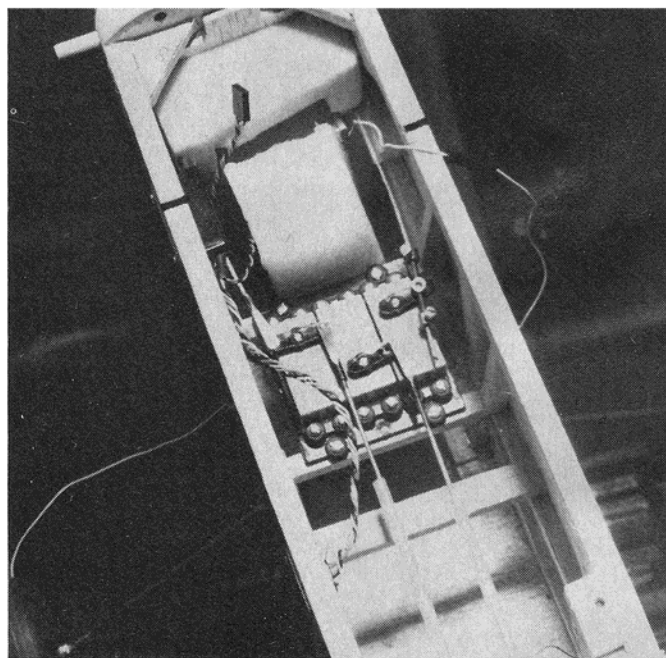
This is a good example of an installation in a narrow fuselage. These are Kraft servos in a Goldberg Falcon 56. Note the tray that accommodates a cross-wise throttle servo in front and side-by-side elevator and rudder servos in back. A Du-Bro flexible cable is used on the nosewheel linkage, and a Sullivan stranded cable is used to operate the throttle. The use of rubber grommets in servo mounting can be seen here. In a closer view of the same installation we can see the tray-mounted slide switch with a push-pull handle through the fuselage side, antenna stop to prevent pulls from yanking on the receiver connection, and a Du-Bro servo override that is intended to reduce servo jamming (top).



An installation of three Kraft servos in a Senior Cadet. Rudder servo, at left, requires long arm to allow placement of rudder and nosewheel pushrods on the same side. An overall view of the same installation (**below**). Note the placement of the switch, away from the engines exhaust.



The nylon throttle arm on this OS .35 has three holes to assist in setting proper movement. Goldberg servo connector allows further adjustment. Nosewheel steering cable runs through Du-Bro servo connector in outer hole of steering arm to avoid bending at pushrod exit (**below**).



or that servo/pushrod is operated) of 200 or more ma. This is due to linkages that do not work freely, bad hinging, bends in stiff wire pushrods, and so on. All such things boost battery drain beyond what the spec sheet tells you and your percentage of incipient mishaps climbs sharply.

You may hear servo buzzing. This can be a telltale warning that a stiff working system is opposing the servos initial effort to begin its travel. Sometimes servos buzz anyway, but not loudly—and do not actually chatter. Servo technician's tell us this is due to the extremely tight deadband found on many servos. All we need to know about "dead-band" is that it determines the precision of servo neutralization (surfaces come back to the same precise neutrals). Pattern fliers and

truly expert fliers demand that. Most of us, including the writer, don't notice it, but we fly servos with narrow deadbands too. If an occasional servo over does it, a tiny percentage of folks can correct it electronically, but we have no hope. But, that buzzing is apt to be faint. If you hear it place your transmitter farther away from your receiver as you test equipment indoors, and the buzzing probably stops. The loud buzzing is what we must watch out for.

A malfunctioning servo, if flown very much with a pronounced buzz, will accelerate the pot/brush wear to the point that the servo goes haywire. Then you will blame interference, lousy batteries or will just cross your fingers for the future. What was probably wrong was a stiff installation.

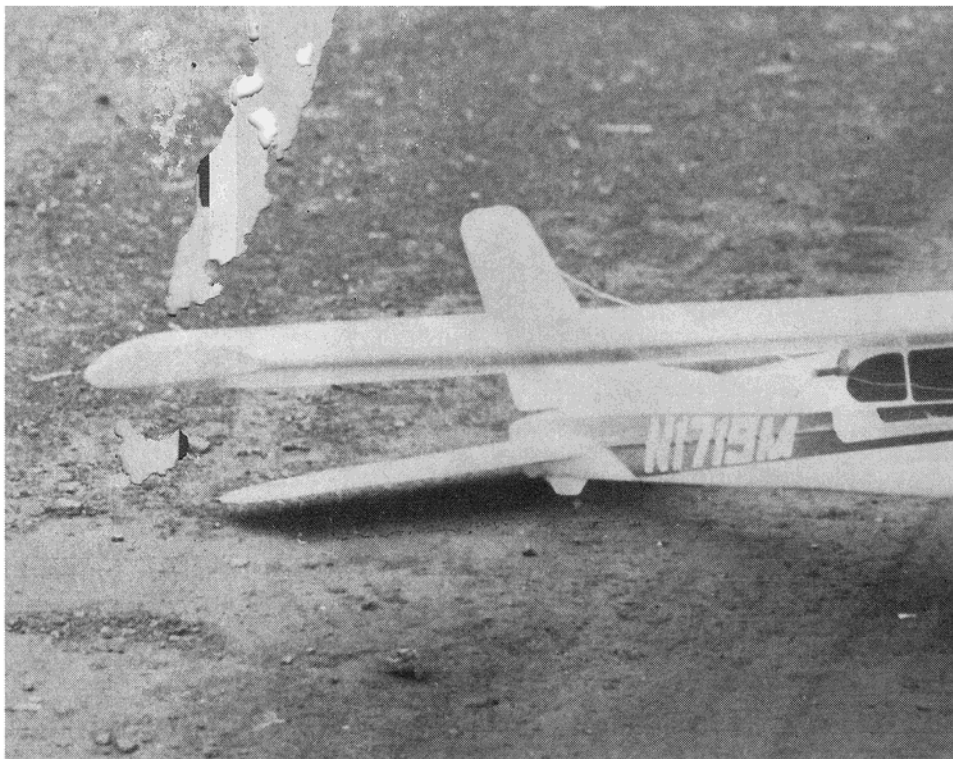
It is true that a picture is worth a thousand words. So rather than bore you with a long dissertation on the how to's, we present some very helpful pictures with lengthy captions. These models were made by a number of experts of national standing, and we had John Preston follow building procedure step by step. One final word: many kits come with nifty, small accessory items. Virtually no kit utilizes all the miraculous little things from your hobby shop which can make your flying life a pleasure. These things cost a bit more—say a buck on the average. But, they are worth their weight in gold. You'll find them identified in the photos. Since, all the builders use such items in these pictures, you can correctly assume, "they are trying to tell you something."

Several months back, I had the opportunity to review the new Model Rectifier Corp. (MRC), Chipmunk ready-to-fly model. During that review, I referred to another upcoming MRC model which they call the "Eagle". The Chipmunk and Eagle are sufficiently different to warrant a separate product review. As a point of recommendation the new Eagle is actually a better subject for the rank beginner in R/C. The Eagle's high wing position, light wing loading and moderate engine power made it an excellent choice for the beginner. The Chipmunk, on the other hand, with its low wing configuration and moderate dihedral, is better suited as a "second model". Another distinction between these two models is that the Chipmunk is imported from Japan, while the Eagle has been designed, tested and manufactured by MRC in the U.S.A.

If you follow the usual hobby advertising, you may have noticed the resemblance between the Eagle and several other popular MRC models, namely the Trainer Hawk and the Electra Hawk. The Eagle is essentially an Electra Hawk converted over to gas power. The new Eagle has also been molded out of a lighter weight, foam material. Remember, the Electra Hawk had to carry a 20 ounce electric motor and battery system. The extra payload made it necessary to go to a very high density foam. The Eagle, on the other hand, could easily be made lighter and still be structurally quite strong. The result is a model with a very light wing loading which can be considered for all practical purposes a powered glider.

I had a chance last fall to participate in a prototype program during the development of the Eagle. The model I flew at that time was a mock-up of an Electra Hawk which was considerably heavier than the final production version of the Eagle. My prototype weighed 28 ounces (the final version weighed 21 ounces). At that time, I didn't have much hope that the little Testors .049 engine would get the model in the air. But, after my very first flight session, I must say that I was pleasantly surprised at the overall performance of this prototype. On a two minute engine run (typical for the Testors engine) I was able to get a few thermal flights up to seven minutes in duration. Similar reaction from other modelers involved in this development program prompted MRC to market the Eagle as a new model, expressly for .049 gas power.

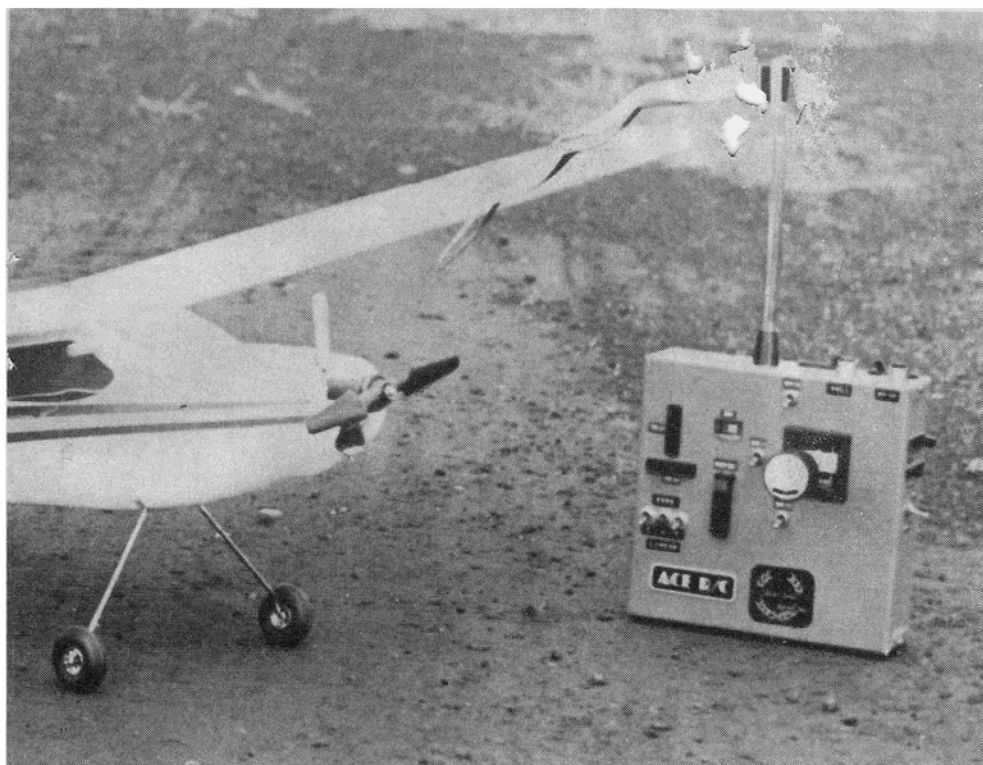
MRC designates this Eagle as their model IF105. It lists for \$74.95, and that price includes the Testors .049 engine which comes already mounted to the firewall. The Eagle's specifications have been included in tabular form with this article for your information. As already mentioned, the entire model is constructed from expanded bead foam (color is all white). The wing is molded in one piece and at the correct dihedral angle. You won't have to join the wing halves. There are no spars nor dihedral braces employed in this wing, yet it is still quite strong for its intended purpose (a basic R/C trainer). The stabilizer and rudder come with the control surfaces already hinged. I did find that the



MRC Eagle



Bob Aberle holds his MRC Eagle trainer. In Bob's left hand is his trusty Ace R/C Silver Seven transmitter. Bob is presently running most of his airborne packs from this transmitter. The MRC Eagle at rest (top).



PHOTOGRAPHY: BOB ABERLE AND TIM MYERS

This thoroughly engineered, ready-to-fly ship can be your starting point in an R/C Hobby. A real performer/**Bob Aberle**

one piece polypropylene hinges supplied with the Eagle are quite stiff or rigid which makes your servos work a little harder and draw a little more power from the battery. However, on the plus side, the hinges are mounted for good. I couldn't pull one out no matter how hard I tried. The two control horns come already mounted to the rudder and elevator. In my case, the mounting was a little careless and certainly not very strong. Also, the swept back angle of the rudder hinge line made it difficult to attach the control rod. You will have to "play" with the connection for awhile to get it right (eliminate any binding). I suspect MRC will take my suggestion and "beef up" the control horn mounting on subsequent kits.

Construction

Assembly involved cementing the stab and fin into position. I used Hobbypoxy Formula 3 thixotropic epoxy cement throughout the assembly. The landing gear wire comes attached to a plywood former. All you do is insert the former in a slot in the bottom of the fuselage and apply some cement. The wheels and wheel collars are also supplied with the kit. Insert two wood dowels into the fuselage to accept the wing rubber bands and the construction phase is completed.

The only remaining item to complete the assembly is the installation of the radio system. Since this model requires only rudder and elevator control (no throttle is available for this engine) a two channel radio is all that is required. MRC would like you, of course, to use their Guidance System 2000 in the Eagle. That radio works fine and was reviewed in the January 1980 issue of *FLYING MODELS* for those who might want to look it

up. I didn't have an MRC radio available at the time, so I placed a Kraft airborne pack in the Eagle. This system consisted of a Kraft KPR-7L receiver, a 225 MAH battery pack and two KPS-18 mini-servos. Admittedly, this is a very light weight radio (around 5.0 ounces complete) and quite frankly a little expensive for this type of training application. Any two channel radio system will work fine in this model. The foam interior of the R/C compartment has been molded to accept two MRC MR-12 servos. This will permit an easy press fit into the foam if you are using that specific size servo. In my case I constructed a simple $\frac{1}{8}$ " plywood tray to accept the two KPS-18 servos. The battery pack goes as far forward as possible, followed by the receiver, both of which you must wrap in foam rubber for extra protection against engine vibration or in the event of a crash. You will have to cut a small hole in the side of the fuselage to accept the radio on/off switch and possibly a charging jack if your radio system has one.

MRC supplies two ready-made control push rods that connect the servo output to the control surface (both the rudder and elevator). In my case, I accidentally broke one of these rods which, as it turned out, was made from soft balsa wood. Balsa wood was chosen to keep the weight down and prevent the model from ending up tail heavy. MRC felt that the slow flying speeds of the Eagle would not put any real stress on these rods. In my case I decided to be a little conservative and installed Sullivan Gold N' Rods in place of the balsa wood rods. It's strictly your choice. All the necessary clevises are provided with the kit. For information, I ended up with the following control surface move-

ments: rudder $\frac{3}{4}$ " either side of neutral, elevator $\frac{3}{8}$ " either side of neutral.

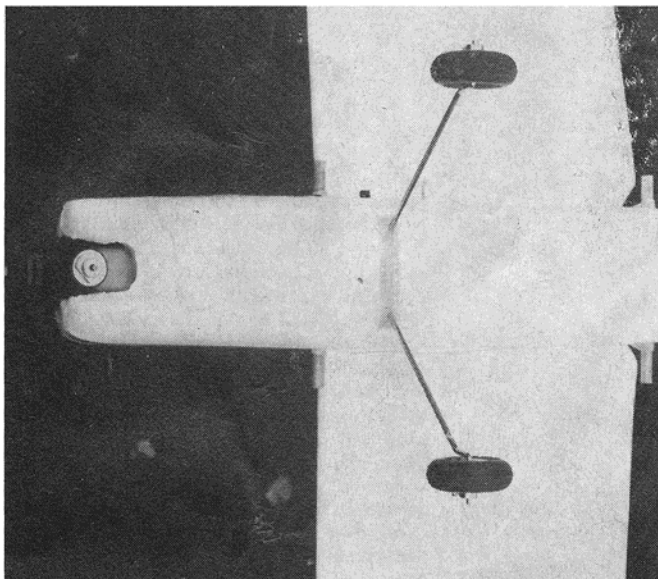
The finishing touches involved the application of a set of decals to the Eagle to dress up the all white foam surfaces a little. These decals will tend to give the model somewhat of a "Cessna" look. I did have some trouble getting the decals to stick properly. They went on easy enough but then unpeeled after a day or so. At Frank Ritota's (MRC's R/C Products Manager) suggestion, I applied some heat to these decals using a Sealelectric Iron set at a very low temperature (about 25 percent of full power). This did help stick the decals down a lot better. But, I have to admit that the engine fuel eventually softened the decals. The entire model can be easily assembled, ready-to-fly, in one evening or possibly two evenings if you use the slower drying cement that I recommended earlier.

Besides the problems noted with the decals, the engine fuel also soaks easily into the raw foam material, especially around the firewall area. If you attempted to paint the entire model (with a special paint intended for foam) it would end up being far too heavy. I compromised and only coated the firewall and forward fuselage area with the Hobbypoxy Formula 3 cement. This worked out reasonably well. I also tried using some Min-Wax brand clear polyurethane varnish. This unfortunately soaked right into the foam without really sealing the surface. The Hobbypoxy cement seems the best approach for now.

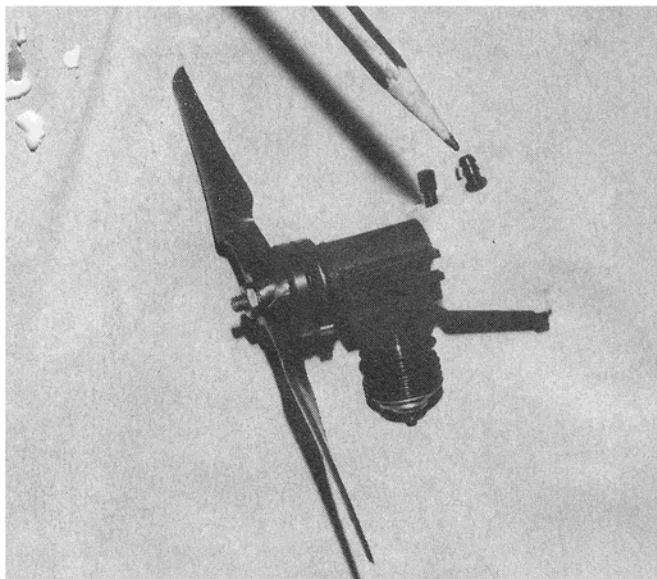
Total weight of my new MRC Eagle was 21 ounces including the radio. Most average two channel radio systems will tend to weigh about 4 ounces more than my light weight radio. But, the extra weight would be of little concern to the performance of this model. The balance point on my model was measured at $2\frac{1}{2}$ " back from the wing leading edge (29.4 percent). I would consider this the rear most center of gravity (C.G.) location for this model. Remember, I employed a light weight radio which included a small 225 MAH battery pack. Normally you would be using a 500 MAH nickel-cadmium rechargeable battery or possibly a dry battery pack consisting of four A-A size alkaline cells (non-rechargeable). This additional battery weight, well forward of the wing leading edge, would easily move the center of gravity (C.G.) further forward. My original prototype Eagle was ballasted (with additional weights) so that the C.G. ended up at $2\frac{1}{2}$ " back from the wing leading edge (25 percent). The key point here is that the final production version of the Eagle will most likely balance correctly, without the need for any additional ballast. A good point for the beginner who doesn't yet realize how important this is.

The Engine

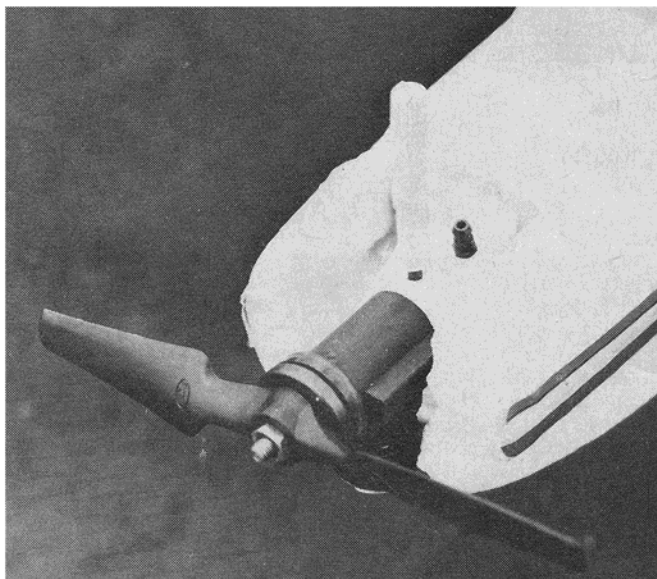
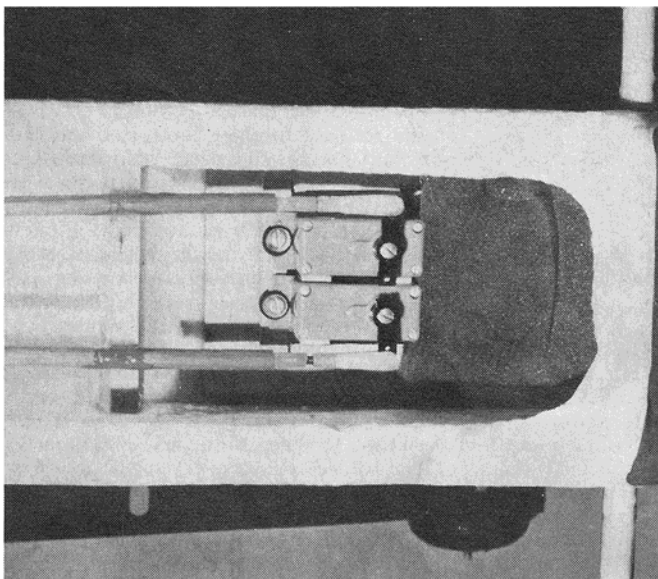
A few words on the Testors .049 engine. It was surprisingly good considering its modest price. The integral fuel tank provided about a two minute engine run. For the beginner, this might seem like an eternity. Without any throttle control you have to "hang in there" until the engine runs out of fuel. MRC



This bottom view shows how the landing gear is cemented into the bottom of the fuselage. Inside the radio compartment (**below**). Here, Bob has mounted two Kraft KPS-18 servos. The receiver is under the foam pad.



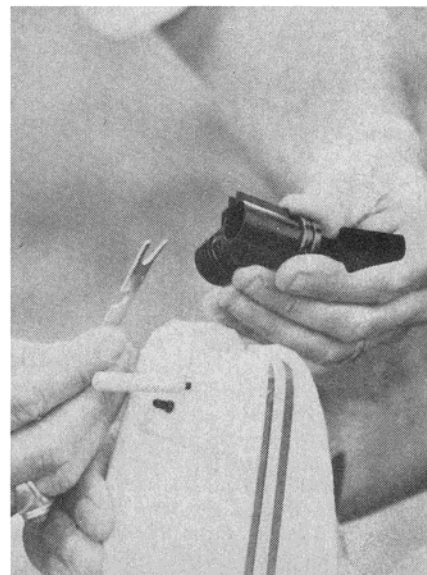
In this photo the pencil is pointing to the K&B pressure tap that Bob added on the top of the fuel tank. The stock single fill vent made fueling difficult. A close-up of the nose (**above**). Crankcase snaps on to tank (**bottom**).

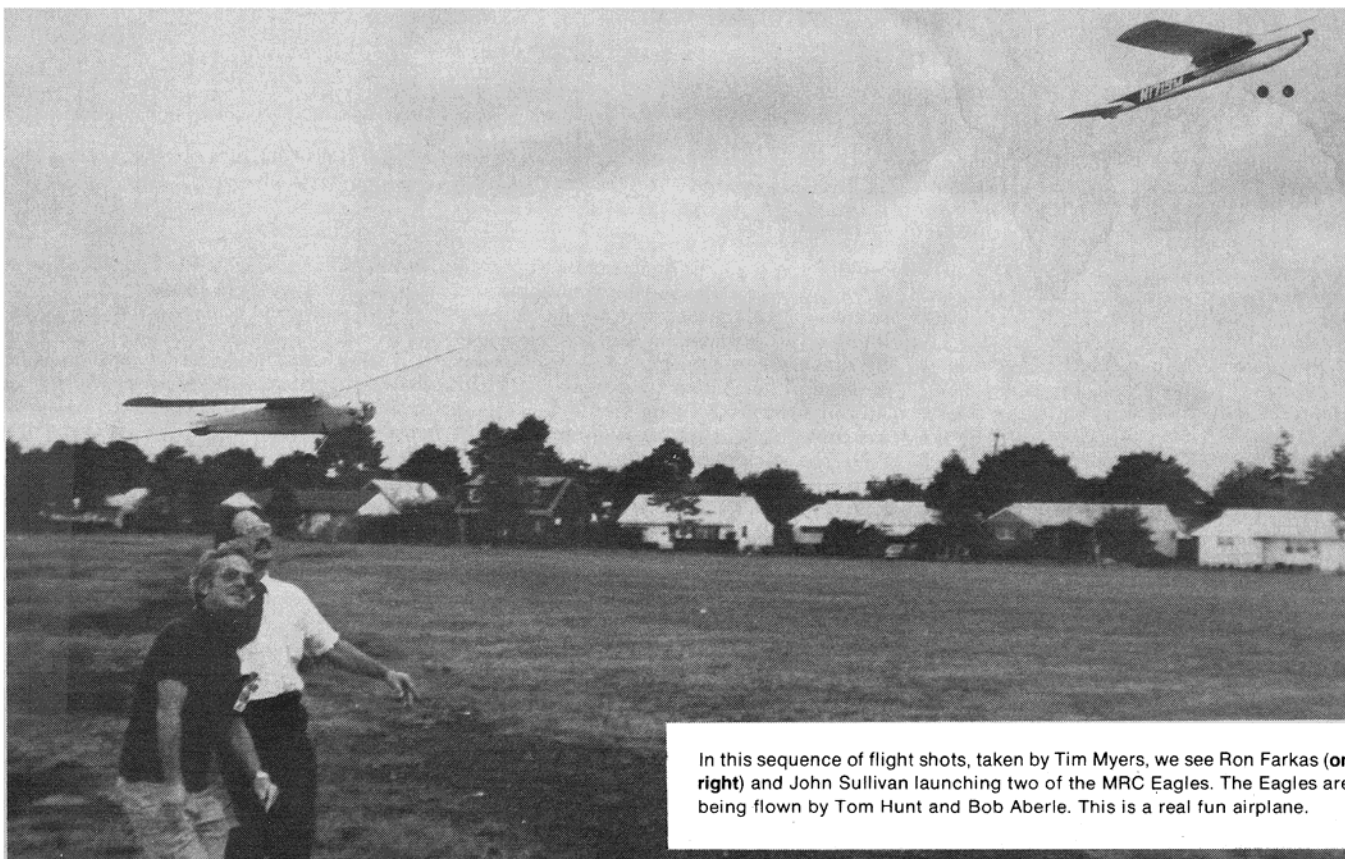


was forced to mount the engine in the inverted position because of the location of the fuel pickup line inside the tank. The Testors engine was primarily intended for control line applications. You will have to suffer some of the inherent problems associated with inverted engines, namely they flood easily. On the other side you end up with the needle valve on top of the tank and behind the engine's cylinder head. This makes engine adjustments much easier and safer for the beginner.

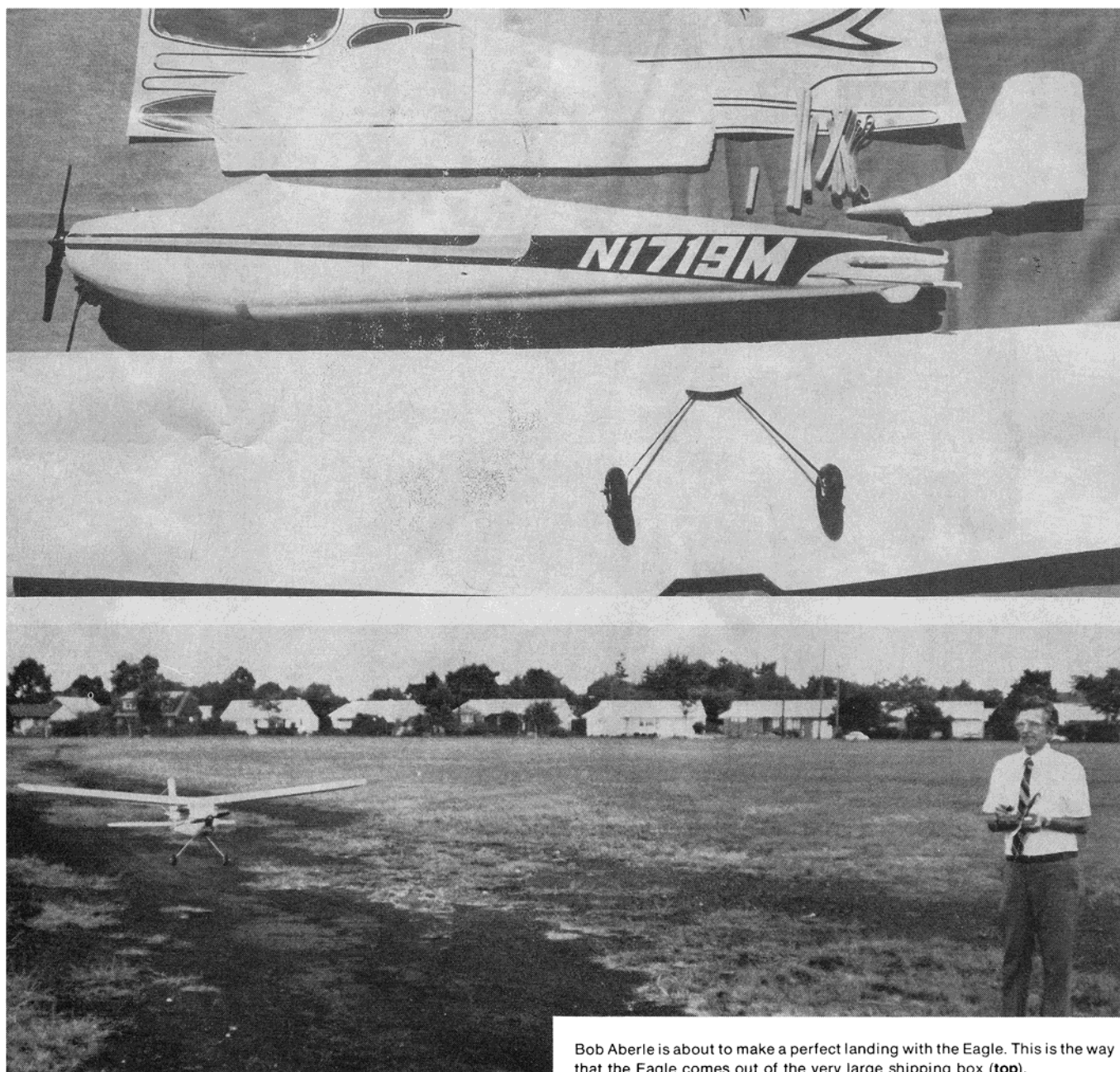
Another problem was noted when I attempted to fill the fuel tank. There was a single opening for filling without a relief vent. In many cases I ended up with a partially filled tank because of all the air bubbles. The solution I found was to install a small K & B pressure tap (P/N 6723) on top of the tank. (You will see this in the photos.) All I did was connect my fuel pump to this fitting. When filled, the tank overflowed from the existing (single) opening. The integral spring starter worked fine. I use it my-

self rather than hand flipping the prop. I might add that I have also successfully used an electric starter on this engine. The Testors glow head is not the standard variety. As such, you'd better buy a few spares and keep them in your field kit. When I attempted to remove my first burned out glow head I got a big surprise. The head was stuck so I was forced to use a large, adjustable open end wrench. One strong motion of this wrench pulled the entire crankcase off the tank mount. My clubmembers really gave me the business when they saw this happen. As it turned out the nylon crankcase was "snapped" into the tank (no screws are required). I had some job getting the crankcase back in place. So please be careful when removing the glow heads, or you will be buying a replacement engine in short order. I've been using Cox red can racing fuel which has a 30 percent nitro content. With that fuel I have tached the Testors .049 on the supplied 5½" diameter/3½" pitch prop at 14,400 r.p.m. No break-in was necessary with either of the





In this sequence of flight shots, taken by Tim Myers, we see Ron Farkas (on right) and John Sullivan launching two of the MRC Eagles. The Eagles are being flown by Tom Hunt and Bob Aberle. This is a real fun airplane.



Bob Aberle is about to make a perfect landing with the Eagle. This is the way that the Eagle comes out of the very large shipping box (top).

two engines I had in my possession. In general the Testors .049 is reasonably reliable.


Testing

Now about flying. Hand launching is about the test technique for this type of trainer. Ground handling, without a steerable tail wheel, would be difficult even for the expert. Hand launching permits you to operate off improvised flying fields. Quite honestly a big schoolyard would be sufficient for this model. In general I would have to say that the MRC Eagle is about the easiest plane I have ever flown. It is truly a powered glider. You can get it up to about 300' altitude on a full tank of fuel. After that you easily glide for 2 minutes in dead air conditions (longer if you catch a thermal). It is steady and slow thanks to the very light wing loading. Because of the light loading, you will find the Eagle better suited for calmer weather. Beyond 15 m.p.h. winds the Eagle would have difficulty penetrating. If it got down wind on a beginner it is possible it

could fly away. For that reason, I would strongly suggest that you put your name and address on this model (like we did in free-flight days). To prove how easy the Eagle is to fly, I invited a group of my fellow workers out for several lunch hour flying sessions. I had literally everybody flying the Eagle without any previous R/C training other than to show them the stick relationship (up/down—left/right). The Eagle easily comes out of tight turns by itself. It is completely stable and has a very gentle stall threshold. I think that

says it all. The MRC Eagle's performance as a basic R/C trainer is excellent.

I have one final comment concerning the instruction manual supplied with the Eagle. It is only eight pages in length, but it instructs in terms the beginner should have no trouble understanding. MRC starts out with safety precautions and discusses the frequency control system used at local R/C flying fields. It includes pictorials showing the correct radio installation and the pushrod connections to the control surfaces. Other sections cover engine start up procedures, preflight check out and the actual flying of the Eagle. Best of all MRC has established a special telephone number you can call to receive factory representative help. MRC will make available spare parts for the Eagle and some of the major parts associated with the Testors .049 engine.

For further information and a catalog/price list I suggest you write to Mr. Frank Ritota at the Model Rectifier Corp., 2500 Woodbridge Ave., Edison, NJ 08817. 

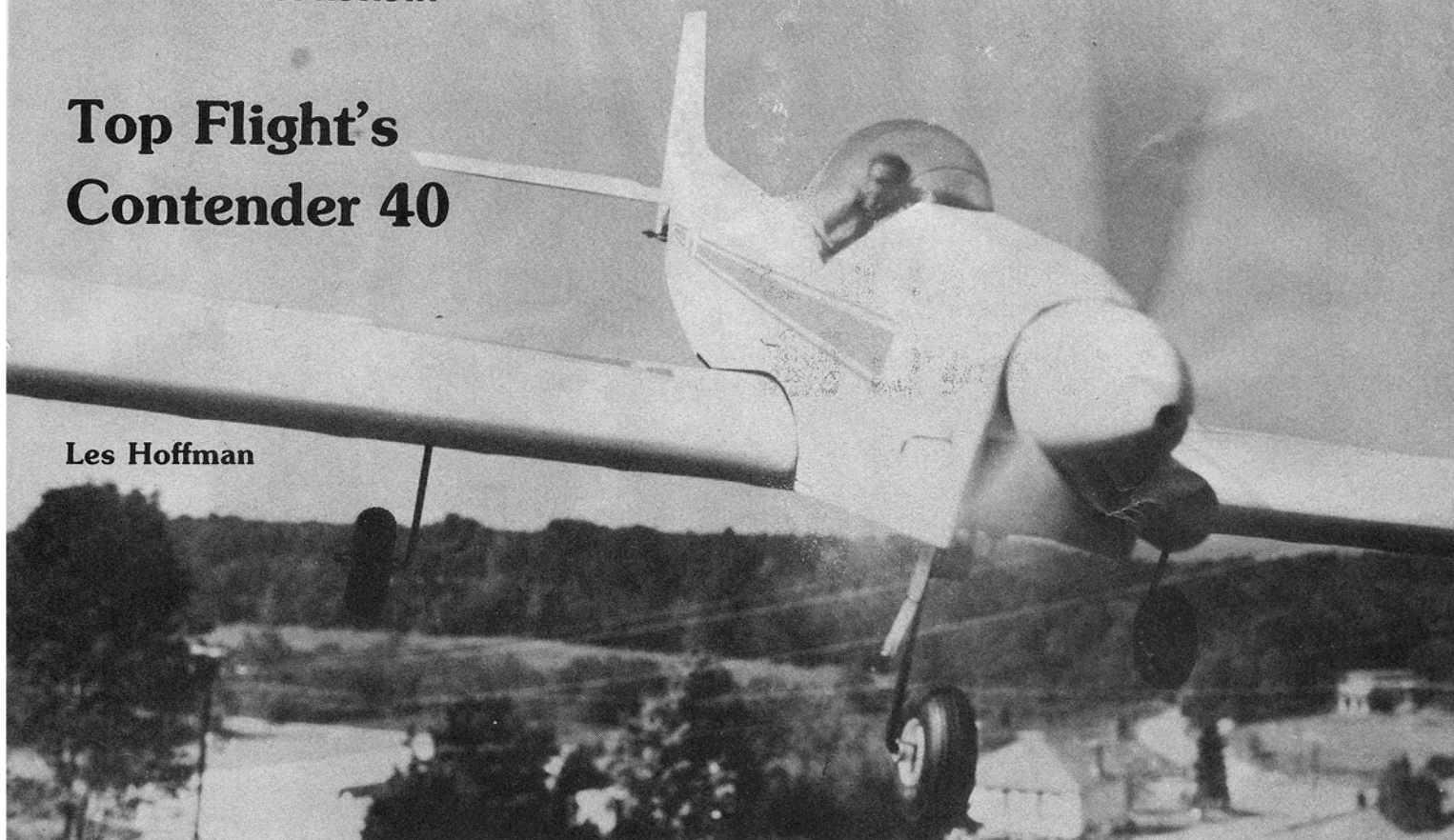
MRC Eagle Specifications R/C two channel basic trainer

Wing span: 48"
Wing area: 372 sq. ins.
Airfoil: 14 percent thick (constant) semi-symmetrical
Dihedral angle: approx. 5 degrees (each side)
Fuselage length: 33" (overall)
Bare model weight: 16 ounces (with engine)
Average weight with radio: 25 ounces
Wing loading at 25 oz.: 9.7 oz./sq. ft.
Engine: Testors .049 (supplied)
Best prop: Testors 5 1/2" D x 3 1/2" P (supplied)

An FM Product Review:

Top Flight's Contender 40

Les Hoffman



PHOTOGRAPHY: BOB HUNT AND JIM BOYD

Top Flite Models Inc., 1901 N. Naragansett Dr., Chicago, IL 60639, has come out with their latest version of the Contender.

The new Contender 40 is a builder's choice kit with the option of building it in a straight or bent wing version.

When I opened this kit, I was impressed with how neat everything appeared. The box had a place for all the pieces. The wood was evenly bundled. The canopy was double wrapped for protection and the landing gear and hardware were packaged and wrapped, so no loose parts could damage the wood. (There's nothing worse than buying a new kit, and opening it to find that the landing gear has made a neat hole through the canopy).

Also included in the kit is a very complete set of plans with an assembly Instruction Sheet which has pictures and a check-off list to help get your contender built as quickly and easily as possible. (It is always a good idea to spend some time looking over the plans no matter how easy a plane may look to build. Wood is expensive, so understand what you are going to do before you do it).

Changes Made

After studying the plans, I found several areas I wanted changed. First the plans showed a permanent tank installation, and I preferred a removable tank. I accomplished this change by making a removable hatch under the gas tank. I cut about $\frac{3}{4}$ " off the tank floor and epoxied it to the forward position to help hold the removable hatch down. (It also helped add strength to the firewall area). The removable hatch had two pieces of

$\frac{1}{4}$ " square spruce epoxied to the front inside of the hatch. These slid under the front floor to hold down the front securely. On the backside of the hatch, I used Goldberg's angled hatch hold downs.

The second change was to use 4-40 bolts and blindnuts to attach the nose gear bearing blocks to the fuselage. I didn't like using screws to hold bearing blocks in place.

The last two changes I made were to add some beveled stock to the sides of the motor mounts, and to use some $\frac{1}{16}$ " sheet to be glued to the bottom of the wing where the aileron pushrods exit the wing.

These changes are my own modifications due to personal preference. Since I like parts to be removable in case of damage or have them firmly attached, I changed what I considered weak areas.



Author, Les Hoffman, takes a moment to pose for this photo before his first flight with the Contender 40. It's a good one.

Construction

I started the fuselage first since this was the sequence shown on the assembly sheet. If you decide to use an inverted engine no changes will be necessary to the firewall or former no. 1 referred to as F-4. I used the inverted engine version since it looked cleaner and didn't destroy the jet-like appearance of the fuselage.

The fuselage sides are laid out so you have both left and right halves. The wood motor mounts are epoxied in place along with the F-2 fuse, doubler and the wing mounting blocks. I omitted the hardwood servo rails and pushrod cross rails after the fuse. Sides were joined.

The fuselage top was then laid down over the plans and the front and rear $\frac{1}{8}$ " sheet joined; followed by formers F-8 and F-10. I used some Satellite City Super-T and found it to be great glue and it really speeded up construction.

After the fuselage sides are dry, line them up over the plans and use the fuse, top as a jig. I glued the front half first and then let it dry. After that I wet the outside of both aft fuse sides (to help make them bend inward) and glued them securely to the fuse top and let them dry.

Before adding any $\frac{3}{32}$ " sheet to the fuse bottom I cut-out the pushrod exit holes in the rear of the fuse for elevator and rudder. Also, before adding the bottom $\frac{3}{32}$ " sheet, I double checked the fuselage sides for correct alignment.

You might find it easier after cutting out the $\frac{3}{32}$ " planking to join these pieces on your workbench and then glue them to the bottom of the fuselage. This prevents getting those

little dips in the planking where each piece is added on.

Building the stab and fin should create no problems; you might have to lightly sand joints before gluing them to get a nice fit. When they are dry sand them to a smooth finish. (I suggest if you're going to use Mono-kote hinges do it at this point). Now carefully align the stab with the fuse. I put holes in the stab and fuse, top with a no. 20 T-pin before epoxying them in place. This makes a much stronger joint.

After the stab is dry add the fin, once again check the alignment carefully before gluing them in place. Glue formers F-5, F-7, and F-9 in place (after adding both F-11s) and add the forward planking. I epoxy the top inside around the motor mounts and inside formers F-5 and F-7. When dry, I sand smooth and gently round off corners where F-11 meets the fuse sides.

I cut a $\frac{3}{8}$ " hole in the firewall in order to fit the gas tank in position. I used G.E. silicon rubber as a seal between the tank and the firewall. I found it much easier to install or remove the tank using this method. Fuel lines are also easier to install or replace.

For those of you who dread building wings simply because you don't like making dihedral joints, this is the plane for you. Just build the straight wing version.

I chose to build the straight wing version because it was a bit quicker to build, and because the straight wing version seemed to

handle better in windy weather. (New Jersey has lots of windy weather).

After the wing was complete, I sanded it smooth and attached the wing to the fuse, as per instructions. I made sure that the wing was properly centered and that it was parallel to the stab.

The control surfaces could now be added, if you planned to use Mono-kote hinges. (Also, I used balsarite on the fuselage, wings, wing tips, ailerons and flaps.)

Radio Installation

I installed my four year old World Expert Radio and used my 5-11 servos. Then decided on the use of 5-10s which are smaller and lighter than the 5-11s. Also, I used one Futaba 5-20 mini-servo on the flap. This fantastic little servo even had ball bearings.

My Last Changes

I omitted the bottom portion of the fin and rudder, so the bottom of the fuse was clean. This was because the bottom fin and rudder tended to get damaged on take-offs and landings.

I used Wilhold RK 56 glue to hold the canopy to the fuse when I installed it. This glue was terrific and I didn't have to use much of it.

Flying

I spent about three nights checking over the Contender 40 to make sure everything

worked smoothly. Then on that Saturday, Dave Thompson and I traveled to Bob Hunt's for pictures and hopefully a chance to fly. (Why is it that the wind always the strongest when you're ready to fly a new plane?)

Well, 45 minutes later we arrived at Bob's and found him hard at work, (testing a new R/C car). Bob said I didn't have to fly the Contender if I didn't want to. Believe me, I kept this in mind if the plane didn't start by the fifth flip of the prop.

After arriving at the field the wind appeared to be getting stronger. Bob took the pictures, while Dave and I checked out the flying field which appeared to be a great place for that first flight.

I figured it would be much easier, initially, to start the engine while the plane was inverted, since the engine would be upright and easier to prime and adjust. Well, would you believe it the H.P. .40 started on the first flip. The engine ran fine, until I accidentally pulled the throttle trim back too far and stalled it. No problem though, it restarted again and this time the trim was neutral.

The Contender performed well on the ground and now it was time to take it to the air. I advanced the throttle slowly and at half throttle applied a small amount of back pressure—the Contender was airborne. This airplane didn't take-off it leaped into the air. With the wind still gusting, I applied full power to get altitude, and to check out the planes handling characteristics.

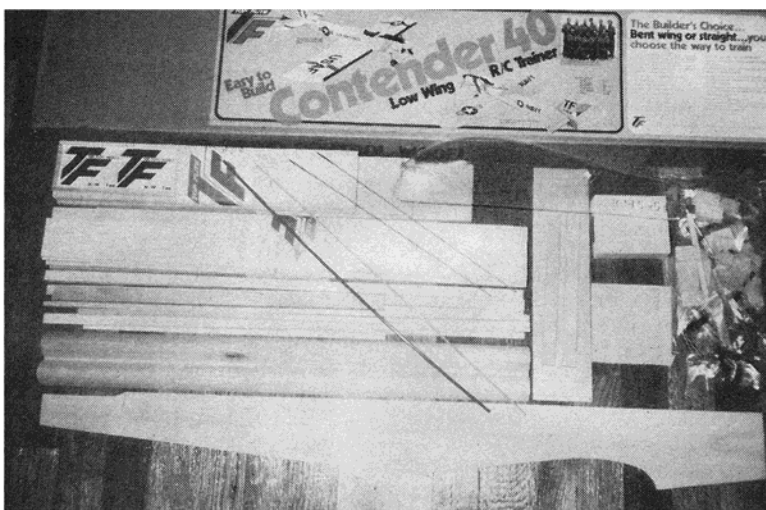
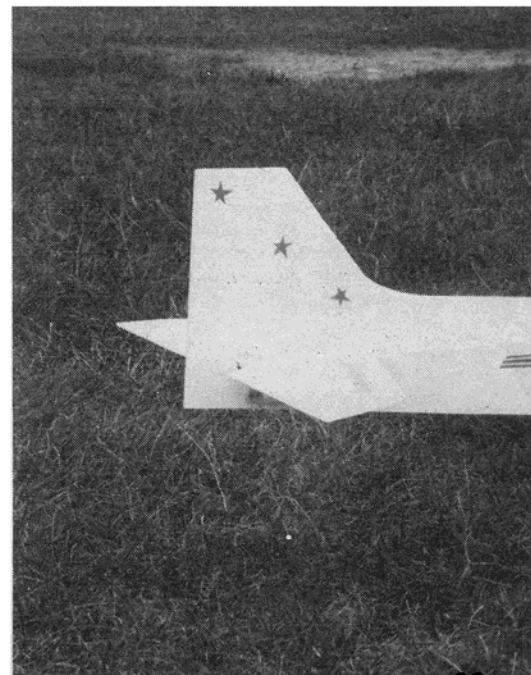
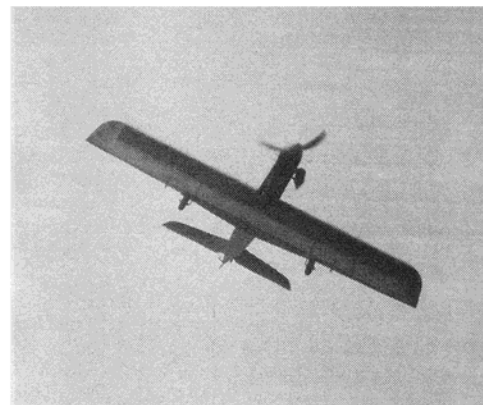
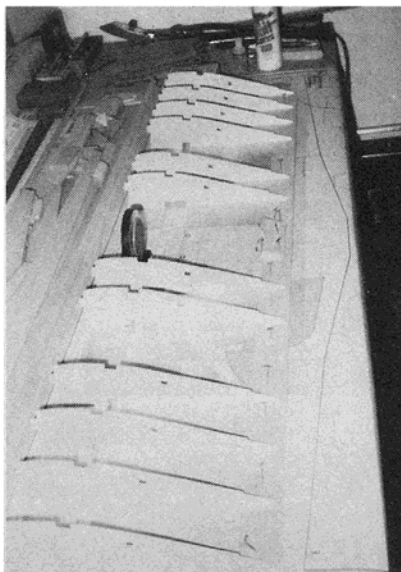


PHOTO: KATHY HOFFMAN

The Contender 40 is a very complete kit that is well packaged. Note the hardware bag. This construction shot of the wing shows the jig "feet" on the ribs (right). Les reports that the assembly is very easy and quick. The two flight photos give an indication of the spirited performance (above right). Les equipped his ship with operating flaps (right center).



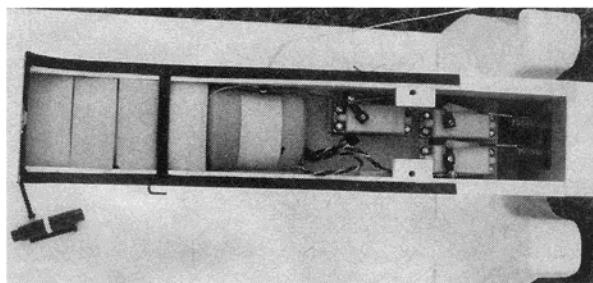
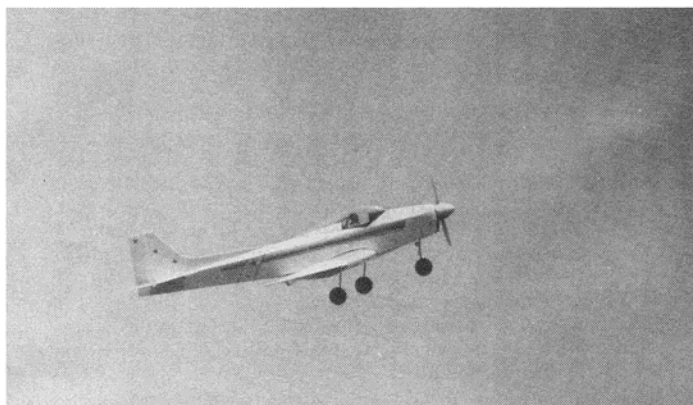
The elevator appeared to be very responsive and the ailerons seemed mild but adequate. I only flew the Contender about four minutes on the first flight. I wanted to land with the H.P. still running. I throttled back and made a short approach and she sunk well. The plane didn't seem to have any bad tendencies while slowing up for the landing.

Later on that day, we returned to our regular flying field and would you believe it, three guys were there on different frequencies. I wasn't going to fly but my buddy Dave hassled me until I finally brought out the Contender. I think he wanted to try the Contender .40 since he has a .60 size big brother. In comparison, Dave said it flew a lot like the big one.

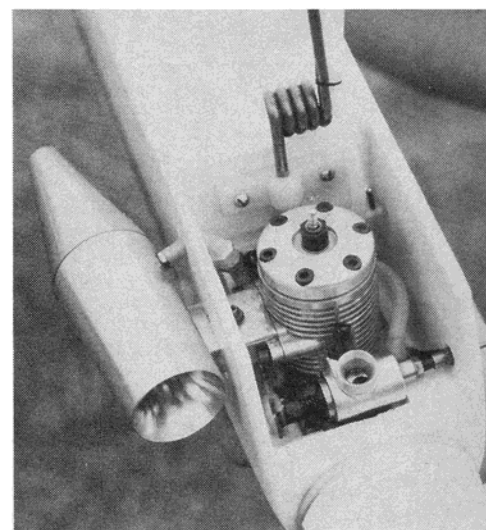
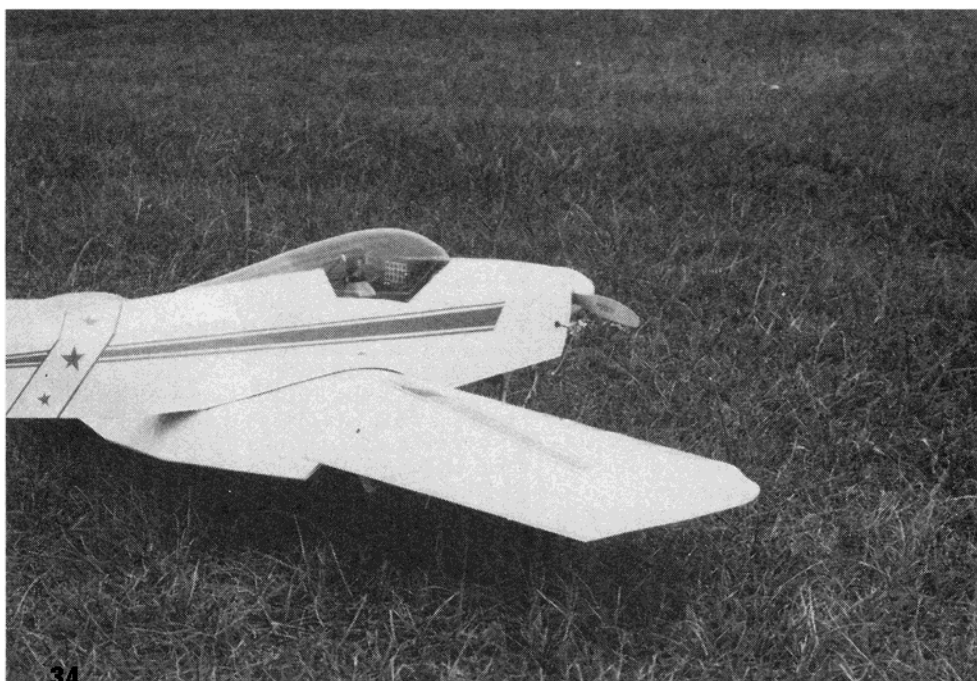
Summary

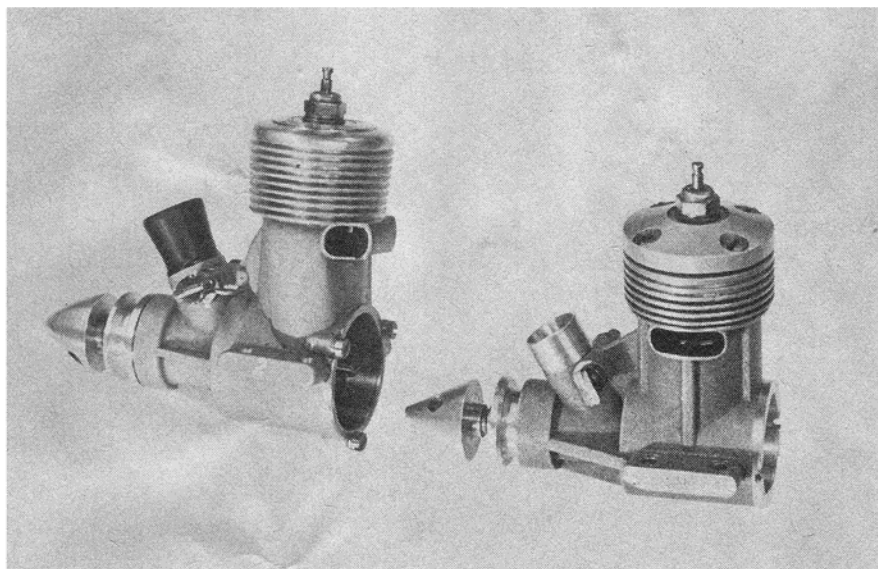
This is a real fun plane to fly. Mine appears to track nicely in loops and with ailerons set-up as per plans—it has a realistic roll rate. My contender doesn't require any roll or yaw adjustments, and the only elevator adjustments are to move the quick-link out one hole. I notice while coming out of the bottom of a split S the Contender has no ballooning tendencies. It stays put.

I don't think a beginner would want to tackle a Contender 40 as a starter. Personally I feel it would be too much. But, for the guy flying a .40 powered Falcon .56 or a .40 powered Kavalier this would be a good first low wing, and not difficult to build. ☺



The servo installation shows some very fine craftsmanship. A World Engines Expert radio is used here. An HP .40 provides the go for Les's Contender (**below right**). Again very neat work.





On Engines . . .

How does the Soviet Combat motor compare to our domestic types? Read on and find out. Our columnist has one/**Henry Nelson**



A quick review of the WC results list in the November Flying Models would remind you that the combat event was won by Doroszienko of the Soviet Union. Although I didn't see any of his matches, the word among the US combat fliers was that he had super equipment - engines included.

While visiting one evening with the Soviet team racers, I asked about their combat engines and they brought one (airplane attached) for a quick look. I was told that it was made by Doroszienko at the Moscow aeroclub. Later, in speaking to one of my Western European friends, I put in my order for one of the engines.

This engine (reported to be one of the winning engines) is this month's subject, but first some history.

European combat, which has been a WC event only since 1978 has always been limited to 2.5cc engines. The British have been the most skilled fliers, and through the early 70's the British Oliver Tiger diesel was "the" engine. The standard airplane was a flying wing of robust construction. Oliver techniques involved survivable crashes and very rapid restarts.

Slowly at first, the style changed to a much faster glow powered "foamie" flying wing using a nitro burning glow on pressure. Although crashes were no longer survivable, the slow and heavy planes were no longer competitive.

The first official combat championship was at the 1975 European Champs at Verviers, Belgium. The Russians were there with fairly uncompetitive equipment and engines that were reported to be a G 20 copy and one other type.

The 1976 World Champs didn't include combat as the Dutch organizers chose not to

include it. However, an unofficial open-entry combat championship was held in Rotterdam, Holland, just prior to the official WC. John Berry (English) beat Richard Wilkins (English) in the final. Both used large, light planes with Supertigre G20 glow engines.

In 1977 Carl Dodge and I went to Verviers, Belgium to fly Team Race at the European Championships. The Soviets were there with a full team including three combat fliers. The surprise (to me) was their home built combat engines. Of two different designs, the engines seemed to be competitive with the G20 15 glows. Fortunately, one each of these engines found asylum in my workshop, and is pictured.

Although of decidedly different construction (one a side exhaust and the other a split rear exhaust), they were both compact and lightweight. The side exhaust weighed 117 grams and the rear exhaust 135 grams. Both types had well detailed investment cast crankcases and cast iron/steel piston/cylinders. Both had cylinder porting geometry which was very similar to the Rossi (not a bad engine to copy).

The SE engine had a 10mm diameter crankshaft while the RE engine used a 12mm shaft. Even in '77 it had become clear that a 10mm front valve shaft was too weak for a really high output 2.5 glow and this was one reason I was most impressed with the RE engine. Other nice features were a ball check valve incorporated into the pressure fitting which was machined in the backplate and a button head which used a threaded ring instead of screws to hold it in place.

On the negative side, both engines use a pretty scrawny connecting rod which looks like it wouldn't live at high power output. This was strange as the RE engine had ample

room in the bottom end of the crankcase which had to have a large diameter to accommodate its 12mm rear bearing.

I was very disappointed when I put them on the test stand. The SE engine was slightly faster but neither could come close in performance to a Rossi. In fact, even when running high nitro fuel neither was much faster than my team racing diesels.

Now in 1980 (having boycotted the '78 WC) the Soviets were back with new engines. Again, there was a split rear exhaust which I saw only briefly but believed it was not the same as in 1977.

The second engine also had a rear exhaust, but it was a single opening. In fact, this engine looked a lot like the 1977 SE exhaust engine with the exhaust rotated 90°. I don't know who made either of the '77 engines and I don't know if Doroszienko was responsible for both of this year's engines.

The published pictures of Doroszienko holding his airplane look to me as if the engine is one of the split exhaust types. However, my written notes from the meeting, mentioned earlier, clearly gives Doroszienko credit for the single rear exhaust engine. Until I find out otherwise, I'll assume he is responsible for them.

There were a few variations of the single exhaust engine. John McCollum granted asylum to two (plus one airplane). Both have ABC piston/sleeve materials, and both have the head held on by four screws. Mine has a screw-in head and is of AAC (aluminum piston with chrome plated aluminum sleeve) construction.

It is apparent that all of these engines were designed to have a light weight. Their compact design wouldn't have any particular benefit in combat. The AAC engine was a bit too successful in the weight department as a rather massive brass prop screw (13 gms) was used. Also, Doroszienko's airplane had the engine spaced well ahead of the leading edge on metal rails which make a pretty inefficient structure. I think I'd spent some time trying to build some airplanes with a little less material in the tail. Also, I liked the pan type mount which was used with the split exhaust engine in '77. (Vibration is a neat power thief and the metal rails used this year don't look rigid enough).

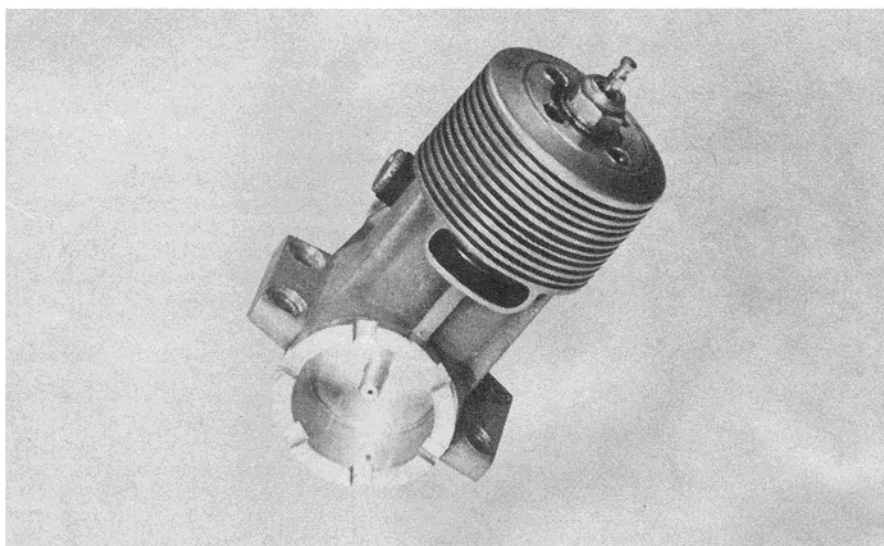
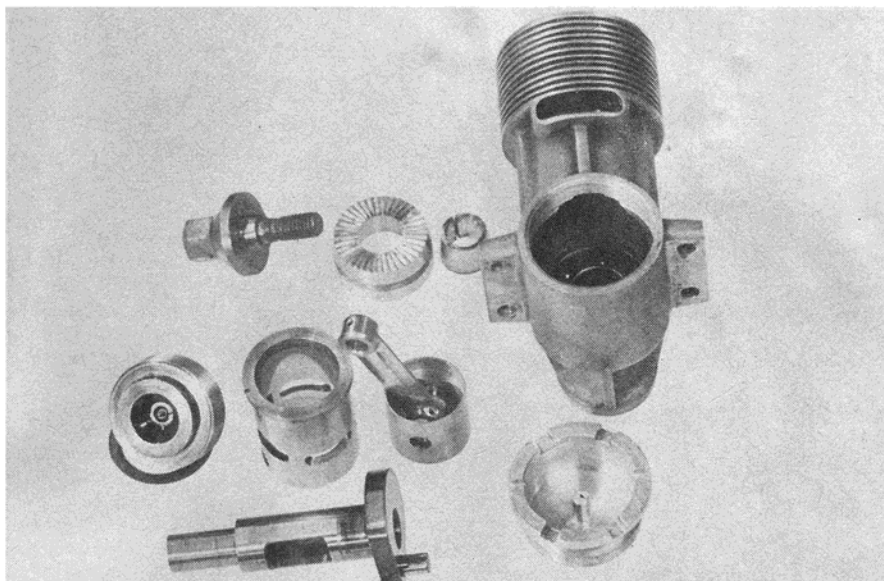
When taken apart, the engine doesn't look bad. Parts fit together as a properly built engine should. However, an examination of timing numbers causes one to suspect that this engine is not going to be a killer. In a word, the timing is conservative. The shaft port closes at 48° ATDC, (60-65° is more typical of a high output engine). The exhaust opening is 146° where 150-155 would be healthier.

Still the proof is in the running, so I fired it up. The word was that the Soviets were using low nitro fuel, so I started with 15% nitro with 5% castor and 15% UCON LB 625 for oil. I wasn't impressed.

My light-load toothpick size prop ran 24500 and a 7-4 Rev-up ran 20300. In desperation, I dumped in some 50% nitro and still only got 25300/21000.

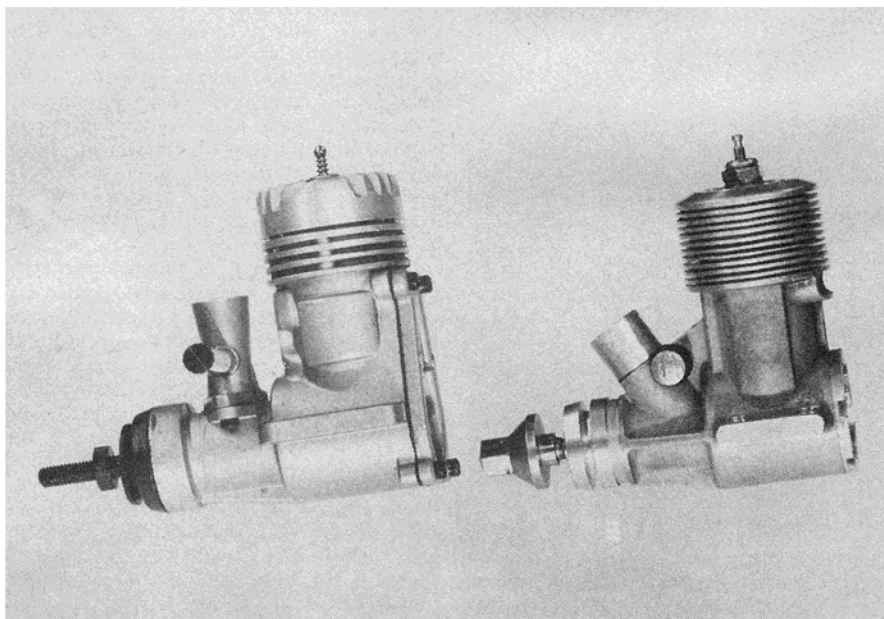
For a comparison I took out a Fox 15 BB which was brand new in the box. I drilled out the venturi to .230, put in a 2 piece needle valve, and tapped the rear cover for a pressure fitting.

My original plan was to run the engine for one hour before testing. After about one-half hour, it was still too tight so I honed out the sleeve until it was reasonable to test. The



Side by side, the U.S. Fox and the Soviet lightweight. They have approximately the same amount of power. This is a rear view of the Soviet 1980 Combat motor (**above**). Without prop nut it weighs 106 grams. Bits and pieces (**top**). Chrome plated aluminum sleeve/aluminum piston. Note the short steel crank, which is heavy, and the threaded button head. Soviet Combat motors from 1977 (**opposite page**).

PHOTOGRAPHY: HENRY NELSON



results on the 15% were 24700/20100 and on 50% 25200 and 20600.

Now these numbers don't represent a whole lot of horsepower. However, I'm quite sure that the combat fliers on the US team had massaged their Foxes so they were putting out a bit more power.

A further comparison can be made with a Rossi set up for Goodyear. My tests of several from Tim Gillott show that on 60% nitro and a .290 diameter carb, they twist a small prop about 30000 r.p.m. Tim ran one of McCollum's Soviet ABC engines (on 20% nitro) and found one of his Rossis to be over 3000 r.p.m. faster. We used one of the Soviet glass fiber combat props.

These comparisons show me that the Soviets have gone to a lot of trouble to produce engines with only modest performance. Why?

First, western engines are difficult for them to obtain. Even the top modelers don't have access to a lot of convertible currency.

Second, they seem to be putting a great premium on light weight. Their weights of 110-120 gms compare with 162 gms for the Fox and 170 gms for a Rossi. That difference of 50-60 gms (1 1/4-2 ozs) makes for better maneuverability with their airplanes which are bigger resulting in a very light loading.

Third, they may have purposely "detuned" the engines to make them easier to use. Retarding the timing on both the shaft, sleeve and the small venturi will achieve that. I'm not at all sure that a Goodyear tuned Rossi will run well through maneuvers using either a tin tank or a bladder.

Fourth, I seriously doubt that the Soviet engine will hold together at a greatly increased power output. The 10mm shaft is just not strong enough for a front valve 15. In the present crankcase, to increase intake port timing it would be necessary to enlarge the port in the shaft thereby weakening it. The connecting rod would have to get bigger.

So, my recommendation is, if you aren't a collector, don't hunger for a Soviet combat engine. A Rossi, Fox or Cox is pretty sure to give more power (with some additional weight). Needless to say, spare parts are more readily obtainable and the extra weight can be handled with a bigger airplane.

1980 Soviet Combat engine

Specifications

Bore - .592

Stroke - .551

Weight - 119 grams. 106 without brass prop screw

Cylinder - Chrome plated aluminum

Piston - Aluminum

Crankshaft - Steel with 10mm rear journal
7mm front journal
4mm integral crankpin

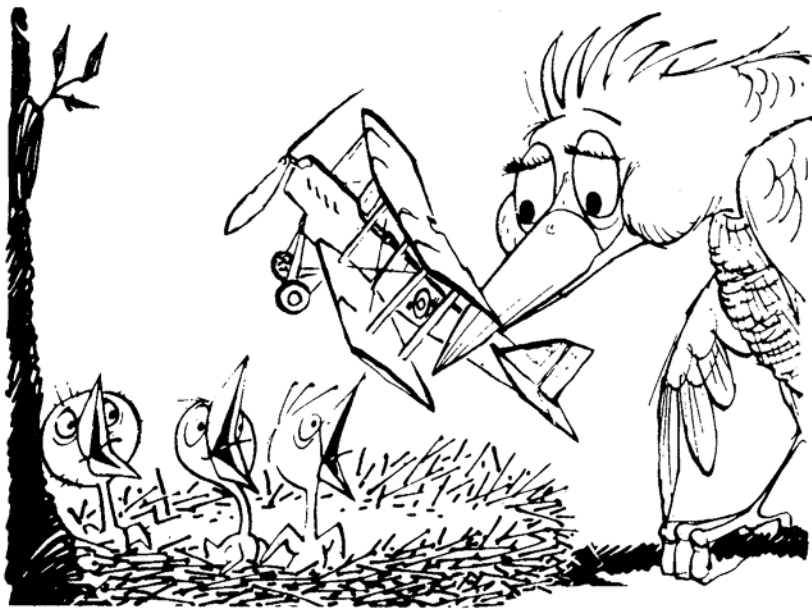
Timing/Sleeve - 4 port Schneurle
Exhaust port - 146°
Transfers - 130°
Boost - 122°

Shaft opens - 35° ABDC
closes - 48° ATDC

Venturi diameter - .237

Tanential spray bar

Flyin' things for fledglings



More news from the gang/**Earl VanGorder**

Ho - Ho - Ho - and a Mer-r-ry Christmas to all. Okay, okay - I know this is the January issue, but I also know that almost all of you will be getting it before Christmas. And, you may think that my "Santa Claus" type of salutation is just a little corny, but, doggone it - Christmas is the holiday that turns me on the most. I practically smother

myself in nostalgia and start thinking of all the great Christmases I've enjoyed in the past.

I especially remember those Christmases, many, many years ago, when all I wanted to see under the tree was a model kit, or two. Of course, they weren't much like today's kits, some didn't even have printwood. You had to

trace the parts on a sheet of wood from the plans. Wing tip outlines and other curved parts were often made by bending a piece of split bamboo, or reed, over a candle flame. This wasn't exactly the safest technique. We used to get a little bottle of glue, and one of banana oil (for applying the tissue) in those kits, too. Yep, that's right... little glass bottles with real corks in them. Sometimes you were lucky and the contents weren't already dried up when you opened the kit.

But, enough of all this reminiscing. I'm pretty sure that the kits that our gang is going to find under those "Yule" trees this year will be sophisticated and well-engineered kits. Sure hope you find the goodies you've been dreaming of.

Well gang, I've got another new item, or two, to tell you about this month, but first - let's check the old mailbag and see what's going on around the country. I'll tell you about the most important letter first. Remember that neat little "Peanut Sport" that I showed you a photo of a few months ago? Well, Lou Roberts, who designed and built it, is making copies of his plans available to all the fledgling gang. Isn't that great? This is a terrific little flier and easy to build, too... and you get the stick and tissue experience that will help you with that next scale job. All you have to do to get a copy of the plans is send fifty cents (cash or stamps) and a self-addressed, stamped envelope to: Lou Roberts, 5760 East Floyd Ave., Denver, CO 80222, and your plan will come by return mail. It's best to send a business size envelope so Lou won't have to fold your plan any more than necessary. You can believe old Van, gang, when I tell you that this is a good one and you should really take advantage of the offer. Okay? You've got the scoop, so, you're on your own.

Oh yeah, remember the other idea for keeping a CO₂ engine's tank warm? We gave you a drawing in a previous issue. The plan utilized a piece from an aluminum cigar case. Well, I had a note from Peter Bull, over in Ireland, and he says that the system will work even better if you use light oil (like 3 in 1) in the tank, instead of water. I want to pass this hint along to those who might have tried this idea.

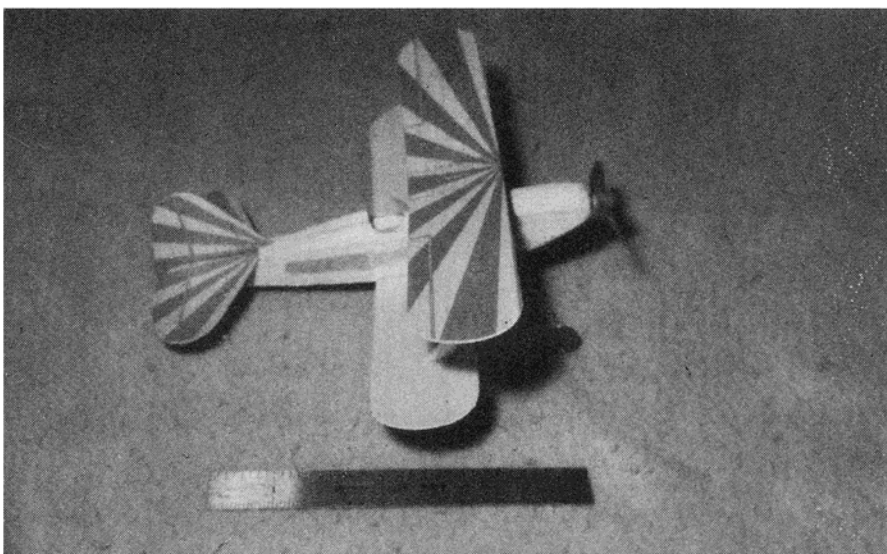
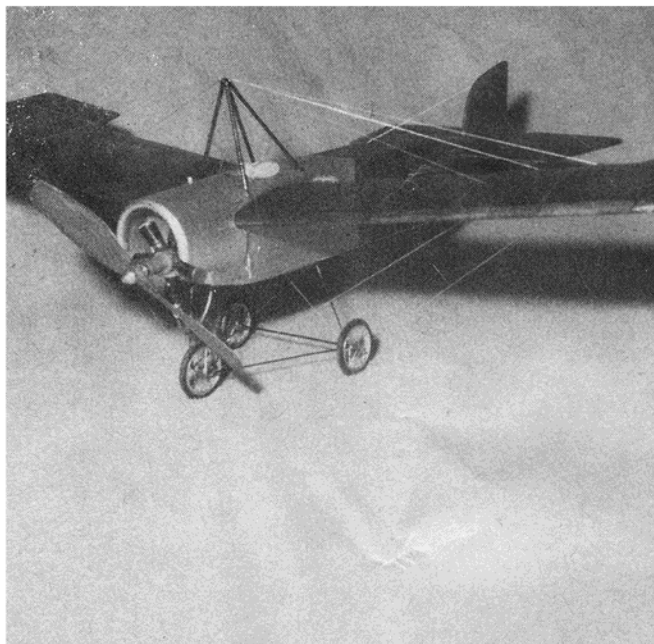
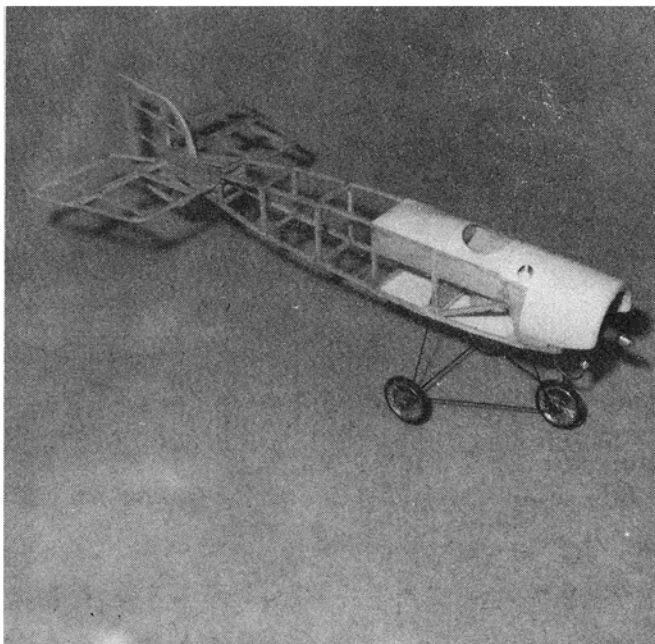
Speaking of CO₂, Ed Toner of Buzzer Model Aircraft, is now importing the new Telco Engine from England. It's called the Turbotank 3000, and he claims it has twice the power and endurance of previous CO₂ engines of this size. It features a built-in "warming" system, and the tank is built directly to the back of the engine crankcase. This should make for easier installations without all that tubing that you usually have to carefully roll up to get out of the way. If you're interested, the new engine is \$35.00 from Buzzer, P.O. Box 124, Howell, N.J. 07731.

I have to tell you, I got quite a surprise in this month's mail. A friend in Australia sent me a selection of beginners kits put out by an Australian company called Aeroflyte Products. These are the pre-colored, all sheet balsa type and come in two series. The "Junior" series, with a wide selection of types, are from 10" to 12" wingspan and the "Senior" series run from 16" to 19" spans (these latter would be good for CO₂ applications). I've built a couple of them and I'm going to show you a photo of one of the little ones because it is a real "cutie". I suppose I shouldn't even tell you about these because they're not available here... not yet, any-

PHOTOGRAPHY: EARL VANGORDER



This is a photo from the year 1947 of Bill Bain and his group of high school modeling students. Bill is on the extreme left. Bill is the Board Chairman of the National Correctional Recreation Association.



This 10" span, beginners flying model is a real cute item from Australia. Note the size comparison with a 6" scale. Van's Lincoln Beachey under construction, showing cowl and top decking done with Devel-Hide (top left). Van's Beachey completed (top right). Note the rigging, wire wheels and simulated motor.

way. Maybe, one of our good firends who import foreign models of the rubber beginner type may consider these. Anyway, if any of these import dealers are looking in on this session, just drop me a note and I'll send you the address of Aeroflyte products. They have a complete line from rubber, through U-control and all radio types. The kits are complete, too. Why, the Senior series, I mentioned, even includes a *full size* tube of model cement.

I learned about a new product this month. It's called Devel-Hide and it's rather unique. It looks like cardboard, but it isn't. It's made from chemically treated wood fibers and it's light and strong. For you scale types, it has lots of applications and is easy to form. Devel-Hide is basically intended to cover foam wings, replacing balsa or plywood, in R/C models. I found another use, though. I used the lighter weight type to form the cockpit and top decking and the heavier type to form a cowl for the model of the Lincoln Beachey Monoplane I was building. Easiest

way of making a neat cowl that I've every run into; it's strong and takes paint beautifully. I'm going to show you a couple of photos of my Beachey - one in the construction stage and one all finished. Look O.K. to you? I can tell you that the Devel-Hide was easier to work with than sheet balsa and any regular cement works well. Besides, it can be drilled, filed or sanded just like wood. It's available in two thicknesses .010 and .015. The .010 actually has the same strength and weight as 1/16" balsa. Incidentally, my Lincoln Beachey is 26" span and uses the larger Modella CO₂ engine which is available from Peck Polymers.

Devel-Hide comes in 26" by 32" sheets (I told you it was originally intended for large models) and is \$4.00 per sheet. Minimum order is four sheets, but there is no additional shipping or packing charge. For those of you who don't make larger models, maybe a few of you could get together and share an order. In any event, you can order - or find out more information - by writing to Idea Develop-

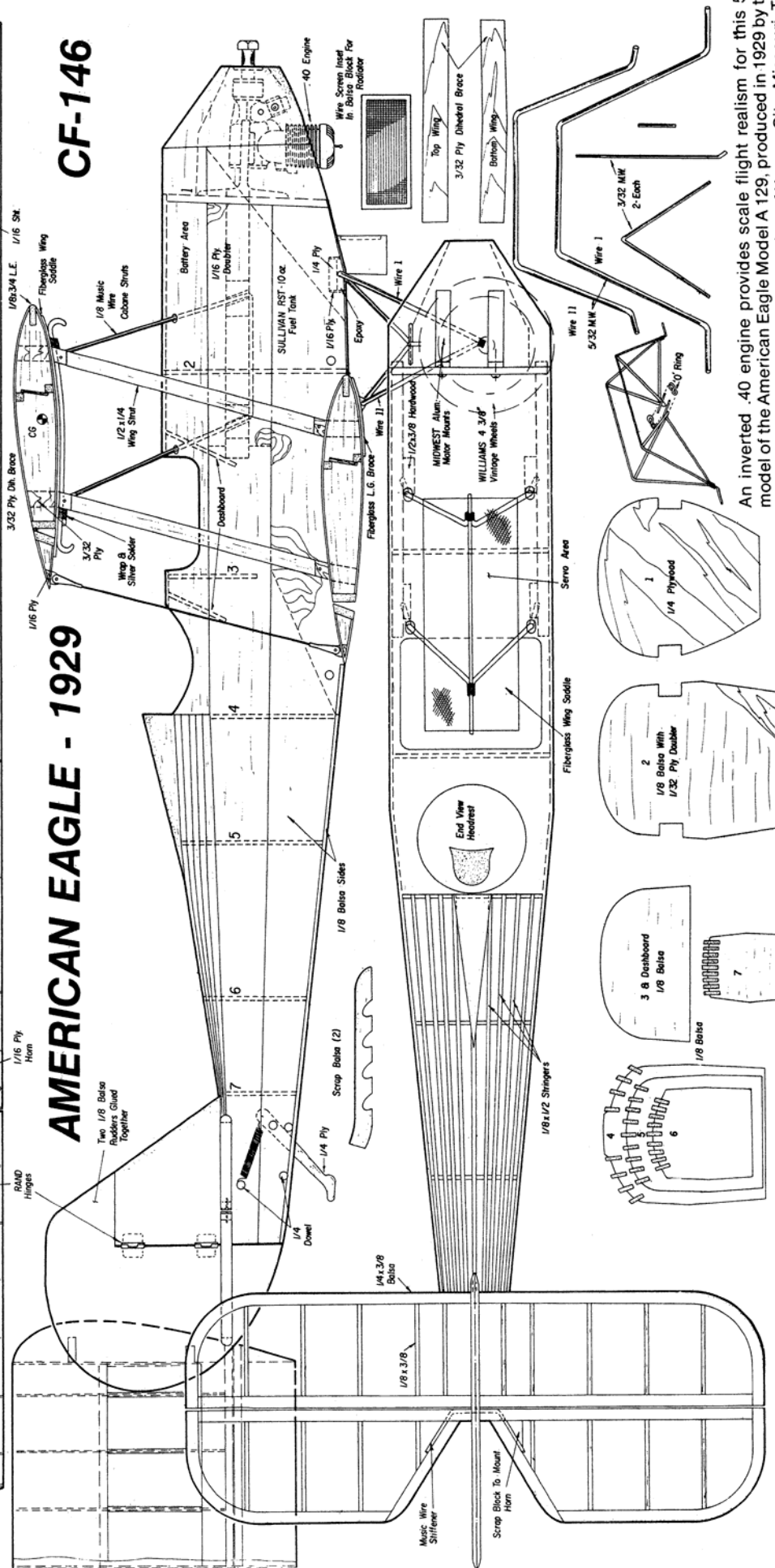
ment Inc., P.O. Box 7399, Newark, DE 19711. Maybe, someday, they'll make up packets of smaller scrap pieces for those of us who don't build the biggies.

Gee, we seem to be running out of time and space, and I want to tell you about a really interesting letter. It's from Bill Bain who is Board Chairman of the National Correctional Recreation Association. The N.C.R.A. has a program of model building going on, as a leisuretime activity, in many correctional institutions. The institution gymnasiums work nicely for indoor, peanut and gliders while the yard is great for U-control. Bill says there's the standard joke about 1/4 scale R/C as a great way to "leave the walls". Bill has been teaching model building for a good many years, having started by instructing a high school class at North High School in Wichita, Kansas, in 1947. But, the good news for all of our gang is that the N.C.R.A. is in the process of developing a simple U-control trainer for fun flying. Significantly enough, they have named it the "Yard Bird" and plans and instruction booklets will soon be available to Prison Recreation people.

Well, gang, Bill sent me a copy of the instruction booklet and said that he would send plans as soon as they are back from the printer. From what I can tell, this should be a great model for fledgling "Ukie" flyers. Now, here's what I'm going to try to do. . . . First, I'll see if Bill Bain can get permission for reproduction of plans and instructions from the designer, Mark (Romanowitz), a University of Kentucky modeler and Ukie stunt flyer. Then, I can prevail upon our editor, Bob Hunt (also a well-known Ukie flyer) to run the whole thing in a future issue of FLYING MODELS as a special feature. Don't know yet if I can work it all out, but I'll give it a real try.

Well, we're out of time and space and, again, I've got more things to tell you about. Guess they'll just have to wait until the next time we all get together here in the old shop and hangar. So, until that next get-together, have a nice Christmas and don't forget to send me your news and photos here at 10 Brothers Rd., in Wappingers Falls, NY 12590. So long and happy flying.

CF-146



An inverted .40 engine provides scale flight realism for this 56th model of the American Eagle Model A 129, produced in 1929 by the American Eagle Aircraft Corporation of Kansas City, Missouri. The model has above average performance in tough air, and performs well in tight sized flying fields. Complete construction article appeared in Dec. 1968 Flying Models.

Designed by Tom Collins

With Model Builders

by Ed Whalley

Salt Lake's 21st—a Biggie

Salt Lake's Annual Model Air Show came of age this year as the twenty-first running was held in spotty weather. A traditional venue in the Intermountain region, the meet drew contestants from all over Utah, Colorado, Idaho, and even a representative from California. Strong winds came up on Saturday afternoon, and while they moderated a bit on Sunday morning, they also brought rain. However, things got better on Sunday afternoon, and the meet ended Monday on a bright note. The following are the people who ran the show for the Utah State Aeromodelers: Carter Watts, C.D.; Keith Whitney, FF events and plaques; young Jarl Boles, CL events, Brad Anderson, merchandise awards, George Swanson, engraving, and, Mr. and Mrs. Bob Sward, general administration. Everyone agreed that the 21st was one of the smoothest ran best attended annuals they'd attended.

Free-flight was definitely hampered by the winds, but Controline got by without too many problems by running about an hour-and-a-half overtime. The screaming Schneurles and the magnificent Mulvihills impressed everyone out on the Flats, and just about everyone tried his hand in the Race events. But, it was Scale that got everyone's attention. All classes of Scale were combined for FF while Sport Scale held sway in the Controline segment. Noal Hess was top banana in both categories. Controline was run on Labor Day, Monday, in warm sunshine and calm air.

A check of the results show that Gaylord Kirkham and Frank Nelson were over from Grand Junction. They both did pretty good. Nelson got a third in A and a fourth in Mulvihill. Kirkham placed all over the board, including the ukie Sport Race event. Kirk's best event was 1/2A Texaco in which he posted 14:07 to win. He also placed second in OT Pylon and P-30. The California delegate might have been J. Moreland (Jack?) who came in fourth in B. But our choice for the big winner in FF was Carter Watts.

Carter had firsts in B Gas (8:14), Early Bird Mulvihill (2:39), A-Gas (12:00), and .02 Replica (7:43). He also got a third in regular Mulvihill (7:42). He had to be the FF King o' the Hill. But Keith Whitney, John Zeisloft and Ramey Hayes gave him some stiff competition, and Jay Jackson was in there, too.

Whitney won in CD Combined with 11:36; Jackson was second. Jackson took Mulvihill, Hayes was second. Zeisloft took P-30 and placed in three or four other events. He also got a second in Coupe—behind Ramey Hayes. Other winners included: John McClurkin (1/2A), Al Graehl (Nordic Combo), and Chad Stott (Handlaunch). Hess took OT Pylon with his beautiful Sailplane.

What Watts was to FF, Gordon Delaney was to Controline. His list of wins included, Fast Combat, Stunt, Sport Race, and 1/2A Combat. He had thirds in Sport Scale and Slow Combat and a fourth in Balloon Bust. But, his was no walk-away victory, he had a lotta' competition. Jim Rhoades, George Swanson, John Boles, Laren Huddleston and John Womack made him work for what he got. Womack had wins in Slow Combat and Balloons. Boles took Class I Mouse, and Huddleston placed in nearly everything. Come to think of it, so did Kirk Robinson. If Stunt is an indicator, here's how things shaped-up: Delaney, 613; Rhoades, 522; Swanson, 456; Robinson, 400. Among the youngsters, Jarl Boles did himself proud. He finished second to Big John in Mouse and got another second in Balloons. Another Junior, Laura Swanson, gave Delaney a go for it in 1/2A Combat by taking second. She also finished third in Balloons.

All things considered, things look pretty good for the 22nd rendezvous in the Intermountain area next Labor Day week end. It should be even bigger'n better.

Never Try To Sucker a Pro

This gem is one told by Ed Fitzwater on himself. We found it in the DCRC Newsletter under the title "The Great 'Powered Guider' Flyoff." It's reassuring to find out that folks can still laugh at themselves, and we got a chuckle out of it, too.

Seems that Ed and his flying buddy, Al Bedford, were having a little exchange about whose powered glider could climb the fastest. Ed was sure that his Wanderer could out-climb Al's Performer with the prop on backwards, plus a few other handicaps. Ed was just trying to sucker Al into a beer bet, and Al was taking the bait. Al suggested a flyoff to see which ship was the fastest. So they agreed on a few ground rules: a specified amount of fuel would be used and they would fire-up and launch together. The guy who got the highest, fastest would win. However, just as Ed was congratulating himself on getting a rise outta Al, along came old Harry Lewis.

Unc'l Harry said that any time that either or both wanted to take-on a "pro," why, he was always ready with his old Piece of Cake. He added, as a sort of afterthought, that mebbe he hadn't oughtta' fly against them as it might embarrass them too much to be beaten by an old guy like him. Well, that did it. "Put up or shut up," they told him. By this time there seemed to be some confusion about who was conning whom. Ed should've known better.

By launch time, he was feeling real bad about it because Harry had spread the word and a crowd was gathering. No one likes to be embarrassed in public. The three T.D.'s were fired-up, and just as the ships were launched, Ed realized he'd made his second mistake: he hadn't told Harry about the fuel allowance.

Al was slightly out in front of Ed. Ed kept his Wanderer in a loose formation off his right wing as he tried to spot Harry outta' the corner of his eye. He just couldn't seem to pick him up and this added to his feeling that something was quite wrong. Turns out he was right.

Things fell into place when Al yelled, "Wow, look at Harry!" Ed looked where Harry should've been, but not where he was. Al pointed with his antenna, "Up there, way up there." Old Harry had at least twice the altitude of either of them and his Piece of Cake was climbing like a hawk with a

scorched tail. About this time, Al's ship ran outta fuel and settled into a glide, and Ed realized that if he was gonna beat Harry he'd have to outlast him on fuel. Well, this was not to be either.

Seems that Harry's ship was running off a tank salvaged from an old Pattern plane; it wasn't gonna quit. Finally, Ed's T.D. quit and the only sound to be heard was Harry's ship still climbing. "C'mon up and fly with the big boys, Fitz," Harry rubbed it in a little. By now, his engine had quit and he was in a boomer that looked like it would last forever.

Al's ship came in for a landing, and he refueled and went up again. Soon his ship was on the way down again, and Ed realized that his was too—but not Harry. They retrieved their ships and headed for the pits. "Hey," yelled Harry, "don't go away mad; come and spell me for a while. Me neck's getting tired." They slunk away, the "agony of defeat" very much present. Harry just chuckled.

Later, in the bar, Harry quaffed his brew and expanded a little. "I guess you just have to chalk it up to years of experience," he said. "Remember, fellas, someday you'll be a twinkle-eyed old codger just waitin' to jump on the young guys." Ed and Al listened impatiently—they should wait so long. Some guys never learn; they're demanding a rematch.

Will they get their revenge? Was Unc'l Harry setting them up again? Stay tuned-in and we'll let you know.

FF Team Members Named

The first word on the Team Finals at Taft comes to us via Jim Scarborough. A/2 Glider goes like this: Jim Wilson (3205), Juan Livotto (3173), and Alberto Dona (3149). Jim Parker (3143) is first alternate; Lee Hines (3139), second. Wilson has been on the Team before; the others are getting a first crack. Power shapes-up like so: Doug Galbraith (3420), Roger Simpson (3408), and Charlie Martin (3396). Tom Kerr (3377) is first alternate; Ken Phair (3348), second. Galbraith and Simpson have seen Team duty before. Doug's 3420 translates to all maxes. Wakefield is made up of, Joe Foster (3420), Carrol Allen (3375), and Walt Ghio (3371). Les DeWitt (3348) is first alternate; Bob White (3312), second. Foster and Ghio have been on the Team, and so has White. From the above, it seems that we are fielding a really strong FF Team for the next World Champs. We'll try to have more details next month.

WAM Contests Reviewed

Early-on in September, Stan Patterson ran the Model Engineers' Annual in Concord. The one-day meet featured various classes of Air Race, Scale, Balloon Bust, Carrier, Combat, Stunt, Economy, Endurance, Glider, Ten-Mile and a coupla other categories—a typical WAM meet. Not so typical were the circumstances surrounding the meet. September is Mom Coad's birthday month, and the Engineers decided to throw a party for her. The whole meet turned into a party.

First off, Mom's usual field office was supplanted by a sumptuous motor home with all the amenities built-in. Then when a break came in the activities, Mom found she'd won a bottle of champagne. The next thing she knew, she was being presented with a phone (a special phone for her office, a B-Gee complete with Air Force colors and

markings). And, of course, there was a shower of congratulatory cards (Mom saves 'em all). Then, to wind things up, there was the traditional pizza party after the meet. Everyone came.

Once inside the pizza place everyone chimed-in on "Happy Birthday to You," and there was a huge cake, another bottle of champagne, more congratulations and a general surge of noisy good feeling. Everyone was yelling, "Happy birthday, Mom." This prompted a somewhat startled old gentleman to explain aloud, "Ye Gods, how many kids does she have anyway?" And to this, the irrepressible Stan Patterson responded, "And this isn't all of them, either." It sure wasn't. Mom's "kids" are a legion.

Anyhow, in the Stunt circle, Ted Fancher was on hand to pull wins in A Expert (400) and BC Expert (506). Good ol' Arlie Preszler came second in BC with a somewhat-distant 466. Bill Howe took A Advanced; Gil Adkisson, BC. And Mitch Williams won in 1/2A Novice and ABC Novice. Howe also took 1/2A Advanced/Expert.

In other events, Vic Garner swept the boards in the Advanced/Expert and Open Ten-Mile events. Gary Buffon, Merle Machen and Gary Crawford provided his competition. Rich Von Lopez earned a first and two seconds in Combat, and Jo Hsu Wu did likewise. Joe Pearson won a couple of Endurance events—doing 1:58 and 55.0 in 1/2A Open (almost two hours). Bob Elies set a record in 1/2A Air Race Open 166.27—Bob Anderson was second with 139.89. Frank Hampton shared Scale honors with Pearson and Patterson. Buffon, Machen and Williams took their classes in the Balloon Bust; Linda Boling, in Beginner.

The ideal weather and all the festivities contributed to making the meet a memorable event. WAM flyers always have a good time in Concord. Earlier in the season, Stan ran another meet for the club—the "All Quiet Day Meet," another annual. This is the meet in which all the "dyed-in-the-wool" specialists forsake their specialties and turn-out to throw chuck gliders. Everyone goes home with a sore arm, but no one would miss it. Try to match some of these scores in your ball park.

Lynn Price posted 1:29.9 to take Five-Inch Expert, and Paul Tobie posted 3:04.8 to take Ten-Inch Expert. By way of contrast in the Five-Inch category, Andy Persson did 0:40.3 to take Beginner; Ron Perry scored 56.7 to take Advanced; and, Robert Anderson did 0:57.4 to take Novice. In Ten-Inch, Anderson timed a 0:59.5 in Novice; Tom Moore did 1:50.3 in Beginner; and, Ron Perry scored 1:44.3 in Advanced. And just to rest the soup bones, everyone got a chance to fly Peanut Scale. Greg Tobler won this one.

Another meet we oughtta' mention was the Air Pirates Two-Day and Night Meet. This is the one in which they fly all day, all night, and all the next day. The night flying puts the accent on Stunt. Everyone puts lights on his ship and has a go at it. Bill Howe took the ABC Expert event with a score of 349. The droning motors and the moving lights usually attract a crowd. Along with Stunt, Balloon Bust is also flown.

In the night Ballooning, Robert Anderson took Novice; Gary Anderson, Beginner; and, Bob Anderson, Expert. Scores were a lot lower than in the daytime. During daylight, Bob Boling won in Expert with 115; Joe Pearson, in Beginner with 85. Bob Boling and Stan Patterson dominated Carrier, and

Joe Pearson twirled for 2:21 and a 18.0 to take 1/2A Endurance. Rich Von Lopez and Jo Hsu Wu gave a good account of themselves in Combat. Rich had wins in A Open and BC Fast, plus a second in 1/2A. Bob Kerr took Advanced BC Fast. Jim Driver and John Salvin came through in Beginner ranks. And Don Cox was on the money in Slow Expert. Frank Hampton took a lotta Scale, and the Prices—Lynn and David—had things their own way in Mouse Race. A good meet.

Records Set at Maine's Fifth

The fifth annual State of Maine meet was held in late August at the New Gloucester High School Field in Gray, Maine, in the height of the heat wave. The crowd erected impromptu sunshades in all possible colors, adding to the circus-like atmosphere of what proved to be a thoroughly enjoyable meet. Credit for the good show goes to George MacArthur, Frosty Adair, Pete Beal and others of the Southern Maine Controline Association.

Three new New England records were set at Gray. Sam Albro posted 220.4 with his familiar Corsair in Profile, and Ray Gastonguay turned 4:53.2 in Sportsman and 4:33.8 in Unlimited to sweep Solo Racing. Gaston-

guay is from the Portland area; Albro is from Hanson, Massachusetts.

Three classes of Stunt were run: Advanced/Expert, Intermediate and Beginner. Neal Thompson, Sam Howard and Dave Cook finished one-two-three in the top class with scores of 566, 527 and 526 respectively. Matt Dube took Intermediate with 508 and was followed by Bill Cargill (461) and Dick Carville (381). Jack Patrolio and Paul Morrison fought it out in Beginner; Jack won. OT Stunt saw a close finish between George Higgins (317) and Sam Howard (314). Ray Dube captured third with 259. Phil Mornault beat Ralph Spencer in Jr./Sr.

Slow Combat drew well. In Open, it was Joe Fustolo, Sam Albro and Vinnie Coyle—in that order. In Jr./Sr., it was Bill Smeltzer, Rod Adair and Joe Fustolo, Jr. Profile Carrier also drew well and Albro's winning 220.4 was followed by Glenn Simpson's 212.4 and Fustolo's 196.4.

In Scale Racing, according to CLAN rules, Gastonguay set the two, new records alluded to previously as he took both the Sportsman and Unlimited events. Jack Patrolio finished second to Ray in both with 5:10 in Sportsman and 5:05.1 in Unlimited. Paul Morrison was third in Sportsman with 5:30; Kevin Barrett,



in Unlimited with 5:30 also. Oddly enough, Pete Beal finished fourth in both events. Judging by the entry, Scale Racing has definitely caught on.

As a final note, Pete Beal who was Combat Director stated that the meet was the only one he'd run in which no complaints were lodged. Maybe with this encouragement he'll add ½A and Fast to next year's card.

Night Flying's No Cinch

Talking about night flying brings to mind an awful lotta' stuff that anyone thinking of trying should know about. In addition to the ukie-type flying such as at the Air Pirates' meet, Coast Free-Flighters, usually card such events at sites like Taft—the last FF Champs had these events. On the East Coast, the DCRC bunch has been doing after-dark R/C work with gliders. Out on the desert, the FF boys fire-up the gas lamps, light a fire to ward-off the chill, and launch their ships equipped with either chemical lights, small bulbs, or both. John Oldenkamp speaks of the fascination of the chemical lights and the streaking bulbs in the eerie night-time setting. And Bill Cavanaugh mentions the unique rewards in his discussion in the DC Newsletter. There's no question about it, night flying is becoming increasingly popular. That any kind of night flying is more dangerous than its daytime counterpart should be self-evident. Bill brings out eleven good points in his Newsletter article that could apply equally to the other types of night flying, so with apologies to Bill, we'll adapt his words here:

1. Safety: This should be the paramount concern. Spectators should remain in a pre-specified area, and anyone going out on the field should carry lights to make their presence known—cyalume light sticks are good. Look about you before you launch.

2. Officials' duties should include looking out for a number of things that the flyer is apt to overlook in the dark: lines on the ground, ships being readied, location of ships already airborne, direction of drift, etc.

3. In the case of night gliding, only one winch should be permitted on the field to avoid line crosses and tangling. In Controline, it's probably better to stick to one-plane-at-a-time events. (Note that the Pirates flew Balloons and Stunt.) FF doesn't pose quite the same problems, but towing and chasing in the dark aren't particularly safe or easy.

4. Fly a ship with known characteristics and in-the-groove performance. Night flying is not the time or place to test and adjust.

5. With any type of control you get a few unexpected problems. Speed is difficult to judge. The lights can be confusing—you can even wind up trying to drive the wrong airplane or even a couple of stars. Bill recommends three light on the tail, one on the fin, and two under the stab to help keep you oriented. He uses 1.5V miniatures with three pen cells on the CG. These accompany the cyalumes on the wing.

6. Launching is very important. Make sure the area is clear, and try to get the ship away in a flight attitude; otherwise you'll probably have problems until you get the thing sorted out. FF'ers and Controliners do pretty much what they do in the daytime, but a hand-launched ukie oughtta' go out slightly nose-up.

7. Experience shows that there is definitely life at night. Night-flying times in all categories of duration events bear this out.

Don't get outta' range with an R/C, and don't neglect the fuse on a FF. Timing a set of lights can be a problem—the timer can't take his eyes off 'em for a second. Also, thermal sniffers help a lot.

8. It tends to get cold and wet as the night wears on. Bill suggests warm, damp-proof clothing and shoes. Eventually everything gets wet: the grass, the ships, the equipment. Depending on local conditions, things should come to a halt before everyone gets more concerned with creature comforts than with flying safety. Bill's gang draws the line at 11:00 pm.

Another point that ought to be stressed, a little, is that you know your site and its environs well. The basic question to be asked is whether your activity poses a threat to life and property in the surrounding area.

Bits 'n Pieces

We kinda' got it right, that J. Moreland on the Salt Lake results was Jack Moreland out of Torrance, California. Jack stopped off in Fresno for their monthly on his way to Salt Lake and eventually went to the Nats. The guy gets around. Anyhow, Jack took A Gas with a Starduster in 7:08. MeetHi Time went to Bob Farley of Carmel who posted 11:24 in B' with his Sprinter. Sissy, Paul and Steve Jensen all had wins. Keith Morgan took Class C, and Harry Mullen took Replica.

Winners at the Circle Burners Scale Meet at Teterboro Airport (that's in the Garden State, New Jersey, Sam) included: Bill Force (B-25), Bill Reynolds (Citabria) and Sam Abdow (Howard DGA)—all in AMA Scale and in that order. In Sport Scale, the winners were, John Sabini (Macchi), Nick Mango

(Focke-Wulf), and Rich Sobrino (Heinkle Fanjet). All received fine trophies at this venue, which is becoming an East Coast fixture. Awards went to fifth-place in AMA and to seventh in Sport. Accessory packages, kits, and medals were given to the fourth-and-lower placers. A highlight came when Abdow, who comes down from Fall River, Massachusetts, every year, flew his Dynajet powered Delta Dart and Panther Jet planes. They are crowd-pleasers.

Here's a nice gesture. Ira Stone of the Mosto Flying Circus (he's Sec.) wrote the WAM directors offering a substantial fund which the club has been building over the years from running WAM meets. The money will pay for printing the WAM Rulebook next year, and it will help pay back amounts borrowed from other WAM funds to keep the organization running. One of the funds to be replenished is the Life Member Saving Account. Stone is a Life Member.

The Illinois Valley R/C bunch ran its annual Air Show recently. This is the event in which the boys raffle-off a side of beef. They also put on a good demo to help further various civic causes. They get a lotta' help from the Boy Scouts, the highway people, and others. Anyhow, this year's beef winner was Cindy Whitney of Ottawa. The gang went a bit overboard this year and added five hams to the giveaway. That oughtta' make six families happy. Howie Halm MC'd the affair and did a good job on the mike.

That first, World Peanut Gran Prix event ran at West Baden, along with VNART and the WC's, was probably the first 24-hour contest ever. No one went the full distance, although guys like Martin, Brown, Sotich, Molo, Adams, etc., almost certainly went over 20 hours. more than 60 planes from six countries were entered. Everyone had a ball.

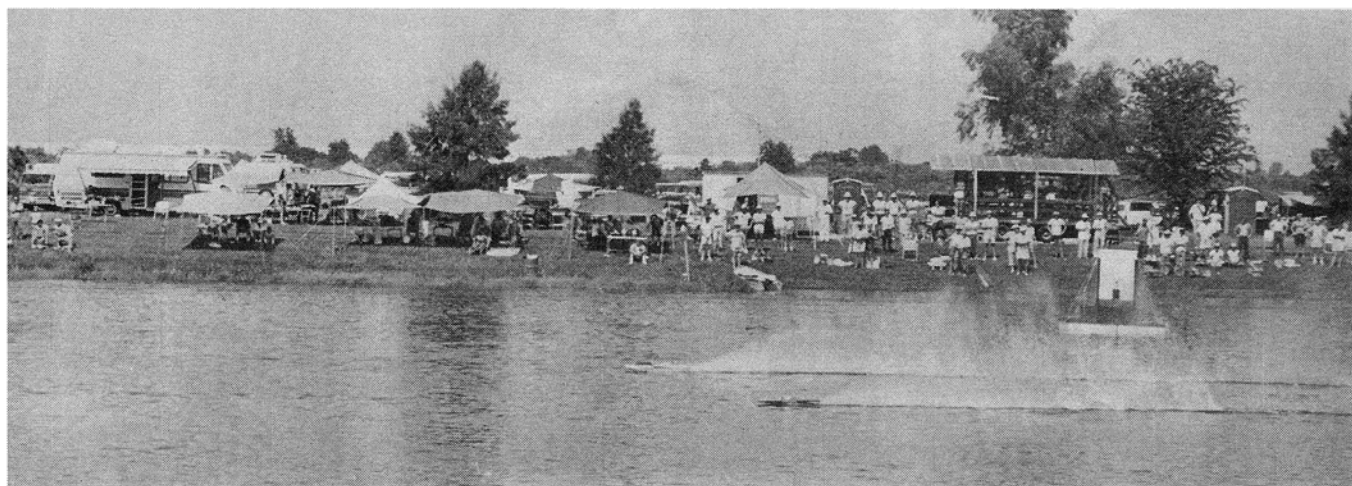
CLAN is still growing in New England. The latest word is that the Bees Controline Club of Winthrop, Massachusetts, have come in under the umbrella. The group made a few bucks, \$256.96, on the Yankee Champs, so they've got walking-around money to work with. On a sad note, however, comes the news that the Flying Goombahs of Braintree are thinking of disbanding. Hopefully, nearby groups can take-in the members who want to continue.

Down the Arizona, the Sun Valley Carrier Contest drew a good turnout. Al Lidberg went to the meet with John Patton and managed to take home the Novice award flying his "sort-of" T-34 (complete with NFFS decal for squadron trim). He got a few cracks about "lighting the fuse" and got quite a kick outta' being called "novice." Al's 43 and has been making the rounds since Hector was a pup.

Pylon Racing continues on the PRO circuit in the Northeast. At Somers, New York, Alex Milyko flew himself outta' the Standard class and was more pleased than if he'd won a trophy. On Saturday, it was Bob Wallace, Arnie Wile and Lloyd Burnham in Formula 500; Wile, Bob Barkowski and Warren Batson in Formula 1. On Sunday it went as follows: Burnham, Barkowski and Wallace won in the 500; Ed Weitcock, Wallace and Glenn Sicotte won in Formula 1. A perusal of the results shows a whole flock of new names. Good sign.

Clubs and individuals are invited to send news, bulletins, pix and what have you, to: Ed Whalley, 89 Lakeview Ave., Bellingham, MA 02019. Keep in mind that we operate on a 90-day basis figured from the first of each month.





IMPBA Internats

An enjoyable week for the whole family, featuring a good site and plenty of competitive racing/**Ed German**

Want a tremendous week of playing boats in fast company? Want a good way for the wife (husband) and kids to have a super vacation at the same time? (Sounds contradictory as your wife (husband) can't stand your boats). Well, try the International Model Power Boat Association (IMPBA) Internats. There's something for everybody. While your playing boats, the wife (husband) and kids can meet the other families at the local motel, play in the pool and sight-see at the local attractions. My family can't wait until next year's Internats in Indianapolis.

The 1980 (IMPBA) Internats were held in Bartow, Florida, under the auspices of the Florida Associated Speed Team (F.A.S.T.). F.A.S.T., a small collection of experienced model boaters in the central Florida area, ably ran the seven day meet with the assistance of other boaters throughout Florida, a strong IMPBA state. Jay and Janet Maguire, of F.A.S.T., served as the Internats General Contest Director (CD) and Correspondent/Coordinator; both did a beautiful job. Janet, especially deserves thanks from all of us for organizing that horde of over 130 boaters into a well-run event. Their young son, Tommy, handled the impounding and releasing of transmitters like a pro, and with an equanimity that most adults would envy.

Event contest directors included, Dave Field (Offshore Classic), John Oian (Outboard), Jennifer Pinckert (Trophy Trials)

and Ray Savoie (Heat Racing). Again, they did a great job while being assisted by drafted contestants as turn judges and pit managers from the Florida area. Ray Coghurn, Jim Fitzgibbon and others provided a stabilizing influence in the pits during heat racing.

Sid Broughton and Dick Jennings, of the Transom Twisters in the Naples area of Florida, brought along their fantastic timing clock. Sitting in the middle of the course for heat racing it allowed the drivers and callers to gauge their milling and starting as well as any clock I've seen. Unfortunately, the clock was broadsided by a stray boat on the last day of racing, and the cable was damaged. Next year, armorplate! Fortunately, a back-up clock was quickly set up by Don Pinckert to allow completion of the week's events.

The Setting

The racing site chosen by our hosts could hardly have been better. It was a lovely, man-made pond 1400 feet or so in length, and about 450 feet wide. It was beautifully banked with plenty of parking room, and more than adequate space for sun tents. To the surprise of a city dweller, we were able to leave our tents (lowered, but still staked) and chairs overnight at the site and find them intact the next morning. It's nice to know that some of the old virtues still exist in

places like Bartow. One of the nice features about the pond, as Tom Perzentka has pointed out to me, was the manicured, natural weed protective cushion around the edge. It not only protected spectators from errant boats, but saved many a hull from damage. Oh, the pond was a trifle short for maximum speed straightaways, however, with the heat and humidity most hulls and engines could not have performed to their limits anyway. Oval setups were more successful, under these conditions, in straightaway trophy trials.

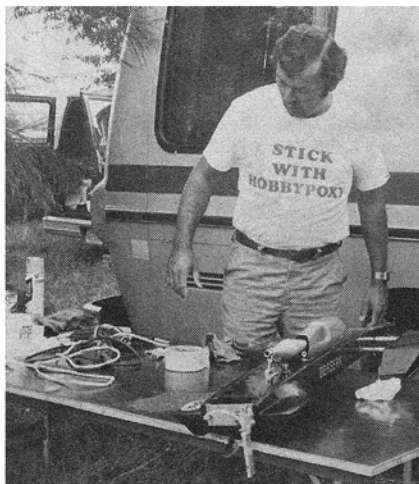
Weather in Bartow during the Internats was much like that in the rest of the East Coast, tremendously sticky. Temperatures, which were in the 90's most of the week, and the high moisture content, made underpropping advantageous for some as needle settings became less critical. Except for one day, the usual Florida gulf coast rains were quite kind to us and stayed away until the evenings. This helped provide relief from the day's temperatures.

The Events

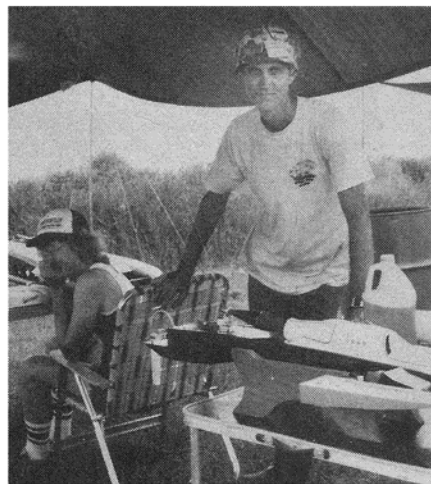
Events at this year's Internats encompassed a period of seven days, from Saturday, August 9, to the following Saturday. Most families, and boaters, stayed at the Davis Brothers hotel in Bartow, which proved to be a perfect choice by F.A.S.T. Frank Johnson and his staff deserve thanks for fine service,



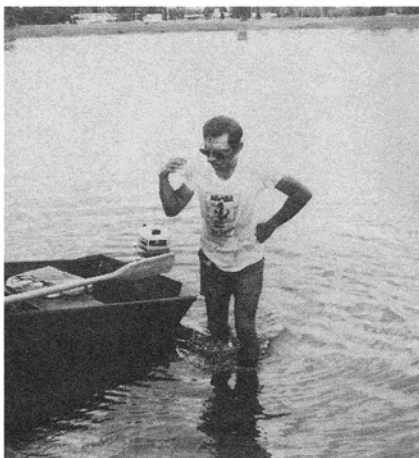
New to the model boating scene is the father and son team of Bill and Brad Schafer from GA. Don Pinckert displays his new sponson-less "Ground Effects" machine (below).



Bob Pettit is hard at work fixing Rick Waters "Berserk". Crashes kept the Hobby Pox booth humming. Len Skwieria seems to be saying: "I know my boats here somewhere" (below).



That's Marten Davis with his very popular "Crap-shooter". Rick and Linda Waters spent their honeymoon at the IMPBA Internats (below). That's a good trick Rick, how'd you talk Linda into it?



food and prices. A welcome break was provided by our hosts on Wednesday, when we all had the day off to go sight-seeing or whatever. For me, it was especially pleasurable as I didn't have to replace any more bent rods (from dunking) or change boat set-ups for different types of events that day. On Saturday evening, the awards Banquet was held at the Bartow Civic Center with most boaters attending. Ray Savoie, with a charming patter, was the M.C. for the presentations with Fred McBroom awarding the special cases, the "Lesser Boaters". Special mention goes to Ed Hughey who had to get special shocks installed on his station wagon to take home all that hardware he won. This included the "Excellence of Performance" Trophy for his handiwork within the two boat maximum during Trophy Trials and Heat Racing. And congratulations to Len Skwieria who received the lovely President's Cup for his work with the most points for two boats.

The weeks events were beautifully scheduled by F.A.S.T., who gave out a complete information package with a printed "Heat Book" schedule covering every days racing. Special events, those not demanded by the IMPBA rules, were held over the first weekend. They included the Deep Vee Classic with mixed classes in the same heats; the Scale Hydros, which surprised me with their quickness, and the Outboards, both tunnel and outrigger. The rest of the Internats,

Monday through Saturday, were devoted to the required IMPBA events including Trophy Trials (1/16th mile straightaway and 1/3rd mile oval) and three days of fast, furious and unpredictable heat racing. This year the heat races were covered by the local TV station which should do us all some good.

An Internats wouldn't be an Internats without a bit of controversy. And, this one was no exception. Some minor complaints were heard over the mixing of tunnel and outrigger hulls in outboard racing. The IMPBA rules pretty much allow anything goes within an engine class, and maybe that's the way it should be in this association of speed merchants. But, the matter possibly is worth some consideration, in the near future, for a satisfactory resolution for all.

A more disturbing matter came to light with the filing of a protest against Andy McCauley's 60 mono record in the previous years Internats. With the protest, a number of unresolved issues came to light and were discussed at the directors meeting on the evening before heat racing commenced. Discussions became so intense that it appeared, for a moment, that the next days mono racing hulls might be called in question. Basically the issues were: What is the legal depth of a mono-hull strake? And, if it is $\frac{1}{4}$ " (which it is), how is this depth measured? And, are any manufacturing tolerances allowed? Usually one thinks of a $\frac{1}{4}$ " maximum as simply that, a

maximum including tolerances. And, usually, the $\frac{1}{4}$ " is measured parallel to the vertical centerline of the hull (or is it)? But some confusion (and, no doubt, politics) was present at the meeting. In any case, the next day's races went on as planned without any glitches. Hopefully, Fred McBroom, the IMPBA's able Executive Director, will get the guys to sit down and hammer out the issues once and for all.

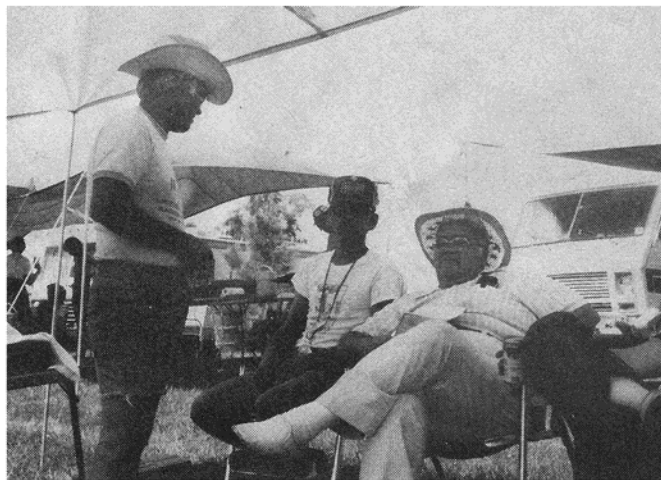
A suggestion at the meeting, was a standard tool for measuring hulls. Surely, this would reduce the controversy, assuming Contest Directors used it when measuring a hull undergoing qualification for a record. Lastly, it seems to this writer, that protests should be acted upon in some specific period after filing and that no protests be allowed after a reasonable, specified time subsequent to an event. Our courts are clogged with interminable litigation; the IMPBA, a fine racing association, doesn't need lengthy disputes to deter all of us.

Memories

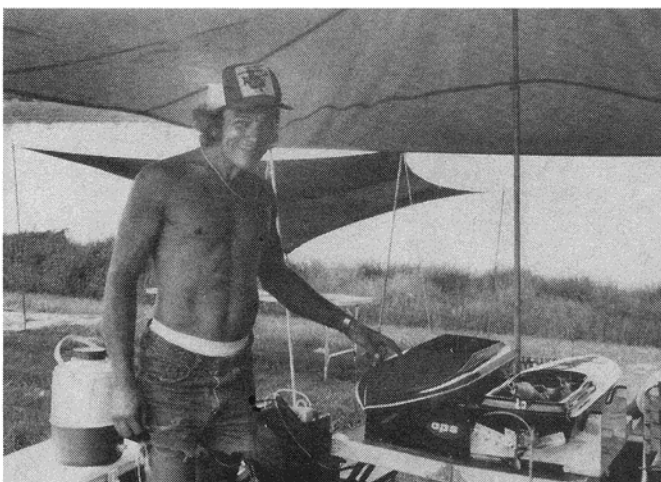
Without intending to leave anyone out, but pleading limited space, time, and memory, I'd like to recall a few moments that peaked my interest and that of others. Boaters helped other boaters—they'd just meet, with parts, advice and time. There was Louisiana's Roger "Possum" Moran's unscheduled hydro somersault flip in the midst



Louis Durand, Jr. launches Charlie Chauvin's boat for a heat. Both are from the Southern Gentlemen. Herb Stewart and his product line (**below**).



"Roundtable" discussion on Internats with Sid Broughton, Len Skwiera and Fred McBroom. World record setter in CD Mono-Oval, G. Grossman (**below**).



of oval trophy trials; he still finished with a two lap time under 40 seconds. Then, young Chuck Tooke of Ft. Myers, Florida, performing the same number in an AB heat race. The singing sound of well tuned twins, and the sweet smell of high nitro let you know you were at the Internats. Charlie Chauvin's twin engine hydro blazed (on a relatively small pond for straightaways to a speed of 75.75 m.p.h. Sid Broughton's hopes for U.S. #1, with his beautifully crafted twin, were dashed on Saturday with engine failure after three perfect rounds of 400 on the previous two days. George Grossman hit a fish on his last CD mono heat after three first place rounds.

Such a small club as F.A.S.T. took on the audacious chore of the Internats and pulled it off. A new pair of boaters, Bill and Brad Schafer of Buford, Georgia, took on the "big boys" with their beautifully built outboard and outrigger hydros. There's no reason to let the same crew take home all the marbles each time, the more the merrier. New crews are welcome.

Len Skwiera's (Past IMPBA President) had a cooling swim; after recovering his hydro and tossing it ashore. No one picked up the hatch which settled to the pond bottom. I practice bobbing apples on Halloween, Len.

Trophy Trials

One of the most exciting events that I've

ever witnessed turned out to be the Trophy Trials and Record Trials of Tuesday evening. To some, Trophy Trials seem boring, or at best, a place for the hull and engine manufacturer's to show off their wares. To me, however, the significance appears to be the attempts of people to make the boats perform to their ultimate limits. Here, uncluttered by passion, we can see what a hull can do in both straightaway and in oval. True, and not to minimize its importance, a boat in heat racing depends much on the drivers skill and has to maneuver and handle rougher water, but the opportunity for observing performance is more apparent during Trophy Trials.

A blending of man and machine in these events occurred in CD mono oval trials and was a sight to behold. George Grossman, of Texas, demonstrated what a good heat racing driver can do with a very fast and well set-up boat in a 2 lap oval. George, with his caller Steve Dixon assisting, drove the Formula X hull into the turns at nearly full speed. Only his reflexes stopped the boat from flipping in the turns. He would drive the boat onto the verge of hooking and then correct it with throttle and rudder. Not only did George capture the ovals, but he won U.S. #1 in CD mono and in driving proxy for George Harris in E mono. On Tuesday evening, in Record Trials, George set a world record in CD mono oval with his driving skills, traveling over 38 m.p.h. around the

course. Included, in the blazing laps, were recoveries from a hook and wiggles between the end buoies. Congratulations, George.

Dedication to model boating is nowhere more clearly seen than in the efforts of Linda and Rick Waters of Greenville, S.C. After a marriage on Thursday, they spent the next week of their honeymoon at the Internats getting tans at pondside. While Rick's efforts with his hydro didn't pan out as well as he'd hoped, he should be congratulated on having such a pleasant and attractive bride.

My Attempts

This reporter tried his hand at CD (.45) Mono and Hydro. Competition in both events was fast and furious, but most of the competitors were friendly and helpful. Jim Fetters, of Indianapolis, adopted me during the Trophy Trials (events in which I was unfamiliar) and guided me with his experience to a 3rd place in CD (.45) Mono Oval. Unfortunately, he couldn't get to the stick during heat racing when I ran up the gunnels of another boat in CD mono and flipped on my first heat. There was no damage to the other boat, but my ego was a bit tattered. Competition was so strong, that good places in the next three heats didn't place me for a trophy.

Beware of poor driving because your boat and mine won't overcome silly mistakes, no matter how fast we think the boats are. Not only that, but somebody else may have to pay



This is a photo of a very busy man, Jay Maguire the General Contest Director, who found some time to run his twin hydro (above left). That's Bud Swenson, winner of CD Mono-Multi racing, with his 40 Sightler (top left). The unsung heros of any contest are the judges and recorders (above right). Jennifer Pinckert and Janet Maguire supplied the "woman power" for these important jobs. This twin hydro is the work of Sid Broughton (top right). Ben and Bill Baird, father and son, drive "the far side" during a heat (below). A fine site for racing and good camping facilities made for a fun meet.



Thanks, also, to Jim Call of Rochester, who gave me a professional job of pitting the last two and a half days of heat racing. Jim came over to watch the races while on vacation near Bartow and before he knew it, was enlisted. Thanks again, Jim, and your forebearing wife, Dawn. Oh, how was the hydro? Well it was fine, but the driver needs practice and glasses.

Lesser Boater Awards

Lesser Boater Awards, an hilarious tradition at the IMPBA Internats, are given to those boaters who distinguish themselves in klutzing it up. For those of us who think only the "amateurs" do it, the list of this years winners should provide some reassurance that we're all human.

Lew Mettetal, last years CD Hydro winner, had difficulty with telling left from right in his steering. Jay McGuire, one of our hosts, on his way to "victory" drove over another boat; not just once but two times in two heats. Tony Fetter, with two yellow boats in the heat, including his, drove the other boat. Ed Hughey, the Excellence of Performance winner, after firing his pitman, launched his boat into the weeds. He received oak leaf clusters on his previous Lesser Boater award. Bob Finley, the CD Hydro straight-away's winner, left his transmitter broadcasting in the pits and also received oak leaf clusters. Fortunately, no one in the next heat was on that frequency. Last, but not least, the Mechanics Award went to Bob Murphy of Shamrock Imports. He meticulously unplugged his batteries to avoid leaving his transmitter on. You guessed it. He forgot to plug back in for the next race.

Summary

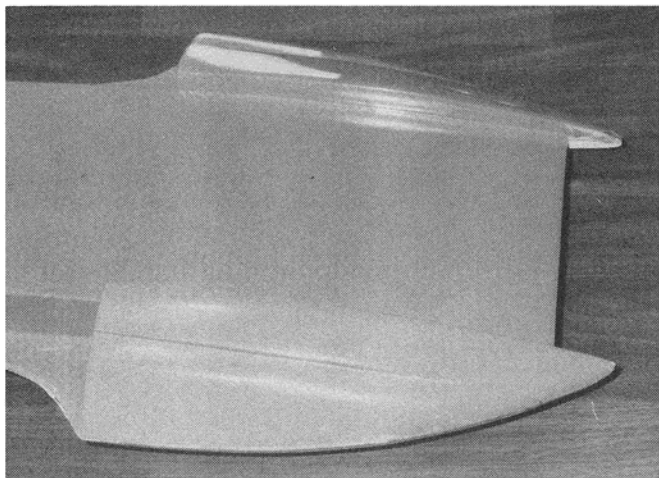
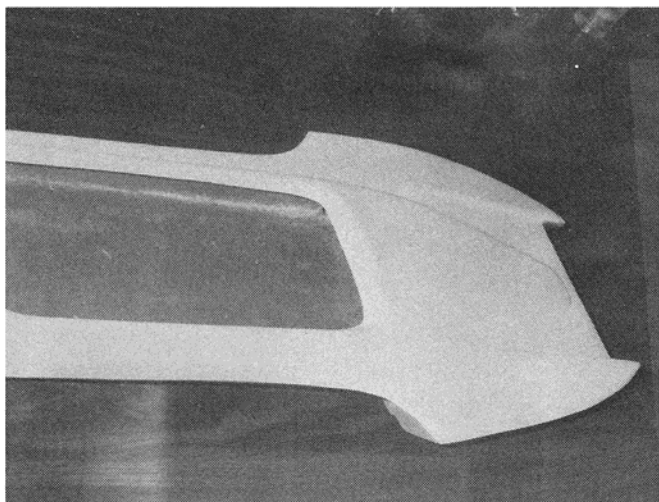
Certainly, the manufacturers and suppliers of hulls and parts deserve a hand for their support of the boaters. Tom Perzentka, of Octura, was there with his fine props. He also, more than capably, assisted this writer in gathering fine pictures of the Internats. Don Pinckert ran his new rear, sponson-less Gator, "the ground-effects" machine as he calls it. It was tremendously impressive in the turns during ovals and record trials (we'll do a review on it early next year, hopefully). Marten Davis, with his remarkable crapshooters, helped everyone in sight with pitting or useful suggestions. His openness and time he spent on expanding our knowledge of the hows and whys of model boating was truly commendable. Ed Hughey, of Hughey Boats, showed his super thoroughness and craftsmanship with a good performance in 20 and 40 hydro. Herb Stewart showed up at the end of the week (after returning from the NAMBA Internats) with his regalia of beautiful (and fast) monos and outboards. The omnipresent, ever-laboring men of Hobby-poxy, Bob Pettit and Ken Williams, set up their repair shop to keep the damaged boaters running. Their talents with adhesives is truly amazing. Louis Durand, of the Louisiana Southern Gentlemen, had his romping "spider" hydros on display. And lastly, EKIM was represented by their attractive Veess. Hopefully, I haven't unintentionally left anyone out as all the suppliers are deserving of special thanks for their efforts and support of our hobby.

Come on out next year, probably in August, to the IMPBA Internats at Indianapolis. Have a wonderful time with good boating and nice people.

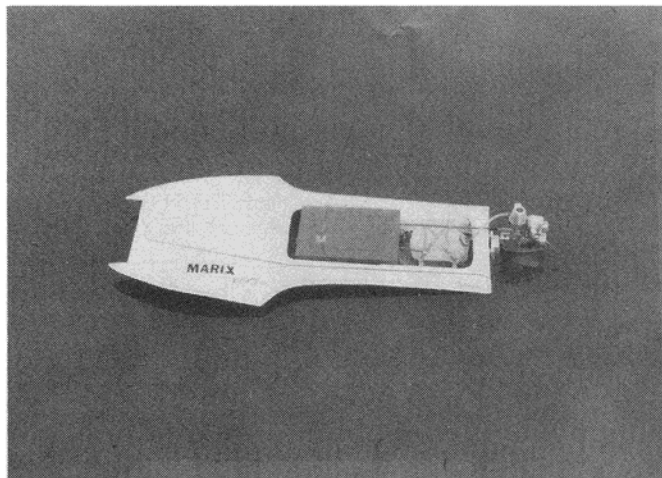
CE

Marix Drag Hydro

This is an easy to build and run boat that is ideally suited for that first R/C project/**Al Berry**



The bottom side of the front sponsons show the one inch deep tunnel. This is the top of the Marix Drag Hydro as it comes in the kit (**top**).



This is an uncharacteristic pose for the Drag Hydro, setting still in the water. This is a more fitting setting for this action packed hydro (**below**).

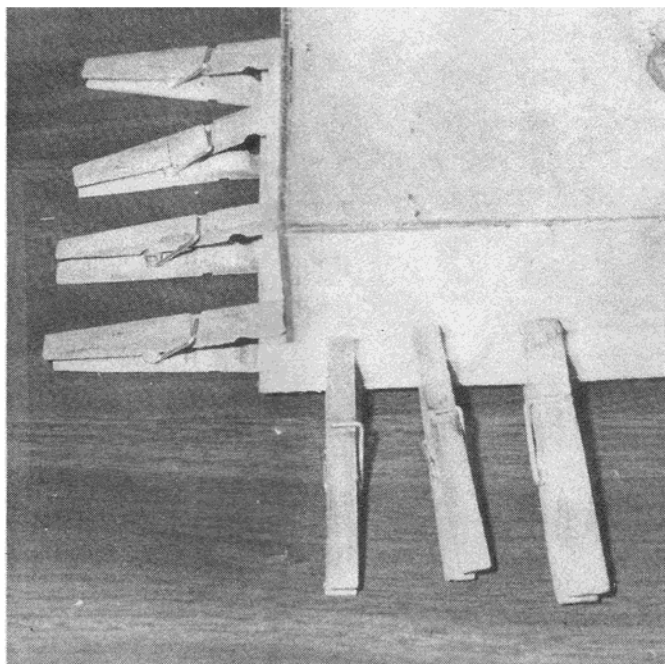
PHOTOGRAPHY: AL BERRY

How about building a hot little outboard that can be put together in less than two hours and taken to the lake. That's right, in less than two hours you can build a Marix Drag Hydro Outboard and be running it. The Marix line of boats are making a name for themselves on the ideal of keeping all construction steps easy and simple. The Drag Hydro is so easy and fast to build that it's hard to write a descriptive story about it.

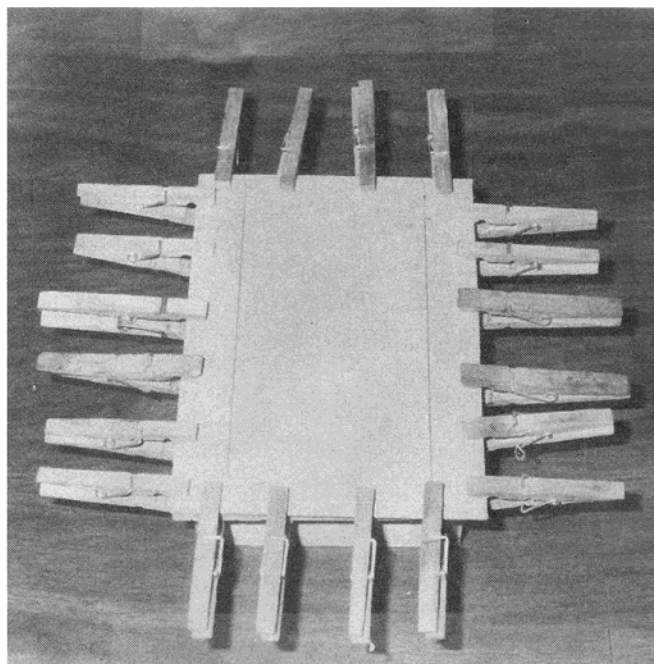
Construction

To start, build a square radio box, bolt the engine on and install a fuel tank. The radio box is just a big square unit with loads of extra room in it. We made one change and that's to replace the plexaglass lid, with a tape-down style lid that's very simple to build and simple to use. The first thing you do is cut a $\frac{1}{16}$ " plywood cover for the box and mark out the lid on it. I cut the lid from the cover, all except the corners, before I glue it to the box. Now just glue the cover on the box. After the cover is dry we finish cutting the lid out. Now cut four strips of $\frac{1}{16}$ " wide plywood the same size as the lid opening. Glue the strips to the underside of the hole in the cover, and leave about an $\frac{1}{8}$ " sticking out in the hole. Then set the lid on a shelf, so it won't fall through the cover. Use Hot Stuff to glue the strips in. Now sand and paint the exterior of the radio box with a nice coat of





Here the rails are glued onto the outside of the box and the $\frac{1}{16}$ " plywood cover installed. Use clothes pins as clamps until glue dries.



The $\frac{1}{16}$ " plywood cover has had a lid pre-cut into it before being glued to the box. A ledge is glued to the inside of the box to accept lid (**below**).

Hobby Pox paint and you have a super fine box that is easy to use. To seal the lid to the cover use Scotch Brand Plastic Tape (which is 100 percent water proof).

The only thing left to do is to finely trim the angle of the engine to the hull. Remove the engine and install an aluminum adjustable block (we made one last year on the transom) and then reinstall the engine on the block. Use the block to adjust the engine for maximum performance. The fuel tank is a standard Pylon Brand SS-8, with a brass

tube pick-up instead of a clunk. The Drag Hydro comes in a nice jell coat finish (colors of your choosing) and only needs trim and a coat of clear Hobby Pox paint.

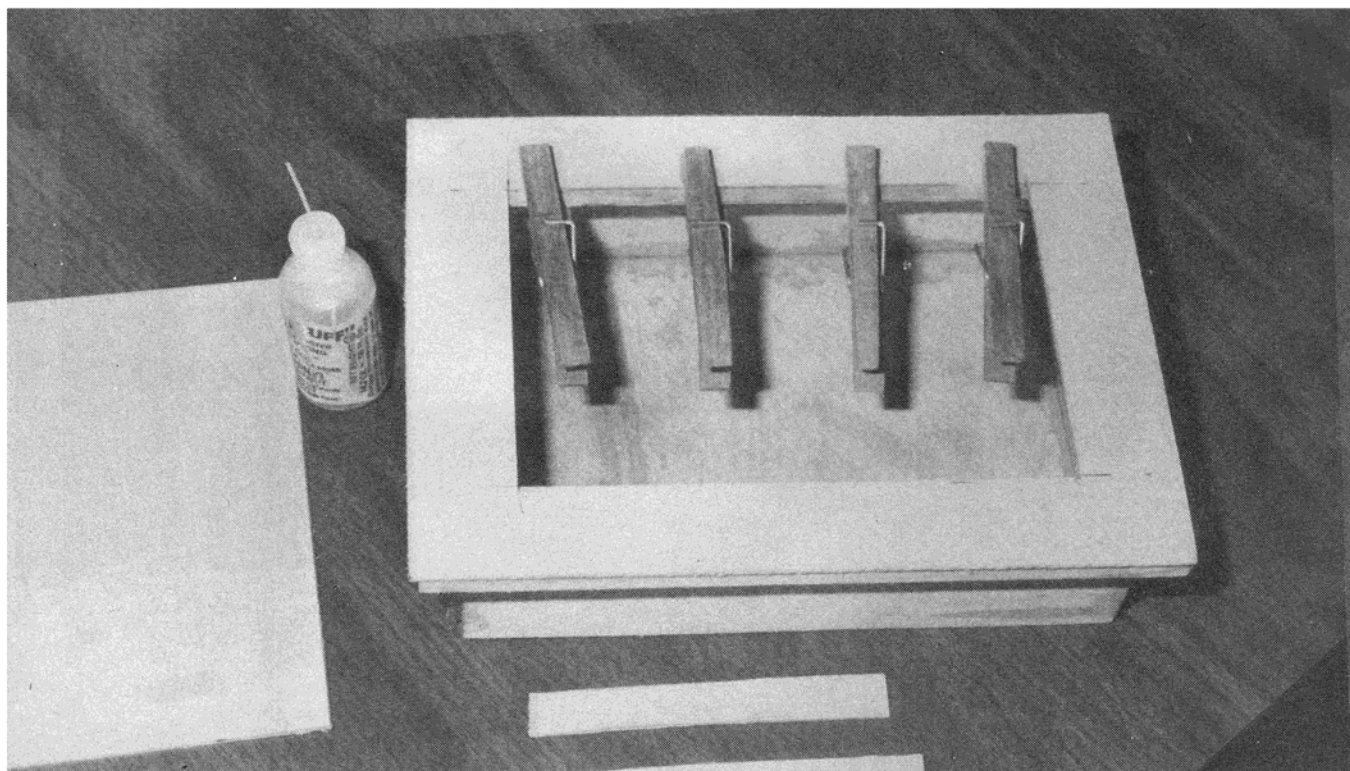
Testing

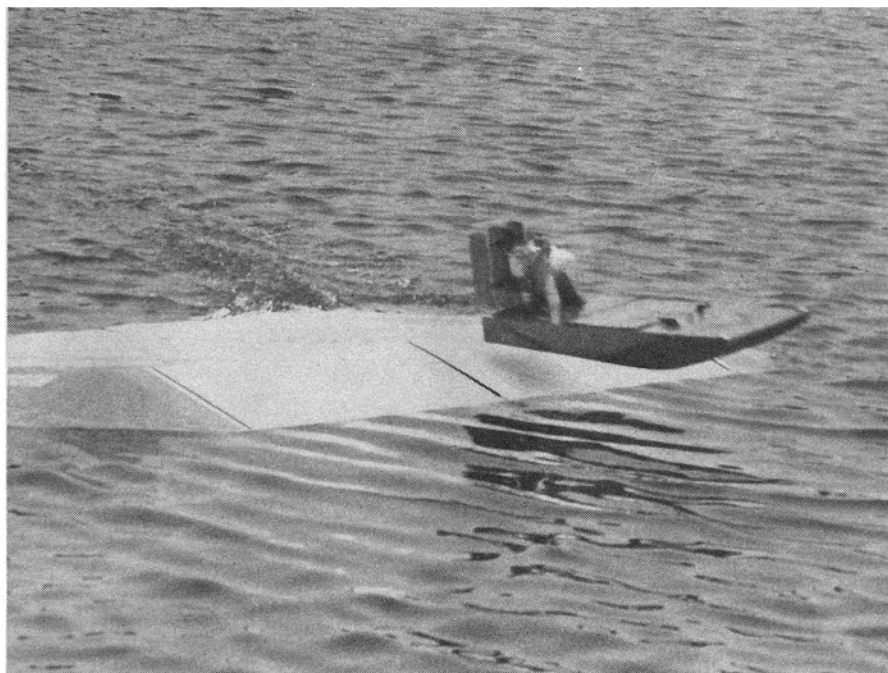
Off to the lake I went to test my new hydro. The first few times around the lake I took my time and got accustomed to the way the boat handled. Then I cut her loose to see what would happen. The hydro dug in and started screaming. The hydro was very fast and sta-

ble, even though I lost it once when I caught a hard gusting head wind and flipped it over. I later found out the wind was gusting at 35 to 40 miles per hour (no wonder it blew over). All in all, I had loads of fun running the boat at the lake, and sure liked building this boat that took less than one afternoon to finish. The hydro was (and still is) stable, fast, good looking, and very enjoyable.

The next time you go to the lake, take a friend boating and show them how much *Fun* it is.

C

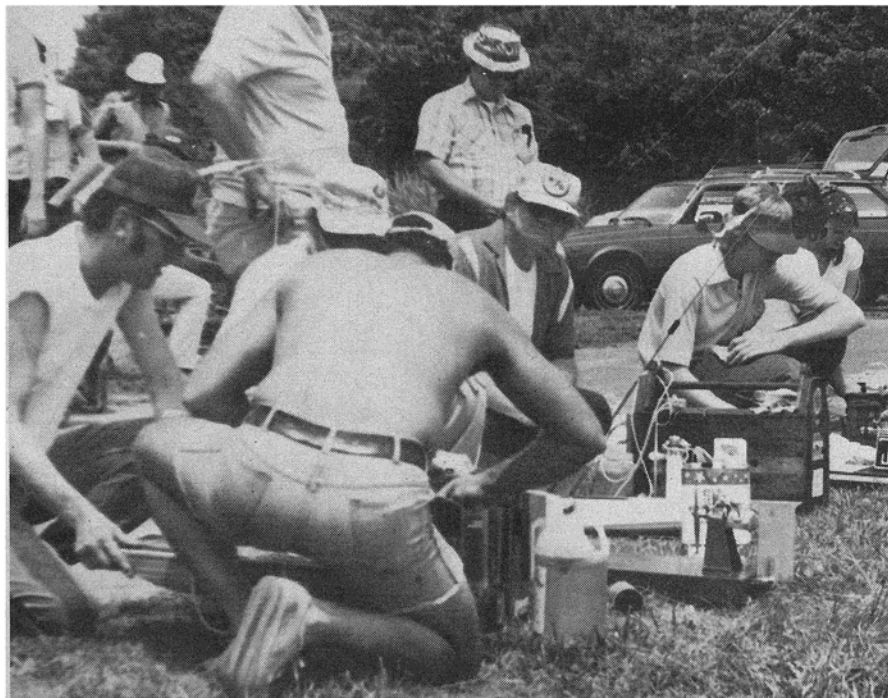




Airboat Racing

Fun is the result when a New Jersey club tries a new type of racing/**Dick Sarpolus**

PHOTOGRAPHY: DICK SARPOLUS



Airboat racing is a fun-filled change of pace for a club project. The challenges are different than those of hydro types. This pit shot shows much participation. An airboat clears the jump ramp (top).

Back in 1974, for a change of pace, the Monmouth Model Airplane club built some Dumas Swamp Buggies and used them for informal fun races when not flying their aircraft. This single-design airboat racing is organized around a course that features a challenging, jump ramp which must be negotiated on every lap. The "Airboat Racing & Beer Drinking Society" is a low key and just-for-fun group of modelers in Long Branch, New Jersey, and FLYING MODELS presents the story of their boats and competition.

Competition had its usual result, and several experimenters began making modifications to improve the performance of their swamp buggies. It was agreed that the engine size limit would be .25; there was no desire to exceed .25, as more power simply meant the boats would flip over more often. On windy days the faster airboats would literally take off in a turn and end up floating upside down.

The first popular modification was turning the engine around to put it in a tractor configuration rather than the standard pusher style. This permitted a wider propeller selection because so few pusher props were available. The new method also eliminated the need for heat sinks thanks to improved engine cooling. Another change was the conversion to dual rudders, the same size and shape as the stock single rudder. These were spaced several inches apart and linked to move together. The additional rudder area gave more positive control for turning, even in windy weather.

By this time, the informal "rules" specified that the basic Dumas hull shape could not be changed. This was to keep everyone on a fairly even basis. The ultimate modification, up to this point, was to lower the center section top decking, and permit lowering of the engine. The bottom of the propeller fell below the deck line; the aim to lower the center of gravity, and provide a more stable airboat. Most of the boats built in the past two years incorporated some sort of lowered engine and deck arrangement to get added stability.

These are other modifications: the addition of a forward mounted, angled "wing", which is adjusted to theoretically keep the bow down. Trim tabs on the transom, to permit adjustment and trimming of the ride angle of the boats, depending upon the weather conditions. One change was a small horizontal wing in the rear, with ailerons coupled to the rudders to give stability in the turns. The boat, with this idea, was not a winner.

The engines vary greatly with everything from old, tired OS and Enya .19s to the latest OS and K&B schnuerle ported powerhouses. Hot engines certainly won't guarantee a winner since the hulls just can't handle too much power and speed.

The most interesting aspect of this type of racing is the course used. Four anchored buoys mark the corners of the course, which is a rectangle approximately 175' by 75'. In the middle of the course leg and parallel to the shore, is a positioned, floating, jump ramp. The airboats must jump this on every lap of the five lap races. The ramp is approximately eight feet wide and fairly shallow on the entry side and has a steep exit. Boats that go too slowly, trying to play it safe, get stuck on the ramp. The faster a boat hits the ramp, the higher and farther it will fly. Hitting the jump straight on is advisable, although missing the ramp completely is a fairly common occurrence.

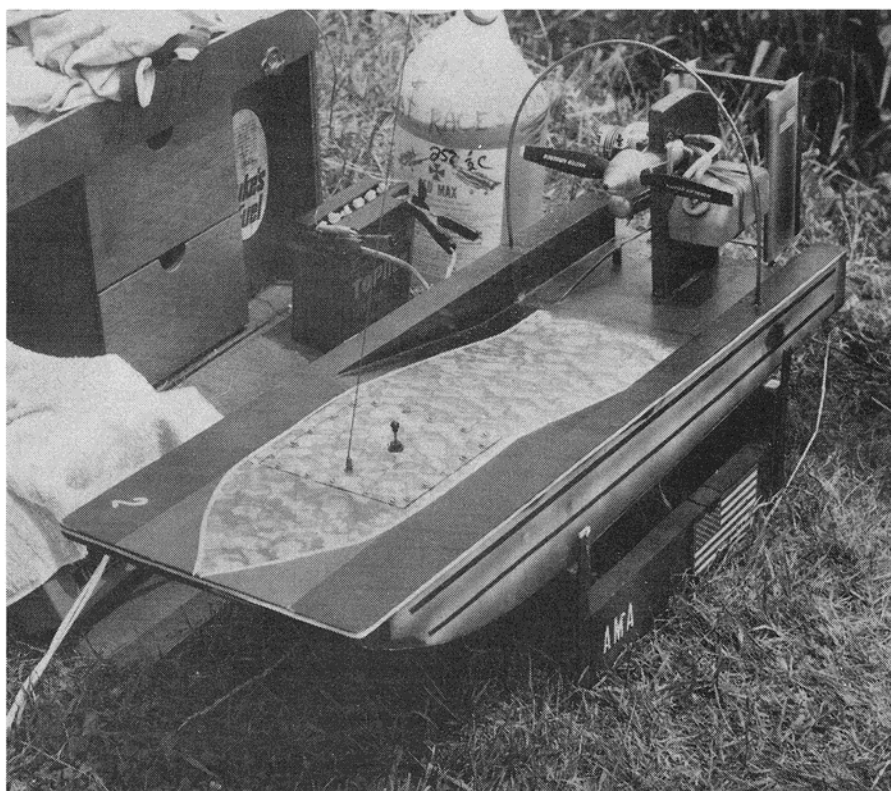


On the day FM saw the races, 12 boats were entered. Four boat heats were run, twelve heats in all, so each entry was able to run in four heats. Points were awarded in each heat, 4 - 3 - 2 - 1, and accumulated to determine the winner. The races were five laps long, and a boat had to complete all five laps to get any finishing points. We saw a number of heats completed with only one boat left running.

There is no formal Club organization running these races; it is all done on a spontaneous volunteer basis. The ramp is built by one participant and another brings it, and the buoys to the races. Someone always volunteers to run the races and keep the scores. If trophies aren't donated, a two dollar entry fee is collected and the pot distributed among the top three placers. A typical season sees three or four scheduled races and a number of less formal get-togethers.

Does this group recommend air boat racing to others? Will their enthusiasm grow to bring inboards, hydros, etc., into the picture? Probably not. The competition stays low key and friendly—that's the way they like it and that's the way they want to keep it.

FM congratulates the winners of the day: 1st, Lou Boyce. 2nd, Dick Sarpolus, and 3rd, Steve Harmer. The others who raced are as follows: Dave Barry, John Frank, Laurie DePew, Scott Sarpolus, Mike Connors, Jim Harmer, Len DiGiovanni, Bruce Horvath, Hank Goedkoop, Walt Paulakanis, Pat McNerney, Al Gama, Bud Roane, and others. Keep at it. Enjoy.



This close view of a competitive airboat shows the shrouded prop, for safety, and the twin rudders for effective steering. More racing action (above and top). Too much power can make an airboat flip.

Letter Rip!

Agrees with Bilsky

I am a member of NAMBA not by choice but because in the West it is NAMBA or nothing. There are some sprinkling of IMPBA members in the West but one must go as far as Texas to run in an IMPBA sanctioned contest.

I, like Don Bilsky, have been interested in a unified national organization for as long as NAMBA has been in existence. Before NAMBA, IMPBA was the only organization for model boaters. In the early days of IMPBA there were a lot of organizational problems that led the California boaters to form another organization, rather than trying to bring order to the existing one.

As I see it today, it would be nearly impossible to get the two organizations together into one. This is mainly due to the insurance stipulations connected with IMPBA. Another obstacle would be the fact that in IMPBA a boating site must be for boating only.

In the West (especially in So. California), we must share our sites with others. An example of this is Legg Lake, where the facility is shared with fishermen and full scale sport boaters. NAMBA insurance permits this.

Perhaps the biggest deterrent to a combined organization would be leadership. The differences in rule change requirements and administration of this new organization could turn into a hopeless situation.

It is a good idea and it would be good for the hobby, but I doubt that it will happen.

VERN SCHMIDT
Anza, California

Product hunting

In the June 1980 issue of FLYING MODELS there was an article by Bob Aberle entitled "The R/C in Model Boating or Keep it Under Control". In this article Mr. Aberle suggested the use of a product called "Dust Off".

Could you please tell me where I might be able to purchase Dust Off along with the valve mentioned in the article?

CAMERON W. DEAL
Kaneohe, Hawaii

Try looking for Dust Off at your local camera store—ED.

Dist. 1 Point Heat Race

On September 20th and 21st 1980, the Radio Control Model Boaters of Baltimore held their annual Dist 1 point heat race.

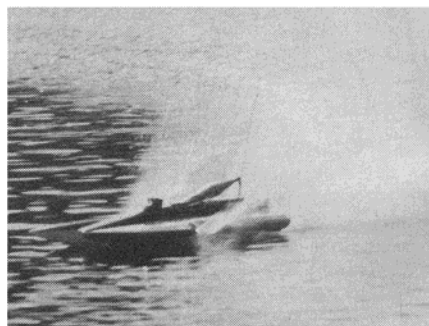
The points from this race go toward the 1981 race season. As usual Artie and Shirley Cooper administered an excellent race.

Spectators were on hand to see some exciting racing on Saturday and Sunday. The Baltimore Club really came out with some fine running, new 3D Deep V's. I know this writer was very impressed with what he saw.

On Saturday night the Dist. 1 1980 banquet was held at the Sheridan Inn of Hagerstown, Maryland. Everyone had a great dinner and a lot of fun.

Fred Gimbal awarded the class high point plaques, Deep V plaques and the individual high point plaque. I'm sure everyone had a

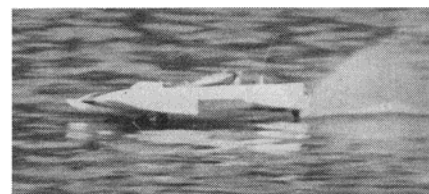
good time as the 1980 race season came to a close—DOUG TWAITS.



Art Valdesere's .60 Claim Jumper kicks up a tail on its way to winning C Hydro.



This is Doug Twait's .20 powered Claim Jumper during some A Hydro action.



The B Hydro winning boat belonging to Rich Ellis, is shown here running well.

Race results

A Hydro

1. Herb Stockton
2. Doug Twaits
3. Wayne Bellinger
4. Larry Clinton
5. Richard Ellis

B Hydro

1. Richard Ellis
2. Doug Twaits
3. Ted Bartkowiak
4. Charlie McColgan
5. Ed German

C Hydro

1. Art Valdesere
2. Herb Stockton
3. Peter Paratore
4. Gilbert Diggs
5. Larry Clinton

A Mono

1. Roy Hartley
2. Fred Gimbel
3. Gary Reault
4. Larry Clinton
5. Bob Kaler

B Mono

1. Kevin Kaler
2. Frank Tobia
3. Fred Gimbel
4. Ed German
5. Gary Reault

C Mono

1. Fred Gimbel
2. Mike Jones
3. Chris Carver
4. Gary Reault
5. Bill York

Product Spotlight:



THE LAUGHING WHALE, P.O. Box 191, Wiscasset, ME 04578, has just released the newest addition to its fleet of scale wood ship models, The Eastport Pinky. Pinkys belonged to that large groups of schooners called coasters. Coasters were built in a great variety of designs usually with a specific commercial purpose in mind and from a specific regional building tradition. As the term, coaster, implies these vessels engaged in a variety of trades up and down the Atlantic coast, from Canada to as far south as the Caribbean.

Pinkeys are a very old design. The name itself comes from the French, *Pingue* and in its American usage goes back to the earliest colonial times. Generically, Pinkeys are boats with both a bow and a stern that come to a point. The earliest ones were truly symmetrical; like a vintage Studebaker, you couldn't tell if they were coming or going. As time went by, the stern became elongated and raised, like a stylized clipper bow. It could be said that they began to look more and more like a pintail duck.

It has been said that form follows function and that art imitates nature. This is strikingly true of the Pinkeys. They look and sail very like a duck on the water, and that is exactly what the designers wanted, for in creating and evolving the Pinkey, Maine ship builders also created the most seaworthy schooner in our history. When other ships prudently beat for port or hugged the coast with sincere respect for Atlantic storms, the Pinkeys stayed out in all weather. Bobbing over creast and down trough, their bows to the gale, they were nearly unsinkable.

This new kit from The Laughing Whale continues their tradition of producing distinctive historic vessels. Their Eastport Pinky is based on lines taken off by Howard I. Chappell. This particular kit reflects the height of development of pinkey schooners as built in the 1850's and 1860's in the Eastport, Maine area. It is an especially graceful design, a bit larger some of the earlier Laughing Whale kits, and since the hull is to be built-up, it will accept R/C nicely.

Most Pinkeys were fishing boats, so it is no surprise to find that this one originally was a herring boat. By the 19th century, the fishing trade was very competitive. To respond to economic pressures, Pinkeys would leave

their home ports and stay out till their holds were full. Ironically, this began the tradition that killed off the Pinkeys. By the beginning of the 20th century, the competition had become cut-throat. The skipper who got his full catch to port first received a good price per pound. Those who followed received progressively less, and the last to arrive often could not make expenses. The outgrowth of this was the Grand Banks Schooner, a large remarkably fast fishing boat that literally raced home from the fishing grounds. Among these famous vessels were the *Bluenose* and the *Gertrude Thiebaud*, racing boats in their own right with razor sharp lines and acres of canvas. The little Pinkeys could not begin to compete with such vessels, and by the mid 1920's most Pinkeys were gone.

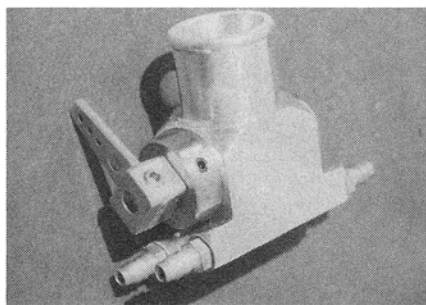
This kit reflects a resurgence of interest in Pinkey schooners, a few are again being built as private pleasure vessels and "dude schooners" in the State of Maine. A few years ago, *Yankee Magazine* printed a feature on one man who built an 85' Pinkey in structural marine concrete. At last report she sailed as well as her wooden prototype.

The Laughing Whale kit has been produced in scale $\frac{1}{2}" = 1'$. She is 33" overall (tip of bowsprit to stern), and $7\frac{1}{4}"$ in beam. As with their previous kits, the Pinkey uses quality materials. The hull is to be built-up from pre-cut basswood keel and frame members. In turn this is covered with pre-cut basswood planking and decking, which produces a quality model, with lots of room for R/C equipment including a good boom motor. Of course the R/C equipment is your option, and not included.

The kit also contains brass chain, eye bolts, belaying pins, winch heads, airports, pintles, gudgeons, quality sailcloth, a pre-cut hardwood cradle, quality blueprints and instructions. Also included are planking instructions which should make it possible for anyone with rudimentary model building skills to neatly plank the hull.

If you are not familiar with these kits, they are designed to be used as high quality display models, scale R/C models or both together. You can put it on your mantel after you sail it (not in your closet).

The manufacturer asks you to look for it in your hobby shop, where it will be priced at \$129.50 complete, less R/C. If your local dealer does not stock it, you may order it from The Laughing Whale, but be sure to add \$4.50 extra for shipping and handling. You might also forward the name of your local dealer to the manufacturer, and save yourself some shipping costs next time—WAYNE DANIELS.



STEVE MUCK'S R/C MODEL BOAT SUPPLIES, 6003 Daven Oaks, TX 75248, introduces Exhaust Throttles to fit your OPS or K&B engine. The throttles come with a 12° angle to fit most Hydroplane boats, or with a

20° angle to fit most Monoplane hulls. They are available for OPS .40, .60 and .65 engines as well as K&B 3.5, 6.5 and 7.5 engines. Extra large water fittings are used for better fitting hose connections and improved water circulation. Each barrel has been hand fitted, and does not use "O" rings. Each barrel is marked for full-open position, making it easier for linkage hookup during engine installation. Prices start at \$41.95. For more information write to the above address.

IMPBA Roostertail

Bob Hunt the new Managing Editor of *FLYING MODELS* has requested that the model boaters make known to him our likes, dislikes, and desires, so that he may be more able to improve the Boating section of the magazine.

IMPBA dues for 1981 remain the same (\$15.00 if paid before February 15). Every member will still receive our newsletter at no charge.

I am happy to also report that our membership is larger than ever.

As promised, here is Sid's rebuttal to Len's comments of last month.

"Democracy rears its head, and opposing thoughts are allowed to be heard. This is most certainly a plus for IMPBA, its officers and above all the general membership. The real winner is R/C Model Boating in which I have been so interested since building my first boat in 1965.

I wish to make clear that my proposed International Regatta procedural change is not intended to eliminate trophy trials. Please be aware that my proposal covers procedures for trophy trials which are far better than that currently used and would without doubt establish who is the real records champion. It is a balanced program providing the boater with twice the amount of trophy trial events as currently are held, while not forcing those who have no interest in them to participate.

To separate Trophy Trials (record trials) from multi-racing is no different from the present form of separation. Unfortunately not many people know that we already have two separate Internats in IMPBA each year. Internats for Scale Boats are entirely separated. So why not separate Internats for Record Trial Boats?

Look at the record books and you will note that the vast majority of records are held by either Boat Manufacturers or so called engine experts. These people are not true amateurs in an amateur sport.

Our's is an *amateur* sport whose major interest has proven to be (by participation) multi heat racing. The number of boaters participating in record trial events is in my estimation less than two percent. Why

should two percent of the boaters have any dictation to 98 percent, especially if they are not discriminated against and are provided a very special opportunity to do their thing?

Currently two entire days of our Internats is devoted to an extremely small minority holding trophy trials. Wouldn't it be better to run events in which the vast majority are interested? This year's Internats allowed only four multi-boat racing rounds. I made a serious driving error this year and knocked a fellow competitor out of one event, which meant that I eliminated one fourth of his racing and possible events. If the trophy trials had not been held, that time could have meant seven or more rounds of heat racing, and that individual would have had a good chance to recover for a driving championship. People talk of the luck of the draw in heat racing and it's true in a four round event, but entirely unlikely in my proposed seven rounds or more.

Our rules currently call for the boats used in trophy trials to also be used in heat racing. They are used but with modification such as specialty engines, and the removal of rear sponsons. I have also seen changes in front sponsons. With all this, isn't the rule defeated? Those boats are specially designed for straight away and altered for multi-racing.

In no other known *boating* championship events (amateur or professional) are champions determined by a combination of timed and head to head racing events. To compare non-motorized sports such as Olympic sports is like comparing apples and oranges. Let's stick to the subject, power boating.

Let's place our International Championship Regatta where it belongs - in the area of interests of the average amateur model power boater. Do so, by voting in favor of my proposal"—SID BROUGHTON.





Greece City Xanthi by Night



Old City Xanthi Street



Old City Xanthi House



Xanthi Central Square



Xanthi Lake Vistonida



Xanthi River Nestos



Xanthi Old House M.Xatzidakis

