

1978 Toledo R/C Show

JULY 1978

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"Heron"
Gas Buggy
a FLYING ACES reprint

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R/C **GEE BEE SPORTSTER**

Royal Omega Tx review

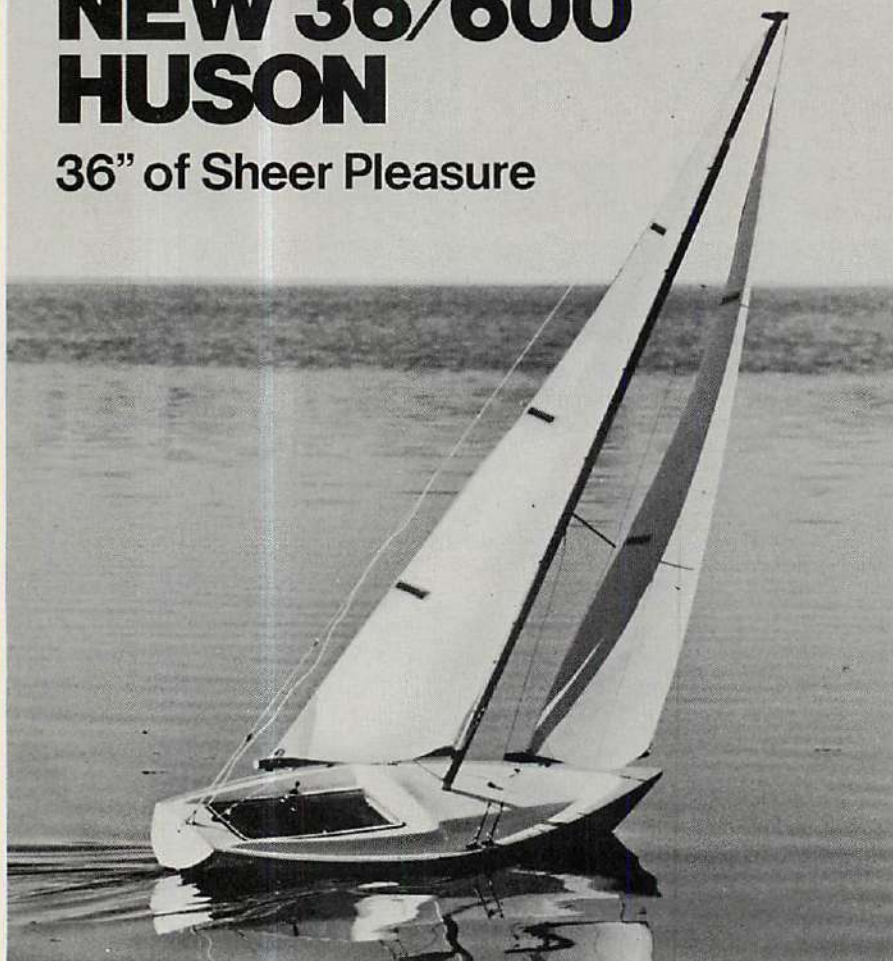


07

R/C Model Boating at Toledo
How to install a Deep Vee outdrive

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modeling news editor
Wayne M. Daniels
advertising production manager
Jan L. Harp
circulation manager
Phyllis Carstens
assistant to the publisher

Judy D. Lovas/office manager and bookkeeper
Evelyn Scheck, Linda Jones, assistants

Circulation: Jeanne Siple, Joan Andrews,
Judy Koester, Audrey Happel, Joanne McMickle

Catherine Streeter/dealer and reader service

Advertising Production: Janet Bodemann,
Miriam Lee, David Case

Shipping: Greg Henderson, Ramon Toye

Some Winds to Consider

Nature can sure keep a pilot busy. It is bad enough we have to fly in three dimensions, but unlike a ground-bound vehicle, an airplane has to contend with the invisible. An ocean of air that is often boiling, seething, shifting and uneven. It is a wonder then that our models make it down to the runway in one chunk. Most do, but some don't. And some fall short, and others overshoot. The fellows that make it down on target seem to do it consistently, so maybe there are some things they know that you should know too.

Our air for the day is beyond our control. If we don't like it, can't cope with it, we exercise our option of leaving the new ship in the car. We can feel the wind. A steady breeze, within reasonable limits can help us, a steeper approach, easier to clear the trees.

Line up just about right for final. Well, you're not down yet, you may fly into a 1,000 foot a minute boomer. And the next flight you may be in an 800 feet a minute downer. These figures are kind of ordinary on certain soaring days, so keep a little altitude in the bank and vary your pattern when you feel the need. Things can happen fast in modeling, so be aware as to just how strong some of these vertical currents can be.

Do most of your flying on the upwind side of the field. Countless modelers have run their altitude down and had nothing to give away to penetrate back to the field.

In flight? Keep an eye out for which wingtip bounces up, turn your radio soarer toward the tip that rose to core the thermal. Ride it as high as you feel descreet, you may soon have to leave it if it tips out, or with models, if it carries you too far toward the downfield side. And when you find yourself in a downer, steepen your glide angle, it's the wrong time to linger around.

FLYING MODELS



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ACES
est.
1928



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on the cover

Henry Haffke's beautiful Gee Bee Model D Sportster is a fine scale airplane with many winning credentials. The construction article starts on page 35. Ektachrome by Jay Duncan.

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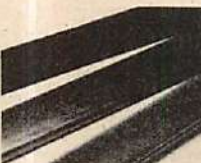
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INDY

Air Mail

readers' forum

1/2A Pylon comment

I read Bob Aberle's article in the May 1978 issue of FLYING MODELS entitled "Pilots—Start your engines" and want to congratulate him on writing a completely new event in the '78-'79 rulebook. There is one rule I don't understand, possibly I am reading it wrong and I'd appreciate an explanation. I believe that it limits the percent of nitro, I think it's 50%, and it says the fuel may be supplied or it may be furnished by the contestant, at the option of the CD. Lets assume that the contestants are bringing their own fuel—would you kindly tell me how the CD can tell if any contestants are cheating by using more than 50% nitro?

BILL SIMPSON

Palos Verdes, Calif.

Good point Bill. The fuel probably should be supplied at the contest—but then again, we're all honest, aren't we?—Ed.

FLYING ACES

Thought you might be interested in a photo of my latest FLYING ACES Moth. This version was scaled up to P-30 rules and came out to 50 grams even with the Peck plastic prop and the .020 wire landing gear using vacuum formed wheels.

I too have enjoyed your reprints and applauded Pete Spule's suggestion that you reprint the Moth. I still have my copy of the August 1941 issue, however the last two pages were neatly clipped out in my teenage eagerness to build and were lost. The ship built in '41 was my first really successful model. When the spring winds subside I'm looking forward to more chasing of my latest P-30 Moth. Keep the nostalgia coming for us old timers.

HOLBROOK H. CLAY
Flagstaff, Ariz.

I enjoy FLYING MODELS very much and have been an avid reader for over 35 years. Keep up the good work and "Happy Birthday".

FERRELL COMBEL
Homestead, Fla.

This is the first letter I have ever written to a magazine, but I felt that is was due. First I must compliment FLYING MODELS on bringing back the old articles and plans. I don't know where I could pick this information up without extensive research, time and money. I hope you continue this practice and either print plans that can be pasted together and built or make them available through your plan service.

I also like Bob Aberle's writeups. Since I'm new to R/C (but not to models), Bob's comprehensive look into products saves me much agony and time. Since the hobby shops won't let me take home and test various R/C sets, I can buy your magazine and have Mr. Aberle test and comment on their performance for me. This is what I call a real service!

JACK MEANY
Fort Pierce, Fla.

The model plan reprints from FLYING ACES bring back many fond memories to me.

I started reading FA back in 1938 when I was a farm boy near Traverse City, Michigan. Not getting into town as often as I would have liked to I missed some of the issues. I treasured these magazines however and still possess a number of copies. I would be great if the Pinkham yarns could be reprinted along with the hilarious sketches by Joe Archibald. My interest in model aviation has stayed keen over the years and I look forward to each new issue of FLYING MODELS.

JOSEPH J. PAHL
Centreville, Mich.

F/F alive and well

I thought that you might like to know that Denver's Magnificent Mountain Men F/F club is alive and well. We have a new flying field that is about 15 miles east of Denver that is truly outstanding. It is about five square miles of prairie land covered with short grass. The field is located on the Walter Grimm ranch which is an old Nike missile site that has long been closed. It even has an untraveled road for old timer ROG. The club is now a mixture of FAI nuts and AMA flyers. The FAI men such as George Batiuk, Bill Gibbons and Don McGhee always produce a very high level of competition at the contests.

I always enjoy FLYING MODELS and Don McGovern's editorials. In fact, while sailing on Long Island Sound last fall, I couldn't keep your suggestion out of my head that it would be a good F/F site. In fact, what ever happened to the Long Island Gas Monkeys club that did so well in F/F at the 1961 Willow Grove Nats? The reason your editorial hit home so hard was the fact that we were becalmed about five miles from land and fast running out of beer.

JERRY MURPHY
Colorado Springs, Colo.

Help with a PZL-P24

Could any of you readers help me? I have been looking for plans of, or information about, a PZL-P24. It is a Polish aircraft used in training the Bulgarian fighter regiment. I'd be much obliged if anyone could help me. I like the FLYING ACES reprints very much. Keep up the good work.

HENRY HENCHAL
2401 McDonald St.
Sioux City, IA 51104

What is it?

In your advertisement for the FLYING MODELS Fiftieth Anniversary Old Time Fly-in there is an old-timer aircraft pictured. I am quite intrigued with the aircraft, what is it's name and are the plans available? Keep up the good work on the old-timer reprints, I really enjoy them.

GEORGE W. SHAFFER
Santa Susana, Calif.

The airplane pictured in the ad is a Dalaire Sportster and is available in kit form from M&P in Lone Oak, Texas—Ed.

Where is it?

In the February 1977 issue of FLYING MODELS
JULY 1978

MODELS there is a picture on the front cover of a T-28 with civilian color scheme. I would like to know if more pictures are available or where the ship is located. I am presently building a Platt T-28 and would like to finish it in those colors and markings. Thank you.

MICHAEL A. LABOSKY
Cleveland, Ohio

When the cover photo was taken the ship was located at a Brookhaven Municipal Airport in Shirley, Long Island, New York—Ed.

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.

MODEL AIRPLANE MEETS

JAMESBURG, NEW JERSEY—June 4. FLYING MODELS magazine and the Rockaway Valley R/C Club co-host a Stand-Off Scale, Sportsman Multi-wing and Novice Pattern contest at Thompson Park Model Airport. All events will use the 1977 AMA rule book. Trophies to 5 places in each event. Contact: Duke Hoeckele, 9 Manchester Way, Pine Brook, NJ 07860. 201/227-3197.

RHINEBECK, NEW YORK—June 24, 25. Second Annual Rhinebeck Classics Meet hosted by the Mid-Hudson R/C Society at the Old Rhinebeck Aerodrome. For F/C ships modeled after airplanes of the Classic era 1919-1937. This year the rules call for the airframe and markings to be accurate. Events will include AMA Scale, AMA sport scale, Barnstorming and time trials. Contact: Vance Sutton, 21 Greenvale Farms Rd., Poughkeepsie, NY 12603.

R/C BOAT CONTESTS

EDMONTON, ALBERTA, CANADA—June 3, 4. NAMBA District 16 points enduro, heat racing, Deep Vee, Scale hosted by the Edmonton MBRA at Edcon Pond. Contact: Paul Omerzu, 15710-89th Ave., Edmonton, Alberta, Canada. 403/489-3494.

YONKERS, NEW YORK—June 3, 4. NAMBA Dist. 1 points. Heat Racing hosted by the Empire Racing Association at Tibbets Brook Lake. Contact: Fred W. Coleman, 23 Park Circle, White Plains, NY 10603. 914/428-5686.

INDIANAPOLIS, INDIANA—June 3, 4. IMPBA. Indy Unlimited hosted by the Indy Model Boat Club at Dandy T Lake, 3307 Dandy Trail. Contact: Jim Alexander, 2607 E. 57th St., Indianapolis, IN 46220. 317/255-7410.

CLEVELAND, OHIO—June 10, 11. IMPBA Multi-Racing for Monos and Hydros hosted by the Cleveland MBC at Clare-Mar Lakes. Contact: Mike Bokulich, 916 Columbia Dr., Amherst, OH 44001. 216/988-2345.

BRISTOL, PENNSYLVANIA—June 10, 11. IMPBA Oval racing, hydros only hosted by the Del Val MPBA at Magnolia Lake in Silver Lake Park. Contact: Nick Monti, 402 Swarthmore Ave. #A, Ridley Park, PA 19078. 215/487-0246.

EL MONTE, CALIFORNIA—June 10, 11. NAMBA Dist. 9 points, heat racing hosted by the Prop Nuts at Legg Lake. Contact: Leonard Feeback, 7906 Spinel Ave., Cucamonga, CA 91730. 714/987-2863.

PORTLAND, OREGON—June 10, 11. NAMBA Enduro, Scale, Deep Vee 40, A Outboard hosted by the Rose City MYC at Lake Force. Contact: Dave Blacksten, 880 NW 6th Ave., Canby, OR 97013. 503/266-4186.

LUBBOCK, TEXAS—June 10-11. NAMBA Dist. 7 points. Enduro, Heat Racing hosted by the West Texas Water Wizards at South Park Inn. Contact: Bob Baker, 1915-43rd Lubbock, TX 79412. 806/744-8136.

ANTIOCH, ILLINOIS—June 11. NAMBA Dist. 4 Points and Heat Racing hosted by the North Shore Model Boaters at Warren Kreuseher Lake, Rt. 2. Contact: Mary Bowen, 2224-20th St., Zion, IL 60099. 312/746-3363.

HARTFORD, CONNECTICUT—June 17-18. NAMBA Deep Vee racing Classic hosted by the Greater Hartford MBC and Loctite Corporation at the Connecticut River, junction 191 & 86. Contact: Robert E. Triggs, Jr., 3 Riverside Dr., Vernon, CT 06066. 203/871-0134.

TOLEDO, OHIO—June 18. IMPBA Unlimited race hosted by Propwash Unlimited at Lake Moon. Contact: Ron Haddad, 717 Chestnut St., Toledo, OH 43604. 419/243-4352.

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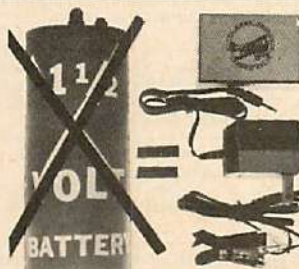
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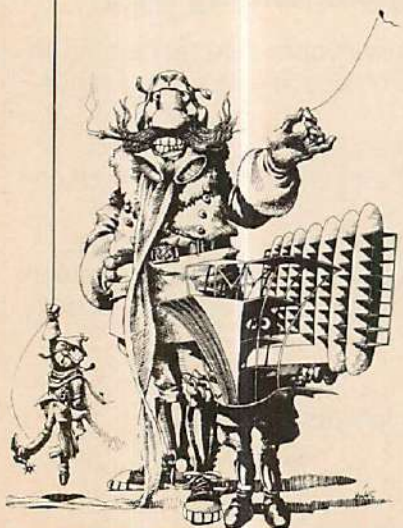
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KENOSHA, WISCONSIN—June 18. IMPBA Heat Racing mono and hydro hosted by the Badger Model Boaters at 194 and E. Contact: Gary F. Mueller, 29306 Durand Ave., Burlington, WI 53105. 414/763-7744.

FLINT, MICHIGAN—June 23. IMPBA Record Trials hosted by WMRBA at Thread Lake. Contact: Lou Torovich, 17641 Rowe, Detroit, MI 48205. 313/526-6909.

BELLE ISLE, DETROIT, MICHIGAN—June 24. IMPBA Hydro Only Multi Race—Mini Gold Cup hosted by WMPBA at Blue Heron Lagoon. Stay over one day and see the full-size Unlimited boats run on the Detroit River. Contact: Lou Torovich, 17641 Rowe, Detroit, MI 48205. 313/526-6909.

TACOMA, WASHINGTON—June 24, 25. NAMBA Dist. 8 points, heat racing, Deep Vee hosted by the Puget Sound MBC at Lake Waughop. Contact: Jerry Dunlap, 6702 Mt. Tacoma Dr., S.W., Tacoma, WA 98499.

CHESAPEAKE, VIRGINIA—June 25. IMPBA Heat racing all classes hosted by the Old Dominion Model Boat Club at Indian River Lake. Contact: Randy Williams, Rt. 1 Box 234, Camden, NC 27921. 919/336-2259.

WHEELING, ILLINOIS—July 1. IMPBA 1/4 mile record trials hosted by the Racing Dolphins at Potawatomi Pond. Contact: Mert Mishnick, 914 Robert Dr., Mt. Prospect, IL 60056. 312/437-2094.

BRISTOL, PENNSYLVANIA—July 1, 2. IMPBA Multi Races hosted by the DelVal MPBA at Magnolia Lake in Silver Lake Park. Contact: Nick Monti, 402 Swarthmore Ave., #A, Ridley Park, PA 19078. 215/487-0246.

CAMPBELL, CALIFORNIA—July 1, 2. NAMBA Dist. 9 points heat racing hosted by the Marine Modelers of Santa Clara at Percolation Ponds. Contact: Nick Gill, 887 Wolfe Rd., Sunnyvale, CA 95086. 408/735-0698.

CHICAGO, ILLINOIS—July 2. IMPBA heat racing hosted by the Marquette R/C Boat Club at Marquette Park. Mufflers required under 95db. Contact: Randy Vitek, 5850 W. 55th, Chicago, IL 60635-5405.

LONGVIEW, WASHINGTON—July 4. NAMBA Firecracker Classic Deep Vee race hosted by the Longview R/C Boaters at Lake Sacajawa. Contact: Rick Hollister, 1220 Ocean Beach #6, Longview, WA 98632. 206/423-6202.

NAPLES, FLORIDA—July 8-15. NAMBA Nationals hosted by the Transom Twisters at Lake Walden. Contact: Sid Broughton, 831-5th Ave., So., Naples, FL 33940. 813/262-5951 or Tony Irmlinger, P.O. Box 7785, Naples, FL 33940. 813/262-3555.

ONTARIO, CANADA—July 8-9. IMPBA heat racing hosted by the Metro Marine Modelers at Island Lake. Mufflers mandatory. Contact: Chris Bridel, 33 Mistlethorpe Sq., West Hill, Ontario M1E 4P3. 416/284-4083.

COUNTRYSIDE, ILLINOIS—July 8, 9. IMPBA 2nd Annual Sundown Championship Race hosted by the Minute Breakers at Lake Ida. Pre-registration. Contact: Ben Beaird, 1501 Deerpath Lane, LaGrange, IL 60525. 312/352-8374.

CHESAPEAKE, VIRGINIA—July 15. IMPBA record trials all classes hosted by the Old Dominion MBC at Indian River Lake. Contact: Randy Williams, Rt. 1, Box 234, Camden, NY 27921. 919/336-2259.

FLINT, MICHIGAN—July 15, 16. IMPBA record trials hosted

by the Wolverine MRBA at Thread Lake. 10% boats only. Contact: Lou Torovich, 17641 Rowe, Detroit, MI 48205. 313/526-6909.

LANSING, MICHIGAN—July 22. IMPBA heat racing hosted by the Lansing MBC at Riverfront Park. B mono, B hydro, B outboard, DE mono, DE hydro and scale hydro. Contact: Dave Homer, 785 Twinbrook Dr., Lansing, MI 48820. 517/669-3976.

FARMERS BRANCH, TEXAS—July 22. IMPBA 1/16 mile straight and 1/4 mile oval racing hosted by the Dallas R/C BC at Lake Nitro. Record trials on 22 July, heat racing on 23 July. Contact: Rip Holdridge, 3019 Oradell Lane, Dallas, TX 75220. 214/357-8926.

FLORISSANT, MISSOURI—July 22, 23. IMPBA class heat racing hosted by the St. Louis Thunderboaters at Chain of Rocks Lake. Contact: Richard Zimmerman, 2555 Greenbrier, Florissant, MO 63033. 314/921-3824.

COLUMBUS, OHIO—July 22, 23. IMPBA Multi racing hosted by the Piranha MBC at I-270 and Williams Rd. Contact: Call Brey, 6639 Evening St., Columbus, OH 43085. 614/888-0909.

HAMMOND, LOUISIANA—July 22, 23. IMPBA record trials hosted by the Southern Gentlemen Racing Association at Millers Pond. Contact: Louis J. Durand Jr., 4400 Ithaca St., Matarie, LA. 504/887-4986.

SEASIDE, CALIFORNIA—July 22, 23. NAMBA Dumas Deep Vee Classic hosted by the Marine Modelers of Santa Clara at Roberts Lake. Contact: Don Reutlinger, 10571 Rampart Ave., Cupertino, CA 95014. 408/252-4987.

SAN FRANCISCO, CALIFORNIA—July 22, 23. NAMBA Scale meet hosted by the SFMYC at Spreckel's Lake. Contact: H.L. Duval, 745 Shelter Creek, San Bruno, CA 94066. 415/873-3459.

KENT, WASHINGTON—July 22, 23. NAMBA dist. 8 points heat racing, Deep Vee hosted by the Seattle Model Yacht Club at Kent Lagoon. Contact: Merrily Hornell, 2533-N.E. 24, Renton, WA 98055. 206/226-7454.

YONKERS, NEW YORK—July 29, 30. NAMBA Deep Vee racing hosted by the Empire Racing Association at Tibbets Brook Lake. Contact: Fred W. Coleman, 23 Park Circle, White Plains, NY 10603. 914/428-5886.

INDIANAPOLIS, INDIANA—July 29, 30. IMPBA record trials hosted by the Indy MBC at Dandy T Lake. Contact: Bob Finley, 740 Mt. Ranier Dr., Indianapolis, IN 46217. 317/786-9048.

FLINT, MICHIGAN—July 29, 30. IMPBA record trials hosted by the Wolverine MRBA at Thread Lake. Contact: Lou Torovich, 17641 Rowe, Detroit, MI 48205. 313/526-6909.

BUFFALO, NEW YORK—July 29-30. IMPBA heat racing hosted by the Buffalo Model Powerboat Club at Delaware Park Lake, NY 198 and Elmwood Ave. Contact: Walter Russ, 256 Hillside Dr., Orchard Park, NY 14127. 716/662-5124.

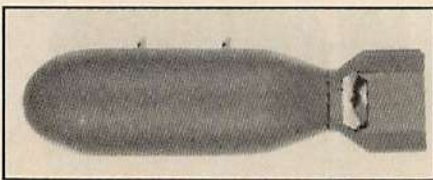
MEMPHIS, TENNESSEE—July 29, 30. IMPBA Scale Internats hosted by the Memphis Society of Modeling at Chickasaw Gardens Lake. Contact: Billy Brimmon, 901/683-1084.

DATELINES

FLINT, MICHIGAN—August 7-12. IMPBA Internats. ☐

Flying Report

news and comment



VORTAC MFG. CO., P.O. Box 469, Oak Lawn, IL 60453, has something new for sport and scale flyers alike. This World War 2 American type bomb scales to approximately 500lb size for Top Flite stand off kits and 1000lb for the House of Balsa 40 powered P-51 Mustang. The bomb is hollow and may be filled with chalk, flour, charcoal ash

etc. On impact it separates into two halves and discharges the powder giving off a puff of smoke. The two halves may be snapped back together and used again. The bombs are made of high impact polypropylene and their molded on shackles are compatible with Vortac's bomb Release Mechanism. \$5.98 each and \$9.98-2 per Pkg.

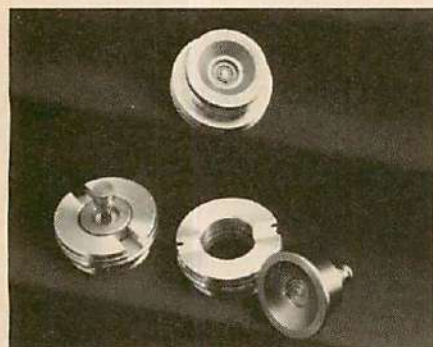
FUSITE DIVISION, EMERSON ELECTRIC, 6000 Fernview Ave., Cincinnati, OH 45212. "Simply replace the original plug in your popular 1/2-A engine with a new GloBee plug, and you'll increase engine output by 1,000 RPM or more!"

That's the powerful claim being made by Fusite Division of Emerson Electric Co. for their brand new 1/2-A replacement plugs,

JULY 1978

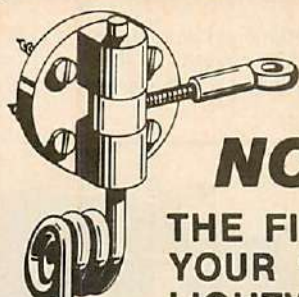
based on lab and field tests of prototype models. In fact, they say, some of the first prototypes have already been flown in competition and immediately helped set new class records.

Greater power and longer life is provided by the high strength alloy coil, patented spiral tip, and blowproof glass seal, according to Fusite sources. Initial pricing is said to be competitive with other 1/2-A replacement plugs now on the market.



The new plugs come in two models—Racing, with a hemi-head glow button and "Superloy" coil, and Sport, with a conical button and standard coil. Both are packaged with individual, interchangeable clamps and gaskets. Glow button changing is done easily and quickly with a standard 1/2-A wrench.

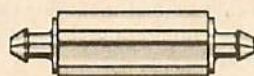
The addition of these new plugs to the GloBee line makes Fusite the world's only



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A sophisticated piece of lab quality equipment for cycling ni-cd batteries. Accurate, dependable, and attractive.

--Automatic discharging and recharging of both receiver and transmitter batteries, simultaneously or independently.

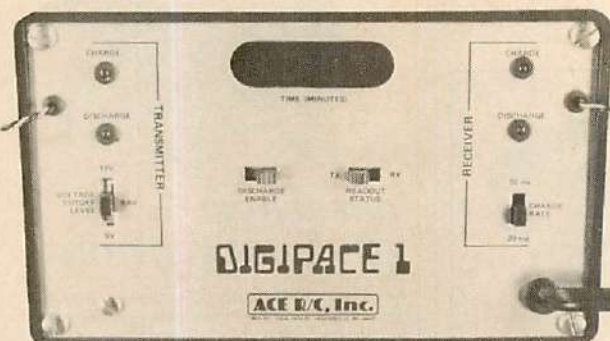
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Tornado

propellers with the true helical pitch can do more to propel air, create thrust and be propelled by air, at discretion of user.

Made of polyester, do not boil or color.

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5-3	5-4		
5 1/2-3	5 1/2-4	each	30¢
6-3	6-4		35¢
7-4	7-6	7-8	50¢
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11-4	11-6	11-8	\$1
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2 Blade Pusher			
5 1/2-3			
5 1/2-4	6-3	6-4	35¢
	8-6	8-8	85¢
	9-6	10-6	\$1

3 Blade

3 Blade Tractor			
5-3	6-3	6-4	50¢

3 Blade Pusher			
6-3			50¢

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Looks like metal. Color all the way thru.			
Tractor			
7-6	7-8	\$1	
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9-6			
10-6	10-4	\$1.50	
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10-6		\$1.50	

GRISH BROS.
ST. JOHN, INDIANA 46373

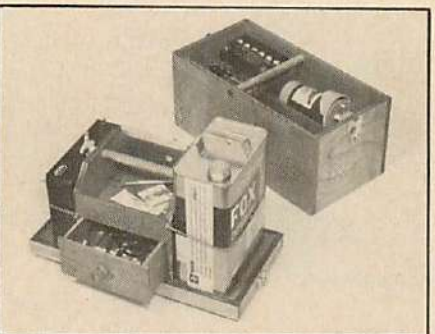
manufacturer of a complete line of glow plugs.

Production has been scheduled to deliver an adequate quantity of the new plugs to model dealers by early Spring.



BoLINK P.O. Box 80653, Atlanta, GA 30341 takes you back to the good old days! Remember the '32 Ford Tudor? BoLINK has it in 12th scale. 1978's most unique body style! Made from Tuffak - available clear or painted. Interior also available. Order from your favorite dealer/distributor or write direct. Also, a '77 Ford pickup truck. Be the first in your club. Remember, when a neater body style is available, it is from BoLINK! Send \$1.00 for a complete catalog and discover the "Quality World of BoLINK". \$2.00 credit with first purchase over \$10.00 when you order catalog.

TWINN-K, INC. P.O. Box 31228, Indianapolis, IN 46231. aj's Division of Twinn-K, Inc. in Indianapolis has released a complete line of replacement 1/8 and 1/12 R/C tires - aj's White Dots. aj's White Dots can be had pre-trued (completely round) with .094 radius on outside edges. The tires are ready to race. They need only to be glued onto the hubs. In addition to the pre-trued feature Twinn-K also offers all tires in FIVE different rubber compounds ranging from soft to very firm closed cell sponge rubbers. Twinn-K is the world's largest manufacturer of racing slicks for model cars and are currently producing over 65,000 tires per day. They offer a complete line of tires for all scales from HO through 1/8 scale. aj's products are available in fine hobby shops everywhere in the world. Racing enthusiasts can get a complete catalog and price list by sending 25¢ to Twinn-K, Inc., P.O. Box 31228, Indianapolis, IN 46231.



MASTER KIT, 6 Fox Rd., Plainville, CT 06062 has released the "Totz-All", a new fieldbox. It was designed for the Pattern, Pylon, and Scale competitive flyer as well as the general sport flyer. One of the primary features of Master Kit's fieldbox, that sets it apart from others on the market, is the detachable power box that the pilot would

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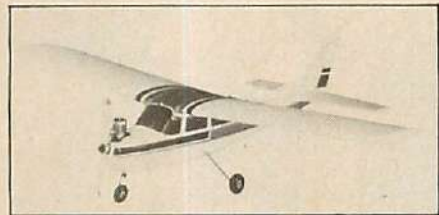
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carry to the flight line. This power box was designed so the modeler could custom design the interior to fit any accessories, battery, power panel and starter motor on the market. Some other notable features are: cabinet grade plywood is used throughout (1/2" Birch veneered both sides and solid core 1/4" plywood); all pieces are precision cut, rabbited and dadoed; complete hardware package (screws, nails, dowels, latches); easy to follow blow-apart drawing with photos. Modelers are requested to inquire at their local dealers. If unavailable, order direct. Dealer and distributor inquiries welcomed. Kit price is \$39.95 plus shipping. Assembled and finished with poly-urethane varnish, \$59.95 plus shipping. Flight items shown in advertising photos are not included.



HEATH COMPANY, Benton Harbor, MI 49022, the world's largest manufacturer of electronic kit products, has announced the latest addition to its line of Radio Control products and accessories, the Delta Products Cessna Skyhawk R/C model airplane.

The Skyhawk, designated RP-1172 by Heath, is offered with complete 3, 5 and 8-channel R/C systems at special discounted prices. It is also available separately. According to a company spokesman, the Skyhawk systems are ideal for beginning R/C pilots because they include everything needed for operation except fuel and starting battery.

The Skyhawk features hot molded wing, tail and fuselage sections and has a 48-inch wingspan. Fuel capacity is from 4 to 6 ounces, and the aircraft is complete with a .25 cubic inch engine. Full R/C systems featuring the Skyhawk and Radio Control gear start as low as \$239.90 mail order. For further information, write for a FREE catalog to: Heath Company, Dept. FM, Benton Harbor, Michigan 49022.



MIDWEST PRODUCTS CO., 400 South Indiana St., Hobart, Indiana 46342. Following the success of the Axiflo[®] RK-40 Ducted Fan, Midwest Products have announced the availability of the RK-049. This kit is designed for use with a Cox Tee Dee .049-.051 size engine. All of the pieces for the kit are

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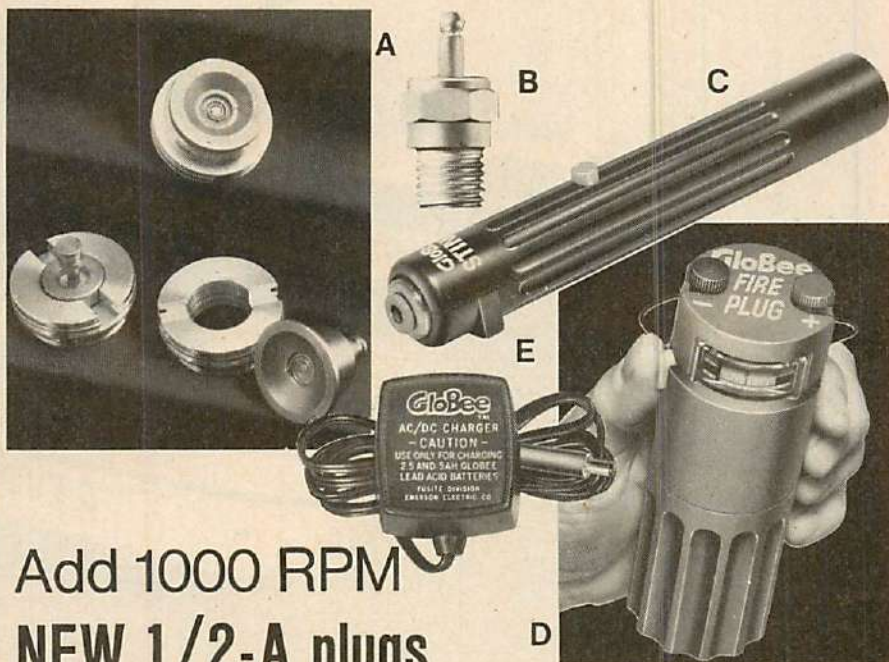
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Join the GloBee Team!

Now you can have GloBee leadership performance from a growing family of improved model products, featuring:

A 1/2-A PLUGS: Prototypes immediately set new records! Get at least 1000 more RPM, greater power and longer life by replacing the plug in your popular 1/2-A engine with a new GloBee—at competitive prices! Racing models have new high strength coil; both Racing and Sport plugs have patented spiral tip and blow-proof glass seal. Change heads with standard wrench.

B GLOW PLUGS: Standard line of GloBee glow plugs for larger models put more sting in your engine! Spiral glow element and leakproof seals are equal to the hottest engines you can buy. Racing, Racing², RC and Sport models available in longs and shorts.

C STINGER: Cordless, self-contained 1/2-A starter delivers over 100 starts on a full charge. No external battery or dangling cords! Rechargeable lead acid cells (included) will start the crankiest engine from .010 to .051 cid. Shroud protects shaft and bearings. GloBee 4.5 VDC charger recommended.

D FIRE PLUG: Integrated glow plug starting system for optimum power. Rheostat control matches current to weather, fuel and plug choice. 0-10 amp ammeter indicates power output, also shows if plug is burned out or engine flooded. GloBee 2.5 VDC charger recommended.

E CHARGERS: Ask your model dealer about special combination offers on matching chargers—2.5 VDC for the Fire Plug and 4.5 VDC for the Stinger—at big savings.

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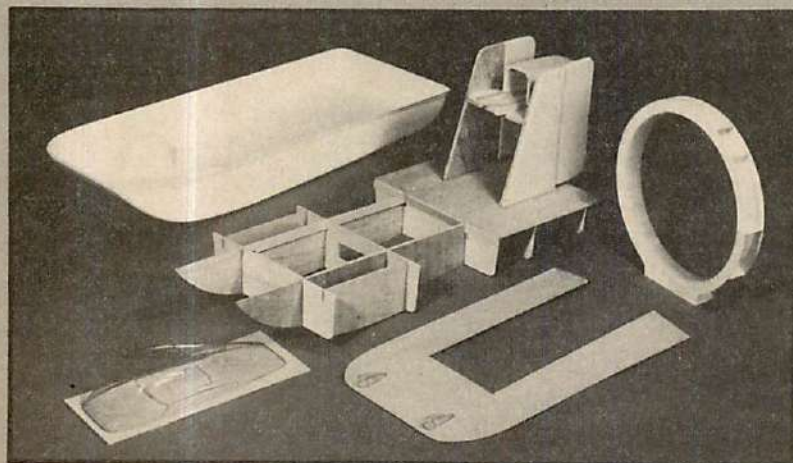
Kit B-27

Length 30" Beam 11"

\$39.95

About The Kit:

Designed for 2 channel R/C or tether control and .15 to .35 engines. Maintaining top quality and simple construction. All Balsa and Plywood parts are accurately die-cut, with precision vacuum formed Plastic hull and cabin. Hardware package including R/C hardware. Full sized Plans, plus Decals for Sport model or Coast Guard version.



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Kit E-14

Wingspan: 37 1/2"

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Piper Cherokee

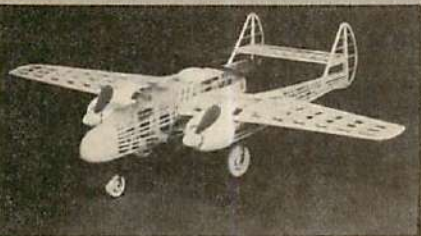
About The Kits:

Unique because such amazing scale detail is achieved with these kits that are relatively easy to build. They can be built many ways, such as: Rubber Powered (as supplied), Electric Motor, .020, .049 Engine Power. For Free Flight, Control Line, R/C (Single or 2 channel) or Static Scale. Any version makes a museum-like model. Frame members are accurately Die Cut from the finest quality Balsa Wood, and every part is numbered to insure fast and accurate assembly as clearly shown on the easy step-by-step plan. Highly detailed Plastic Parts simplify assembly adding a touch of realism-in-miniature. Covering material, formed wire parts, Wheels, Decals, Hardware that includes Control Line parts is a partial list of the contents of these fine kits.

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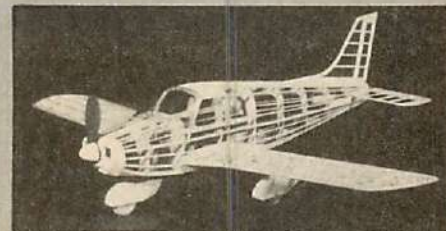
The Beautiful Cherokee is manufactured by one of the greatest names in American Aviation, Piper Aircraft Corporation.

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The "Widow" became feared by enemy aircraft because they were never sure of her presence in the blackness of night flying, and knew of the devastating effect of the four 50 caliber machine guns coupled with four 20mm cannons.



P-61 Black Widow



Kit E-15

Wingspan: 37 1/2"

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either molded or machine cut, insuring a precision fit. Special features of the kit include a jig for properly aligning the stators, a glass filled nylon motor mount and a tail-cone that serves as a 1½ ounce fuel tank. Full size drawings and a comprehensive instruction booklet are included. Performance tests show a thrust of 16.00 oz., using a Cox Tee Dee .049, 25% nitro and 20,000 rpm. Retail price is \$38.95. An injection molded foam A4D Skyhawk will be released to be flown with this unit. See your dealer today and go with Axiflo!



PACTRA INDUSTRIES, INC., Los Angeles, Calif., offers a new line of specially formulated, 2-component system finishes that are designed to handle the special problems of gas powered model builders. Aero-Poxy's super tough, totally fuel proof, mar-resistant, one-coat "armour finish" is designed to endure the punishment of rough handling, wear and fuel spillage, without affecting its durability or good looks. Pactra points out that their unique formulation utilizes a non-irritating and non-sensitizing curing agent, that eliminates dermatitic or respiratory problems, and that Aero-Poxy is free of lead hazards and non-toxic when dry.

Aero-Poxy consists of a Color Base, available in Phantom Black, Radar White, Rocket Blue, Solar Orange, Fighter Green, Trainer Yellow, Marauder Red, Sabre Aluminum, Gloss Clear and Primer (8 oz. Only), and a choice of a Super Hi-Gloss Catalyst or a Flat Catalyst, to give modelers versatility of finish and color mixing capabilities. Suitable for brush or spray application. Will be available in 4oz. and 8oz. cans, plus thinners for brushing and spray in 16oz. and 32oz. cans.


TOP FLITE MODELS, INC., 1901 N. Naragansett Ave., Chicago, IL 60639. Patterned after the original Nobler, the greatest U-Control winner ever flown, Top Flite's most recent release is the Tutor. Perfect for the beginning stunt flyer, the Tutor is also the ideal practice ship for full stunt competition. With the same characteristics that made Nobler a great name in precision flying, this newest and most advanced U-Control aerobatic trainer available continues Top Flite's long tradition of excellence. Designed for .35 engines, the Tutor

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For 35 to 40 Engines
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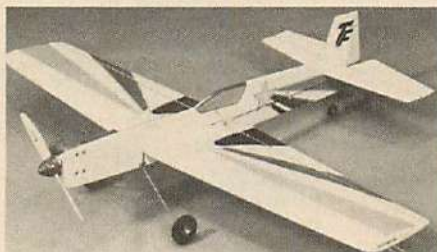
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FM Clinic

tips from the staff

Cowling Ignition Engines

H.A.: Why did some of the old time Free-Flights extend the exhaust stacks out with sheet metal ducts?

ANSWER: Glow fuel is just not as flammable as a 3-1 gas and oil mixture. Ignition type model engines often backfire and a burst of flame lingers very easily around the exhaust stack. If the model is closely cowled and saturated with excess fuel around the exhaust area trouble comes fast. Usually one quick blow will put it out, but within seconds the model can go up in smoke. I've lost three aircraft like this and saved another only by ramming it completely under the hard crust of a deep snowfall which happened to be on the ground at the time. In all cases the fault was mine, too tight a cowling and no stack extension in place at the time. I guess I was a slow learner.

Air Vents

F.L.: A friend suggested I puncture newly doped covering with a pin between each rib bay before exposing the wing to sunlight. Is there any need for this?

ANSWER: Yes, you definitely should. A well doped wing often completely traps the air inside and even a few minutes of hot sunlight can severely bloat the covering, or burst it. I once placed a seven foot freshly

doped wing out in the yard to really dry the dope and returning minutes later I found the covering severely bloated and ready to burst. The tiniest pin hole in the tissue can be made back along the trailing edge somewhere and you will never have a problem.

Pin holes at the trailing edge, clear through both top and bottom covering and positioned in the corner formed by each rib serve you well as a water drain on seaplanes too. Often a little moisture will collect between rib bays (if a model dunks or flips over) and this can be blown out by simply blowing into the pin hole on the top surface and pressurizing the collected water out. It is an easy matter to hold the aircraft at whatever angle is necessary for the water to pocket up where the pin hole is. It works fast and keeps the structure from becoming too saturated with excess of lake inside.

Airfoiled Tail Surfaces

G.L.: Can you suggest any simple methods of building up tail surfaces with at least a slight semblance of an airfoil?

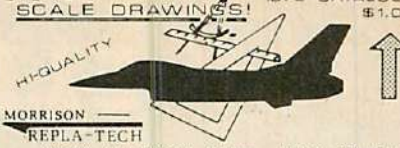
ANSWER: If you've gone down the route of flat sheet balsa tail surfaces you might like to try this. Build up your stabilizer outline out of 1/8" stock (heavier for a larger model). Edge the leading and trailing stab edges with an 1/8" square of spruce if you like (unless this

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will be a problem with your hinges). The stab should also have a spar built in, possibly again of spruce. Don't hesitate to sever all your rib strips where they butt against the spar, we're about to take care of that. 1/16" x 1/8" strips can now be chopped to approximate rib length, one to go on top, another later to be glued along the bottom edge of each rib position. Before these strips are placed however, they should be trimmed with a razor knife to an airfoiled contour. All you need is a quick stroke or two to take off the obvious extra balsa, the final sanding of the airfoil will create the desired airfoil. Once the upper strips are in place, remove from the plan and follow the idea on the bottom surface. As for the elevators, try for a hardwood crossbar and possibly you might like to laminate the sheet, grain running in opposite directions. False ribs are easily added to the stab if you would like them. All in all it makes for a rugged tail and a beautiful piece of woodwork.

Slotting Trailing Edges

S.D.: What is the best way to cut notches in a trailing edge?

ANSWER: I'm not sure there is a best way, but there are several good ways, a little dependent on tools at hand. I prefer to notch trailing edge stock with a motor saw or jig saw. Two quick cuts at each rib position, perhaps 3/32" deep for a 1/16" thickness rib, an 1/8" deep on larger models for 3/32" thick ribs. I then pre-coat the notched area with a little Ambroid. The exposed end grain will tend to drink up the glue through the wood pores, so this little pre-coat of cement seems well worth the extra moments to me.

There are other methods of cutting the notches. Some builders stack two or three hacksaw blades together and one rip of the blade teeth will do it for you. This presupposes the stack of two or three blades will add up to the thickness desired. Usually it will.

A third option is your trusty model knife, it's certainly capable of handling this little task. Do strive for just the right width and depth of cut. Too loose and the ribs will not be a snug fit, too tight is to ask for warps, too deep and the trailing edge loses too much strength. Everything in aviation is a trade-off, just enough will do.

Untwisting Fuselages

D.P.: I have just framed out a rubber model fuselage and found it to be somewhat twisted. Is there a way to straighten such a structure?

ANSWER: Yes, often a few winds one way or the other of a rubber model's motor will twist the framework straight for you. It is quite effective, though it is not permanent in itself. If you let the winds out the twist is right back. What you can do is put in 37 winds or however many does the job and lock the prop in that position. You can then issue cover the fuselage, water shrink it and apply the three or four coats of dope you need for a final finish. Allow to dry well, for hours if possible. The tight covering will now hold your fuselage straight without the winds.

Center of Gravity Position

H.L.: How is the center of gravity of a model determined? It is usually shown around the airfoil position. Is this where it really is?

ANSWER: The center of gravity of a model may be found by suspending it (allowing it to dangle at whatever angle it wants to assume) from a fishline. If you extended the imaginary lines upon which it hangs to a common meeting point, this would be your center of gravity. In practice this is not necessarily where the airfoil is, but somewhere deep within the fuselage in most cases. In a low winged model for instance the C.G. might fall an inch or so above the wing, while on a high pylon Free-Flight the C.G. would no doubt be well below the wing. On a fully symmetrical stunt machine, wing upon the datum line of the fuselage and all that the C.G. might then fall within the datum line of the airfoil. All that is theoretical and need not command too much of your attention. It is usually adequate for a modeler to know just how far back along the airfoil the C.G. is located and simply balancing the model (level) on your fingertips will give you a ballpark idea. It is a good idea to actually mark where a known C.G. position should be, then block up the model on balancing points and weight the finished aircraft (fueled up) until the desired balance is achieved. It should not be fine balanced in the field. The slightest breeze will have an effect on the model, perhaps blowing the tail down, creating the illusion that the model is tail heavy. The height of the C.G. within the fuselage is pretty well determined by the basic design and therefore is not easily changed by the modeler. At times he may wish to raise or lower battery packs or other weighty equipment to adjust it to a small degree.

Two Sides at a Time

G.P.: How can I build up two identical fuselage sides of strips and longerons without having them stick to each other and the plan drawing?

ANSWER: It's not very hard. Start with a flat building surface. Tape the plan down well in several places so that it cannot wrinkle or shift. Next lay a roll of Saran Wrap over it, trim it to length required and tape this down at a dozen points as well. It is to be used instead of the old wax paper routine which ruined the glue joints. Once you try Saran Wrap for this you'll forget wax paper forever. Now pin your longerons down carefully, pins bracketing the wood, not piercing it. You may wish to use small nails for more strength where bends in the wood create pressures too strong for mere pins. Cut the uprights and diagonals to fit very carefully, a snug fit without pressure is what you want. Build the first side as a unit, that is all at once without a thought of the second side. Don't try to cut double pieces as wood sizes might vary a speck. If using acetate based modeling cement pre-coat the end grain before installing with a second coat of cement as the wood's pores drink up the cement like a soda straw.

Once the first side is dry, duplicate the procedure. Leave the first side pinned to the board. Lay another film of Saran Wrap over it, pressing it down over the pin and nail heads as carefully as you can. This will prevent side #2 from adhering to side #1. Lay your second set of longerons down and shim and match the curvature of the first side very exactly. If you use a few nails you will be able to hold alignment well. Add the final cross-pieces and diagonals and all to dry. Remove when dry and they will come apart easily, a perfect pair of sides.

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PHOTOGRAPHY: FRANK TIANO AND BOB HOECKELE

1978's Toledo R/C Exposition



Seventeen year old Bill Bassler is shown at **top** receiving the Best in Show award from Gail Wehner, Miss Weak Signals, for his Wizard pattern ship. Bill also took Best Finish. Deiter Schluter (**above**) received a special appreciation award for his work in pioneering R/C helicopter design over the years.

After 24 years this show of shows is still going strong/**Bob Hoecke**
Frank Tiano

This year's Toledo R/C Exposition was big, busy, impressive and tiring and everything else that its long standing reputation said that it should be. Our hobby/sport seems to be following a steady, even growth pattern that indicates a healthy attitude on the part of those of us who are participating in it—both old and new. As for the products exhibited at the show, there really wasn't anything new in terms of major advances like helicopters, fiberglass and foam construction or the introduction of digital proportional radios were but there were many examples of the polishing and honing of existing techniques and products. There

JULY 1978



R. SHETTLER ENTERPRISES, Pottery Rd., RR 3, Vernon, B.C., Canada V1T 6L6, had the Quadra engine on display, an air cooled, two h.p. gas engine for putting big birds into the air.



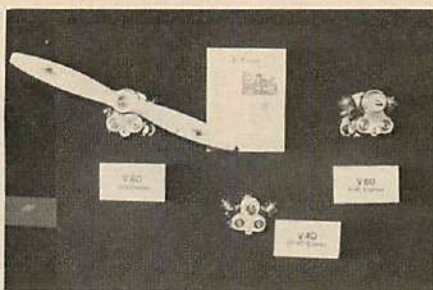
SLIMLINE MUFFLERS had Fred Morgan and Peggy Leonard working hard showing their line of very fine, light and effective mufflers. The one in the photo is made especially for scale ships.



D&B MODEL AIRCRAFT COMPANY had new owner Chris Weiss at left and Bob Dively showing their full line of scale kits including this D&B Yankee all balsa/foam kit with glass cowl and pants.



BUD NOSEN MODELS, INC., Box 105, Two Harbors, MN 55616, had their new quarter scale P-47 Thunderbolt on display along with the P-51 and a new PBV Catalina that's really big.



V-POWER is a new company that was showing a number of belt driven units to enable you to use two .40's or .60's in a V configuration to fly a really big quarter scale airplane.



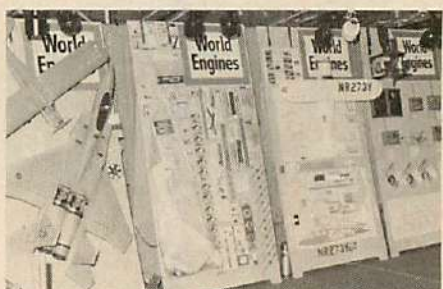
RHOM PRODUCTS MFG. CORP. 924 65th St., Brooklyn, NY 11219 had the ever popular Harold Goldclank showing Rhom's soon to be produced retract gear for quarter scale airplanes. No price



POLARIS PRODUCTS, 2614 Highway 97 N., Kelowna, B.C., Canada, V1K 4J4, is a Canadian importer that had on display, among other things, a very beautiful quarter scale Piper J-3 Cub kit.



ANDY SHERBER, 18497 Brentwood, Livonia, MI 48152, was showing his 1/3 scale Pitts S-1 semi kit. Plans are available as well as many of the special parts such as wheelpans and canopy.



WORLD ENGINES, 8960 Rossash Ave., Cincinnati, OH 45236, had their very large, impressive booth that seemed to hold everything that they make or import. They were all very helpful people.



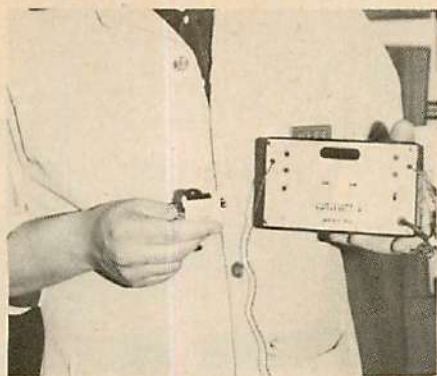
AMPS LTD., Station House, Hartham Lane, Herts, England, was showing their flight box panel with built in fuel pump for \$69. Also their rubber insulated starter battery holder.



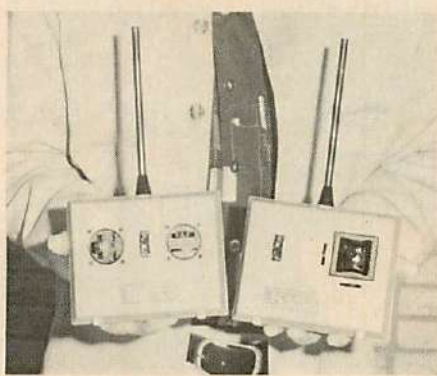
MIDWEST MODEL SUPPLY CO., 6929 W. 59th St., Chicago, IL 60638 had Jerry Nelson with his impressive, complete line of HP engines and accessories in both airplane and marine versions.

show and even longer to explain exactly what they were offering us. So what I have done is pick out a few that I didn't witness at the New York show or a few that had something a bit different to offer. In no way am I deliberately leaving anyone out but as I said, time and space is a bit limited.

One of the neatest contraptions on display is offered by Eastcraft Specialty Products, PO 25, Irwin, PA 15642. The Lectra-Starter as it's called is a self-contained starting unit that bolts to the front of your airplane and provides automatic restarting at will. For further info, drop the boys at ESP a self-addressed, large, stamped envelope. For those of you who always wanted a ready to fly, competitive, pattern ship, look no longer



ACE R/C INCORPORATED, Box 511H, Higginsville, MO 64037 had Tom Runge showing off their new mini servo as well as Aces new automatic battery charger and cycler in one unit.



KRAFT SYSTEMS, INC., P.O. Box 1268, Vista, CA 92083. Dave Schidell helped present their new Sport Series 2-channel radio in single and dual stick versions. Interchangeable crystals on 27.



TOP FLITE MODELS, INC., 2635 S. Wabash, Chicago, IL 60616, displayed their exciting .60 powered Corsair kit for Stand-Off Scale. It's in the works and should be ready by Christmas 1978.



COVERITE, 2779 Philmont Ave., Huntingdon Valley, PA 19006, had Art Kramer diligently ironing on Coverite. Art figured that he ironed on 739 feet of Coverite during the 3-day show.



MODEL RECTIFIER CORP., 2500 Woodbridge Ave., Edison, NJ 08817, had Frank Ritota showing their Mabuchi Electric power system for \$129.95. The battery also runs the airborne components.



HEATH COMPANY, Dept. FM, Benton Harbor, MI 49022, had a large professional display of all their products that applied to R/C flying including weather instruments. We could use 'em.



BILL'S MINIATURE ENGINES, 1325 Carol Dr., Memphis, TN 38116 had Bill McGraw showing the Rossi R-61 FI R/C rear exhaust engine. A fine pattern engine. \$175 with a muffled pipe.



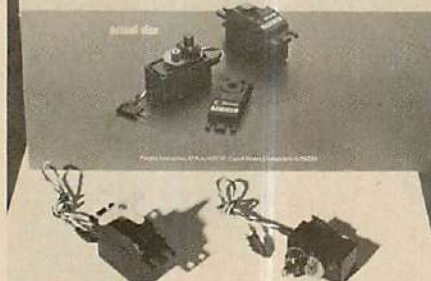
AIR/LAND/SEA a division of **D.I.C.E., INC.**, is offering a whole range of power panels. Each panel can be individually etched with artwork that you provide.

cause Utopia Enterprises Co. from Jefferson Mo. 65101 has just the ticket. Utopia is the name of the ship and is a well known competitor. The ship comes fully assembled, including Rhom retracts and fuel tank. Just finish it in your favorite paint, install the servos and go win a contest. The price is close to \$500 but considering the amount of work and material, it's a good buy. The House of Balsa trekked all the way from California to show us a F-82 Twin Mustang built by me. This was accomplished by using two of their outstanding P-51D kits and two Super Tigre .35 Mk. II engines. Flight tests are being conducted during the 3rd week in April and if the ship handles well it may become a limited production kit.

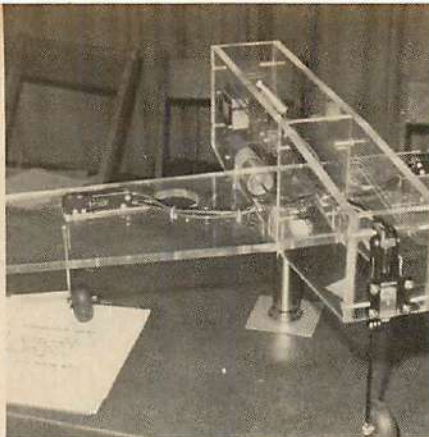
The House had their beautiful Candy Man P-51 on display as well. Another scale model that looked kind of nice was the YAT-28 from Tri R Models, Wickliffe, Ohio. This kit features all top quality wood and pre-cut parts as well as all accessories to build a beautiful model suitable for stand off scale competition. The firm also offers a new Mooney 201 in the same fashion. Aside from the House of Balsa's fine line of 1/2A kits, the neatest little number in Toledo might have been the KFIR C2 delta fighter offered by JM Glascraft. This ship features a fiberglass fuselage and an all up weight of only 23 ounces. Very neat indeed. For the rubber powered enthusiast, check into the old time scale and glider offerings just rekit by

Easy Built Models from Beamsville, Ontario LOR 1B0. The leader in "why didn't I think of that items", Robart Mfg., Box 122 Wheaton, Ill. 60187 displayed their new, rugged retracts that offer rotating and conventional modes. These units are intended for 40 to 60 size models and appear to be very well engineered. I can't wait to try them in my new Bob Hollman Corsair! "Cousin" Don Sobbe from Vortac Mfg. Co. PO 469, Oak Lawn, Ill. 60453, showed us his new exploding bombs to go along with his fantastic, foolproof bomb release mechanism. These bombs retail for \$9.95 and will open up upon impact and spill out whatever you stuff inside. Powder seems to work quite well. Best of all the bomb may be re-

The Futaba S20. We put a lot of servo into our little servo.



FUTABA INDUSTRIES, 630 W. Carob St., Compton, CA 90220, was showing their new super mini servo. It weighs .85 ounces and develops 22.2 oz./in. of torque. List price is \$39.95.



SONIC SYSTEMS, P.O. Box 191, Whippany, NJ 07981, had Bill Wardlow showing his new Turfmaster retracts that feature a double locking hydraulic system that guarantees durability on grass.



AEROMOBIS DESIGN, Box 325, New York, NY 10009, had John and Kathy Heisch showing the ZOZ 35 a ship made of Fome-Cor construction which is strong and quick and finishes without sanding.



MIDWEST PRODUCTS CO., 400 South Indiana St., Hobart, IN 46342 had their new A4D-1 Skyhawk ARF all-foam ship which is designed for use with the Axiflo RK-049 ducted fan.



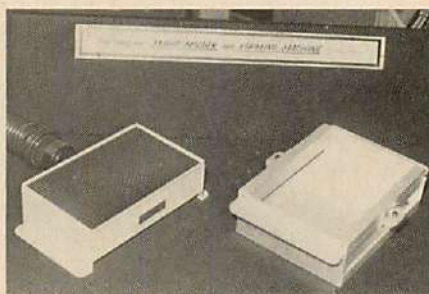
AMERICAN R/C HELICOPTERS, 23811 Via Fabricante, Mission Viejo, CA 92675, had their new four-bladed, fully aerobatic, rigid rotor helicopter on display. A real step forward in choppers.



LONDON R/C HOBBY CENTRE had Florence Schoonard and Pat An Wheeler helping Dieter Schluter show his Schluter Bell 222 and Heli-Boy choppers. These are very impressive machines.



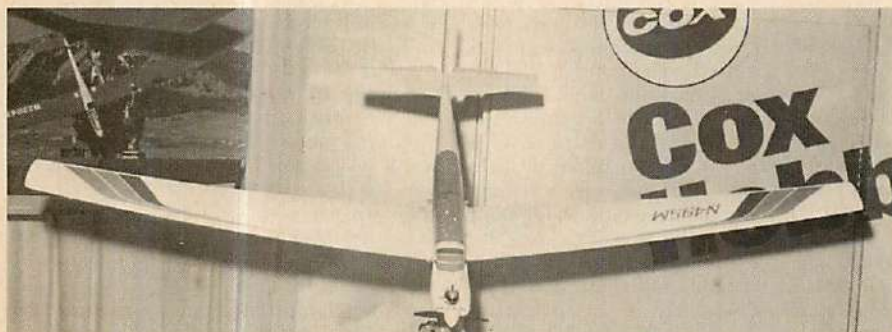
INDY R/C SALES, INC., 10620 N. College Ave., Indianapolis, IN 46280, had Bill Stum, Bev Goad and Jim Goad showing their fine lines and telling about their very efficient and helpful organization.



WING MANUFACTURING, 15 Morgan St., Crystal Lake, IL 60014, was showing their Magic Molder and forming machine. It works with your oven and vacuum cleaner. List price \$99.95.



CONCEPT MODELS, Box 7335, Madison, WI 53711, released their new Fleet Biplane to the public. It is of the same quality as their other fine kits, The Travel Air and Kraft Super Fli.



COX HOBBIES INC., 1505 East Warner Ave., Santa Ana, CA 92702, was showing their new Sportavia, a ready to fly 2-channel R/C trainer. The ship has a 70 inch span.

sealed and used over and over again for contest after contest or for great fun flying. In the trainer department, Sig unveiled their new Kiwi while Amco showed off their new Big H, a revised H-Ray. Not to be outdone, Carl Goldberg displayed his new Skylark 56 Mk. II. The trainer of trainers may be the Genie offered by Custom Model Products in Brockton, Mass. This is a very deluxe kit capable of standing up to the novices mistakes and still providing the experienced flyer with near pattern performance just by increasing the throws on the control surfaces. For Golden Era fans, G.S. Products Corp. Intl. showed their new Stinson Reliant done in the same manner as their very successful Howard DGA Jobmaster. These



R.F. ENTERPRISES, 106 N. Main St., Arlington, OH 45814 had Rick Williams introduce the Servo Gard which responds to loss of signal by throttling back your engine servo immediately.



VORTAC MANUFACTURING CO., P.O. Box 469, Oak Lawn, IL 60453, introduced their new exploding bomb to go along with their bomb release mechanism. Load it with flour, reusable.



CARL GOLDBERG MODELS, INC., 4734 W. Chicago Ave., Chicago, IL 60651, had Carl showing his new Skylark 56 Mark II. A simplified and improved version of the original. List price is \$44.95.



DAVE PLATT MODELS INC., 6940 NW 15 St., Plantation, FL 33313, had Dave showing his Duellist Mk. 2 twin .40 pattern ship. The kit is as impressive as it's price, \$79.00.



WINGS ENGINEERING, 19 Sea Beach Dr., Stamford, CT 06902, showed their SonoTrak, a speedometer/tachometer for use with engine powered models that works with the airplane in flight.



ASTRO FLITE, INC., 1377 Beach Ave., Venice, CA 90291, has Smiling Bob Boucher showing their full line of airplane kits and electric flight equipment including this geared unit.



BOLINK INDUSTRIES, P.O. Box 80653, Atlanta, GA 30366, had the man, Bob Rule, proudly displaying an incredibly complete line of R/C cars and accessories. For any information, contact him.



TWINN-K INC., P.O. Box 31228, Indianapolis, IN 46231 had pretty Lauren Winn displaying their White Dot R/C tires that are available in many sizes and 5 different rubber compounds.



PARMA INTERNATIONAL INC., 4651 West 130th St., Cleveland, OH 44135, is offering their line of 1/8 and 1/12 scale clear bodies along with a full line of R/C racing car accessories.

two kits offer all machine cut spruce, plywood and balsa parts for a true scale aircraft.

Radio manufacturers seemed to be trying to outdo each other at Toledo this year. KRAFT showed their new tiny servo as did Ace, Futaba and Royal. Cox displayed their new line of competition radios as did Ace R/C and a few others. Millcot and Variant are coming along strongly by being innovators in their field. Whew, you'd have to be an electrical genius to understand all the technical data these guys throw at you! The big deal in the radio field this year could be the Ace transmitter with 2 dual rate functions and reversible servos, in kit form for less than \$300. Bob Aberle will keep you posted

on that one.

I guess I really could go on and on about the multitude of items shown but we're running out of space. Let's see if I can sneak in a few quickies. Rhom's new 1/4 scale retracts were fantastic; so were B&D's. Bob Violett's new Skyhawk II in Israeli colors looked great, so did RS's Mig 21 in Arab livery. Dave Platt Models Inc. and Dave Platt Models both showed a Duellist Mk II and a Duellist respectively. Both ships looked good to me. Sure Flite's little .10 powered "Pete" is a real jewel. I really liked Master Kits new flight box that separates into 2 separate units for the competition flyer. D.I.C.E. Industries showed power panels for every application of modeling. D.A.E.

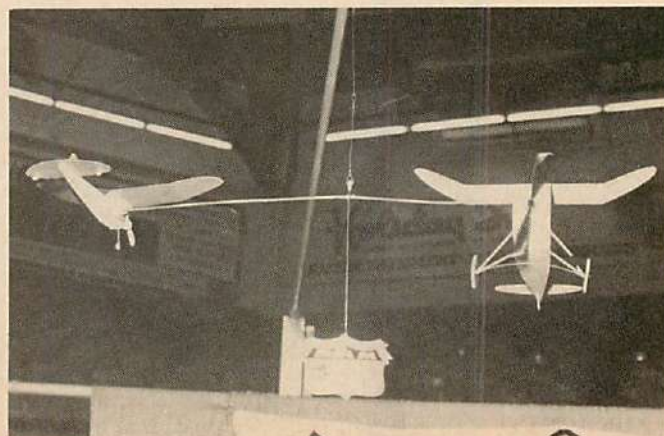
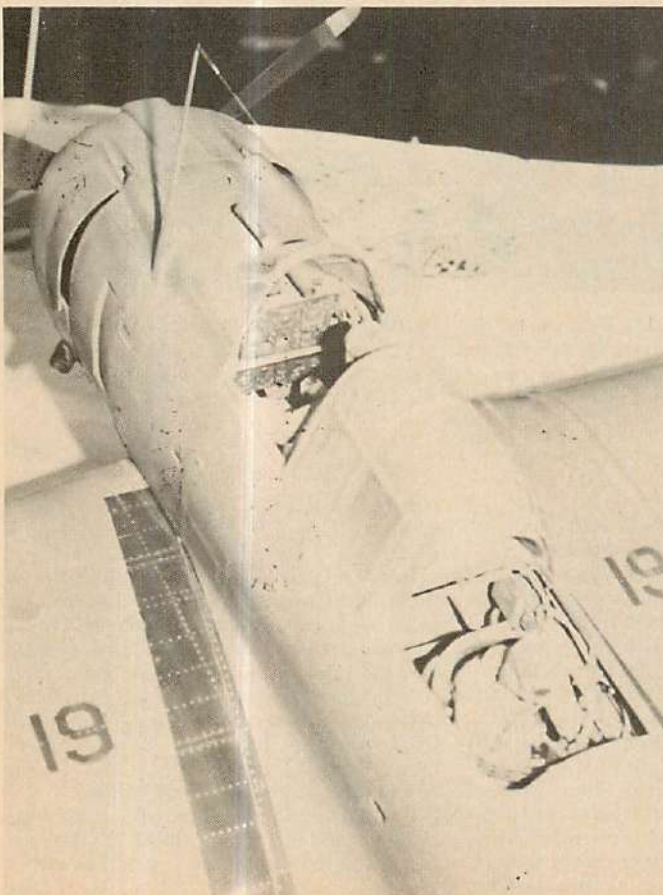
has one that reads and writes. You know, come to think of it, I didn't see anything I didn't like. That's the problem!

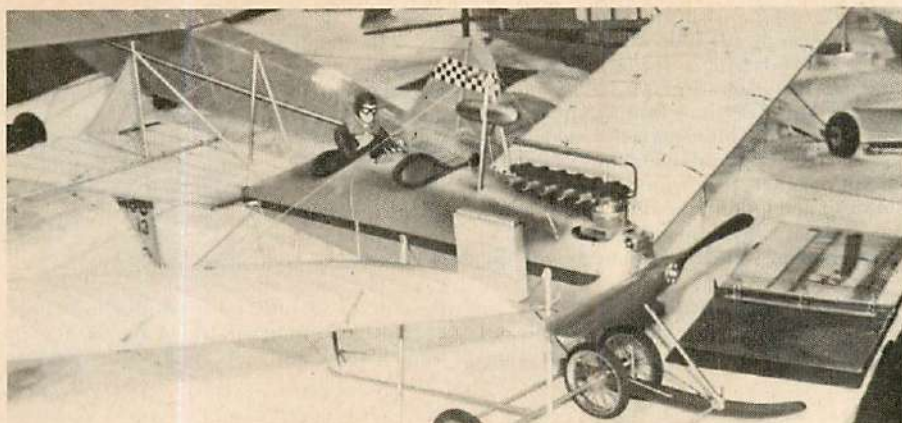
In closing, all I can say is that if you're in the Toledo area next year around the first week in April, stop in at the Sports Arena and take a peek. If you are not that fortunate, do what I did and jump a plane, get a train, rent a boat, drive a car, motorcycle, skateboard or skis, but whatever, get there. Oh, by the way, bring your Brownie cause there's so much to see. We wouldn't want you to miss or forget a single thing.

If you can't do any of the above, wait till next year and buy a copy of FM. It's the next best thing to being there yourself —FRANK TIANO



Seventeen year old Bill Bassler's Wizard (**top left**) took both Best Finish and Best in Show. 1/2A SOS was well attended (**above**), the House of Balsa supplied the trophy. Dave Platt's Douglas Dauntless (**left and bottom left**) took the first place honors in Military AMA Scale. It was beautifully weathered and the cockpit detail was flawless. The old timers were in attendance with Gordon Pearson's Berkely Brigadier taking first place (**below**) and two tiny old timers making endless circles above Joe Beshar's head, Joe's version of a halo maybe?





Bob Vail's Fokker Spider (top) took third place in Military SOS aircraft. Jerry Spallone of Fort Wayne, Indiana, made 2nd in SOS Military Scale with this Dornier Do 335A which featured two engines, a puller and a pusher (above). It was a year for big ships, but the biggest was this 1/2 scale Aeronca shown being hoisted into place (below).



1978 Toledo Show Results

Best of Show

Bill Bassler The Wizard

Old Timer

1. Gordon Pearson Berkely Brigadier
2. Bill Clipper New Ruler
3. Steve Bozercavitch Mercury

Sport Bi-Plane

1. Jim March Pulsar
2. John Wolf Stinger
3. Don Foster Dreamer

Military Stand Off Scale

1. Dale Ketterman BF-110 Messerschmidt
2. Jerry Scallone Dornier 335A
3. Bob Vail Fokker Spider

Non-Military Scale

1. Ed Wisser Smith Miniplane
2. Casey Solosky Waco F-3
3. Jim Bratson Pitts Special

MonoKote

1. Dan Deluca Pathfinder
2. Tom Ingram Flying Quaker
3. John Wolf Stinger

Pylon Racers

1. George Simpson Toni
2. Ken Hunt Toni
3. Bob Reuther Pole Cat

Military Scale

1. Dave Platt Douglas Dauntless
2. Ed Wisser Albatross D-5
3. Mark Minnig Fokker E5

Helicopter

1. Bob Haten Jet Ranger
2. Larry Cathman Jet Ranger
3. Dave Darr Jet Ranger

Sailplane

1. Ken Bates Manx
2. Charles Kelly Spartan I
3. Albert Migley LMG 3100

Best Finish

1. Bill Bassler The Wizard
2. Duane Neefe Mach One Black Magic
3. Eric Meyers Trion

Original Design

1. Bill Keller A-Star
2. Bill Vellecia Agitator
3. Bob Hellman, Jr. Wildemiere

Non Military SOS

1. Al Krepps Pitcairn Mailwing
2. Don Gruert Starduster Too
3. Skip Eversaul Waco UPF-7

1/2A SOS

1. Bill Wilkin Jenny
2. Keith Shaw DH Comet
3. Ken Kalanick Chipmunk

R/C Cars

1. John Carey Ferrari Form. I
2. Irv Enensol Wayne Palmer Special
3. Rick Davis Porsche 435

A simple, easy to build trainer is what **Howie Applegate** was aiming at when he designed this ship. It's called the . . .

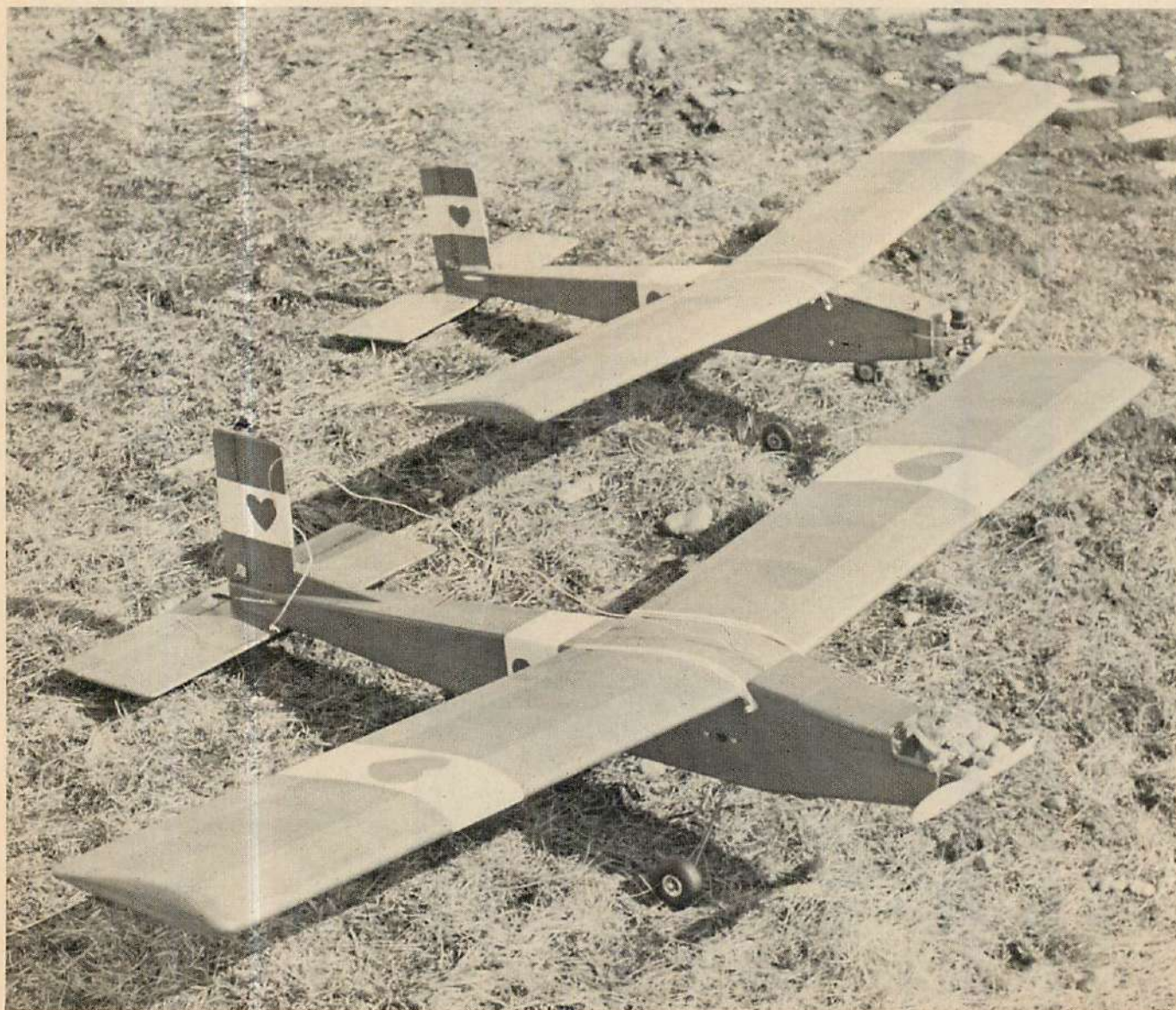
The Boxcar is not a beauty, but a good first (or second) airplane. It is economical and easy to build, a second generation airplane. Her baby sister is a 3-channel .049 powered ship, weighing in at 23 ounces with a 42" wingspan. This version is scaled up to a 49" span with a flying weight of 2 pounds. Boxcar is an .09-10 powered airplane and is not designed around the ultra small radios. Any system using miniature servos such as D&R Bantams, Heath Miniature, will do.

Fuselage Construction

The fuselage is a boxy slab sided affair and simple to build. Start by cutting F-1, F-3 and

F-4 out of $\frac{1}{8}$ " ply. F-2, F-5 and F-6 are $\frac{1}{16}$ " ply. All others are $\frac{1}{8}$ " balsa sheet. The two sides are $\frac{1}{16}$ " medium balsa sheet, reinforced with $\frac{1}{64}$ " ply doublers. The doublers go from the trailing edge of the wing forward, contact cemented to the sides. Make sure the sides are laying with their proper faces showing so that the doublers wind up on the inside of the fuselage. Otherwise, you may wind up with two left or two right sides (I have several odd sides laying around because of my modeling goofs). I usually leave the $\frac{1}{64}$ " ply a little on the full side before contact cementing and trim it after. You will find that the $\frac{1}{64}$ " cuts quite easily with a

BOXCAR



razor or a model knife.

Contact cement the trapezoidal shaped $\frac{1}{64}$ " ply doublers to the inside sides at station F-10 and the $\frac{1}{64}$ " ply wing hold-down gussets to the ply doublers. While you are at it, you may as well contact a piece of $\frac{1}{64}$ " ply onto a piece of $\frac{1}{8}$ " medium balsa sheet 7" long. (This will become the bottom nose plank).

Epoxy F-3 and F-6 to the fuselage sides; F-5 may be added at this time if you know where your servo rails will fall. (If not, wait until you are ready to install your servos). F-4 should be positioned approximately as shown on the plans. You may slide it fore or aft to suit your servos. You do not want F-4 to capture your servos or make it difficult to remove the servo mounting screws.

The next parts to be installed are F-1 and F-2, but before installing F-1 locate and insert the engine mount nutplate to the back of it. Note that F-1 is angled to provide for engine downthrust. Fifteen minute epoxy, such as Hobby Pox 4 is ideal for securing the plywood bulkheads to the plywood doublers. The remainder of the bulkheads ($\frac{1}{8}$ " balsa) can be white glued in now. Add the tail block and the $\frac{1}{8}$ " balsa wing and tail seat members; also add the $\frac{1}{8}$ " square strips to the aft section.

Next in line will be the belly. The center-section is $\frac{1}{8}$ " balsa, the nose is the $\frac{1}{8}$ " x $\frac{1}{2}$ " x 7" balsa plank with the $\frac{1}{64}$ " plywood doubler, and rear $\frac{1}{16}$ " medium balsa sheet. The top rear is also $\frac{1}{16}$ " medium balsa. The upper nose is made up of two $\frac{1}{8}$ " balsa plys, cross-grained. The tank access hatch can be three thicknesses. The third ply will act as a key to help hold the hatch in position. Add the $\frac{1}{16}$ " ply landing gear plate and the hardwood landing gear blocks. The landing gear retainer strips are $\frac{1}{8}$ " plywood $\frac{3}{8}$ " wide. Epoxy is recommended for installing all the landing gear parts. The top rear is $\frac{1}{16}$ " medium balsa sheet. The nose sides can be cut away at this time to provide clearances for needle valve and exhaust/muffler of particular engine used.

Tail Surfaces

The tail assembly is built up of $\frac{1}{8}$ " x $\frac{1}{4}$ " hard balsa strips, then covered with $\frac{1}{32}$ " medium balsa sheet on both sides. The stab center-section is $\frac{1}{8}$ " medium balsa - grain running chordwise. The rudder, elevator, and dorsal fin are cut from $\frac{3}{16}$ " medium balsa.

Wing Assembly

The wing is super simple to build. All the ribs are $\frac{1}{16}$ " balsa. Start by pinning down the $\frac{1}{16}$ " x 1" medium balsa lower trailing edge. Next, add the ribs (note: the three center ribs are skinned to allow for the center-section planking). At this point the fronts of the ribs should be elevated approximately $\frac{3}{8}$ ". You may want to support them by sliding a $\frac{1}{8}$ " x $\frac{1}{4}$ " strip (edgewise) under them. This strip will be running spanwise. (Use the rib setting template to get the proper angle on the center rib. Next, glue in the top spar, $\frac{1}{8}$ " x $\frac{3}{8}$ " hard balsa, and the trailing edge webs, $\frac{1}{16}$ " x $\frac{3}{16}$ " medium balsa). Glue on the $\frac{3}{16}$ " x $\frac{5}{16}$ " medium balsa leading edge. Note: $\frac{3}{16}$ " x $\frac{5}{16}$ " may not be available at all hobby stores, so you may want to cut them yourself from the $\frac{3}{16}$ " sheet needed for the rudder and elevator. Sand the taper as shown on plans on the lower trailing edge and the webs and add the upper trailing edge; this is also $\frac{1}{16}$ " x 1" balsa. After removing the wing panel from

the plans add the lower spar ($\frac{1}{8}$ " x $\frac{3}{8}$ " hard balsa). It may be advisable to sand the top and bottom bevels on the leading edge now, as it will be more difficult to do it when both halves are joined.

Now build the other wing panel. The plans show the right hand panel only, so remember which ribs go where.

Glue both wing panels together. When the glue dries, notch the ribs and install the $\frac{1}{32}$ " ply dihedral braces. Install the $\frac{3}{16}$ " balsa gussets after securing the leading and trailing edge dihedral braces. If you have already beveled the leading edges, glue on the upper and lower leading edge planks ($\frac{1}{16}$ " sheet). Please note that these sheets overlap the leading edge and are glued over the beveled edges. Construction hint: When planking a wing, it will be easier if you lay some scrap strips of $\frac{1}{8}$ " x $\frac{1}{4}$ " or $\frac{3}{16}$ " square balsa on top of the planking sheets, but over the leading edge and spar areas (spanwise). Now you can push your pins through these strips and sheets into the leading edge and spars. You will find that you will need fewer pins and get a smoother job than if the strips were not used.

Next, glue on the $\frac{1}{2}$ " thick soft balsa wing tips and add the $\frac{1}{16}$ " sheet center planking.

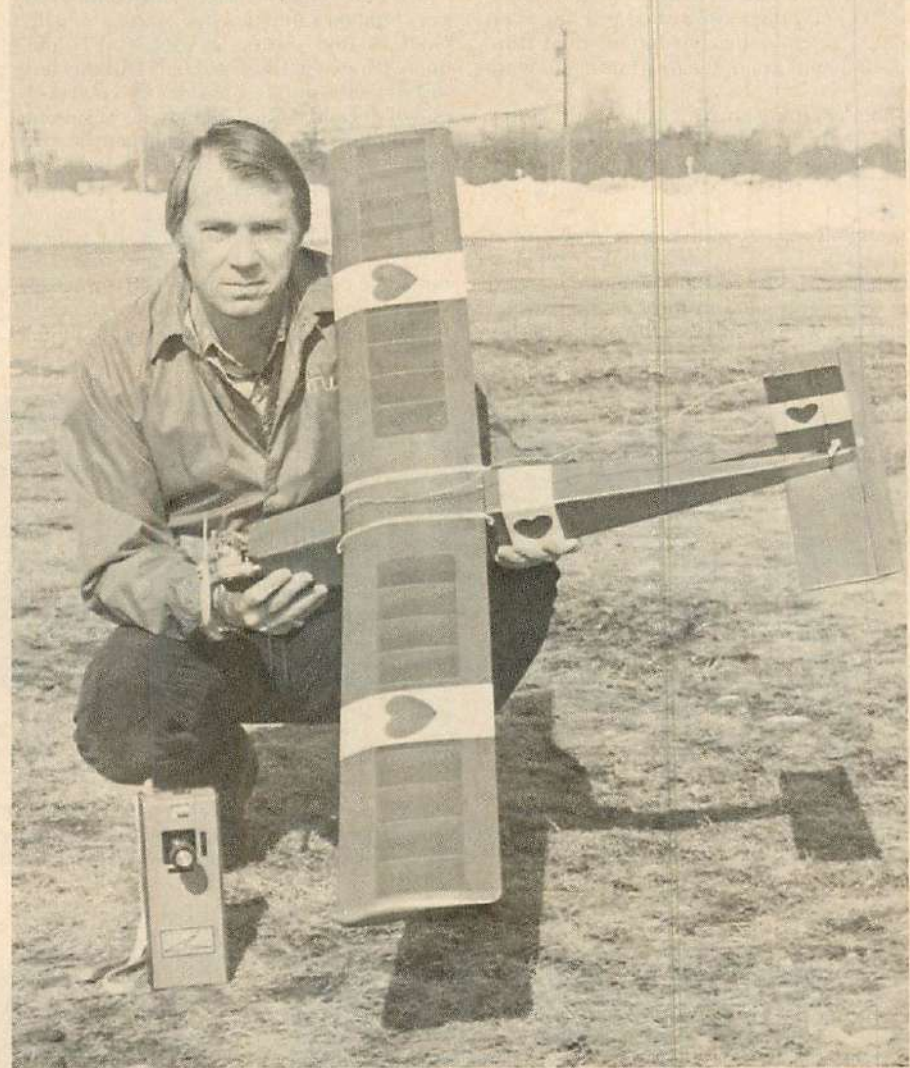
Miscellaneous Parts

Make the landing gear struts of $\frac{1}{8}$ " dia. music wire. Bend them both together so that they both turn out to be the same length. The tail wheel strut should be .030 or .040 dia. wire. Do not make the 90 degree bend to insert into the rudder yet. Shape a tail wheel bearing out of a small piece of $\frac{1}{32}$ " plywood about $\frac{1}{4}$ " square. Drill a hole in the center of it the same diameter as the tail wheel strut. Make the oil drain out of a short length of $\frac{3}{16}$ ", $\frac{7}{32}$ ", or $\frac{1}{4}$ " aluminum tube; cut it on a slight bevel.

Finishing and Final Assembly

I guess this is as good a time as any to start sanding. Round all the fuselage corners to about an $\frac{1}{8}$ " radius. Do not sand any radius in the wing mount or stab mount areas. Sand all the flat surfaces with $\frac{6}{0}$ sandpaper. Sand the leading and trailing edges of the fin and stab to a full radius. Do not sand the fin leading edge where it is to join the dorsal fin. The dorsal fin only gets its top edge sanded to a full radius. (You may prefer to glue the fin and dorsal fin together before sanding.) The rudder and elevator are to be tapered to about $\frac{3}{32}$ " thick at the trailing edge, then the leading and trailing edges get a full radius.

PHOTOGRAPHY: HOWIE APPLEGATE



Howie and his Boxcar. A Heath radio system is installed. There is a big need for some of these simple ships, helps get a modeler really up in the air. Retracts and exotic touches come at a later date in a flyer's experience. Facing page: Boxcar is in foreground, a little sister (.049 powered) in the rear.



The wing gets a rounded leading edge and the wing tips need a generous rounding ($\frac{1}{8}$ " or so). Sand the wing planks and trailing edges to get rid of any high spots or rib mismatch to insure a smooth covering.

Glue the elevator to the fuselage and proceed with covering. The original airplane was done in blue silk. If silk is used, apply two coats of slightly thinned clear dope before covering. My airplane required 5 coats of clear after covering. I trimmed her with broad white bands on wing fuselage and vertical tail and then airbrushed red hearts on her. After covering, but before final trim, install the oil drain, fin and dorsal and wing hold-down dowels.

The landing gear strut holes and landing gear tie down plate screw holes are to be drilled. The tail wheel strut hole may be drilled and the tail wheel bearing glued in place.

Solder a washer on the tail wheel strut as shown on the plans and solder a retainer washer on to keep the tail wheel on. Insert the tail wheel assembly through the stab and bend the wire at right angles. Stick on the

rudder and sew the hinges (3 places). Also sew the elevator to the stab (3 places). Now put on the rudder and elevator horns and you are ready to install your Gold 'N Rod pushrods. Drill a $\frac{3}{32}$ " dia. hole along the top and side of the fuselage where the pushrods are to enter the fuselage. Now, using a round needle file, open up a slot in the fuselage to allow the Gold 'N Rod outer sheath to enter the fuselage neatly. Use Ambroid glue, or a small amount of epoxy to secure the sheaths.

The aerodynamic loads on the controls are very light on a ship this size, so retaining the Gold 'N Rod sheaths at each end is adequate. Epoxy in the servo rails and tray and install the pushrods. I prefer a clevis at each end of the Gold 'N Rod for better adjustment. The throttle linkage on my ship consisted of a piece of $\frac{1}{32}$ " dia. music wire inserted in the sheath of a .032 dia. cable type Gold 'N Rod. Use a long drill about $\frac{7}{64}$ " dia. to go through F-1, F-2, and F-3. Bend the $\frac{1}{32}$ " dia. wire to suit your throttle/servo setup and solder on threaded couplers on each end to accept your clevises. Epoxy the sheath in place.

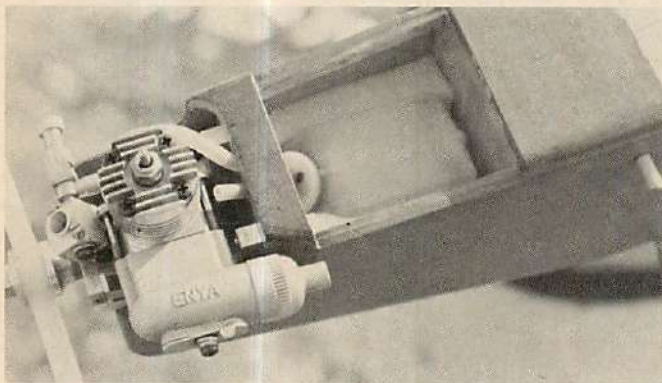
Make your tank tube holes and switch

cut-out and put on your final coats of dope.

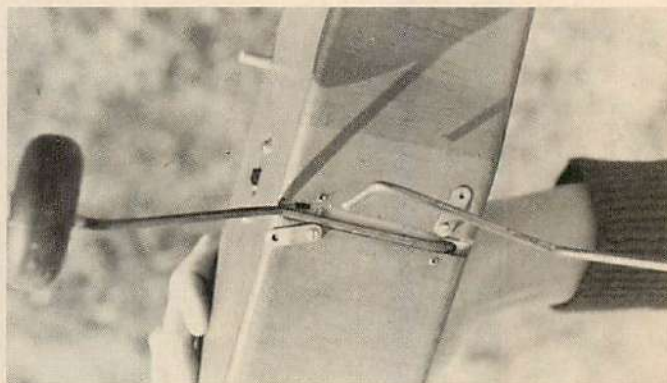
Final Adjusting and Flying

The balance point is shown on the plans ($\frac{1}{3}$ " back from the leading edge of the wing). The airplane should hang level (with tank empty) when balanced. My ship balanced perfectly with a 450 mil battery pack. With the landing gear removed (for snow flying), I replaced the 450 pack with a 500 and still maintained balance of the ship.

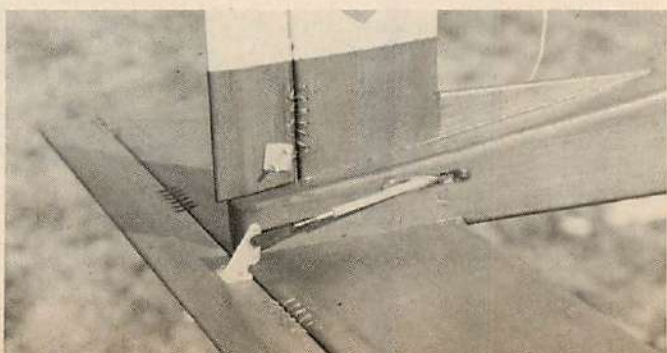
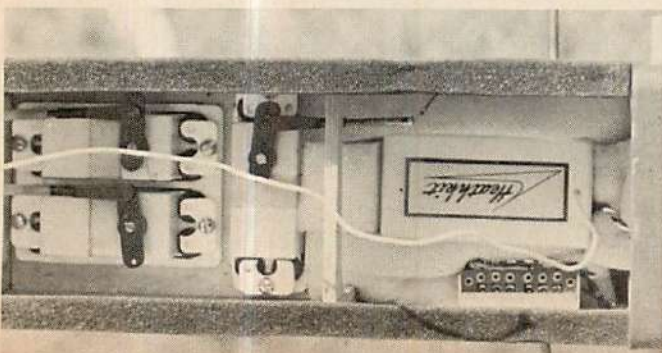
Philosophies vary from flyer to flyer, but I believe in not over-controlling. Small control deflections is the name of the game, about $\frac{1}{4}$ " up and down for elevator, and about $\frac{3}{8}$ " left and right for rudder. Of course, you want full throttle control at all times. The one ounce tank should give you 4 to 5 minutes of high speed running time (this can seem like an eternity to a novice pilot). The .09 or .10 engine will supply enough power for this ship. Take it easy and enjoy flying. When your confidence goes up, you may want to increase your control travels and go to a 2 ounce tank. Good flying with your Boxcar.



A one ounce tank fits neatly under hatch, room enough for two ounces if you feel the need. The battery pack is right behind tank bulkhead. Beneath: Trio of servos, rudder servo on right, elevator on left, engine servo is sideways.



Landing gear is simple to bend, plugs into an $\frac{1}{8}$ " dia. hole. The strap holds everything down. Below: Close-up view of the tail showing the elevator horn and sewn type hinges. Low-friction practical type hinge for smaller aircraft.

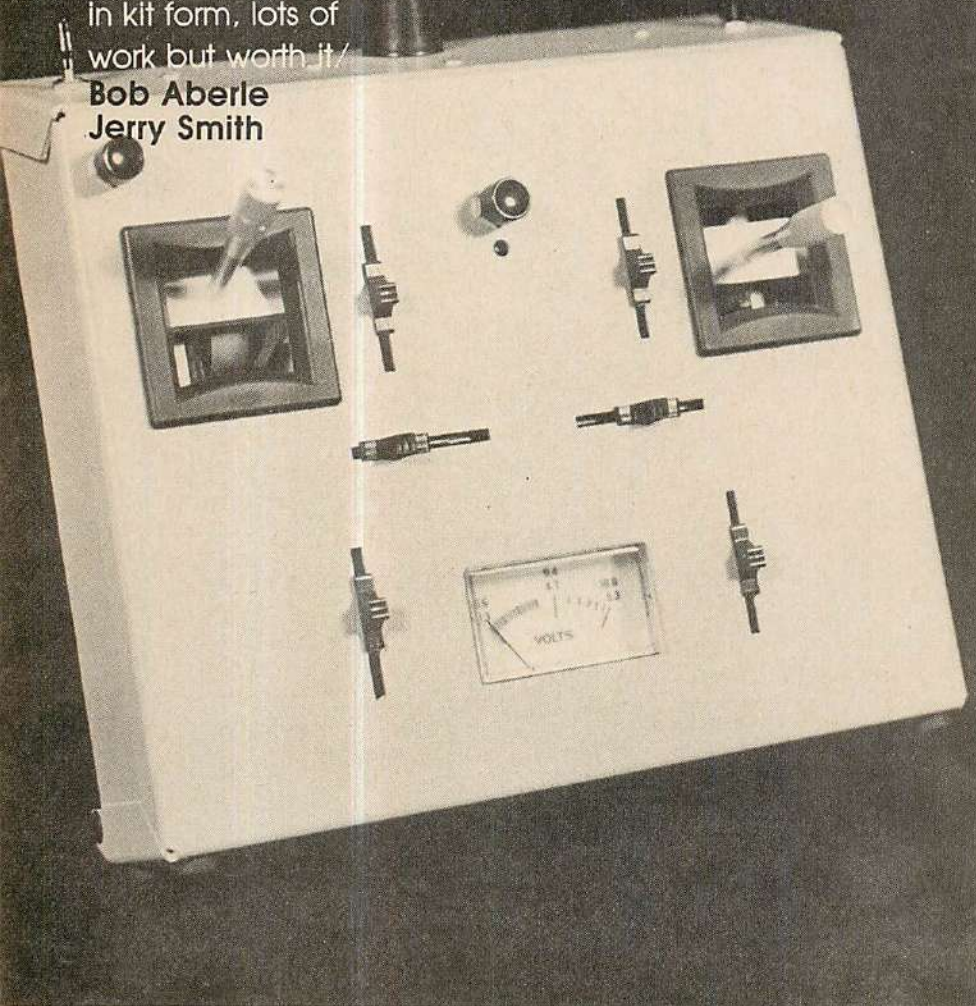


Royal Electronic's

Omega Transmitter kit

A super transmitter
in kit form, lots of
work but worth it!

Bob Aberle
Jerry Smith



PHOTOGRAPHY: JERRY SMITH

The fourth in our series of "Super" radio systems is the Royal Electronics, Omega transmitter. Since Royal Electronics only offers this transmitter as a kit, at this time, it would have been almost impossible to do one of my usual in-depth reviews (because of the cost and time involved). I still felt that a good detailed description of the Omega transmitter was essential for our FLYING MODELS readers. This is especially true if you want to compare the features of each individual "Super" system presently on the market. My good friend and fellow modeler, Mr. Jerry Smith (of *Here's How*, *R/C Modeler* magazine) came to my rescue. Jerry had just finished construction on his Royal Electronics Omega transmitter kit and was good enough to supply me with a good set of photographs. In addition, Jerry and I had a series of telephone conference calls where I was able to actually interview him

on the details of the entire project. The complete text to follow has been reviewed and verified by Jerry Smith.

Royal Electronics Corp. of 3535 So. Irving Street, Englewood, Colorado 80110, is offering the complete Omega transmitter kit for \$299.95. A complete system kit (with receiver, servos, etc.) is also offered at \$450.00. For the purpose of this review I will strictly concentrate on the transmitter. By in large, it is the transmitter that really makes the new breed of "Super" radio system.

As a matter of interest the Omega's designer, Mr. Sid Kaufman, is now offering a built up transmitter version for a \$500.00 list price figure. You can contact Sid at SLK Electronics, 2906 Charolais Drive, Greensboro, North Carolina 27406. In addition, Sid authored a complete five part construction article on the Omega transmitter in the *R/C Sportsman* magazine beginning, in

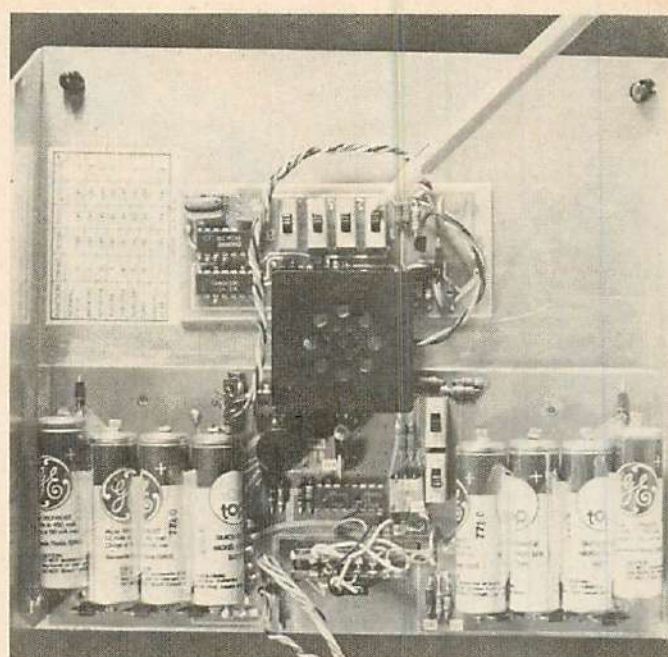
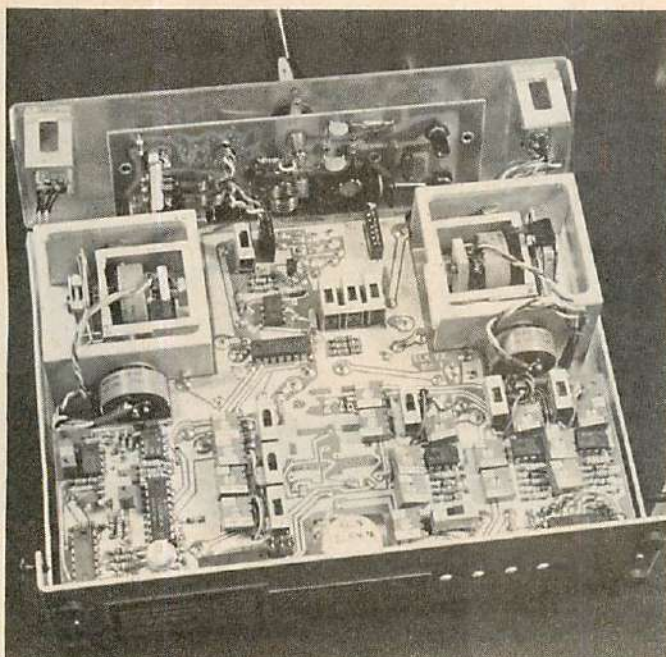
about the September 1977 issue.

The transmitter itself is housed in an aluminum case measuring 6 $\frac{3}{4}$ " high X 7 $\frac{1}{2}$ " wide X 2" thick. The top of the case is at an angle. As such the antenna ends up in a more vertical position for improved radiation pattern. Unlike all the other "Super" transmitters, the Omega has a hinged rear case cover that is fastened with two small latches. This provides for quick and easy access to all the internal adjustments (and there are many!). The telescoping antenna does not fold down inside the case, but it can be completely removed if necessary. Frequency is determined by an interchangeable R-F module that is located at the top inside of the case. It is held in place with four screws and can be easily removed at the flying field for a quick frequency change. All 72 mhz and six meter frequencies are available. R-F output is approximately 500 milliwatts ($\frac{1}{2}$ watt).

A dual function meter is included with the Omega. During normal operation the meter will read as an expanded scale voltmeter, monitoring the transmitter batteries with a range of 8.6 to 10.6 volts. As the battery voltage drops below 9.2 volts (1.15 volts per cell) an L.E.D. (located between the two control stick assemblies) will also light. The L.E.D. itself is set back in the case and is somewhat shrouded. It can be seen outside depending on the angle of the sun on the transmitter's face. Of more importance is an optional flight timing device (which lists as a separate kit for \$24.95). This timer is mounted on the rear inside case cover. As a separate feature it provides an audible alarm signal when the 9.2 volt level (or red line on the meter face) is reached. This alarm is certainly a much better indicator than the L.E.D. by itself. Additionally the alarm will sound should you leave the power on and accidentally walk away from the transmitter (but remember it won't sound until the 9.2 volt level is reached). By connecting an umbilical cable between the transmitter and the receiver charging jack, the expanded scale voltmeter range is automatically switched over to a lower scale of 4.3 to 5.3 volts. Also an 18 ohm, 2 watt resistor is included in the circuit to simulate the average power consumption of the receiver battery while in flight. Finally the meter serves as an R-F output indicator. A button switch is located between the two control stick assemblies, just above the L.E.D. When you depress this button the meter scale switches to the R-F output indicating function. This is a momentary contact switch, so you will only monitor R-F output as long as the switch is depressed.

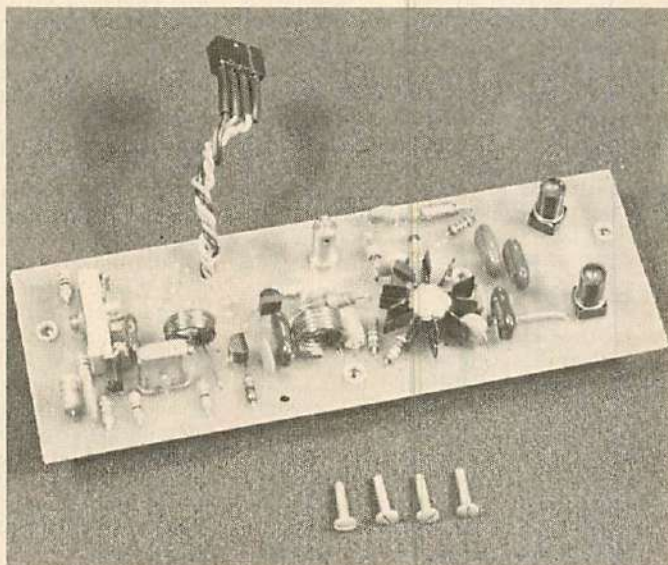
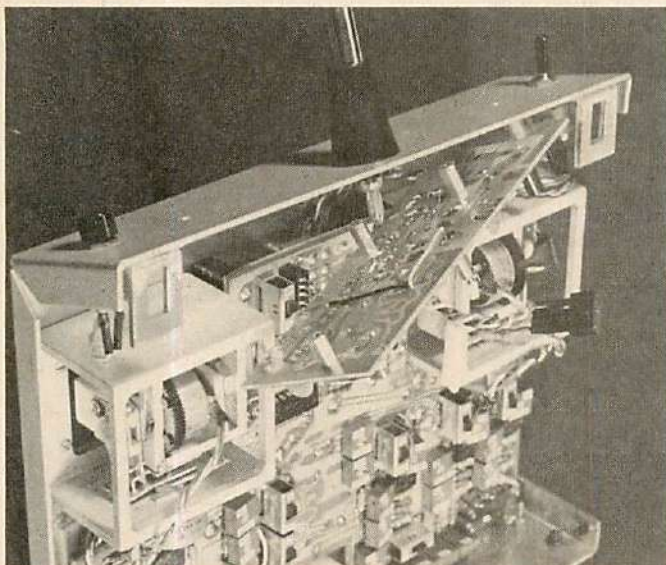
While on that same subject, that push button switch just described will also reset the optional timer (which is a highly recommended option, by the way). Besides the all important low voltage alarm feature this flight timer is certainly innovative. It will up count or down count for periods of time up to 15 minutes. Through binary switching you can program it to down count. In this mode it will give you initially 15 beeps (audible from the tiny speaker), then after a minute 14 beeps, etc., all the way down to 1 beep indicating 60 seconds to go. The time interval is fully adjustable. You can also program the timer for up count. In that case the number of beeps increase with time.

The control sticks are a precision all metal open gimbal variety manufactured for Royal by Bob Dunham (Dunham's R. & R.). Stick length can be adjusted easily by the owner.



A work of art! Jerry is an experienced electronic kit builder. Don't try it as your first kit. Unused portion of the P/C board in the center is intended for the optional control mixer which he did not install. **Beneath:** R-F module being installed at top of case. 40 hours to construct and align transmitter.

Jerry points to the binary switches which set the timer intervals. Optional timer kit, \$24.95 list, adaptable to many other existing R/C transmitters. **Below:** R-F module comes already assembled and certified. This board must be removed and replaced to change frequencies.

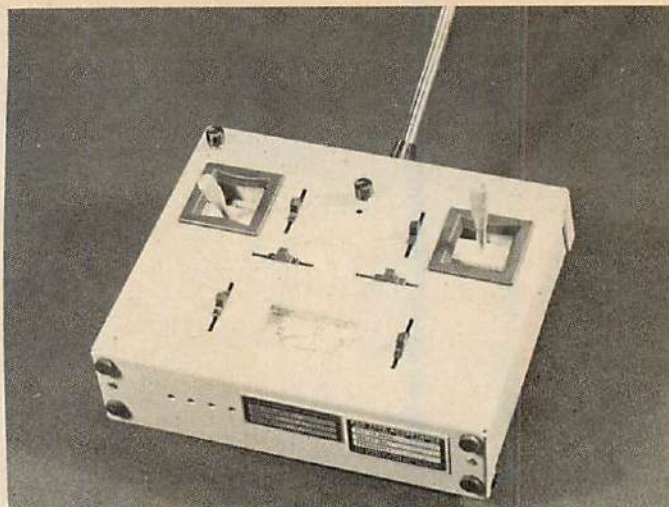
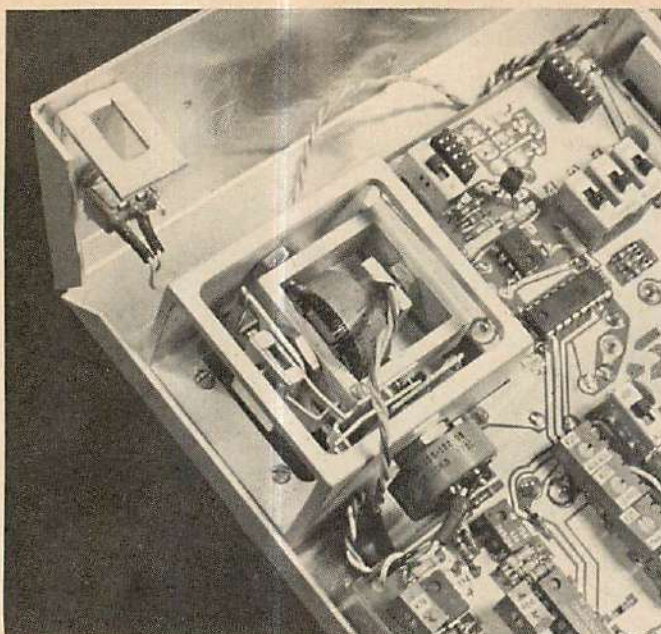


The spring tension cannot be adjusted. There is no protective cover over the stick assembly openings to prevent field dust and prop wash from easily entering the transmitter (unfortunately not one single manufacturer has tried to solve this problem). Jerry chose the instrument grade (normally supplied) pots for his particular transmitter. These pots provide extreme accuracy and will far outlast the useful life of the transmitter. You can wire the transmitter for Mode II or Mode I during the assembly procedure. Regular or cross trim is available. You make the decision while building. Cross trim seems the better way to go. All main control function trims are actuated by linear type (not rotary) pots. You can set the trim excursion (inside the case) so that *any amount* up to full control throw can be obtained from each trim pot. That's a full 80 to 90 degrees of servo travel. This can be quite an advantage

since most flyers are normally accustomed to no more than 12 to 15 degrees of trim adjustment on a basic flight control surface. Of course you should be careful when setting up the trim for large excursions since any slight or accidental movement of the trim lever (pot) would have a substantial effect on the control surface position. With all this flexibility in control movements and trim you might wonder if it were possible to go past a servo limit. In the Omega this can't happen because of a special overtravel protection circuit. The control signal is limited to the range of slightly over 1.0 to 2.0 milliseconds, with 1.5 ms as the nominal neutral position. If you have your trim set for a large control surface displacement and proceeded to move the control stick (for the same function) a point would be reached where the servo would simply stop moving even though the control stick was still being

moved. In other words the limit was reached and the servo simply would not move any further. This protects the servo gears and your airborne control linkages. It also prevents excessive current drain which results when a servo is driven up against its mechanical limit. I might add that the actual limit was established at 115 to 120 percent of normal servo travel. This works fine with the regular rotary output servos. However, on some linear rack gear type servos it is possible that the motor could be stalled before reaching the cut off limit. Keep this in mind.

This servo overtravel protection is also important when using the program buttons. A slow roll (aileron) button is provided on the top right corner of the transmitter case. You can program an aileron control surface throw so that it will repeat itself every time the button is depressed. On the Omega you can add some additional aileron control from



The end view of the Omega transmitter. Meter is a dual range expanded scale voltmeter (E.S.V.) plus an R-F output indicator. **Photo at left:** Close-up of the Dunham precision all metal open gimbal stick assemblies. A single stick transmitter is not available at this time, most likely it will not be made.

the stick even while depressing the slow roll button. If the aileron servo travel gets excessive the overtravel protection circuit will stop the servo before it is damaged. This is an interesting compromise, since some of the new transmitters simply add control surface movement (without any limit) while others actually disconnect the control stick when the program (roll in this case) button is depressed. An additional program button is located on the front of the case in the top left corner. This button can be wired for one or two additional program commands. For example: elevator or a combination of elevator and rudder for a spin maneuver. You must decide the type programming you want during the kit building process.

Possibly the most important aspect of the Omega transmitter design is its new *non-linear* control concept which provides for a soft (desensitized) feel around neutral. It actually dampens the flight control response making them a lot smoother, without the traditional abrupt attitude changes that are normally associated with R/C model operation. This special non-linear control, made possible by new op amplifier technology, is employed on the aileron, elevator and rudder channels. In actual operation, if you move the control stick through $\frac{2}{3}$ of its normal movement, the servo would only travel $\frac{1}{2}$ of its full rotation. The remaining $\frac{1}{3}$ of the stick movement (up to the full limit) would move the servo the remaining $\frac{1}{2}$ of its rotation. In other words it responds slowly around neutral and considerably faster out at its full limit of travel. On the Omega this non-linear function is *connected all the time*. You don't have the ability to switch back to linear control as you do with another popular new radio system now on the market. Likewise, you don't have switchable dual rates (high or low).

Three auxiliary channels are provided. One is a switch operated retract channel (switch at the top left corner of the case). Two proportional auxiliary control channels are included (located on either side of the meter face). Adjustments are available inside the transmitter case to vary the travel of these auxiliary channels.

An optional control function mixer can

also be built into the Omega. In the photographs you can see an unused area on the encoder printed circuit board (approximately in the center). Jerry did not install this option in his unit. The mixer option (actually additional parts) will cost you less than \$10.00. If you desire this mixer option you should plan on installing it at the time of construction, although it can be added later. Using switches you can select various mixer functions, e.g. elevons on a "V" tail or flaperons (ailerons combined with flaps). The non-linear control functions are still retained with this mixer circuit. Even the mix ratios of the two coordinated channels can be adjusted.

As if that weren't enough there are still several more features in the Omega. All seven primary and auxiliary flight controls can be reversed with the flip of a switch, located inside the transmitter case. You can also set up a particular channel for differential control movement. For example, the elevator could be set for more up than down control if that were desired for a particular model application. You may conceivably never need a feature like this but at any rate it's all there.

The Omega is powered by eight General Electric (Gold Top) 450 mah high charge rate cells. Each cell is connected individually to a P/C board on the rear case cover. Since the cells are not in a pack they can be tested and replaced individually (a good idea!). Each cell is diode protected against opens and cell reversals (another good idea!). But remember, you must have the same type of protection in your airborne battery pack. If you don't then the airborne pack simply becomes the weakest part of the system and your transmitter battery protection will be of little real value. A fast charge rate of c/3 or 150 ma. will provide a full charge in just about four hours. The Omega's total current drain on the batteries is 150 ma. Based on this you should be able to get three hours of operating time from a full charge providing the batteries have full capacity.

By the way it was not previously mentioned, but Royal Electronics does not have any plans to market a single stick version of the Omega transmitter at this time. This

leaves myself and about 15 percent of the other modelers in the country very unhappy.

The big question I'm sure you will all have is how difficult was it to assemble? Jerry indicated that it took him approximately 40 working hours to assemble and test his Omega. I have a complete copy of the assembly instructions used by Jerry. These tended to be pre-production type plans. It is my understanding that these instructions have since been upgraded. Presumably only an experienced modeler, with considerable kit building background, would attempt the construction of the Omega. On the plus side Sid Kaufman has arranged a series of sub-assembly tests which must be satisfied before you start the next phase of the work. This approach does save a lot of trouble shooting at the end of the project, but, as Jerry pointed out to me, increased the building time considerably. Another cause of errors is in the identification of the color bands on the small resistors. In many cases the color codes were very difficult to interpret. Ohmmeter verification before assembly might be advisable.

That just about covers it. On a final note, Royal Electronics has been planning for some time to introduce a new Royal Classic Custom series. This series will be fully assembled and will have many of the features now in the Omega system (but not all). One of the most interesting prospects in this new custom radio is a three way switch which lets you select between, high and low rate (linear) or non-linear control. That, to me, would be the best single compromise of all the new "Super" radio systems offered to date. Sid Gates of Royal Electronics has promised the loan of one of these radios as soon as the actual production begins so that we may do a detailed review. He has indicated that the fully assembled system would list for under \$600.00.

Next month, of course, we will continue our series of R/C equipment reviews. If there is any particular radio system or equipment you would like to see reviewed, write to the manufacturer and ask that they contact us at FLYING MODELS. Our ultimate goal is always to review what you modelers are most interested in.

GEE BEE MODEL D SPORTSTER

Here's one of the prettiest airplanes of the Golden Era of racing in scale R/C form. It flies as good as it looks

Henry Haffke

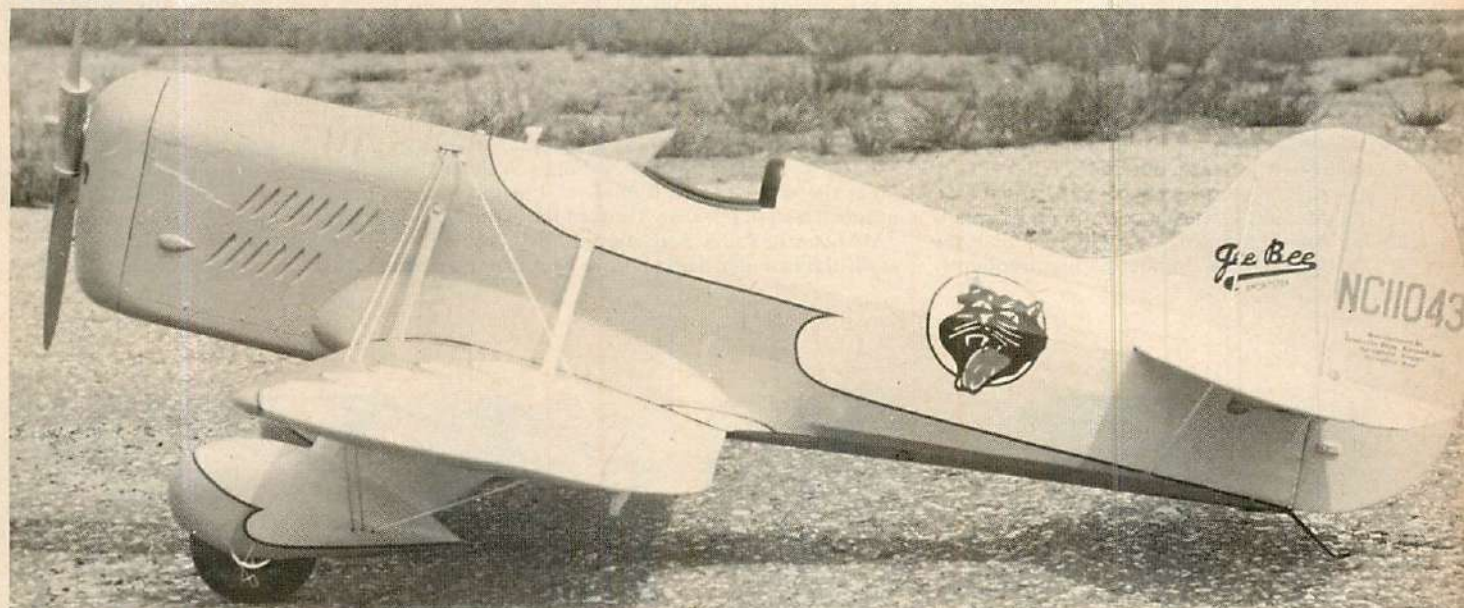
We all have certain types of models that inspire us to spend many hours in our workshops. My thing is models of aircraft from the Golden Era. I am particularly interested in racing aircraft because of their very colorful and striking color schemes and the ships built by the Granville Brothers (Gee Bee) Aircraft Company in the early thirties have always had a special appeal to me.

These aircraft were built in what had previously been a dance hall on one edge of

the Springfield Airport in Springfield, Massachusetts. I was born in Springfield and lived in nearby Chicopee Falls, less than a mile from the site of the Gee Bee Factory. A common evening's entertainment for my family, in those hard times, consisted of my dad loading by mother and me, along with my three younger brothers, into the old Ford and taking a trip (just a few blocks) to the Springfield Airport to watch the activity. Even though I was young, I can remember quite vividly those evening trips to

watch the airplanes fly. I undoubtedly watched many of the Gee Bees during those evenings. At the time, I did not realize how involved I would become with these airplanes which were to become among the most famous in the history of aviation. I have wanted to do several of the Gee Bee subjects for several years and have been restricted because of lack of suitable information on the particular models that I wanted to build. The later Super Speedster racing craft built by the Granville Brothers

PHOTOGRAPHY: JAY DUNCAN



GEE BEE MODEL D SPORTSTER

could be well documented as many pictures and drawings can be found. However, it was the earlier Sportsters that I wanted to model and that presented much more of a problem.

I built a Model Y Sportster and, after flying it, tried to find information and photos of it usable for documentation for judging in scale competitions. I also drew up plans for the earlier Model D Sportster but put off building it until more photos could be found. I spent the better part of two years searching for material and for the most part, got nowhere. The Smithsonian did have one picture of each of the two Model Y's which were built and the Connecticut Aeronautical Historical Society sent me two good pictures of the first Model Y.

I am a member of the E.A.A. and when my January issue of the E.A.A.'s Sport Aviation arrived, it contained a great article on the Gee Bee racers, written by Robert H. Granville, one of the five Granville Brothers who had designed and built these craft in the early thirties. I immediately wrote to him telling him of my problems in trying to find suitable pictures to document my model. I enclosed a few pictures of the model and also asked numerous questions about the real Model Y. A week later, I received an answer and this was the start of a continuous series of letters between Mr. Granville and myself in which I learned many new things about the Gee Bees. With the new material I had, I went to work on the Model D which I had drawn the plans for some time ago. I decided to finish the Model D as the aircraft that was frequently

flown by Zantford Granville.

Bob informed me that it was blue and cream, though I had seen it referred to as blue and white, and also green and cream in two different publications. I sent Bob color charts to get him to give me the exact colors and he informed me that Randolph Bahama Blue and Tuscon Cream were the correct colors for NC 11043. The model started to take shape as I learned of the Mid Hudson R/C Club's plans to conduct a big contest at the Rhinebeck Aerodrome for models of the Golden Era.

Now the project took on new meaning and in mentioning this affair to Bob Granville in one of my letters, he replied that he had always wanted to visit Rhinebeck and would like to see my Gee Bee models fly.

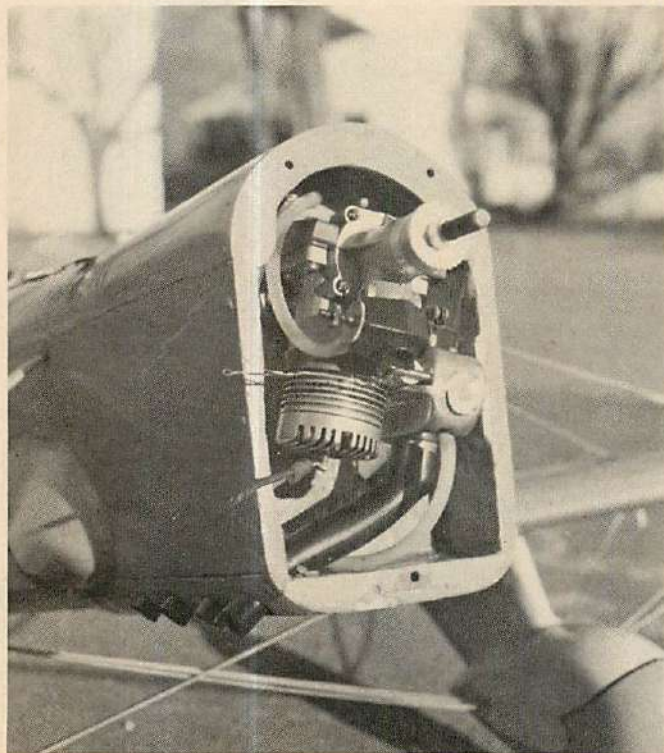
My club, the South Jersey R/C Society decided it would be a great thing for model aviation to have one of the greats of that period be in attendance at the contest for models of that time, and voted to authorize me to have Mr. Granville there as our club's guest if he was able to make it. Two weeks before the meet, Bob informed me that he was planning to make the trip to Rhinebeck with one of his sons and both their wives. I had the model finished about this time but was having problems getting to test fly it. First, it was bad weather and then my radio acted up. I sent the radio out for repairs and got it back eight days before the meet. I had wanted to fly it at the Valley Forge Scale Meet the week before Rhinebeck but did not get it tested. I flew my Howard Ike in the AMA event at Valley Forge on Saturday and, as the flying ended early, I drove back to our

club field about an hour and a half away and gave the Model D a try. Everything was working this time and the weather was ideal. The first flight showed I had insufficient up elevator movement to do much, so after feeling out turning the model, I throttled back and made a beautiful landing. I made the necessary adjustment on the elevator clevis and topped off the tank and took off again. The second flight was fantastic. I did everything I could think of and the model responded in a way that is hard to believe. Loops, rolls in both directions and spins in both directions, everything worked to perfection.

The next morning, I returned for the second day of the Valley Forge Meet and entered the Model D in the Sport Scale event. The weather was very windy and my first flight earned a score of 75 which put me close to the leader.

On my second flight, I goofed a couple of maneuvers slightly and my score dropped to a 73, but my final flight with this new aircraft went very smoothly and earned a score of 80.5 which put me in first place in the model's first contest. I was too busy the week before Rhinebeck to do any practice flying except on Thursday evening, when I did get out long enough to try two flights for the Barnstorming event.

I arrived at Rhinebeck early Saturday morning and got in one flight before Bob Granville arrived with his family. He was very impressed with the Model D Sportster and remarked how real it looked. I also had five other Sportsters on display and he thought they were all great. In addition to



The engine compartment (left) shows the engine installed on a Kraft mount with a Tatone manifold. Note muffer pressure line and exhaust extension exits through the scale exhaust stack. Nose closed (above).

my Model D, I had my Model Y that Maude Tait flew; Phil Barbaro of Clayton, New Jersey had his Model X flown by Lowell Bayles, and built from my plans; Dink Shahan of Deepwater, New Jersey had a model of George Rand's Model C Sportster, also built from my drawings; and another friend, Burton Williams of Westfield, Massachusetts had his model of Florence Klingensmith's Model Y Sportster and also a Gee Bee Model A Biplane which he had designed and built several years ago; in my Gee Bee display. I had a big panel with framed pictures of all of the Gee Bee Sportsters and three views of each model headed by a picture of the five Granville Brothers and the Gee Bee Factory taken in 1930. It made a very impressive display and many cameramen took pictures of Bob Granville with the Gee Bee models.

Bob had never seen an R/C model fly before and was very impressed with them. He called all of the rest of my scale flights during the two day meet and enjoyed it very much. Everyone was impressed with the way the Model D flew and after two days of competition in three different events, the Model D proved to be the most consistent performer, as it fared no poorer than 5th in any of the three events.

When the prizes were awarded at the end of the contest, the Model D had won at least its share of the awards. Bob beamed with each presentation and I guess he relished a few moments the times when the real aircraft was a winner in its flying activities.

The Gee Bee Company started out building a biplane trainer which was an excel-

lent flying machine. Then they built a special aircraft designed around the American Cirrus engine to compete in the All American Derby of 1930. This was a 5,541 mile race sponsored by the Cirrus Company to demonstrate the durability of their engine. Eighteen aircraft competed in this race that started in Detroit, the motor capital of the world, penetrated the deep South, went as far west as Los Angeles, and then returned to Detroit. The Gee Bee Model X, as this first low wing sport plane was called, flown by Lowell Bayles, finished second in the race and thus began a situation which was to make this company, formed by the five Granville Brothers (Gee Bee was the spelled out abbreviation for Granville Brothers) one of the most well known concerns in aviation history.

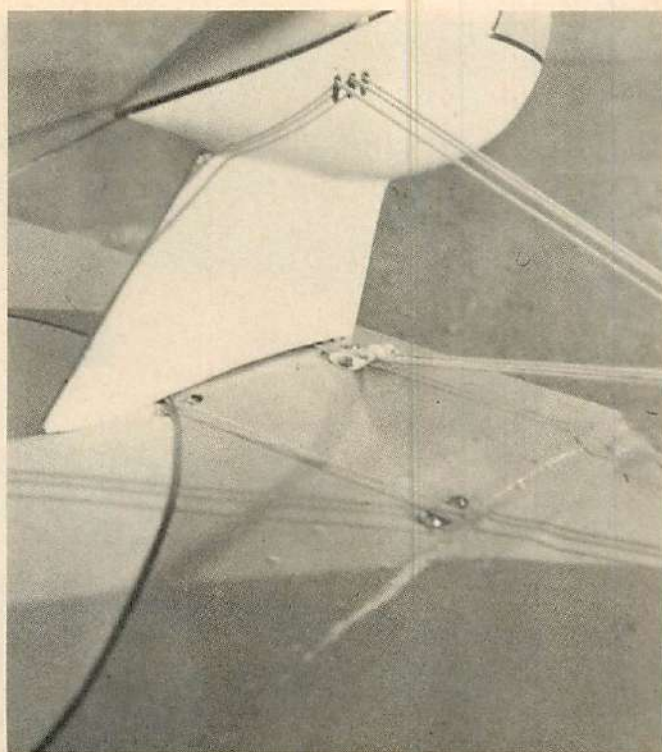
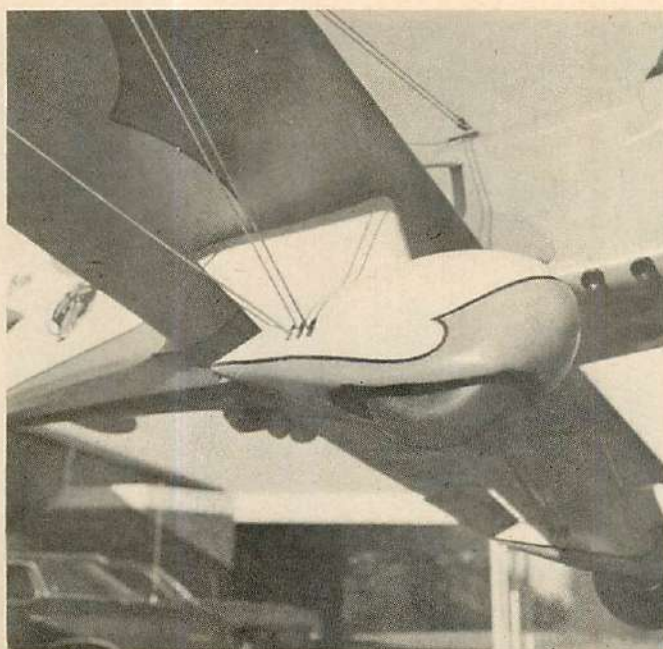
Following the success of the Model X Sportster in the Cirrus Derby, the company received several requests from sportsman pilots for one of the little single seat sportsters. As the sportsters were built, there were slight differences in them as some were built with the Cirrus engine and some with the Menasco power plant. These inline engine versions were designated Model X, C, and D Sportsters. Some were also built with the Warner radial engine and were known as the Model E Sportsters. The other noticeable difference in the Sportsters was in the landing gear. The original Model X had a non-shock-absorbing landing gear and depended on the balloon tires to absorb landing jolts. A few of the later sportsters had a different gear modification and the later models had

the fully faired gear as used on the later Ryan ST aircraft. Any one of these subjects can be built from my plans and included in this article is a chart of all of the sportsters which encompass many color combinations, so there is a wide variety of choices. Also, I show the three types of gear configurations so that any of the Model X, C, D, or E Sportsters can be built from the plans. The front end modification for the radial engined Model E is also detailed. All of the Sportsters were excellent aerobatic craft and were used extensively for air show work. Russell Boardman won the National Aerobatic Championship in one of the Model Y Sportsters. Few realize that the Gee Bee aircraft flew this well.

Pick out your subject and let's get started with the construction.

Fuselage

The basic sides are cut out of $\frac{1}{8}$ balsa and the firewall (F-1) and F-2 and F-3 are cemented in place. Next, the $\frac{1}{4}$ inch doubler is glued to the sides, back to F-4. When this has dried, the sides may be joined at the rear and F-4 and F-5 can be added. The top of the fuselage back to F-4 may now be planked with $\frac{3}{32}$ balsa. Next, the tail surfaces should be prepared of $\frac{3}{16}$ balsa. The fin and stab are added to the basic fuselage structure and then the $\frac{1}{8}$ x $\frac{1}{4}$ stringers are added. Finally, the $\frac{1}{2}$ balsa cowl bottom is added. The nose front parts N-1, N-2, and two N-3's are glued together and are tack-glued to the fuselage front. When dry, the front may be carved and sanded to shape. Add the $\frac{1}{8}$ ply mount plates for the com-



These two photos (above and right) show the landing gear details and the wheel pants. Note the inner side of the landing gear fairings and the method of attaching the flying wires with an aluminum bracket.

GEE BEE MODEL D SPORTSTER

pression struts, the wing mount block, the ply tail skid mount and the fuselage is ready for final sanding and finishing.

Wing

The wing needs little explanation as the structure is very standard. All ribs are cut out of proper size material and are slid onto the two spars. The rear spar will have to be tapered evenly, top and bottom, from the last outboard rib C to the tip so that it is $\frac{3}{16}$ ths at the tip. When the ribs have been positioned on the spars, the leading and trailing edges are added. $\frac{3}{16}$ " x $\frac{3}{4}$ " spacers are added between each rib at the leading edge and $\frac{1}{8}$ " x $\frac{1}{4}$ " spacers are used at the trailing edge. These make a very sturdy structure. The tip parts are cut from $\frac{1}{4}$ " stock and glued in place. The maple landing gear mount blocks are epoxied in place and finally the $\frac{1}{8}$ " ply plates for the strut base and brace wires are added. The strut base plates are needed on the top only but the brace wire plates are needed both top and bottom. Ailerons are carved from $\frac{3}{4}$ " x $2\frac{1}{4}$ " balsa, or may be built up if desired. Cut out two dihedral braces of $\frac{1}{8}$ " ply and join the wing halves with $4\frac{1}{2}$ inches of dihedral at one tip. The $\frac{1}{8}$ " ply mount for the aileron bellcrank is added and the bellcrank is mounted and the linkage for the aileron can be completed. Cut away part of the center rib A-2 for aileron servo installation and sheet the wing center section.

Landing gear

Wire parts are formed from $\frac{1}{8}$ " wire and the front and rear wires are bound and soldered. The fairings are built from the various parts shown on the plans. Each fairing is built in two halves and the parts should be

weighted until thoroughly dry. Drill through the two halves of each fairing at the front and rear and install a $\frac{3}{32}$ " dowel for alignment. Glue dowel to one half only. Now tack-glue the two halves together and carve and sand to shape. When finished, the halves are split apart and are sandwiched around the landing gear wires and are held in place with sheet metal screws. If they become loose, a piece of fuel tubing may be split and slipped over the wires for a more snug fit. For anyone wishing to avoid building the landing gear fairings, they may obtain a set of molded fairings from Aero Classics. The cost of these fairings is \$5.95 plus 75¢ postage.

If you would like to build the model as the Model E with the radial engine, the cowl is built as follows: Wrap a $2\frac{1}{2}$ -inch wide strip of $\frac{1}{16}$ " ply around a 3 lb. coffee can. Wrap a second layer over the first, staggering the joints. Then build up the proper thickness by adding layers of balsa to the plywood. When it is completely dry, it may be removed from the can and is carved and sanded to shape. The front of the fuselage is extended forward of firewall with $\frac{1}{2}$ -inch balsa layers around the motor mount and the front end is carved to an oval shape, as round as possible at the very front. I did Maude Tait's Gee Bee Model Y with this process and it can be seen in the background in some of the photos. Radio installation should be no trouble as there is plenty of room for even the largest of servos. Engine is installed with about 3° of right thrust. Tilt the engine as much as possible to one side and you will have enough room for a Tatone exhaust manifold inside the cowl. A section of the exhaust extension tubing will exit the exhaust out through the first scale exhaust

stack. Finishing the Gee Bee is where the real character of the model is brought out. The Gee Bees were noted for their high gloss finish and the addition of the struts and brace wires really finishes the job.

Sand the entire structure with fine sandpaper. Fill all dings with Hobby Pox's new Polyester Filler Compound and sand smooth. I gave the sheeted areas two coats of Randolph clear sanding between coats and then covered the sheeted areas with medium silkspan. This was then given two more coats of clear and then three coats of filler (dope and talc). The fabric covered areas were given a coat of Coverite's Balsarite. Then Super Coverite was applied to fabric-covered areas. Two coats of clear were brushed on the Coverite and then the entire aircraft received three sprayed coats of Randolph Tuscon Cream. The trim areas were masked off and two coats of Randolph Bahama Blue were sprayed. These colors were picked out by Robert Granville as being the correct shades for NC 11043. A $\frac{3}{32}$ " black pinstripe is added between the colors. The panther on the sides of the aircraft was hand painted. A pattern was made and traced on each side and then painted.

Details

The compression struts are made of flattened aluminum tubing or streamline tubing can be used. Flatten each end enough to bend to fit flat on the wing and fuselage and drill a hole in the flattened end to take a small sheet metal screw which fastens the struts. They are easily removed to take the wing off. Flying wires are added by threading elastic thread through holes drilled in the ply plates built into the wing. The ends are fastened by small hooks to an aluminum



bracket protruding from the fuselage above the front compression strut. This can be a continuous length of aluminum about 1/2-inch wide, long enough to extend about 3/8" outside the fuselage. Three holes are drilled to take the hooks. Similar brackets can be screwed to the landing gear blocks at the base of the landing gear fairings to receive the other ends of the flying wires. Brace wires at the tail surfaces are simply threaded through the surfaces and joined to themselves just beneath the stabilizer. Other small details such as gas caps (one ahead of gas gauge on top of fuselage and one between compression struts on each wing stub) gas gauge and cockpit coaming complete the model. A cockpit may also be included if you so desire. Don't forget the pitot tube extending from the wing leading edge.

Through much research and study of old pictures and correspondence with Bob Granville, the included chart was prepared. Nine of the single seat sportsters were built and the chart gives the order in which they were built; model, powerplant, colors, owners and pilots, and a few notes of interest pertaining to particular models.

Anyone wishing to use his Gee Bee for scale contests can contact me for documentation material. I have negatives and can supply prints from original pictures loaned to me by Bob Granville.

Reference material

The Gee Bee Racers - Profile Publication #51 -

Pete Bowers

Model Aircraft (August, 1957)

American Modeler (July, 1958)

They Call Me Mr. Airshow - Bill Sweet

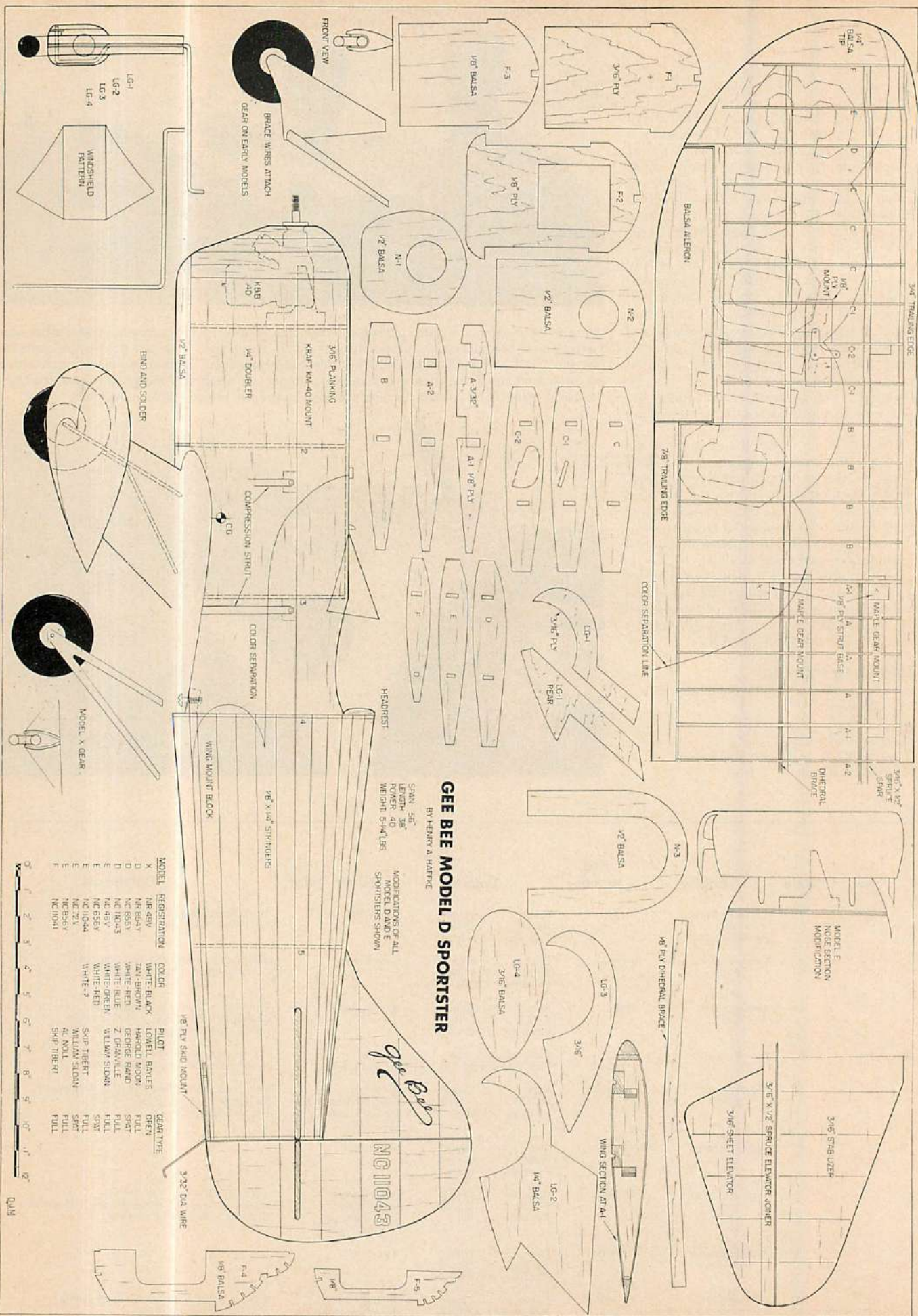
Robert H. Granville



Henry Haffke, the author, is shown (above) at left with Bob Granville, the last surviving brother of the team that built these beautiful racers. Bob is holding the Model D Sportster at the 1977 Golden Age contest at Rhinebeck, N.Y. The cockpit detail is visible in this shot (below) showing the burlled aluminum panel and the fuel wobble pump. The Triumph gas gauge is in front of the windshield and the gas cap is forward of the gauge. Panel lines, cockpit coaming and some rivet detail is also visible in the shot.



No.	Model	Engine	Reg. Number	Colors	Owner - Pilot	Comments
1	X	Cirrus Hi Drive and Fairchild 6-390	NR 49V	Black - White H-6117 - Q-1916 Pinstripe - None	Lowell Bayles	1930 Cirrus Derby - Lowell Bayles Rigid Gear w/Air Wheels
2	B	Cirrus Hi Drive 95 HP	NR 654Y	Tan - Brown X-5260 - B-3535 Pinstripe - Red	Harold Moon	New type gear with shocks & fairings Cowling different than on Bayles
3	C	Menasco B-4 95 HP	855Y	Red - White P-8599 - Q-1916 Pinstripe - Black	George Rand	Returned to factory for modification Changed to a Model D in 1931, new fin, rudder, and landing gear as on NC 11043
4	E	Warner Scarab	856Y	Army Yellow & Blue First Werner Job	Al Nott Z. D. Granville	Old type gear and fairing like 654Y New type rudder and fin like 11043
5	D	Menasco C-4 125 HP	NC 11043	Blue - Cream H-9170 - X-5260 Pinstripe - Black	Bill Rausch Clem Whittenback Dannie Fowlie - Mae Hazlip	Being rebuilt - first used by Z. D. Granville for demonstrations and sky writing. Pilot for flying aces
6	E	Warner Scarab	NC 11041	Red - White P-8599 - Q-1916 Pinstripe - Black	Skip Tibert	
7	E	Warner Scarab	NC 46V	Green - Cream F-5830 - X-5260 Pinstripe - Black	William Sloan Lowell Bayles Z. D. Granville R. Boardman	1931 Ford Tour - Lowell Bayles Handicap Race - LA 40 Cleveland - Z. Granville Crashed in 1932 - R. Boardman
8	E	Warner Scarab 110 HP	NC 11044	Red - White P-8599 - Q-1916 Pinstripe - Black	Skip Tibert	
9	E	Warner Scarab	NC 72V	Green - Cream F-5830 - X-5260 Pinstripe - Black	William Sloan Johnny Crowell Don Walters Jack Wyman	Wing in E.A.A. Museum is red and white - May have been repainted.



It came as a pleasant surprise to this old War War I buff to be asked to review a kit of the D.H.-6 by Vintage Aero, 1 The Glen, Tenafly, NJ 07670. The D.H.-6, while not one of the better-known World War I types, nevertheless did yeoman service during that war. Well over 1500 of these aircraft were produced by the Royal Aircraft Factory. Most of the type were used as trainers, however approximately 300 were assigned to coastal patrol. The aircraft was regarded as a stable, easy-to-fly type, and a properly constructed model from the Vintage Aero kit should demonstrate the characteristics of the prototype.

I always find that one of my great pleasures with a kit model is that first look into the box. The D.H.-6 didn't let me down. The plans and covering material come rolled and wrinkle free. Wood is clean, evenly cut, and a bit on the hard side. I was glad to find this slight hardness in the balsa as the model is lightly constructed and needs the strength of something harder than contest grade. Also included in the kit are all other necessary parts - an ample supply of rubber strip, plastic propeller and wheels, wire parts, thrust bearing, washers, etc. The plans are full size on two sheets and printed on one side only, simplifying construction layouts.

One of the most outstanding features of the kit is the large, step by step pictorial instruction sheets. Combined with the clear, easy to read plans, these instructions make the building process a comparatively simple and enjoyable project - even for the less experienced builder.

The really unusual feature of the kit is the covering material which comes rolled inside the plans. It is a heavier, almost parchment-like, tissue which totally eliminates the need for water shrinking or doping while still imparting strength to the model. It is pre-printed with all necessary details, and even has reference marks which match similar marks on the plan to insure that the covering goes on exactly as intended.

Okay - so far, so good - now to start building after, of course, the usual period of studying plans and instructions to achieve total familiarity with the whole process.

Fuselage construction was the first order of business. Since the model is a "profile", this job is finished rather quickly, like building one side of a full-bodied type. This also provides a plus for the newer modeler as there is no chance of mismatched fuselage sides or a twisted, or mis-aligned, fuselage with all its attendant difficulties. I opted to build the CO₂ powered version using the Shark engine. Details for both rubber-powered and CO₂ versions are clearly detailed on plans and instructions. All parts for the rubber version are included in the kit. Parts for the CO₂ version are also included with the exception of the engine of course.

Wings and tail surfaces are straight forward construction and the building job here also moves at a rapid pace. The wings are flat surfaces like the tail parts, so there are no ribs to cut out. There are no curved wing tips to worry about either since the flight surfaces of the real aircraft were entirely squared off - which, incidentally, led to a story, at the time, that the manufacturer, "built the wings by the mile and cut 'em off by the yard".

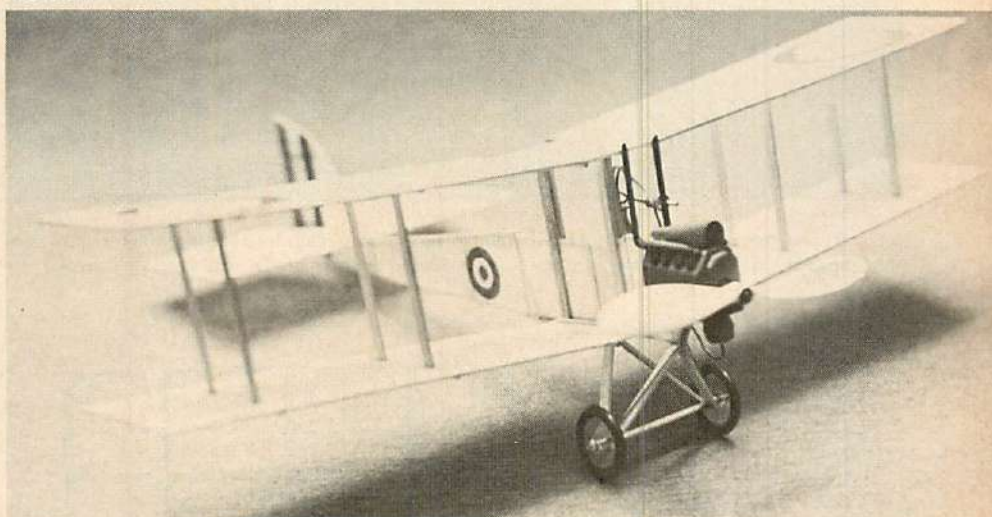
Total construction time for all the frameworks was just a shade over two hours. It might take a bit longer using white glue as

An FM Product Review:

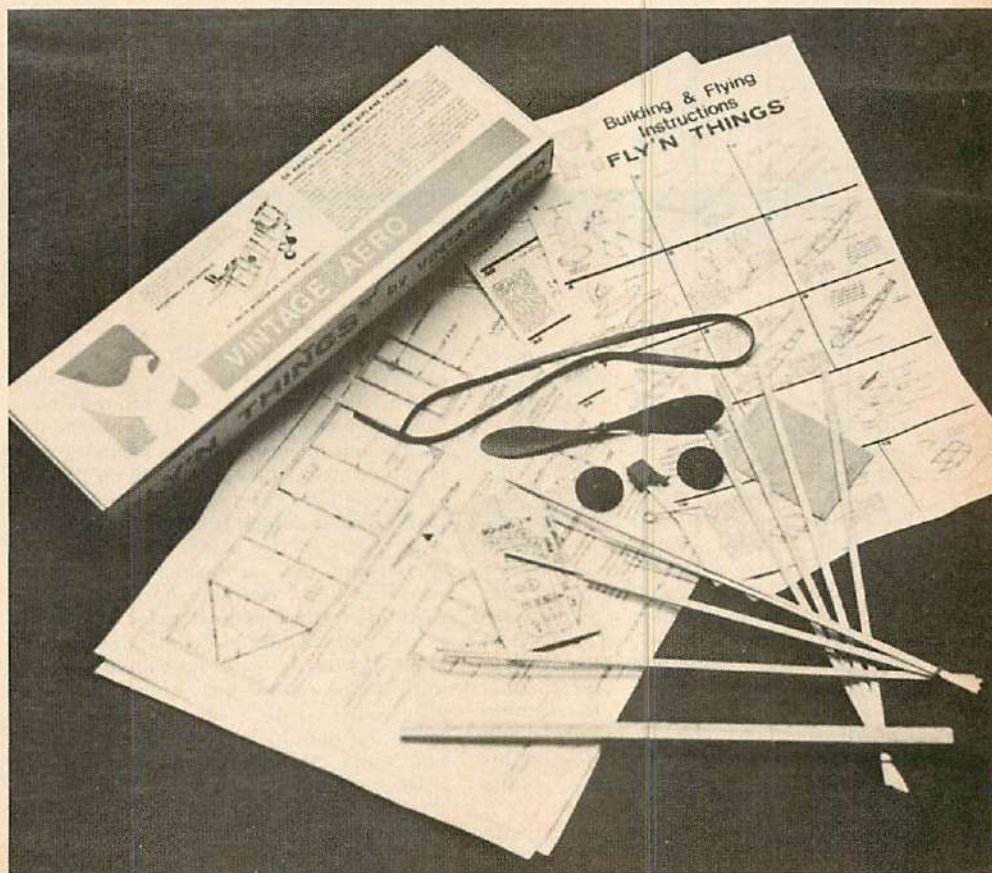
Vintage Aero's DH-6

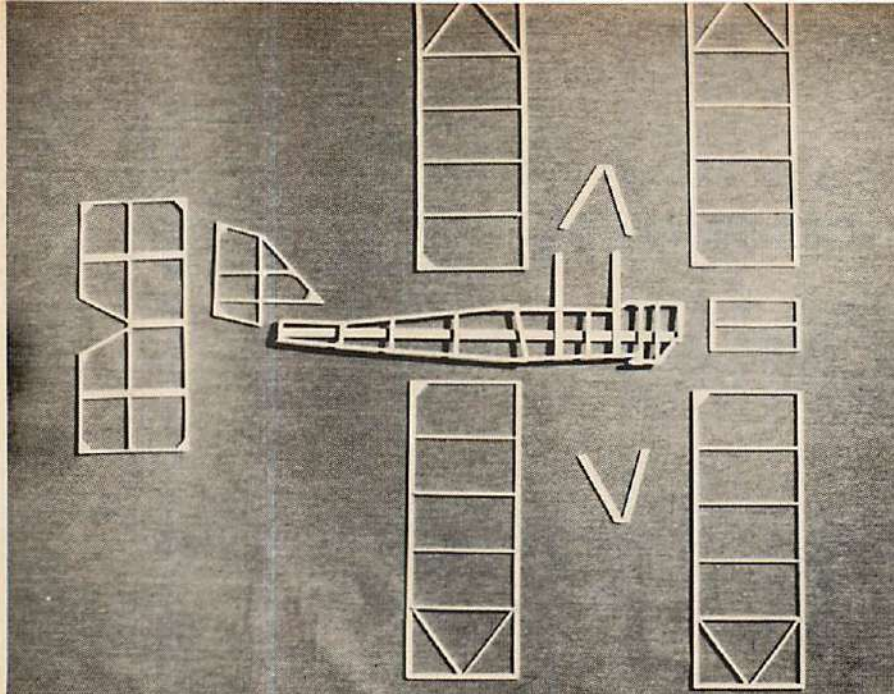
Beginners like to build airplanes that look like airplanes. Here's a CO₂ kit that fills the bill/
Earl VanGorder

PHOTOGRAPHY: JACK ARNOUTS

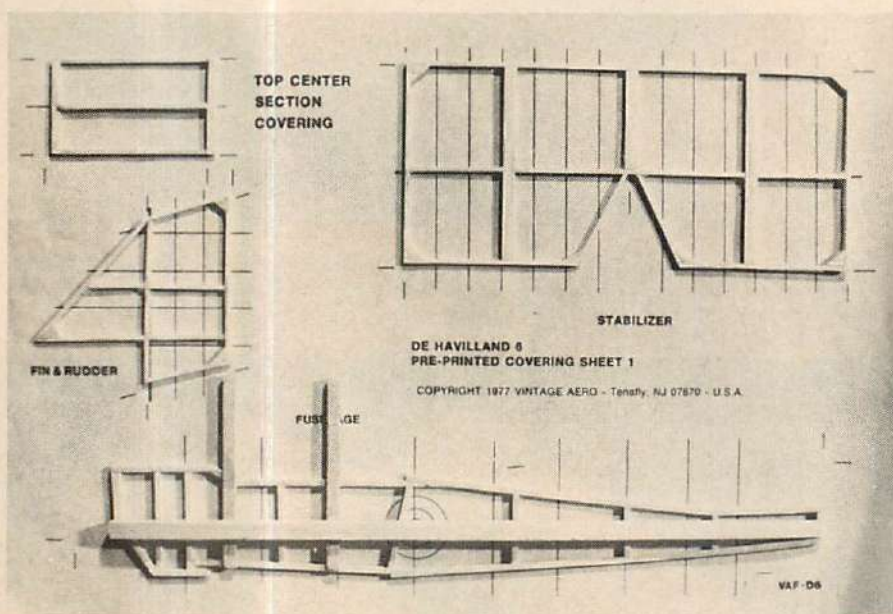


This fine quality Vintage Aero kit is impressive in its finished form (above). The scale-like looks of the ship make it very appealing to young beginning modelers. The kit as it comes (below) is very impressive with excellent drawings and instructions as well as good wood, covering material and accessories.





The built up frames of the airplane are shown (above) all built and ready for covering. They are now laid on the special covering material in the positions indicated on the material. You can't do it wrong.



recommended in the instructions, however I chose to use my favorite cyanoacrylate cement. (You, too, may want to "Zap" them out quickly by "Stuking" them together with a "Jet" of "Hot Stuff".) If you do use a slower drying adhesive, the merit of the plan, which is printed on the one side only, evidences itself. Since you don't have to wait until something dries so you can turn the plan over to build another part they can all be laid out at the same time.

Well, now that the frames are complete, let's move on to covering and assembly. The first step is to add the color to the covering. The recommended color scheme for this aircraft is white, with red, white and blue cockades and tail stripes. Standard red and blue wick-type marking pens are fine for this job and the color does not "creep" on the material provided.

The covering instructions are quite simple and easy to follow. Some ordinary

white glue is mixed 50-50 with water. A piece of waxed paper, or Saran wrap, is taped over the plans. The pre-printed covering is then taped in place. Remember to put the printed side down so that when the part is turned over, the covering is on the top surface with the printed side up. Reference marks on the printed covering are lined up with those on the plans. The cement is spread onto the parts which, in turn, are placed on the covering material. Line the parts up exactly with the drawing which will insure that all printed details are properly aligned. Now the parts are weighted down until dry. A not-too-heavy book, or magazine, works fine. The entire covering operation should not take more than an hour's time. A word of caution, however. Do not get too much of the water-thinned glue mixture on the frames. These are light frameworks and will warp easily. Besides, if the moisture creeps into the tissue - this

tissue, while fairly coarse, will reveal a fantastic shrink factor. I had this problem, possibly because I'm not used to using this method of tissue adhesion, and apparently used too much of the watery mixture. I then compounded the problem by trying to steam out the warps. Wrong! That warped the surfaces into something resembling oversized potato chips. The net result was that I had to make a new set of flying surfaces. Be warned, don't let this happen to you. If you're used to using dope to adhere tissue, as I am, it's probably best that you continue to use it. Make sure that it is well thinned, or plasticized for low shrink.

The installation of the CO2 engine is well covered in plans and instruction sheets, and proved to be quickly and easily completed. It is important to observe the instructions and locate the CO2 tank directly on the CG as it will vary in weight from full to empty. Materials are provided, in the kit, for engine cowl and details. Again, it is a simple straight-forward process. Upon completion of the cowl, details such as carburetor scoop, cylinder heads, and exhaust pipes are added. The carburetor scoop is made from bond paper and is printed on the plans. Cylinder heads are printed on balsa sheet. I did make one change here. The plans show a V-type engine with *three* cylinder heads showing on each side (and I thought the V-6 was a recent development.). Since I was aware that this aircraft used either a 90-h.p. RAF V-8 engine, or an OX-5 V-8 engine, I chose to put *four* heads on each side of the cowl. Okay, so it's not an AMA scale type - I still like to see those eight "pots" out there. Besides, when this three-dimensional cowl is added, you'll be surprised at the illusion of a full-bodied scale type.

Final assembly is begun by cementing wing panels to center sections and setting the proper dihedral angle. A dihedral gauge is provided on the plan to insure the proper angle. The builder is instructed to cut the gauge from the plan and glue to cardboard. Since there is extra room on the printed sheet, it would seem like a nice idea if the manufacturer reproduced the gauges on the printwood.

Wing mounting is almost a "snap together" operation if profile fuselage and wing center sections have been built strictly to plans and instructions. In addition, the bugaboo of proper incidence is handled automatically for the builder. Interplane struts are cut to size from stock furnished and a full size pattern is provided. Attachment of these struts is a simple procedure and small dots on the printed covering assure proper placement. Horizontal and vertical tail surfaces are then cemented to the fuselage and properly aligned.

Landing gear is bent to a full size pattern on the plan from wire provided. This is installed with two wooden "Vs" and a spreader bar (also cut from a full size pattern), to complete a sturdy, and scalelike landing gear. If you decide to install the wingtip skids, wire and full size patterns are again provided. I chose to omit the skids since I fly over grass and was afraid that a skid might catch on landing and damage a wing. If you fly over a hard surface, they should be installed to protect the wingtips. Tail skid is fashioned from a T-pin provided in the kit.

Well, there it is - an "almost" D.H. 6, and if you stand back a little way, the illusion of a full scale model is terrific. In fact, I was so

carried away, that I installed a pair of simulated wire spoke (clear plastic) wheels. These are also distributed by Vintage Aero and can be purchased from the same source from whom you obtained your kit. Of course, the plastic wheels furnished will work fine and are of good quality, but the "slightly fat" tires just didn't look "World War I-ish" to this old buff.

Static balance is achieved in the usual manner using clay or plasticine where weight is needed. CG is well indicated on the plans. Actually, my own model came out "right on the button" statically, without the necessity of adding any weight.

Glide tests revealed a slight tendency toward a left bank and turn, but not extreme. This was apparently due to a very slight wash out which had occurred in the left wing panels.

I decided to try a low power run without further trim changes. In previous experiences with CO₂ engines, I had never noted a strong torque reaction and if the "built-in" turn didn't increase too much under power, it could be a desirable trim. The Shark engine was adjusted to a fairly low r.p.m. After all, scale flight, for this aircraft, should be well on the slow side. The engine was started and the aircraft launched. Good, it was giving a shallow left climbing turn but with a considerably low rate of climb. The degree of bank and turn had not increased over what had been evidenced in the glide tests. I adjusted just a bit more RPM for the next flights and still got slow scale flights with just a slightly increased climb. On succeeding flights, the model continued its slow climb until the gas was exhausted and then gently dropped into a nice, shallow glide still maintaining the same left circle until touching down in a very gentle landing. Even though there was no landing run after touchdown, due to the grass surface, the D.H. 6 landed so slowly that it didn't even nose over.

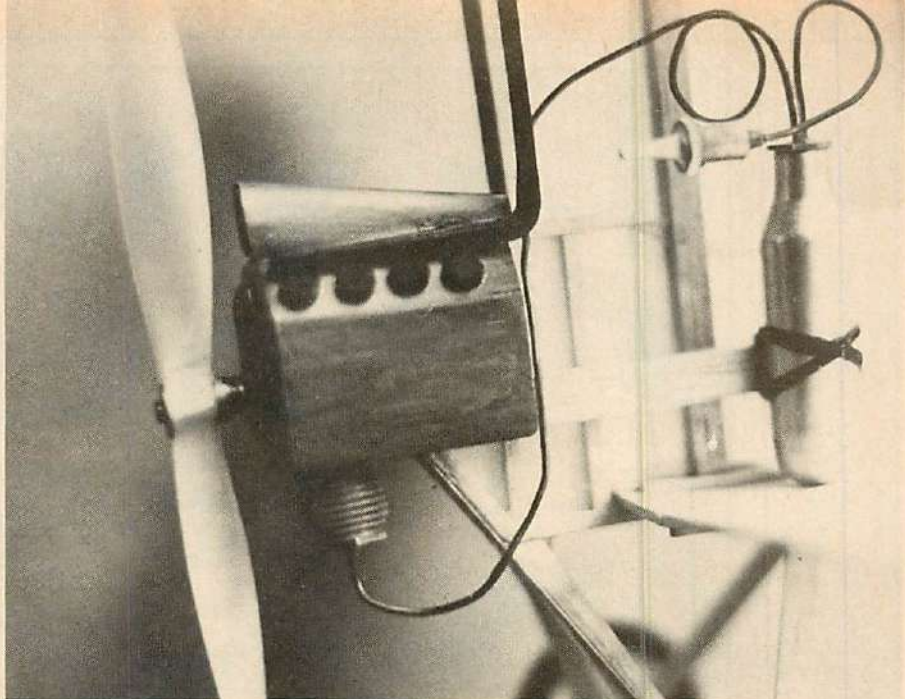
Several additional flights were made with virtual "carbon copy" results. The model is definitely a floater in the glide and a slow, steady climber under power.

I did not attempt any flights at a higher r.p.m. setting as the engine speed used gave such realistic scale flights. It is entirely possible that my left turning trim would increase in intensity if a higher r.p.m. setting were used. The only advantage of the higher setting would be to possibly gain a greater altitude (even here, there is some doubt as the higher r.p.m. would result in a shorter engine run). I much prefer, however, to see a model of an antique aircraft flying at a scale speed and climb angle.

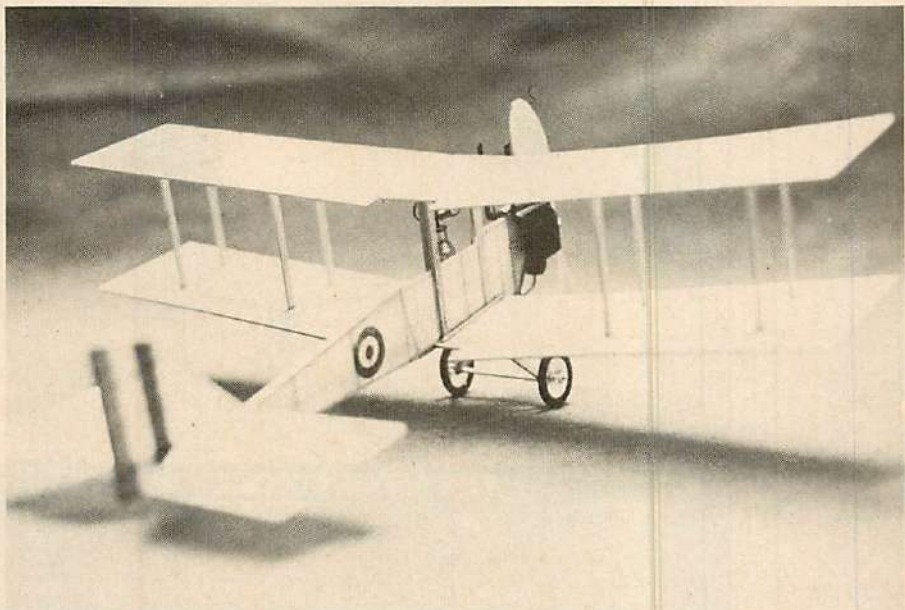
If a higher speed run had been used, and if it caused a "too tight" left circle, I would trim by attaching a small card stock tab to a left wing and adjusting downward to lessen the amount of left turn. I would definitely recommend against trying to warp adjustments into the flight surfaces.

An ROG flight was attempted off a hard surface and the little D.H. 6 responded like a champ. The takeoff run was only about four to five feet before it was airborne, and again it settled into its climbing left turn.

No damage was done to the model during these flights and, normally, I would probably have "shot up" a few more CO₂ cylinders. The problem was that outdoor flying in the northeastern part of the country in mid-January is something less than comfortable. I decided to surrender to my desire for



The Shark CO₂ engine installation is shown (above). The pressure tank is fastened to the main fuselage beam exactly on the center of gravity. The dummy scale engine is also visible. A very scale-like ship.



a little more comfort and discontinue flying for the day.

In summary, this kit must be considered a very good value for the price. All materials provided are of good quality and in ample supply. An oversupply of strip wood in all sizes is included and if care is taken in cutting and handling parts, a good start on a scrap box of good strip wood should result.

The model goes together quickly, flies well, and looks good. What more can be asked of a flying model kit?

There has been considerable discussion, in recent years, concerning the so-called "junior problem". Where are tomorrow's modelers coming from? What is being done to help the beginner along? I have no intention of getting into this discussion, but in building and flying this particular model, it became quite evident to me that Vintage Aero was doing its share toward the solution of this problem if, indeed, it is a problem. I'll

agree that a young modeler can be "turned off" by a succession of stick type flying models and, from experience, I'm aware that most want to build a model that looks like a real aircraft. It has always been a difficult step, however, from the stick type model to the flying scale model. The "scale-like" profile flying model appears to be an answer and the subject of this product review is an excellent example of what can be done to hold the interest of the new modeler. Not only that, but Vintage Aero is making available a number of different types in this series.

This is not to say that the kit is only for the embryo builder - not in any way! After forty-plus years of building all types of models, I found that the building and flying of my D.H.-6 was a most relaxing and enjoyable experience. And, further, I fully expect it to be around for a while providing continuing pleasure and enjoyment.



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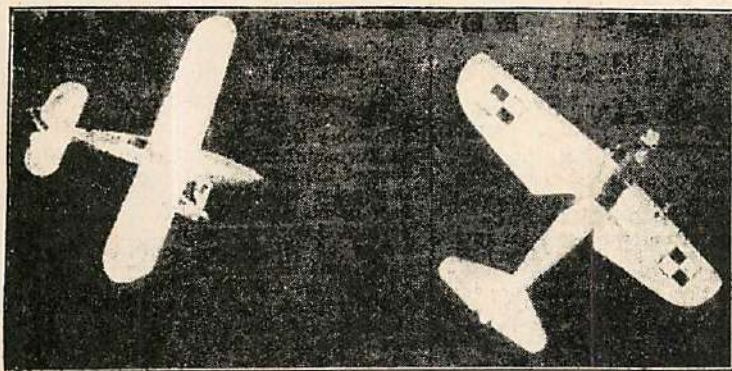
**FLYING
ACES**

The "Heron" gas buggy article in this issue reprinted from the December 1939 issue of *FLYING ACES* not only tells the reader how to build and fly this good-looking 48-inch span airplane, but tells a little of some of the problems they had flying in New York's Van Cortland Park in 1939. Nick Limber, the writer, tells of Frank Gagne's, the designer's potential trouble with "the long arm of the law" as he puts it. It just goes to show you how little basic things seem to change in the span of forty years.

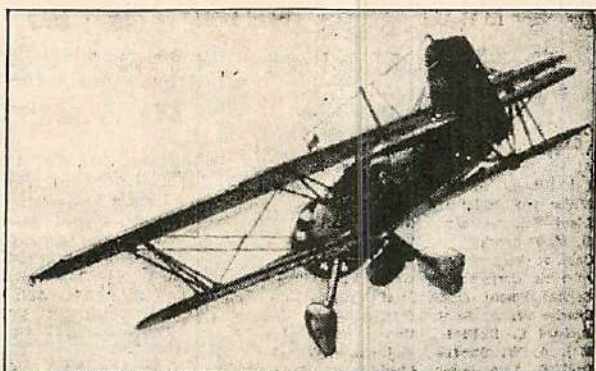
The "With the Model Builders" page of photos has a good selection of various airplanes that we felt seemed to capture the flavor of what the folks were flying in 1939. The photo in the lower left corner has Claude D. McCullough third from the left in the group shot. Claude continued his model aviation ways and is now with Sig Manufacturing Co.

Since we've started doing this series of *FLYING ACES* reprints, we've gotten many letters from readers complimenting the decision and asking for more, but never were we really aware of how well they were received as when we made the rounds of the WRAMs show in New York and the Toledo show this year. Literally hundreds of modelers both young and old have expressed their enthusiasm for the idea and told us how much they look forward to each new issue of *FLYING MODELS*. We'd like to take this opportunity to thank them all and pledge that, not only will we endeavor to keep *FLYING MODELS* following the tradition of *FLYING ACES* with great designs but we will also endeavor to give you what you want in a modern, contemporary model airplane magazine.

With the Model Builders



Hold on there a moment! Do our eyes deceive us, or is that really a Hawker "Fury" on the tail of a Polish PZL-6? Heck, we thought they were allies! But don't get worried, fellows, because this is just a shot of two of Lowrie McLarty's jobs. Looks like our Canadian reader made a swell job of 'em too.



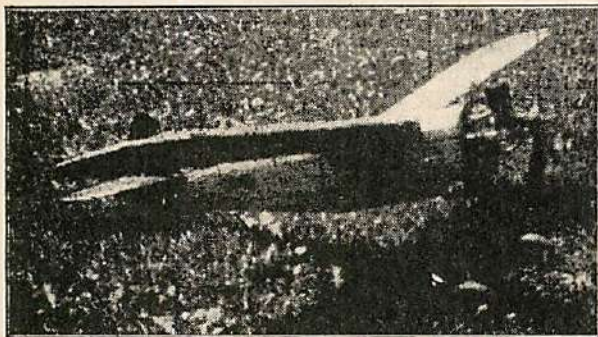
Arlo Koontz, of Onawa, Iowa, says that he's been trying to "make" this page for a long time. But he won't have to worry any more about having his photos published—for this shot of his Curtiss Navy F11C-2 is tops!



A few weeks ago John Pope, of Durham, N. C., dropped into the office for a short visit and gave us this view of his "Baby Cyclone" powered gas job. But don't let the smallness of the photo fool you, for the model is plenty big—having a 6' span and a 48" length. John says she flies swell in all types of weather.

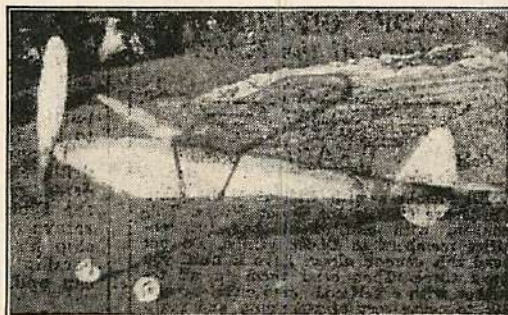


It took Dan Williams, of Gadsden, Texas a full 160 hours to finish off this "Quaker Flash." And we think that the time he spent on it—from April 24 to May 22—was well spent. For she's a honey! The ship's powered with a "Syncro Ace," has a 5'-7" span, and weighs 3 lbs., 3 oz.

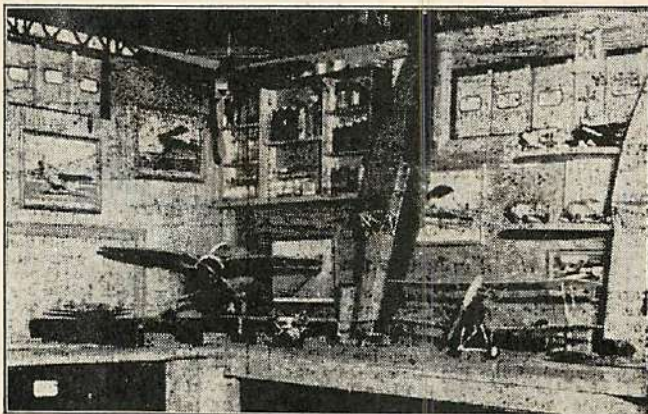


This gas-powered "Mighty Mite" (May, 1938, F.A.) was built by Jim Shutt, of Columbus, Ohio. The craft is powered with an "Atwood Phantom." According to Jim, the ship made a full loop and pulled out a bare three inches above the ground on its first hop.

Right: Now we have the "High Climber" (August, 1939, F.A.). This craft was built by Bob Babskie, of Glen Lyon, Pa., and seems to be a striking replica of Earl Stahl's original model. Bob tells us he's had over 31 flights to date without even on serious crack—!



Here's a line-up of some of the members of the Hi-Y Aeronauts, of Fairfield, Iowa. Don Fuqua, who supplies many of our Workbench Tips, is second from the left. And Claude D. McCullough, who designed the "Cub Coupe" (October, 1939, F.A.) is third from the left. Looks like the boys have got many nice models.



We've seen many neat workbenches in our time, but this one of Charles Glock's really takes the tail-skid! Charley, who lives in New York, has been building models from F.A. plans for many years, and his pride is his enlarged "Moth" (August, 1937, F.A.), the up-ended fuselage of which is in the center of the bench. That's a Stinson there to the left, of course.

"Heron" Gas Buggy

MODERN MEDICINE is indeed wonderful—but heck, it just can't do anything for the modeler who's been stung by the "gas bug." The best remedy for the "unfortunate" is a good dose of balsa, cement, and a set of drawings. The two former items, we dare say, may be obtained from your local dealers, the latter we're here to administer in person!

This month's sky-scootin' gas buggy is a consistent little flyer designed by Frank Gagne, of New York. Frank was flying his craft at Van Cortland Park when yours truly spotted the ship. It was indeed inspiring to watch Frank rev the engine, cast hurried glances around him, and then let the tiny job take to the sky with a climb as steep as a Seversky's dive. Yes, while all the other modelers were preparing their ships for flights and the long arm of the law was desperately attempting to ground all gas buggies, the Heron would take to the sky, complete a graceful flight and land before any peace officer had time to lecture its builder.

After one afternoon of this nerve-racking procedure, it was easy to see that Frank's ship had what it takes. Yes, consistent flights are what a fellow needs in these parts if he expects to fly his ship at all. With all the policing and campaigning to ground gas buggies, there are no two ways about it. Your ship *must* take to the air like a fish to water or else all is not so well once the long arm of the law rests upon your shoulder!

Not only does the Heron serve its purpose in restricted areas, but is dependable to take to the air without coaxing or hesitation. The latter we venture to state is what builders pray for when in contests. So gather around and we'll give you the lowdown on the construction details of this high flyer. Are you ready? Okay, modelers, here we go—

CONSTRUCTION OF THE FUSELAGE

IN MAKING the body, first assemble the two side panels, using 3/16" square balsa of medium hardness. These panels may be made on a jig, constructed with nails placed alternately at the points of the panel where most bending occurs. When the sides have been completed, cut the bulkheads out of 1/8" ply and cement into position the full bulkhead, just aft of the rear landing spar, and the half section, at the first upright brace. The cross-braces are then cut to size and cemented to the structure.

A floor board of 1/8" sheet balsa is cemented to the bottom of the body, and to this the coil and battery box are fastened. The timer, as you will note in the plans, is mounted at the side of the fuselage on to a triangular sheet of balsa designed for this purpose. The booster battery outlets are also located on the same triangular brace. A piece of 1/16" sheet balsa is cemented to the bottom of the rear part of the fuselage, and onto this the tail wheel

or skid is mounted, using plenty of cement.

Carved from a piece of 1 1/2" by 2" by 2 1/2" hard balsa, the nose of the model is cemented to the first bulkhead. The motor mounts, made of 7/16" by 5/8" by 5 1/2" pine, are slipped into place and fastened to the structure. The landing gear is bent from 1/16" wire and attached to the fuselage as indicated in Fig. 2.

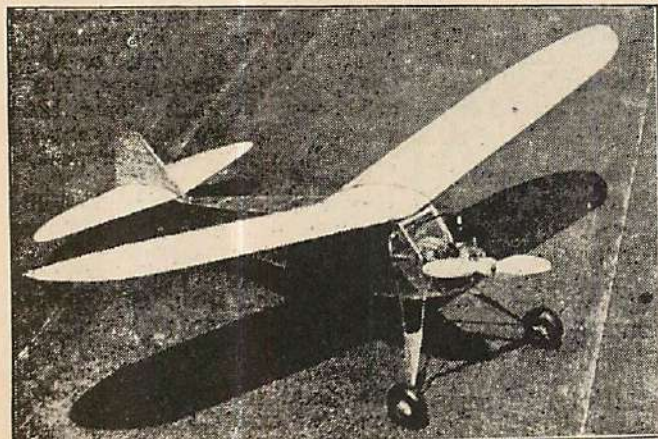
Note that Fig. 1 indicates the general shape to be assumed by the nose-block. Actual shape of the landing gear will be found on Fig. 4. Sheets of 1/16" are laminated to form a 1/8" fillet which is cemented at the lower ends of the landing struts, as indicated.

After the landing gear has been completed and cemented to the fuselage, two strips of hard balsa, 3/8" by 3/8", are cemented on the inside of the

"Chug-chug-chug, well all right. Zoom-zoom-zoom, well all right. Glide-glide-glide, well all right." Yes, fellows, that's the way we'd word that currently-popular ditty if we knew anything about music. But since we can't do anything except pick top-notch models for you fans, we'd better leave that job for some other guy. And since we DO know how to choose power jobs, we'll give you a little advice: If you want to be the envy of every modeler in your district, build this little "Heron" pronto!

By Nick Limber

Designer of "Petrel" Gas Job," etc.

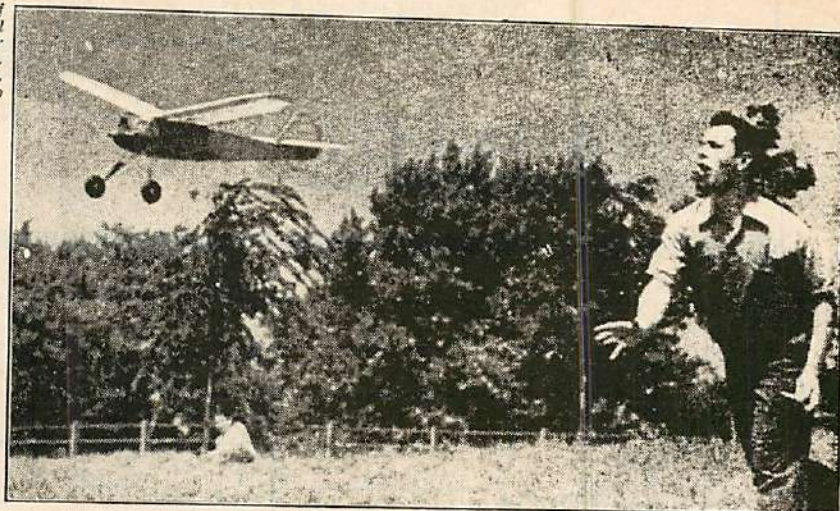


This shot of the "Heron" shows what a truly clean job she is. And you can also see that her landing gear was designed for strength as well as beauty. Yes, that l.g. was planned to absorb every shock that comes with hard landings.



And now we see Frank Gagne—the young chap who designed our "Heron"—proudly displaying his brain-child. True, she's just a mere handful of flying power. But—take it from us—she's a handful that's really worth working for!

Right: It was plenty hard to get a good flight shot of this month's gas job—because she wouldn't stand still long enough to be snapped! But after several tries, our cameraman came through with this remarkable pic. And just look how Frank Gagne's got his mouth open. Better close it quick before the "Heron" tries to set-down in your "hangar!"



top longeron to strengthen the wing bed.

Short lengths of 1/16" aluminum tubing are glued to the tail post and to the former directly in front of it, to accommodate the rudder shaft. Bind the tubing into place with thread and coat it liberally with cement. The tail block is carved from medium balsa, 7" by 1 1/2" by 2", and glued in position.

Note that it is important that the motor be installed allowing for 1/2 degree of right thrust and 1 degree down thrust. When drilling holes into the motor mounts allow for this off-set.

MAKING THE WING

CUT RIBS from 1/16" sheet balsa. Cement them to the spar, and when the cement has hardened attach the trailing edge. Insert the leading edge and the 1/8" square spars. The forward portion of the wing is covered with 1/32" sheet balsa. The wing tips are carved from 1/8" sheet. Incidentally, the sheet balsa covering of the leading edge extends around the under surface to the 1/8" square spar.

A dihedral of 4 1/2" is required under each tip. This is built into the wing by cementing "V" plates onto the center portion of the main spar and binding into place. When the assembly has been completed, the center portion is covered with 1/32" sheet; this includes the under surface of the section, also. For the sizes of the materials used in the construction of the wing, refer to the "Bill of Materials."

TAIL ASSEMBLY

BOTH the rudder and the elevators are constructed in the same manner, therefore a general description for their construction will be given rather than a detail account of each unit.

The rudder outline is of 1/8" sheet. The ribs are of 1/16" by 3/16" sheet, which are streamlined and cemented to the spar. Strips of 3/16" balsa are used for the spars. To these, 1/16" wire is cemented. Thread and a liberal amount of cement are used to hold the wire in place. Small wire hooks are cemented to the outline of the unit, as indicated.

Trace the stabilizer ribs from the plans and cement them to the main spar. Attach the leading and trailing edges, form the tips, and sandpaper to shape. Fig. 3 indicates that a strip of 1/4" balsa is glued to the center-section of the elevator. To this, the rudder spar and rods are inserted. Be sure, however, that the fit is neither too loose nor too tight. Continue to experiment until you get exactly the correct size.

COVERING THE MODEL

YOU MAY use either bamboo paper or Japanese silk to cover the Heron. The original craft was covered with paper. But, no matter which you select, apply a liberal amount of dope to the frame of the portion being covered as an adhesive. The dope, incidentally, is mixed with an equal amount of cement in order to obtain best results.

Clear dope is applied to the units after the covering has been completed. Several coats, of course, may be applied, depending upon the effects desired and the grade of covering used.

Coloring the craft will be left to the judgment of the modeler. It is advisable, however, that a bright combination of colors is used, so that the model may be clearly seen when at high altitudes. And after painting, take your craft outside for testing.

ADJUSTING AND FLYING

DO NOT under any conditions attempt to fly the model unless she has been balanced after the motor has been attached. First glide the craft from a low altitude and make adjustments until stable flights and perfect landings are achieved. Adjust in the orthodox way for any kinks that may appear while balancing the ship. Usually by shifting the battery box, the proper adjustment of weights may be made and perfect balance achieved.

When balanced, set your timer for a twenty second run, rev-up your motor, and head her nose into the wind. The tiny craft will take to the air in short order if the instructions have been followed and the proper adjustment made. A check-up after each landing is an advisable habit to get into, because this will undoubtedly make for longer life of the ship.

Well, fellows, that's all there is to it! So get busy on this job before it's time to start on your home-work. And if you by chance run into any difficulty, let's be "Heron" from you. (Haw-w-w-w-w-w!)

BILL OF MATERIALS

(All wood is medium balsa except where otherwise specified)

Eight strips 3/16" sq. by 36" for longerons and braces;
Four strips 1/8" sq. for diagonals;
Four strips 3/16" by 3/4" for spars and trailing edge;
Four sheets 1/32" by 2" by 36" for leading edge covering;
Four strips 1/8" sq. by 36" for wing spars;
Three sheets 1/16" by 2" by 36" for ribs;
Two strips 3/16" sq. for leading edge;
Two strips of 7/16" by 5/8" by 5 1/2" pine for motor mount;
One sheet 1/4" plywood for bulkheads;
One strip 1/8" by 3/8" by 18" for wing bed;
One sheet 1/8" by 3" by 18" for floor boards;

One block 1 1/2" by 2" by 2 1/2" for nose;
One block 7" by 1 1/2" by 2" for tail block;
One sheet 1/8" by 2" by 36" for wing tips and "V" spar plates;
One sheet 1/8" by 2" by 36" for tail outlines;
One strip 1/16" by 3/16" by 36" for tail ribs;
One sheet 1/16" by 2" by 18" for stabilizer ribs;
One length of .049 wire for tail skid, one length of 1/16" wire for landing gear, bamboo paper or silk, clear dope, cement, pigmented dope, and all the rest of usual supplies.

F·A·HERON

Fig 1

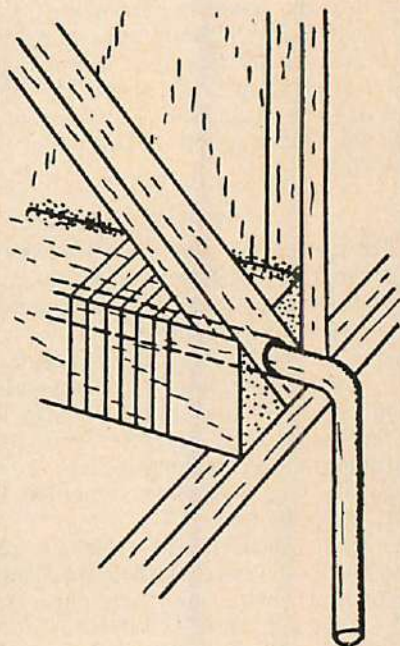
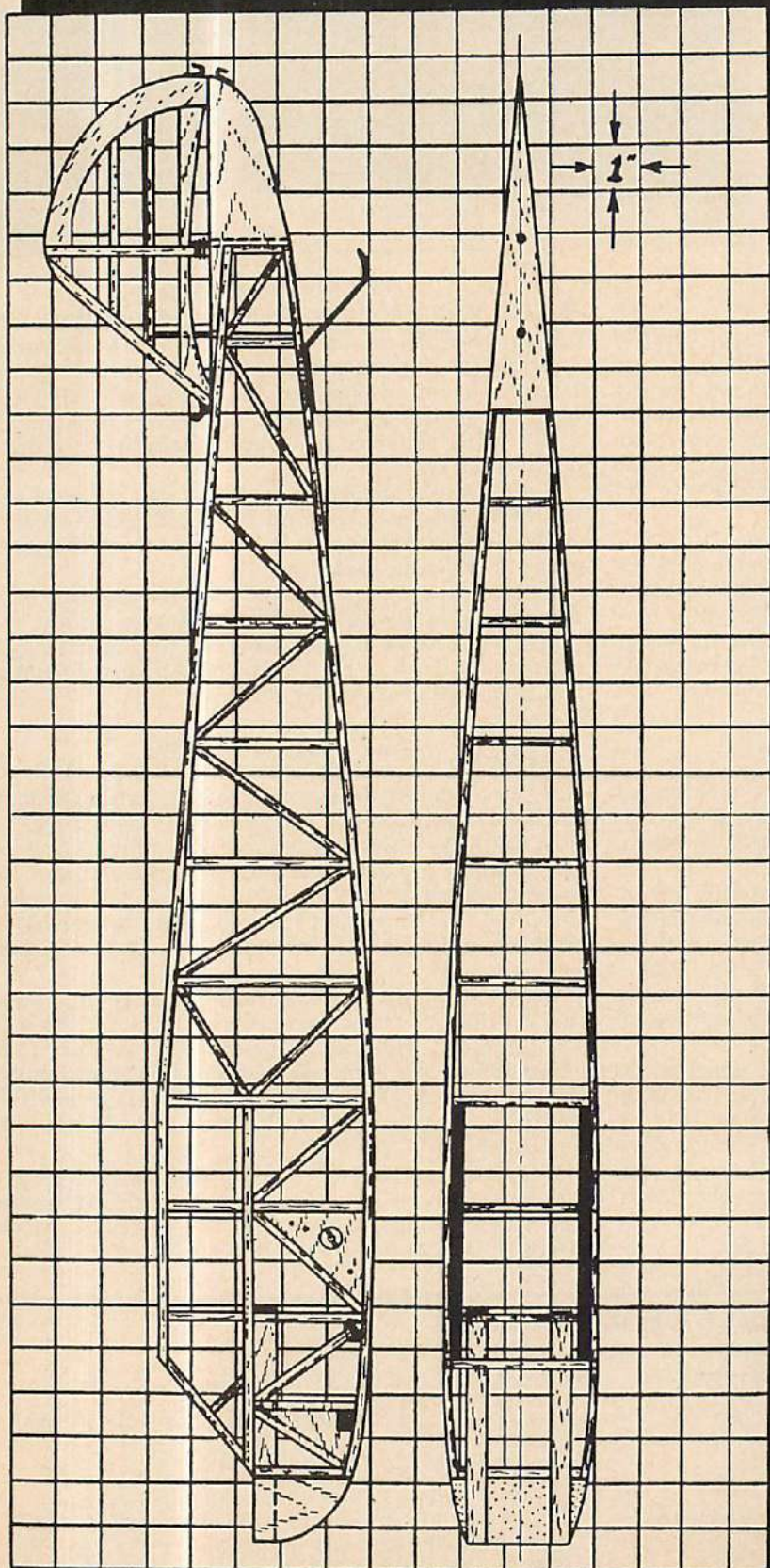
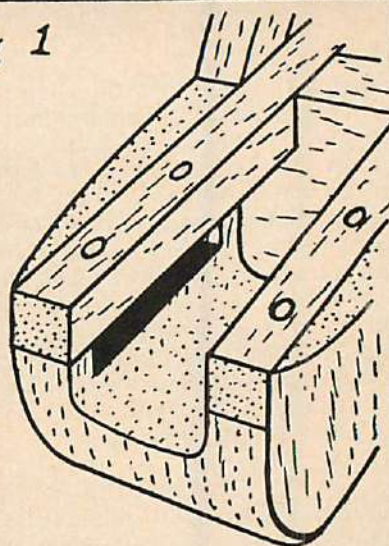
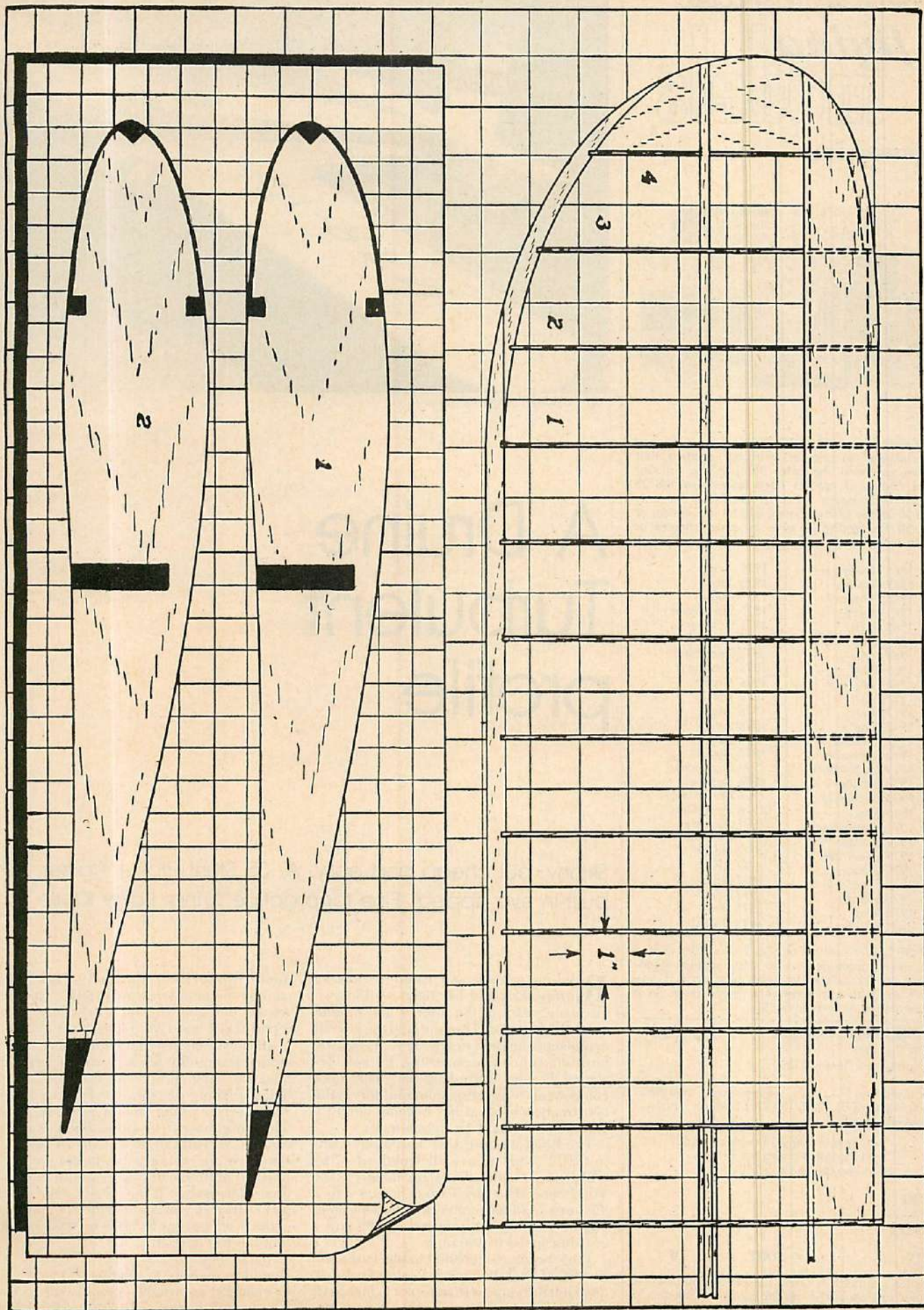


Fig 2

NOTE - FIGURES ARE
NOT 'TRUE SCALE':
FIG.1 MOTORMOUNT
FIG.2 LANDING GEAR

TRY THIS "HERON" GAS BUGGY—Plate 2



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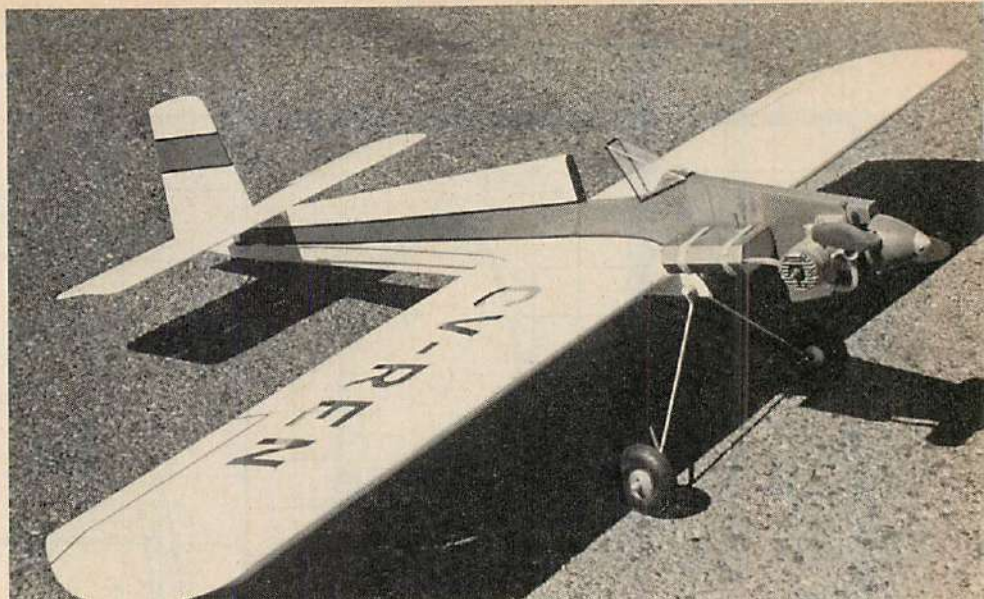
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PHOTOGRAPHY: LARRY KRUSE

A Druine Turbulent profile

Skinny, but cheap and easy. A .35 Stunt Profile Trainer with built-in eye appeal. Fine for practice flying/Larry Kruse

Rollason Aircraft and Engines, Ltd. of Surrey, England has been well-known for many years in the aircraft and engine overhaul business. They entered the aircraft manufacturing field nearly 20 years ago, by building, under license, the French designed Druine Turbulent, and Turbulent components to assist amateur builders in the construction of what has become almost a European standard for light aircraft.

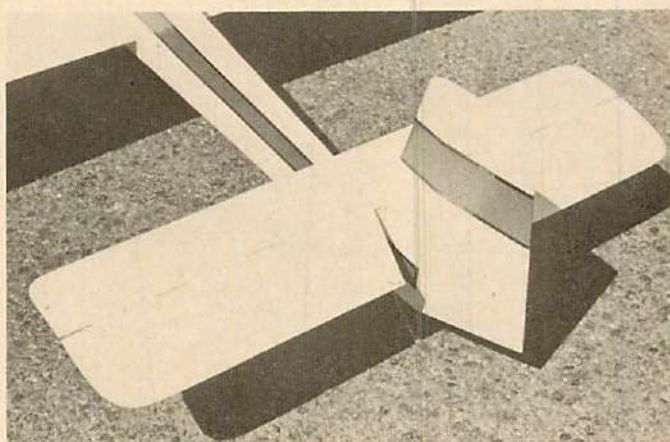
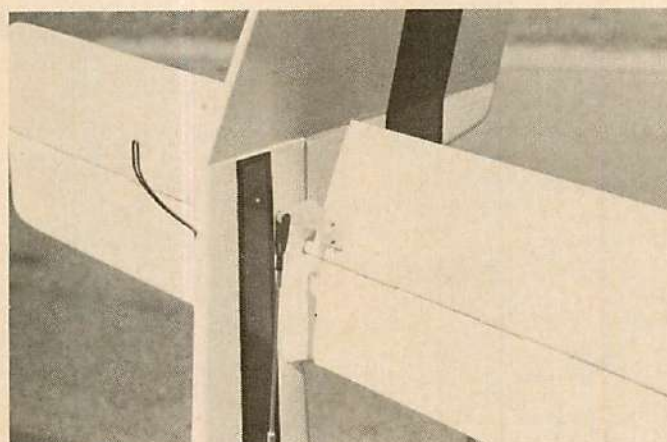
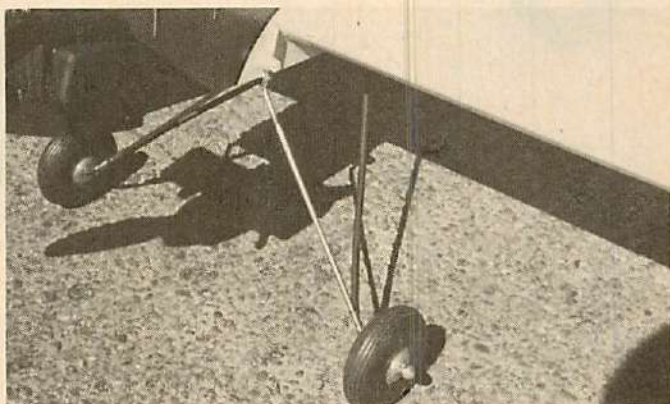
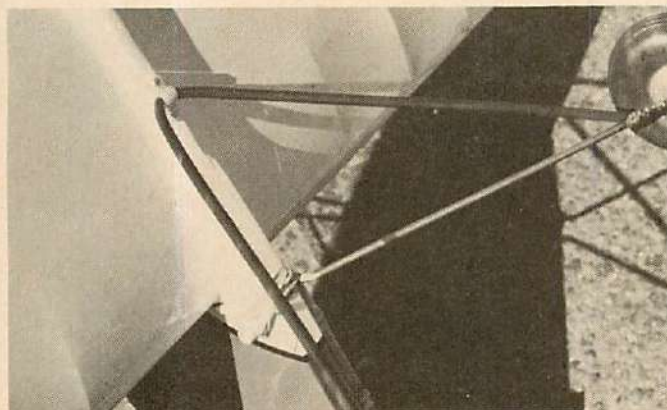
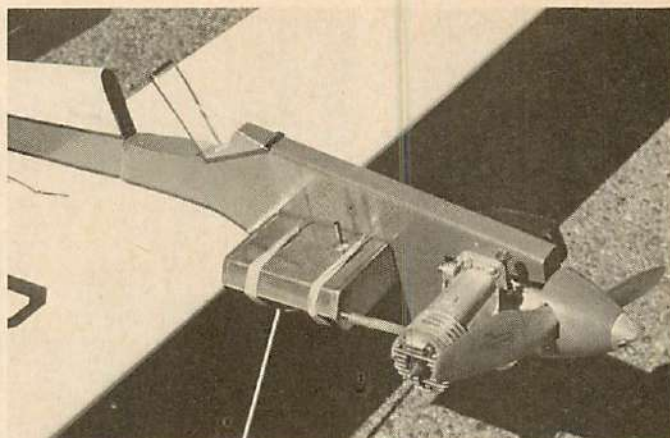
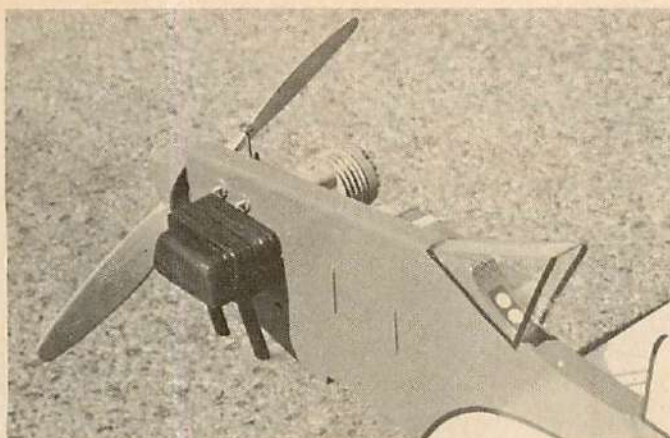
The Rollason-built D31 Turbulent spans just 21'7" with an overall length of 17'6", which puts it in the same size category as the Volksplane. The tiny Turb is powered by a 45 horse Ardem (converted Volkswagen) engine and has a top speed of 109 and a cruising speed of 100 mph.

I first became interested in the Turbulent by way of Peck-Polymer's Peanut Scale kit, and later did some research on it in *Jane's All the World's Aircraft* - '73-'74. It had ade-

quate proportions for an intermediate stunter and an interesting profile that I felt would look good in the air. I'm happy to report that I was right on both counts.

All construction of the Druine is centered around the profile fuselage which serves to hold the wing and tail in place as well as being a handy place to hang your engine. The fuselage is cut from a 1/2" balsa plank which may have to be laminated unless you can buy 1/2" balsa in greater than 4" widths. Bandsaw the thing a bit larger than its finished outline and coarse-sand it down to final dimensions. If you really want to be picky about it, you could even taper the rear of the fuselage now to 3/16" where the rudder (not the fin) joins it.

Maple motor bearers and 1/8" ply doublers should be epoxied in position and weighted or clamped overnight or until cured. You may have to adjust the width of the space



between the motor bearers if you are using an engine other than a Fox .35.

Drill out the motor bearers and install blind nuts to suit your engine, and carefully drill holes for the tank mount wires, if that's the mounting method you have chosen. While you've got your drill out, you may as well make a $\frac{1}{4}$ " dia. hole for the landing gear lash-down dowel, too, and epoxy it in place.

The stabilizer, elevator, and rudder are all cut from firm $\frac{3}{16}$ " balsa. The two halves of the elevator are joined by a $\frac{3}{16}$ " dowel. I used standard over-under cloth hinges for the stab/elevator joint, but that was not my original intent.

I had some Du Bro hinges on hand, and thought that they'd work just fine. They would have, too, if I hadn't tried to just eyeball the hinge slots when I dug them out. A hinge gouging tool and guide are well worth the little extra money of the initial

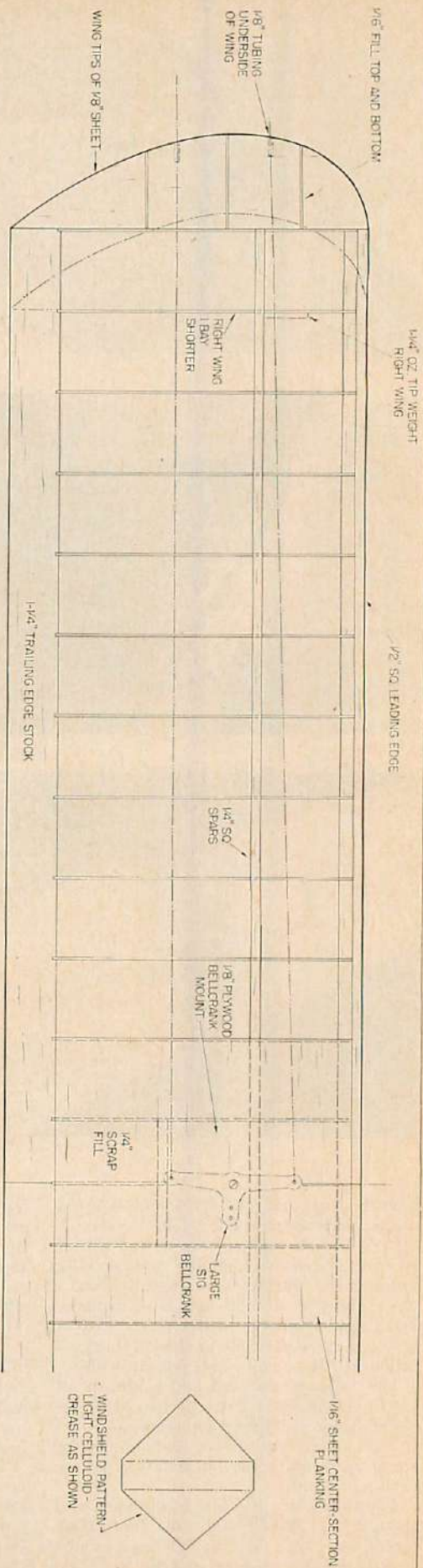
purchase. That thought flashed through my mind as I tried to force perfectly good Du Bro hinges into misaligned slots in perfectly good $\frac{3}{16}$ " C-grain balsa filled with perfectly good 5-minute epoxy. I always feel a little silly hurling curses at perfectly inanimate objects.

The W-1 wing ribs should be cut from $\frac{1}{16}$ " medium hard balsa. The W-2 ribs for the center-section need to be firmer for the bellerank mount, so if you've got some hard $\frac{1}{16}$ " sheet you haven't been able to use yet, here's the place and now's the time.

The trailing edge stock needs to be notched to accept the ribs. A hack-saw blade broken in half and doubled makes a good notcher. A strip of masking tape placed $\frac{1}{8}$ " above the cutting teeth will let you control the depth of the cut and assure the uniformity of the notches.

Pin the bottom spar down on the plans and

slip the ribs over the spar, but don't glue them yet. Slip the ribs into the slots in the T.E. but don't glue the joints yet either. Now place the $\frac{1}{2}$ " sq. leading edge in the rib notches, making sure each rib fits snugly. Slide each rib backward or forward until it is well aligned against the leading edge. The L.E., T.E. and spar joints can now be glued. Before adding the top spar, check the alignment and make sure the wing hasn't twisted. Epoxy the bellerank mount to the mount rails and to the bottom spar. Assemble the bellerank, lead-outs and pushrod, then check them for smoothness of operation. Notch out the L.E. for the spruce landing gear bumper and epoxy it in place. Center-section sheeting along with the $\frac{1}{8}$ " tips will complete the wing. Lead-out guides are pieces of $\frac{1}{16}$ " brass tubing epoxied into notches sanded into the bottom of the in-board wing tip. About $1\frac{1}{4}$ oz. of lead is



OUTLINE WITH D.U.'S MULTI STRIPE

3/8" X 1/2" MAPLE MOTOR BEARERS

2" DIA. SPINNER

NOTE: DUMMY CYLINDER OMITTED FOR CLARITY

1/4" LANDING GEAR LASH-DOWN DOWEL

1/8" DIA. MUSIC WIRE LEGS

1/8" DIA. MUSIC WIRE LEGS

1/8" DIA. MUSIC WIRE LEGS

1/4" BALSA LAMINATE

3/16" DIA. DOWEL DUMMY EXHAUSTS

REMOVE SECTION TO INSERT WING, THEN EPOXY IN PLACE

1/8" PLY INSERT

1/8" PLY INSERT

1/8" PLY INSERT

1/8" PLY INSERT

1/8" PLY INSERT

LANDING GEAR PATTERN 1/8" DIA. MUSIC WIRE

1/2" BALSA FUSELAGE

1/2" TRIANGULAR BRACE

1/8" DIA. MUSIC WIRE SKID

SIG CONTROL HORN

OFFSET RUDDER 1/2" TO THE RIGHT

FIN

RUDDER

3/16" SHEET

3/16" SHEET

3/16" SHEET

3/16" SHEET

3/16" SHEET

3/16" SHEET

3/16" SHEET

3/16" SHEET

3/16" SHEET

3/16" SHEET

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needed in the outboard tip. Give the wing a careful sanding in preparation for finishing. Eliminate all glue bumps and rough spots. They will show through regardless what you use for covering.

The remaining accessories that need to be fabricated are the landing gear, the tail skid, and the dummy engine cylinder.

I'm always amused by construction notes that say something like - "The landing gear can be easily bent from 1/8" dia. music wire." For me, there's no way to "easily" bend 1/8" dia. music wire. I had two types of wire bending jigs and a good vice for this job, and it still was a tussle to keep the wire from developing a torsional twist. So bend it any way you can - and good luck.

After the landing gear, the tail skid is no problem. I used a piece of music wire bent double for durability, epoxied it into a pre-drilled hole and slot in the fuselage. A little piece of fiberglass will really keep it in place permanently.

The dummy cylinder is made up of 1/4" balsa laminated as per the plan with 3/16" dowels for exhaust pipes. I gave mine two or three coats of flat black dope which simulated the machined metallic texture of an aircraft engine fairly well.

Assembly of all of the components should be done sequentially. Slip the landing gear in place, slide the wing into position and epoxy it. Block up the wing and fuselage until the epoxy is cured, then add the bottom fill piece under the wing. Epoxy the stabilizer. Again, block up the fuselage and wing so correct alignment is maintained. Once the stabilizer is set, put the rudder in place with epoxy. The stabilizer support blocks are necessary to keep from peeling the stabilizer off at the bottom of a loop. Don't forget them.

Sand everything one more time in preparation for finishing. I used Hobby Pox white for the plane's base color and green for the trim color on the rudder and the fuselage. The wings were covered with white MonoKote. Trim lines were black DJ's multi-stripe and the lettering was stolen from model railroad decals. The windshield was cut from light celluloid, outlined with DJ's, and Hot Stuffed in place. Simulated instruments were punched out of white MonoKote with a paper punch and pressed into place.

The auxiliary landing gear strut adds a certain amount of realism to the plane, since the full scale Druine is set up that way. The auxiliary strut on this model is actually black fuel tubing forced over short wire spurs soldered to the landing gear proper and clamped to the fuselage with a Sig landing gear clamp. It looks good, and yet has the ability to collapse under shock loads as the main gear wire moves back ala Goldberg's Shoestring Stunter, Buster, and Cosmic Wind.

Flying is as you would expect from a profile stunter of about Magician dimensions. Approximately 45° elevator movement should be evident in both the "down" and "up" positions. The plane should balance close to the indicated C.G. A little in front of the indicated mark is okay, a little in back could cause you to do funny things in the flight circle. Add weight to the nose or tail until it's right.

The Druine Turbulent is just different enough from the usual profile machines that it attracts spectators on the ground, and it will please you with its performance in the air.

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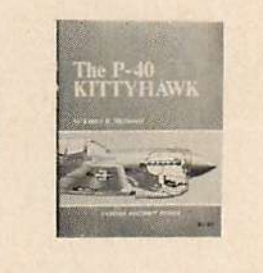
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RCMB at the Toledo Show

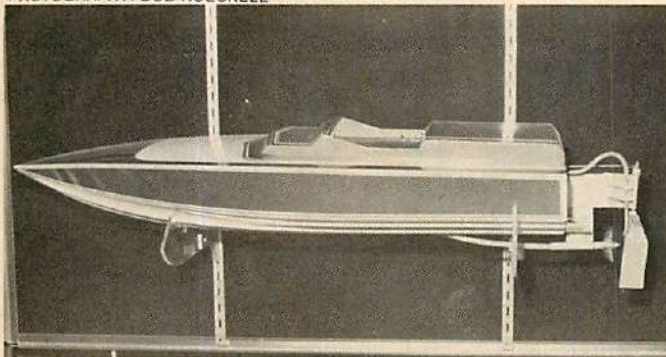
Toledo is not only the place to be if you like airplanes, boaters are coming in droves/**Bob Hoeckele**

Model boating is alive and well and was living in Toledo on April 7, 8, 9. Not only were the manufacturers of the products that model boaters need well represented with many fine offerings but the static competition was bursting the seams of the area that was set aside for it. The level of competition was high too and the winners in all categories really worked for their glory. In talking to the various manufacturers we got the impression that public interest in R/C

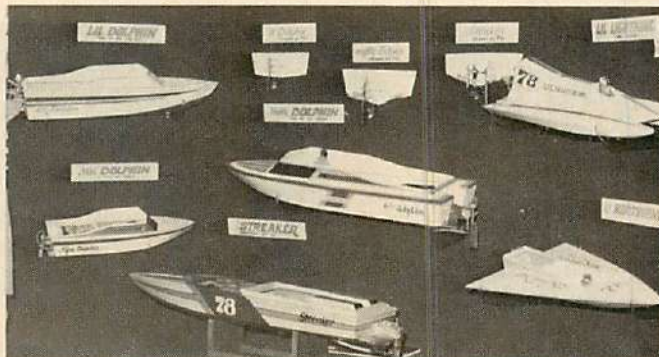
model boating is at an all time high and many airplane modelers as well as folks new to R/C are actively seeking out information on how to get started and what makes a model boat work. What all this points to is increased growth for model boating in general which will lead to even better products for us all to use and enjoy. The growth also seems to be across the board, that is, not only

in racing boats but in sail and scale as well. The entry of Dumas into sail and the abundance of Scale glass hulls from manufacturers like Staubit of Buffalo as well as the proliferation of outboard hulls are taking a lot of the mystery out of model boating for the uninitiated. All in all it was a great show for R/C model boating and if you can, don't miss it next year.

PHOTOGRAPHY: BOB HOECKELE



DUMAS PRODUCTS, INC., 902 E. 17th St., Tucson, AZ 85719, introduced the Competition Deep Vee 21 designed for 3.5cc racing engines to handle rougher water. A mahogany and birch ply kit, it's available now.



STEVE MUCK'S BOATS, 6003 Daven Oaks, Dallas, TX 75248, had Steve there showing his complete line including the new Streaker DV for 6.5 engines and the Mighty Dolphin a DV day cruiser for 6.5 engines, competition legal.

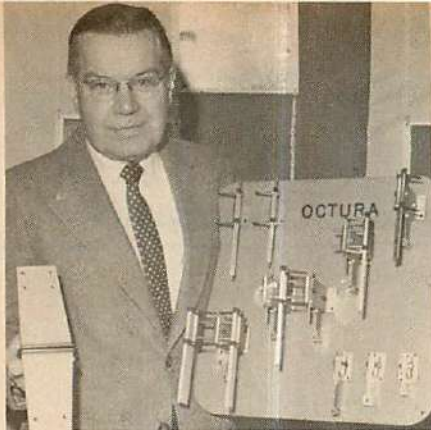


PRECISION BOAT MANUFACTURING, 4120 Richelieu Rd., Indianapolis, IN 46226, showing his new El Diablo outrigger designed for the K&B 3.5cc outboard. He is also the manufacturer of the famous Crapshooter line.

FLYING MODELS



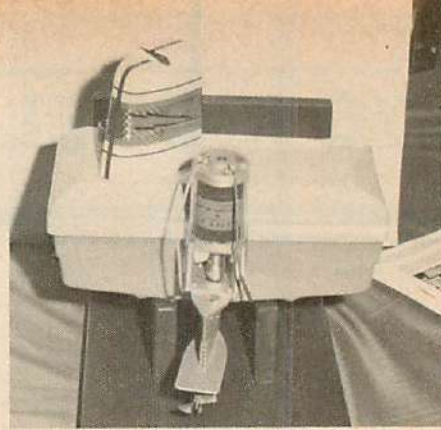
THREE-D MODELS, P.O. Box 972, Port Huron, MI 48060 had Tom Daniels and his wife showing their growing line of fine racing boats. The Ruff Stuff DV's are already famous and the Phase I tunnel and Hot Shots are on the way.



OCTURA MODELS, 7351 N. Hamlin, Skokie, IL 60076, had Tom Pyzentska showing their new rudder assemblies as well as the new larger Wing Ding kits. The new Wing Ding is 1" wider than stock.



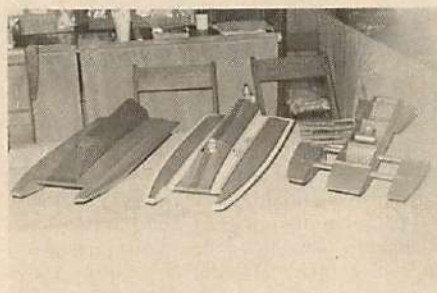
DIAL-A-PROP, 840 East 64th St., Indianapolis, IN 46220, is going strong with Dee Hughey telling the world about the endless possibilities when you make your own props.



RADIO CONTROLLED MODELS, INC., 3631 N. Kedvale Ave., Chicago, IL 60641, was showing their new electro drive outboard kit for use with Astro Flite engines. Clean, quiet and economical.



SPECIAL PRODUCTS, P.O. Box 16429, Rocky River, OH 44116, had Robert and Shirley Johasz showing their line of fiberglass hulls for scale R/C warships. Full size plans available soon.



HUGHEY BOATS, P.O. Box 68328, Indianapolis, IN 46268, had their new Hughey 21 tunnel hull with slotted propeller and the new 21 Rigger with stainless steel struts.



PROBAR DESIGN, P.O. Box 639, Escondido, CA 92025, was showing their very complete line of R/C sailboat hardware including non-jamming pulleys and adjustable gooseneck.



G&M MODELS, P.O. Box 342, Broadview, IL 60153, was there with Gary Preusse showing their Lightning Bolt 21 Mono for .09 to .23 engines. A record holding hull, glass construction.



SPORTS CYCLE AND HOBBY CENTER, 1801 E. Perkins Ave., Sanduskey, OH 44870 has Ray Ozmun with the Scampi 36, winner of the 1976 36/600 class championship. List price \$190.00



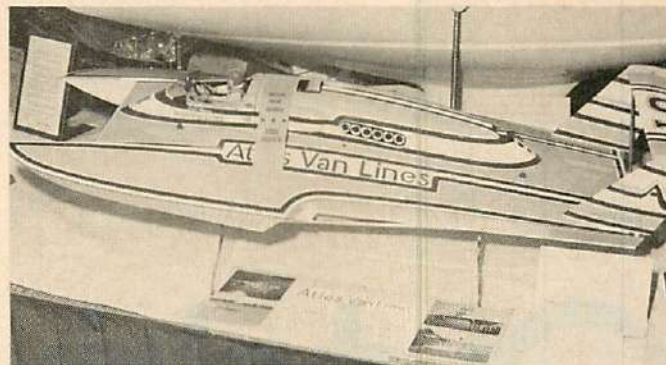
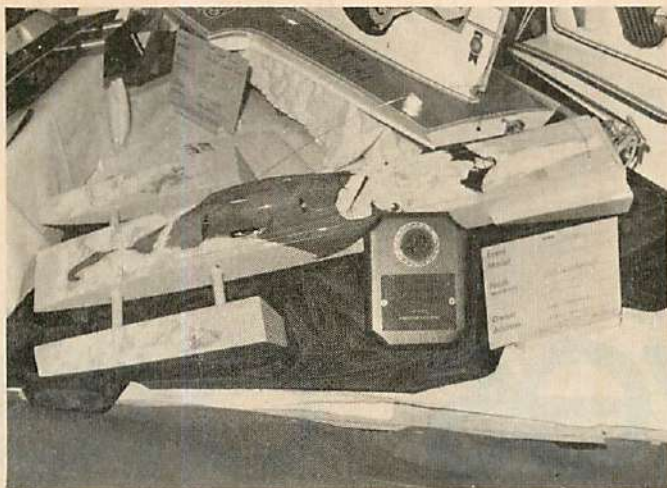
STERLING MODELS, 3620 G St., Philadelphia, PA 19134, was showing their Mk.II Puddle Jumper R/C air boat/amphibian for .15 to .35 engines. Vacuum formed plastic hull. List \$39.95.



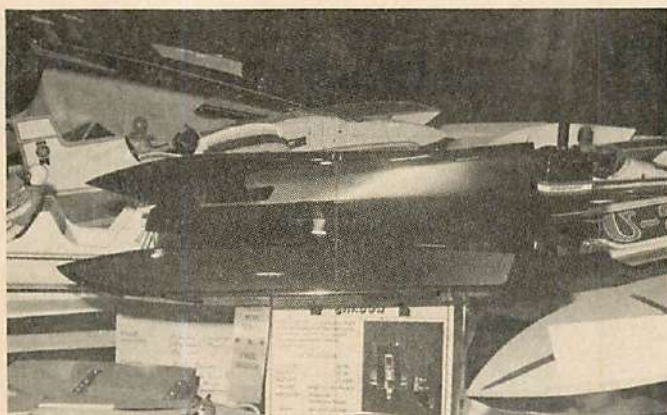
STAUBITZ OF BUFFALO, 105 Hollybrook Dr., Williamsville, NY 14221 had Glen Staubitz and Al Herod showing the line of fiberglass scale boat hulls including the Scajaquada, an ocean going tug.



SHAMROCK COMPETITION IMPORTS, P.O. Box 26247, New Orleans, LA 70186, had Louis Durand Jr. showing new powerhouses from OPS. These engines are a boating standard and the new 5-port .65 looks to continue.



Lou Torovca's hydro didn't place but was too good not to use a photo of (left). Don Bocca's Atlas Van Lines (above) took first in Scale Hydro.



Martin Casey's Twin Screw (above) and Bill Jarsky's Shadow tunnel hull took first and second respectively in the Competition Hydro class.



Duane France of Toledo took second in Competition Mono with his Banzai (left). Doug Rehauf's U-2 won third in Unlimited hydro (above). Bill Haines' tremendous (both in execution and size) tug and barge took 1st in Scale.

Toledo Show Results

Competition Mono

1. Art Konkle
2. Dwayne France
3. Dave Field

Scale Boats

1. Bill Haines
2. Bob Kline
3. Al Waut

Competition Hydro

1. Martin Casey
2. Bill Jarsky
3. Tom LaGeness

Unlimited Scale Hydro

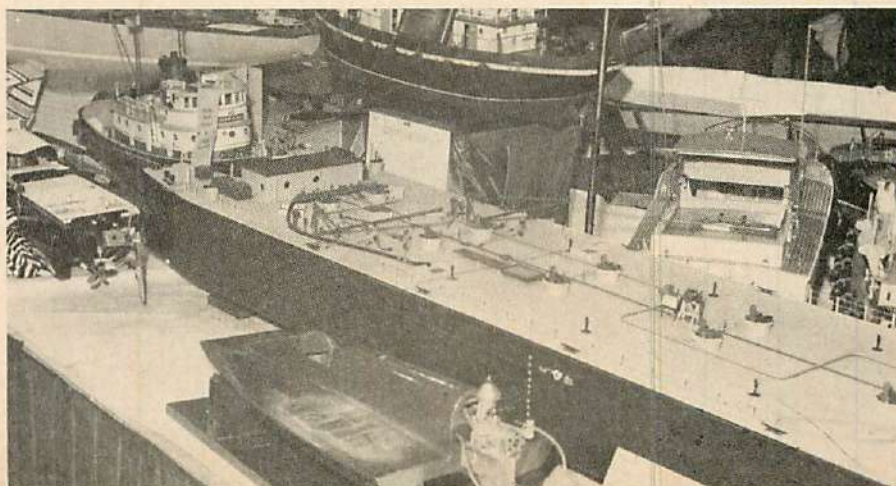
1. Don Bocca
2. Ron Trigol
3. Doug Rehauf

- Off shore racer
Deep vee
Coke Deep Vee

- Tug and barge
Coast Guard Eagle

- Twin Screw
Shadow
Outrigger

- Atlas Van Lines
Budwiser U-1
Miss US U-2



Outdrives are

For the beginner in R/C model boating, everything is a mystery. Author **Paul Stakun** tries to clear the air when it comes to installing outdrives on DV's.

PHOTOGRAPHY: PAUL STAKUN

Fig. 1

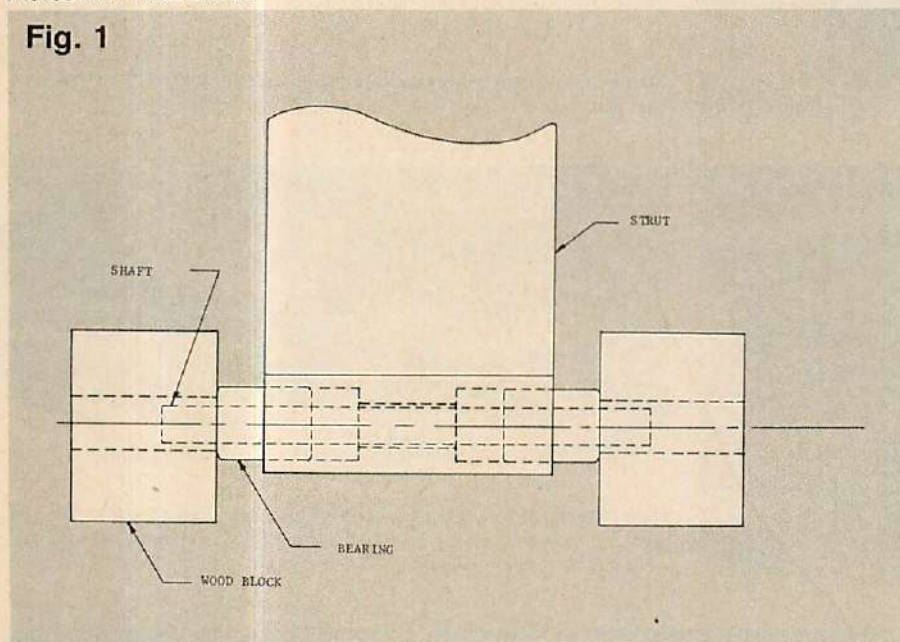
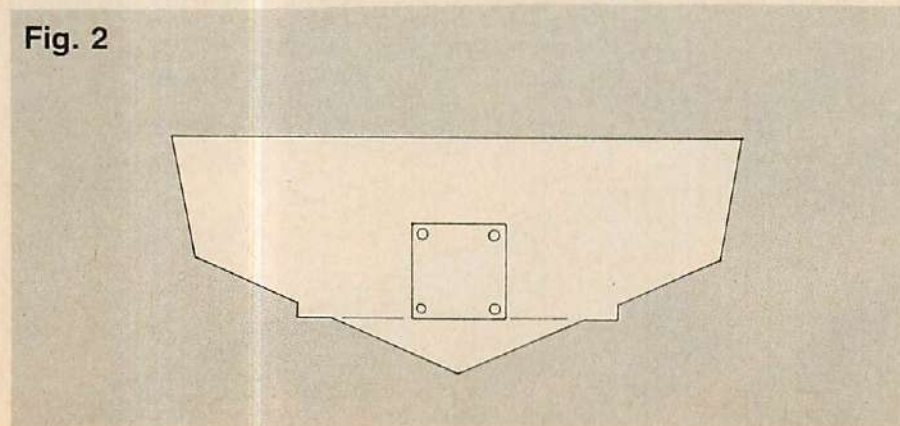


Fig. 2



Having been involved in model boating for over seven years, I guess that I've kind of taken for granted most of the basic techniques for boat building and set up. A while ago, a letter appeared in *FLYING MODELS* asking not how to build a boat, but how to set up an outdrive unit, where to bolt it, how deep should the shaft be, etc., etc. The first one that I installed was done mostly by guesswork, which subsequently worked well, so I'd like to pass on my experience for what it's worth to those new to this game.

This article will deal with the installation of the Octura Strudder on a 3-D "Ruff Stuff" Deep-Vee hull. The same basic setup for this boat will work equally well with any of the other popular Deep-Vees around today.

First, your boat should be fully built ready for final finish. It would be senseless to install this unit while you have a rickety frame in your hands. The engine should also be mounted solidly in its final position at the proper angle (around 12 degrees for the Ruff Stuff). Set the boat aside because the Strudder must be prepared before installation.

At your local bearing supply dealer, procure 2 Torrington B-36 needle bearings for the strut. Before you install these, the leading edge and trailing edge must be sharpened to reduce water drag. Don't forget that the drag in water is eight times that in air. Start with a rough file and remove most of the material until the edges are almost sharp. Finish with a fine file until the edges are fairly sharp, but not enough to cut yourself. You can get a good final finish by using some 200-grit crocus cloth. I only sharpened the area that extends into the water and left the portion that is captured in the mount square, but I've seen some people do the whole thing.

Next, drill a $\frac{3}{32}$ -inch hole through the side of the bearing housing, halfway between the bearings. This is so you can pump lubricant into the bearing housing to prolong bearing life. Wash the strut to remove the dirt and chips.

The bearings are now ready for installation. These will have a light press fit and even though the fit is tight, proper alignment is a must so that the drive shaft won't bind. You may think that because the fit is tight in the housing, the bearings will line up with each other. Quite often one can cock and cause trouble. To assure good alignment, I used a short length of $\frac{3}{16}$ -inch diameter drive shaft to hold the bearings in

in

position as I pushed them into place. A couple of small blocks of wood with $\frac{1}{4}$ -inch holes drilled in them will help as you use a vise to slowly seat the bearings. See Figure 1.

Remove the rudder blade and sharpen the leading edge to reduce drag. I've seen so many boaters, even experienced ones, who neglect this procedure. Every little bit counts!

Now the meat of the work. We must locate and mount the strudder assembly on the transom. I assume that in your construction a plywood doubler was glued on inside. On the transom of the 3-D hull, I drew a light pencil line vertically through the keel and horizontally through the flat of the strakes. I placed the strudder on top of the horizontal line, centered it on the vertical and marked and drilled the bolt holes. Other hulls with deeper Vs, such as the Dumas, may require that the strudder be mounted lower to the keel.

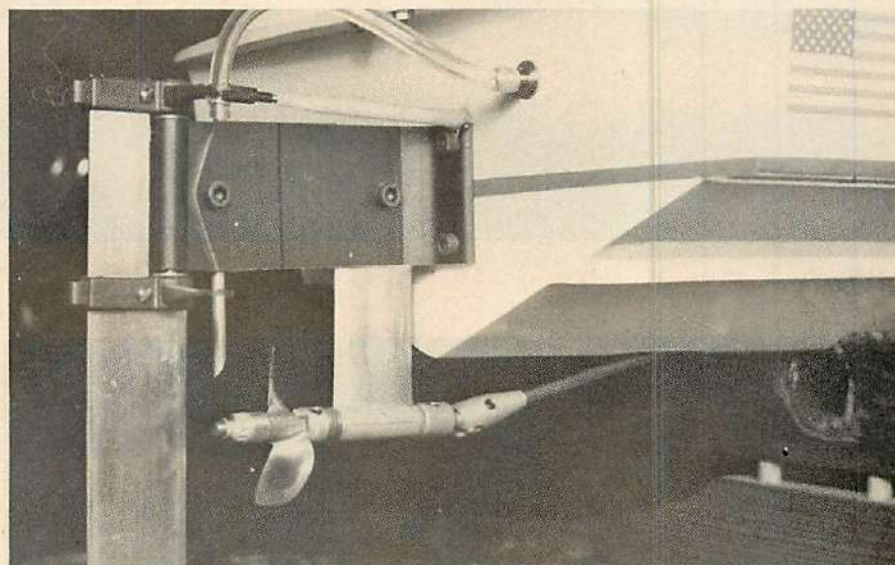
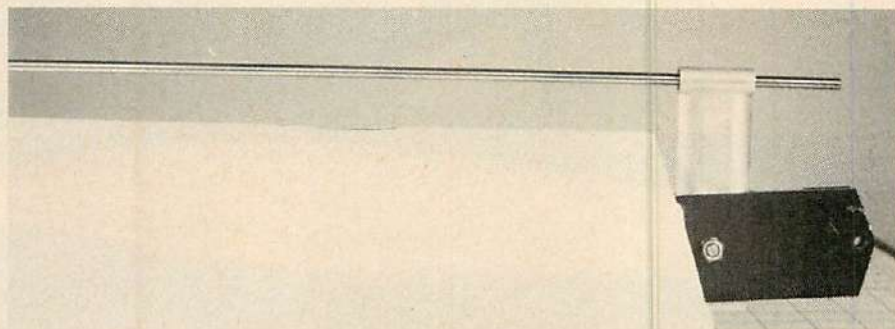
To get a close approximation as to where the unit should be placed on your boat, we have found that for a .40 powered boat, the centerline of the drive shaft should be $\frac{3}{4}$ inch below the keel. For a .60, it should be $\frac{7}{8}$ inch. Using these dimensions, I adjust the top of the strut so that it is flush with the mount as can be seen in the photos.

Next, bolt the strudder assembly to the transom either using the "T" nuts supplied or some form of locknut. Insure that the strut is centered on the keel. If not, the holes may be enlarged in the strudder mount slightly to compensate.

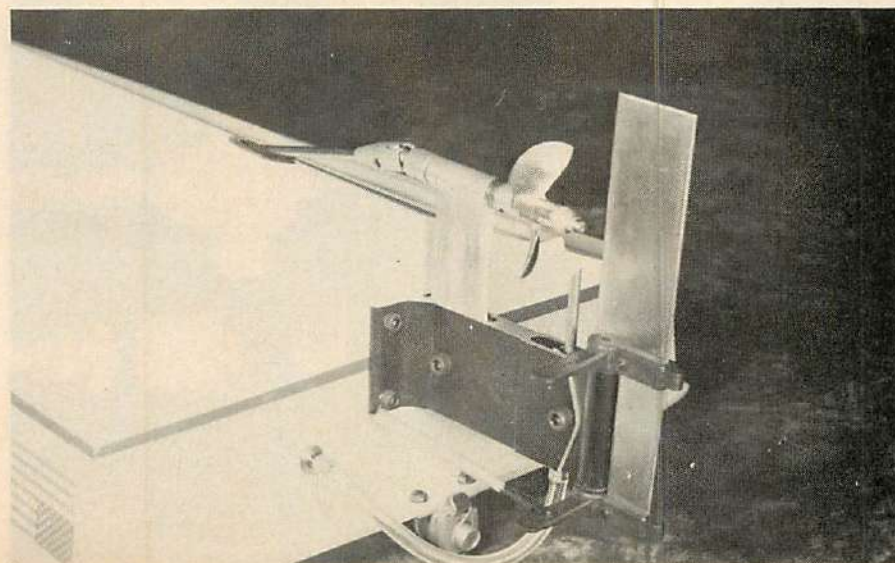
The strut is then bolted in place and for Deep Vees, I suggest that the centerline be adjusted to the depth that I've recommended above and also should be dead parallel to the bottom. You can easily do this by inserting a long length of drive shaft into the strut and measure the distance between the shaft and the keel, once near the transom and about a foot forward. Now bolt the unit tight and install the rudder.

Install your short shaft into the strut with the universal joint, thrust bearing, drive dog, prop and prop nut. Then you can install the long shaft through the bottom to the engine. You can use a stuffing box with bearings, but I've chosen to install just a tube leaving the shaft unsupported except at the U-joint ends. Having no bearings in the stuffing box minimizes any mis-alignment problems and eliminates friction entirely. Good racing!

FLYING MODELS

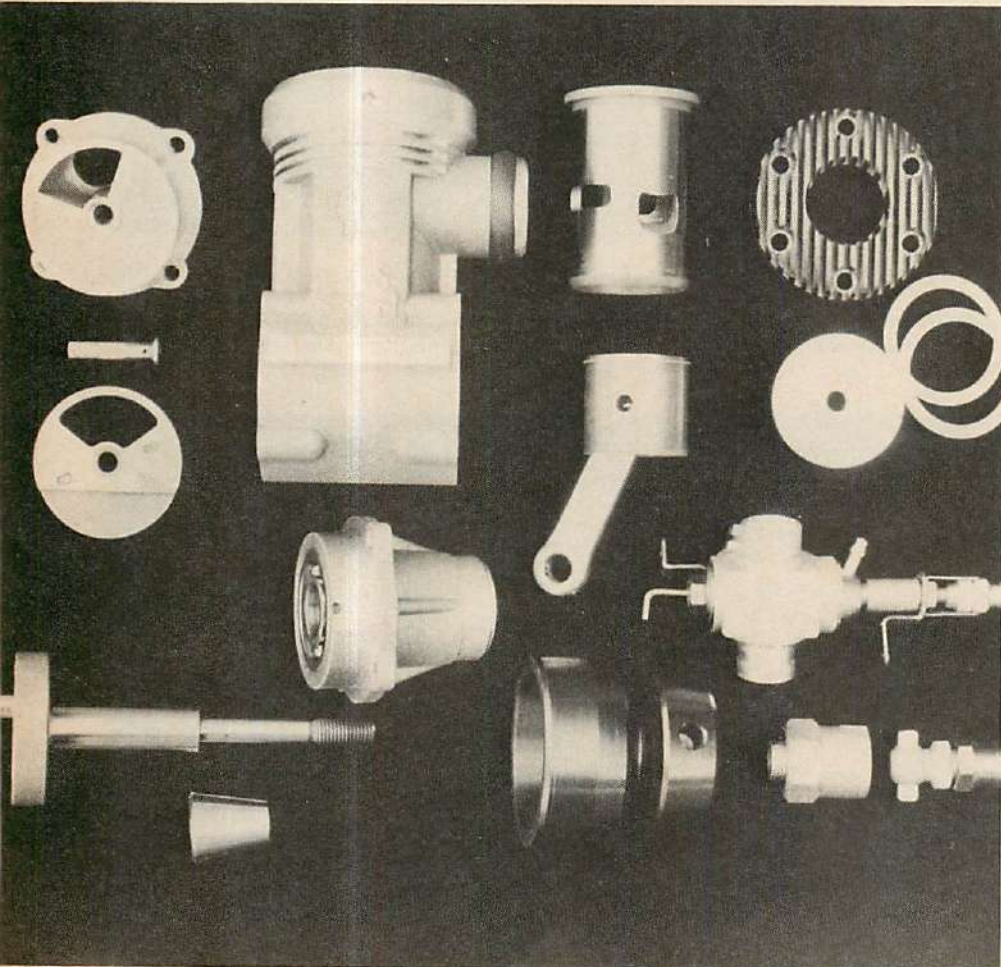


Note the long length of the shaft (at top) inserted into the strut to determine its parallelism with the bottom of the hull. The distance from the shaft to the keel should be constant along the length of the shaft. The photo above shows the strudder position on the Ruff Stuff .40 hull ready to run. The photo below shows the same thing upside down. Note the clean entry of the shaft into the bottom of the hull. No bearings are used on the main shaft. If you keep everything neat and clean it will work smoothly.



Rossi .65

It's a strong potential winner/Bob Staat



Rossi engines are known the world over as high performance, proven competitors. The Rossi .15 cu. in. is the standard of comparison for all others in that class while the older, loop-scavenged Rossi .61 has been used by many boaters to earn their 70 m.p.h. hydro patch. After working with Rossi's newest release, the 65 Marine, I'm sure that number of 70 m.p.h. boaters will increase. This engine definitely has the potential.

The Rossi .65 marine is available as either a lapped ABC set-up or as a ringed piston-steel liner system. My review deals mainly with the ringed version. According to Bill McGraw, the man behind Bills Miniature Engines, 1325 Carol Drive, Memphis, Tennessee 38116, who imports the Italian made Rossi to the USA, there is little difference performance wise between the ringed and ABC engines. The price of the ABC Rossi .65 is \$214.00 and the ringed engine goes for \$202.00 which includes the muffled pipe.

The Rossi .65 marine is typical of current racing engine design featuring rear rotor fuel induction, schneurle porting, rear exhaust, and tuned expansion chambers. Although typical in overall layout, the Rossi .65 features a number of unusual and excellent innovative details, such as low contact area piston ring and a servo mediated needle valve adjustment system. Overall quality and workmanship of the engine is good.

Crankcase/Crankshaft

The main casting is an aluminum alloy with a completely machined interior. The upper part of the main casting is fitted with a flow through cooling sleeve. The cooling sleeve is rigidly affixed to the casting and I

was reluctant to try and force it off for interior dimensions. Since my engine is the ringed variety, this type of cooling is entirely appropriate, however, the ABC version uses a water cooled head to avoid undue distortion of the brass liner. The round exhaust stack-pipe adaptor is an integral part of the main casting. The exhaust outlet diameter is 13.5 mm.

The lower section of the main casting is machined symmetrically so that the exhaust may be pointed either fore or aft. The crankcase, also an alloy casting, is secured to the main casting with 4 socket head bolts; no gasket is used between the crankcase and main casting. An oil hole is drilled through the internal edge of the crankcase to provide lubrication for the forward shaft bearing. Fuel induction is regulated by a thin (2 mm) steel rotor that is lapped to the cast aluminum backplate and supported by a steel bearing shaft. The shaft has an oil hole for improved lubrication.

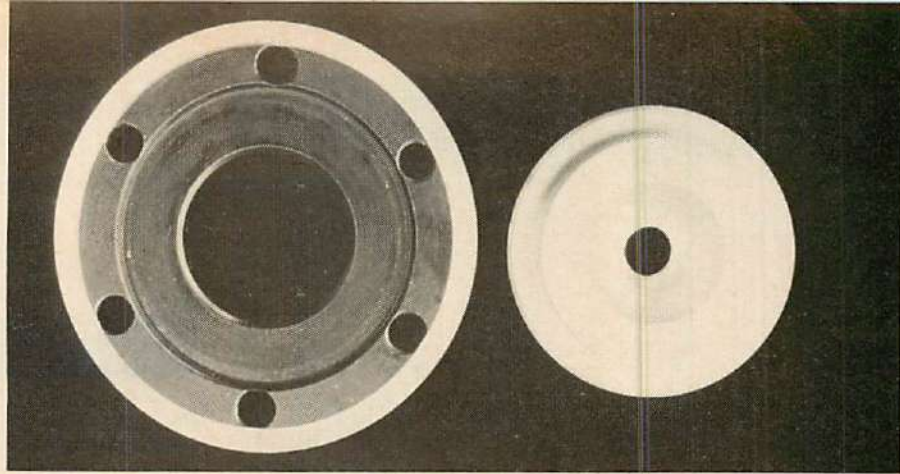
The hardened crankshaft is machined from steel and features a fully enclosed crank disk. The engine is balanced by cutting slots into the disk on either side of the 7 mm crankpin and then capping the slots with a brass ring. The purpose of this is to reduce the lower unit volume consequently increasing the compression ratio in the lower unit when the engine is on the down side of the stroke. The higher compression of the fuel mixture in the lower unit causes an increased fuel charge to enter the cylinder as the intake ports open. The net results is a greater fuel charge burned per stroke, thus, more usable power. This type of crankcase packing sacrifices engine balance, however, vibration levels on the ringed Rossi .65 are not excessive.

The shaft diameters are a little unusual for this size of engine. The forward section measures only 7 mm in diameter, while the rear measures the more typical 12 mm. These dimensions are the same as found on the O.P.S. 3.5 (.21 cu. in.). The shaft is supported by two 8-ball ball-bearings. The shaft accepts 1/4 x 28 threaded universals.

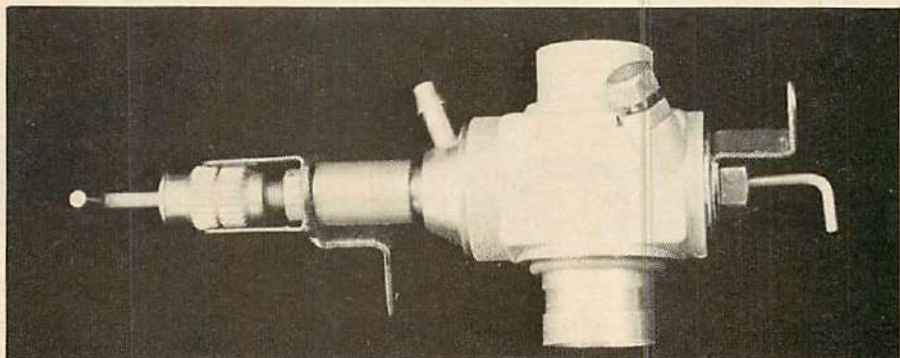
Piston/rod/liner

As mentioned earlier, my test engine is the ringed version. Perhaps the most unusual feature of this engine is the ring itself. It measures only .020" in thickness while engines like the O.S. .65 use a .040" ring. The ring is kept from rotating to an open port by a brass pin. My engine has been run for about 45 minutes and the ring has seated to form a good compression seal. The aluminum piston diameter is .004" less than the bore. The liner tapers .005" from top to bottom, which combined with the piston clearance ensures that there is very little drag due to piston expansion when running hot at full r.p.m. The porting of the liner is typical of schneurle technology (table 1) except for the two center intake ports which have raised corners giving a "butterfly" effect. Complete port opening request 4-6° of crank rotation. The 170° exhaust open period is the generally accepted figure for both good power and acceptable handling characteristics. Rossi produces 0.3 and 0.4 mm liner shims if you want to raise the port timing even further when using fuels in the 70% nitro bracket.

The connecting rod is a substantial aluminum forging with a rectangular cross section. Both ends are bronze bushed with oil



The head on the Rossi .65 (above) is unique in that it is a simple insert which can be easily modified or replaced. That should warm the hearts of the hop-up artists. It is held in place by the finned ring bolted to the main casting. The carburetor is set up to allow you to hook up a third servo and change the mixture after the boat is in the water running. How many times have you wished you could do just that?



holes. I did note that the lower bearing seat was rubbing on the rear rotor causing added friction at the rotor-backplate surface. A few passes of the lower rod boss over 400 grit paper opened up the tolerances and eliminated the problem.

Another feature that will endear this engine to the hearts of the hop-up artists is the head design. Not because the combustion chamber is unique (it is a bowl and flat squish band), but rather because the head is a simple insert which can be easily modified or replaced. This head is held in place by the finned clamp ring which is bolted to the main casting. There are two inserts currently available from Rossi - one for nitro fuels which I used and an FA1 design. My engine was equipped with 2 copper head gaskets (0.1 and 0.2 mm) which gave .014" clearance at top dead center.

Marine accessories include a steel flywheel (230g) that is centered on the shaft via a substantial collet. A universal is included with the engine, however, the male portion of mine was built for a 5 mm drive shaft which requires about an .008" concentric shim for proper centering using 3/16" shaft material. The universal is secured to the shaft by a course taper collet. With the shim in place, I found I could not keep the shaft from slipping in the collet when the boat prop was under load in the water. This is one of the few things I didn't like about the Rossi .65.

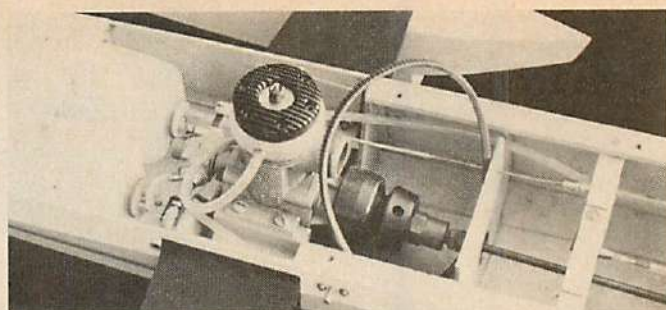
Carburetion is achieved with the standard rotating drum, two needle valve design. The fuel induction bore measures a generous 10.5 mm in diameter. In operation, the rotating drum travels inward as the engine is throttled down causing the low speed nee-

dle to progressively restrict the fuel flow and prevent low-speed fuel build-up in the crankcase. The high speed needle valve assembly is of interest because it can be adjusted by a third servo. The needle valve is threaded into a housing which is then mated to the carburetor with very course threads. Thus, the needle valve housing, which is equipped with a bell horn, can be rotated to move the high speed needle in or out of the valve seat. The thread ratio of the valve to the housing is 2.5:1 so that a third channel servo could effectively vary the fuel mixture at least a half turn relative to the main needle valve setting ... and how many times have you wanted to adjust the mixture just after launch, now you can!

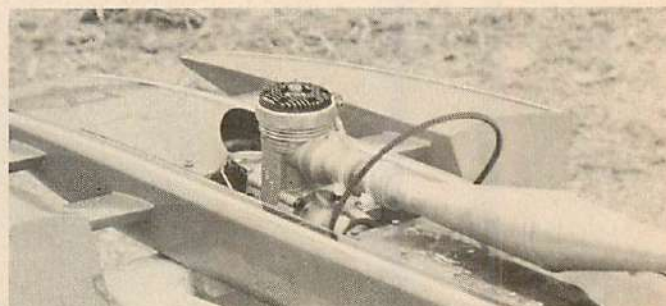
I purchased my Rossi .65 with two pipes, one for nitro and the other a muffled pipe. These are both spun aluminum types with a slight convex shape to the functional cones. The engine header pipe is water cooled and seals with a heat stable rubber "O" ring seated in the main engine casting. The pipe is sealed to the header with a silicone rubber sleeve which is secured with an aluminum collar.

Performance evaluation

My first impression of the Rossi .65 was gathered the instant I started the engine for the first time. Two flips and it was running smooth on an 11 x 6. Very nice! After a half gallon of fuel and about 30 minutes of time, I started to tune the nitro pipe. Table 2 gives the data I found for different pipe lengths with two sizes of propellers using 50% nitro fuel. The 10 1/2" pipe length (plug to center weld) gave the highest absolute r.p.m.'s, however, an 11" pipe gave the highest



The author's Rossi .65 installation in Octura's Wing Ding is shown (above). The shot below is of Bob Finley's Rossi .65 in his Gator. This is an airplane version of the engine with Octura fittings for marine use. At left is Bob Finley's Gator in some high-flying action at the test pond.



r.p.m.'s under a more severe load. I am using the 11" length on my Wing Ding. After all, in the water 20,000 r.p.m.'s and 5" of prop pitch equals 75+ m.p.h. assuming 20% slippage.

Data for the FM text props are found in Table 3. You might note that a Top Flite Super M 9 x 6 yields 1200 more r.p.m. than a 9" prop cut down from a 11 x 6 Power Prop. This points up the fact that for any evaluation system the variables have to be reduced to a minimum for your results to be valid and consistent.

With the engine broken in, there are three performance aspects which I would like to mention. First of all the data indicate that this is a very strong engine. Secondly, the carburetion system is good. As mentioned earlier the on-board adjustable needle valve is unique, but functionally, the

induction bore is adequate to allow sufficient breathing for 23,000 r.p.m. with the 9 x 6 prop. During the 23K run, I was able to idle back to 5800-6000 r.p.m. with the 50% fuel and non R/C glow-plug (K & B 1L). . . . an excellent range. The third aspect concerns the muffler pipe. It takes the ear-piercing crackle out, but it also takes out close to 1000 r.p.m. The back pressure on the pipe with the added muffler appears to be excessive.

At the pond, the Rossi .65 was just as easy to handle as on the bench. Suction fuel draw with the double tank was no problem although the fuel consumption rate is approaching 3 oz. per minute. Throttle response was good and gave a linear feel. The slow-speed needle valve setting that I used for the test propellers also worked well for the flywheel set up. As you can see from the

pictures the Rossi is quite at home in the Octura Wing Ding and I'm counting on this combination for this year's Indy Unlimited.

Another of FM's prolific contributors, Bob Finley of Indianapolis, has also been giving the Rossi .65 a long, hard look. He is using the airplane version fitted with Octura hardware in his 60 sized Gator boat. Bob is also impressed with the Rossi .65 but did say that he has had much better luck with his ringed engine than with the ABC system. However, I feel the engines are too new to make any definitive statements on the merits of the two types.

When all is said and done about the new Rossi .65 it has to be viewed as an easy handling, strong, high RPM engine, with crisp performance characteristics. . . . a bona fide potential winner.

Table 1

Port timing for the Rossi .65 marine engine as measured by the author. TOP refers to the total open period.

port	timing
Exhaust	170° TOP
Side schnuerle	124° TOP
Boost schnuerle	120° TOP
Rear Rotor	open 40° PBOC close 58° PTDC 198° TOP

Table 2

Effect of pipe length (plug to joint at cone maximum diameter) on RPM's using Top Flite Super M pros and Randy's 50% Custom Blend Fuel.

Super M Prop	RPM x 1000		
	pipe length (in)		
	10½	11	11½
9 x 6	23.0	22.2	
10 x 6	19.7	20.0	

Table 3

Performance of the ringed version Rossi .65 using a series of props cut and balanced from Power Prop 11 x 6's. Fuel was Randy's 50% Custom Blend. K & B 1L plugs were used for all tests.

Prop Diameter	RPM x 1000
11	16.8
10½	18.4
10	19.5
9½	20.3
9	21.0
8½	21.8

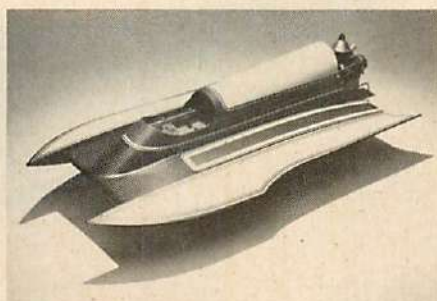
Letter Rip!



Paul Schumacher

It is with deep regret that we inform you of the tragic death of Paul Schumacher. Paul gave his life in the proudest tradition of a modeler by helping others. When he saw an elderly couple in trouble, he rose to the occasion only to be stabbed and died three hours later.

As a modeler, Paul was a strong competitor never giving up until he succeeded. He was always trying new ideas and shared them with his fellows, both personally and through his writing in FLYING MODELS. He will long be remembered by those who knew him. Paul leaves his wife Carolyn and two children, Paul, 6 and Denise, 11.



DUMAS PRODUCTS, INC., 902 East 17th St., Tucson, AZ 85719. The venerable Drag'n Fly hydro which has been one of R/C racings "old standbys" for many years is being reborn. Many model boaters possibly don't know it, but the original Drag'n Fly kit was developed from a full size, very successful outboard hydroplane. Based on this fact, Dumas "The Model Boat People" modified the Drag'n Fly 20 hydro for the 3.5 outboard. Prototype testing proved excellent results. Just goes to show that good outboard hydros make good outboard hydros. The Dumas Drag'n Fly 20 Mark II outboard hydro kit is plywood construction and comes with complete instructions for pickle forking the bow, as shown, if desired. Available from your hobby shop now.

STAUBITZ OF BUFFALO, 105 Hollybrook Dr., Williamsville, NY 14221 is offering a fiberglass hull of the Seajaquada, an ocean-going tugboat. It is available in either 1/32 or 3/8" to 1" and comes completely formed as in the accompanying picture with the tub rails on the hull in place. Both main and cabin decks are of fiberglass and curved both in the camber (athwart ship) and sheer (lengthwise). The fiberglass units come colored in either white, grey, black and red. The decks usually are either black or grey. Displacement of the craft ready-to-run is about 28 lbs. Full size plans are furnished for the assembly but interior arrangements are left to the modeler as several different power sources such as electric or steam can

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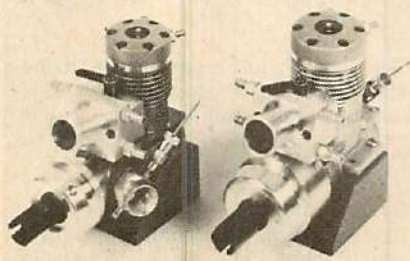
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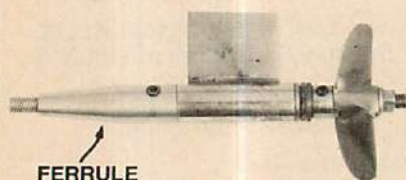
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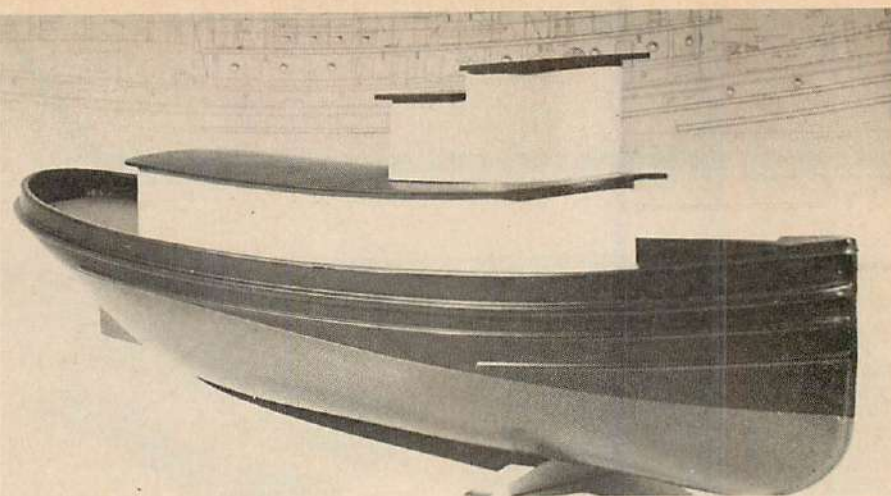
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be used. The deck is not attached to the hull to give the customer greater access to the hull interior when installing equipment. Also included is a full shell life boat and canted stack of fairly modern design should the builder choose to alter the plans. The model is 42" long with a 9 1/2" beam. Price is \$115. F.O.B. Buffalo, N.Y. and all kits are shipped UPS insured. Delivery time is about 3-4 weeks. The kits contain no fittings but one can purchase them from boat catalogs and be selective in both cost and quality.

Oops!

In Jerry Dunlaps piece on R/C outboard-ing in the May 1978 FLYING MODELS he says that the K&B outboard retails for just under \$10.00. Didn't he mean \$100?

WARREN GRABLE
Lansing, Mich.

Yes he did. The error wasn't Jerry's, it was faulty proofreading in the office—Ed.

R/C sub

Enclosed is a photo of my second R/C submarine which I have been constructing



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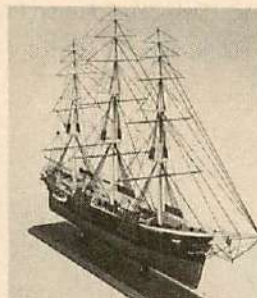
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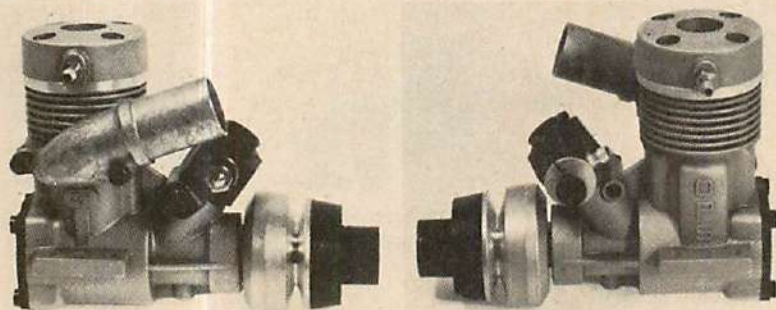
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during the past few months. The sub is of the ballistic type, but not of any particular one, instead, a working, submergible model of my own design. It is constructed of plastic and wood with a metal frame. I was able to build it in a very short time compared to the Nautilus, which appeared in the February 1977 issue of FLYING MODELS. I am also helping a fellow modeler build his R/C sub of a WW II Fleet class. By this summer we should have quite a bit of subs running in the lake at Golden Gate Park in San Francisco.

My latest sub incorporates features taken from the Nautilus and a few newer items such as a diving "whoop, whoop" alarm and flashing navigation lights of the sail. It also features easier sealing of the hull, overall reduction in weight and complete accessibility to the insides for servicing and maintenance. Nickel-cadmium batteries are used for the power instead of lead-acid. I will keep you informed of my progress.

WILLIAM JUNG

4424 Balboa St.

San Francisco, CA 94121

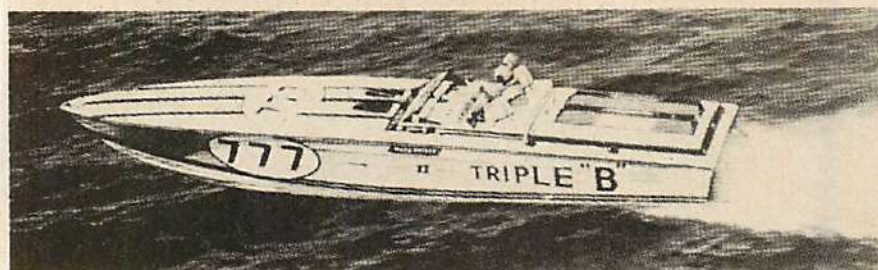
NAMBA District 8 report

In keeping with State of the Nation speeches given by our President and State of the State Messages given by our Governor, the following is a report on The State of NAMBA District 8. Model boating in the great Northwest is beginning to show some interesting trends. A look at what has happened the past couple of years may help shed some light on what the future holds in store for model boat racing in this area.

An interesting trend, and rather bother-

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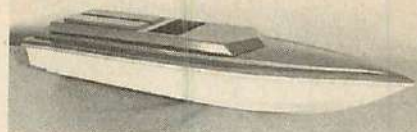
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some to a few, is the decline in the traditional competition hydroplane classes. As recently as five years ago, the .40 hydroplane class would average 20 boats at the major races. The 1977 average was about a half dozen entries. Five years ago the Deep Vee and Scale Hydro classes were nonexistent. The two classes were the most popular events run during the 1977 season. I feel the biggest contributing factor to the increase in popularity of the Vees and Scale Hydros is found in their resemblance to full size boats. It is becoming more and more evident that model boaters in the Northwest desire to race boats that look like boats. In some ways this is a healthy and refreshing trend. Spectators really enjoy watching model boats compete when they can identify with the type of full size boat the model represents. Beginners are attracted into the hobby because of their interest in full size boats can be transferred to the models of them. Interest and enthusiasm generates greater involvement and the sport grows. However, it is only fair to look at what has happened to the ultimate racing type models in our analysis. For those dedicated model boaters looking for the fastest means of propelling a model boat across a watery surface, Vees and Scale Hydros are limiting designs. Even though one of our District 8 members holds the world record for straightaway speed in the .40 monoplane/vee class with a vee, most would agree that a vee design isn't the final answer in planing hull designs. Neither is the Scale Hydro the best design for ultimate speed or cornering in a hydroplane design. The 65 mph average for the fastest scale hydro is 15 mph behind a competition hydro

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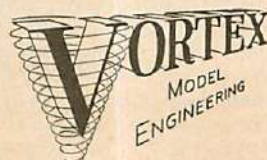
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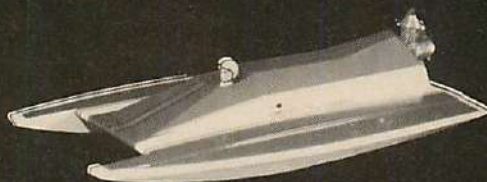
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using outrigger sponson design concepts. We still have a small group of "hardcore" competition model boaters in our District. Even though they may be small numerically, they are big when it comes to records and achievements. As long as these "diehards" maintain their interest in seeking the ultimate in model boating speeds, the rest of us will continue to benefit from their experimenting and discoveries. However, the majority of model boaters in this region will continue to race boats that have some ties with full size boats.

A class that will be interesting to watch develop during 1978 will be the .21 Outboard Tunnel Class. In 1977, hull type was not defined for District Outboard racing. However, a majority of the boats participating in the class employed the tunnel design. 1978 will initiate the second year of model outboard racing and now the class is restricted to tunnel hulls. The class is also the only semi-scale scale class where drivers and realistic paint schemes are required. It is also the only stock engine class in different classes raced in the Northwest. Much can be said both pro and con about racing in a "stock" class. Many of the problems and concerns voiced by a few have yet to crop up in District 8 outboard racing events. Some have labled the outboard class as "Poor Man's Scale." There is some degree of truth to this comparison. Compared to the price tag of a competitive Scale Hydro (\$750 to \$1,000), a very competitive .21 Outboard Tunnel Class hull, engine and radio can be obtained for under \$300. The model outboard offers ease of access to the hobby of radio controlled model boating never before possible. Participation in model outboard racing should be double in 1978 what it was in 1977.

NAMBA District 8 begins the 1978 racing season with more events and more model boat racers than any previous year. There will be 6 District 8 Points Races in 1978 as model boaters from all over the Northwest travel to Longview, Medford, Tacoma, Seattle, Spokane and Portland for these events. The Scale Hydro circuit has a dozen events listed bearing titles like, Apple Cup, Stan Sayers Memorial, Diamond Cup, Rose Cup, Gold Cup, Silver Cup, Governor's Cup and the list could go on a bit more. The excitement created by these beautiful mini thunderboats must be experienced to be understood. 1978 will see three special events that should be well attended and most competitive. The Annual Fourth of July Firecracker Offshore Classic should draw the best deep vee boats in the region for some exciting racing at Longview. Always one of the most popular spectator events due to its being held in conjunction with Longview's community celebration of July Fourth, this year's event will be limited to one day of furious deep vee racing. The World Championships for Scale Hydros, Outboard Tunnels and Deep Vees should draw contestant from all over the West Coast during the first weekend in August. This event should be the premier racing activity for Scale Hydros held during 1978. District 8 alone could assemble over 30 small versions of the fastest full size boats to race on water. The final special event of the year will be the Second Annual Northwest Mini Outboard Championships to be held in Longview in October. This is a two day event conceived to provide both fun events and serious competition for those with model outboards.

Model boating is most certainly alive and growing in the Northwest. Enthusiasm and interest has never been higher. We welcome and encourage anyone interested to come and join us. The boats maybe mini, but the thrills, challenges and rewards maximum—JERRY DUNLAP, District Director.

IMPBA Roostertail

The IMPBA Executive Board met at Toledo, Ohio on April 8 during the Toledo Weak Signals R.C. Conference. We met for thirteen and a half hours not counting a two hour break for dinner. If anyone thinks a meeting of that length is not a heck of a lot of work and effort, they are nuts and that's the name of that tune.

Perhaps I should have explained first your President, Len Skwieria, is not writing the "Roostertail" column this month. He is totally tied up trying to correlate all of the information from the Executive Board meeting for the "IMPBA Quarterly Report" that is mailed directly to all IMPBA member's homes. Len asked me to write one more Roostertail, so we would not miss the copy deadline.

The meeting was attended by all ten of the voting members of the Executive Board and several Assistant District Directors. I believe this is the first time ever for 100% attendance of voting members. When you consider that everyone paid their own transportation costs and that some traveled from as far as Texas, Louisiana, Georgia, New York & Virginia I feel this shows their dedication to the RC Boating Hobby & IMPBA.

Should any one think this group of elected District Directors and President, plus the two past Presidents met for 13½ hours just to push their own interests or pass rules favorable to small segment of the membership, let me tell you a few of the major changes that were made:

1. Voting results on change proposals will be published in the quarterly reports. This will include identification of each members vote on the proposal.
2. Major changes, which means almost everything in the Rule book, will be discussed at an Executive Board meeting, then sent out to all registered clubs by the IMPBA office. We are asking the clubs to respond to their District Director with a head count vote of yes's or no's. Armed with this data the

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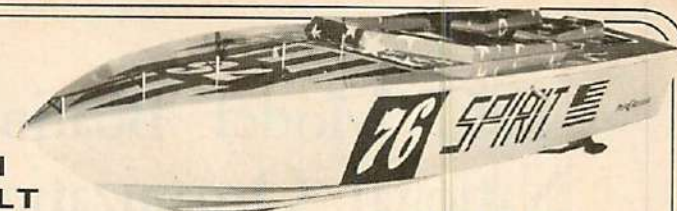
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Director will then vote.

3. Certain sections of the rule book were identified as being of such major importance to the general racing memberships that no changes could be made without a trial period, for the proposed change, at several contests throughout the country. Two items covered by the trial period are numbers of laps per class and approved course dimensions. Len's write-up will completely identify all of the above items. I mentioned them simply to demonstrate the sincere interest and intent of the Executive Board to represent the entire memberships. It was the most progressive meeting I have attended in my 10+ years on the board.

As many boaters know IMPBA is extremely safety conscious. I am proud to announce that with the close of 1977 we completed another year without a casualty claim to our Insurance carrier Lloyds of London, thus keeping our perfect record intact. One of the safety items we originated was the use of safety netting to protect spectators & contestants from the racing boats. Our original inventory has been exhausted, but we have re-ordered a new supply. As with everything else these days the cost has gone up about 20%. The new price for a set consisting of two 250 foot sections will be approximately \$100.00. The minimum order from the mill is 500 pounds on netting which equates to about 12 sets. One set is already on order from our new supply. We hope all clubs with running sites that have sloping banks that would allow a stray boat to come in contact with spectators or contestants will invest in this safety equipment.

Thanks for putting up with me this month. Len will be back next month if his writing hand isn't in a cast—JOHN BRIDGE, Past-president IMPBA.

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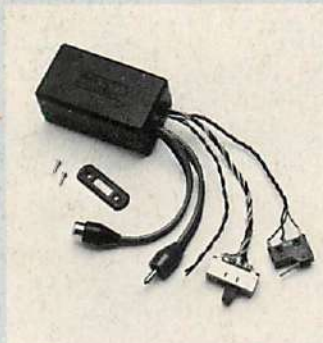
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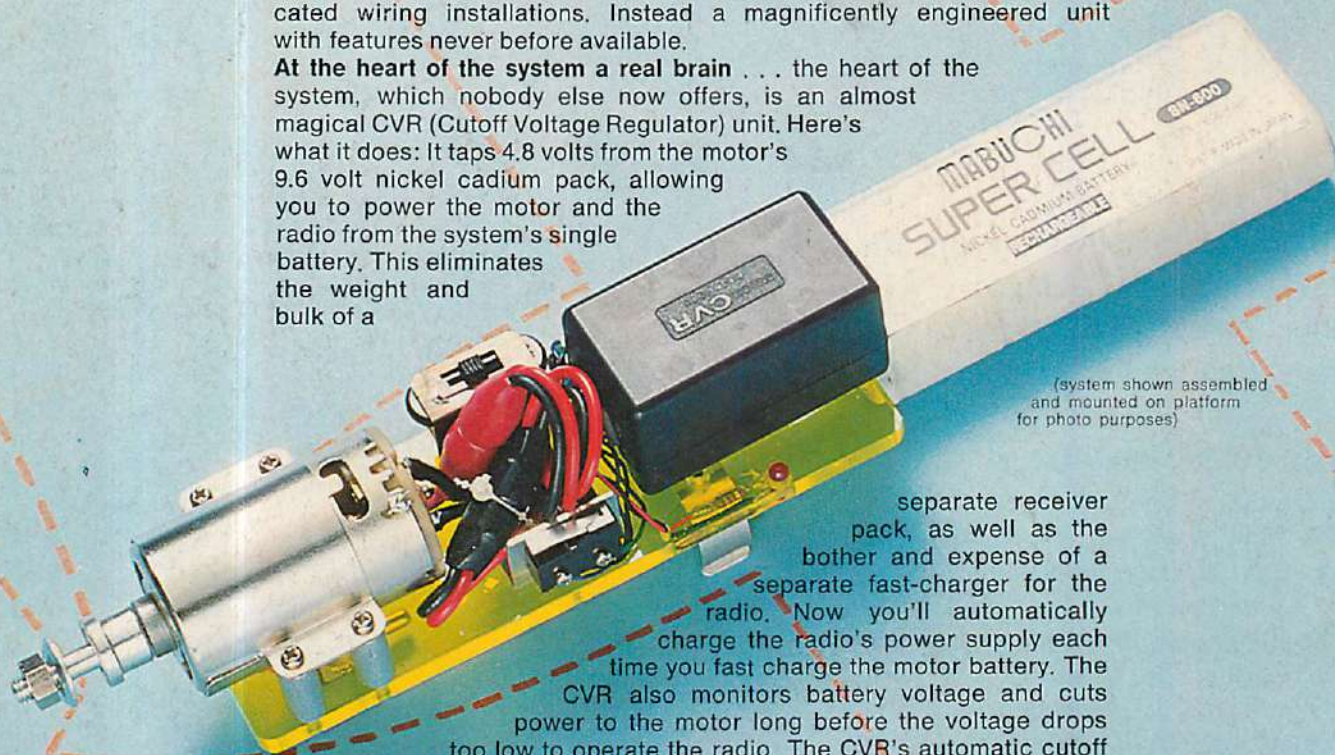
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