

Orr's "Pacemaker"

For Old Time Rubber Competition

Classic O.T. rubber at its finest! Properly built, this 1940 twin-fin cabin job can be very competitive in SAM Commercial Rubber and Small Rubber Fuselage events.

In the late 1930s Wichita, Kansas was a hotbed of modeling activity, spurred on by the full-scale aircraft industry which was just recovering from the throes of the Great Depression. During that time, R.J. (Bob) Youngman, a talented model designer in his own right, was a modeler's best friend. Bob ran the model supply shop for one of two Orr's Department Stores, which were located strategically within the city. Both of Orr's stores stocked modeling supplies because full-scale and modeling activities were growing at an accelerated pace. However, the location of the College Hill store, just across from East High School, guaranteed a steady supply of modeling customers during noon hours and after school.

Bob designed his first kit model, the J-Hawk, in 1938. Subsequently, Orr's sponsored a one-design contest for models built from the kit. In 1939 Bob produced his second kit model, the Chieftain, and again, no strangers to promotion, Orr's featured it in another one-design contest. By all standards, the Chieftain was an improvement over the J-Hawk. It was larger, flew better and as a consequence, the annual contest grew—both in entrants and in prizes.

In 1940 Bob produced his third and best rubber model kit, the Pacemaker. Much cleaner and more visually attractive than either the J-Hawk or the Chieftain, the Pacemaker featured elliptical flying surfaces with a V-dihedral wing and



Jim Kutzkuhn shows us his version of the Pacemaker decked out in yellow and black trim. The unusual lines of the model make it an attractive as well as an efficient platform. The huge 14-inch propeller is a decided advantage in SAM Commercial Rubber events. A delthermalizer system is an absolute necessity; Jim opted for a pop-up stabilizer. The Pacemaker might also be a good candidate for a pop-off wing DT.

stabilizer. Although it was much more complex than either of the first two designs, the modeling youth of Wichita by now looked forward to the annual one-design contest and snapped up the kits as fast as they were produced.

Dean Zongker, a local modeler, had been chosen to build all of the test models for the series. As a friend of Dean's, and a participant in the first two contests, Ernie Linn was involved in the flight testing of

the Pacemaker. Unlike the first two designs, which were literally off-the-board fliers, this newest effort from Youngman seemed to be prone to a tail-heavy condition which showed up as a stalling tendency in the glide. To correct that condition, Dean and Ernie decided to move the cabin structure aft 3/8 of an inch, rake the windshield back more sharply to match the new angle created, and increase the lifting horizontal stabilizer area from about 30 percent to 39

percent of the wing area. These corrections fixed the problem and the model performed flawlessly after that.

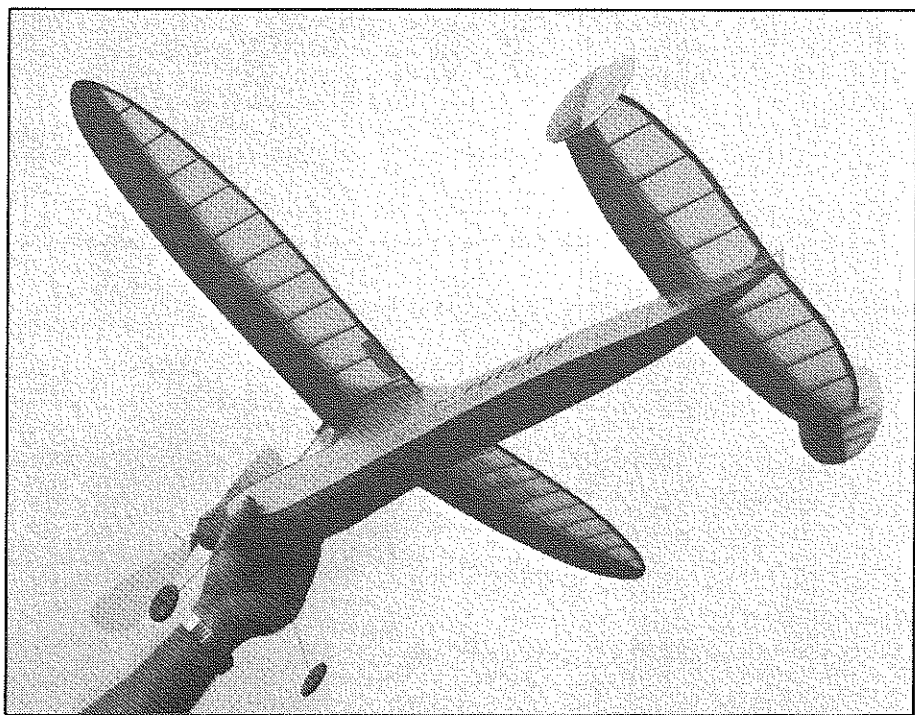
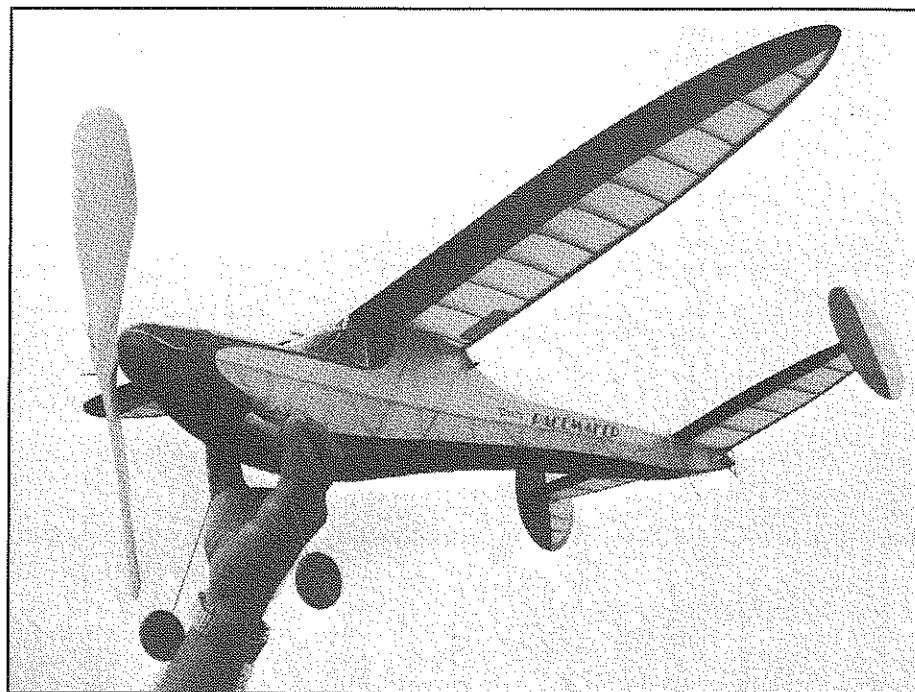
The Pacemaker's classic lines make it a very attractive ship to build. At the same time, because of its numerous compound curves and relatively complex structure, it is not a good ship for the beginning builder to tackle. However, for the more experienced builder and serious competitor, it has a great deal to recommend it. First, it satisfies the SAM "Commercial Rubber" event. It is within the maximum wingspan specified and has a large 14-inch freewheeling prop. Most Commercial models have a prop diameter no larger than 1/3 of the model's wingspan, or more in the neighborhood of 11-12 inches. Likewise, it satisfies the FAC "Old Time Rubber" event because it meets the maximum 36-inch allowable wingspan rule. And again, that big freewheeling prop offers the same distinct advantages in FAC flying as it does in the SAM event. As a bonus feature, the performance of the Pacemaker is good enough to fly it in SAM "Small Rubber Fuselage" events against larger designs.

BUILDING NOTES

The fuselage presents the most challenging aspect of the model. The longerons must be matched for equal flexibility to keep the sides from warping disproportionately. After the basic box structure is put together squarely, as noted in the perspective drawing shown on the plan, the nose and underbelly formers can be added. When laying in the 1/16 square stringers, take care not to pull the fuselage box off to one side. The same holds true for the formers on the rear deck, although by the time the underbelly structure is in place the fuselage should be fairly rigid. Some different accommodation for mounting the wings might be considered also. The photos show a dowel arrangement, which is much preferable to the "rubber band around the fuselage" instructions given on the plan. Likewise, modifications for a pop-up-stab dethermalizer should be made if you want to keep your Pacemaker around for more than one flight. (More about that later!)

The most painful part of completing the fuselage is covering it with multiple pieces of tissue, due to the numerous compound curves. Using thinned white glue as the adhesive and applying it with a small, pointed brush makes the job a bit easier. The photos also show a very attractive yellow and black decorating scheme that Jim Kutkuhn used on his model, but again, there is a certain amount of painful *deja vu* associated with covering compound curves, particularly in two colors.

The wing and stabilizer construction are very much alike. The process can be sped along by first making up the spliced leading and trailing edges, and, while they are drying, cutting out the ribs for both surfaces. Construction is pretty straightforward, beginning with pinning down the

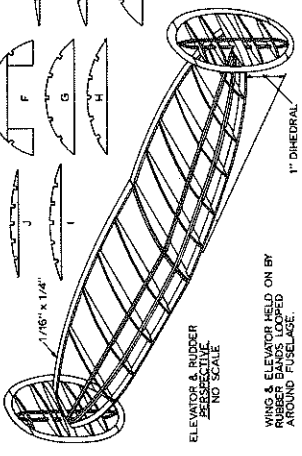
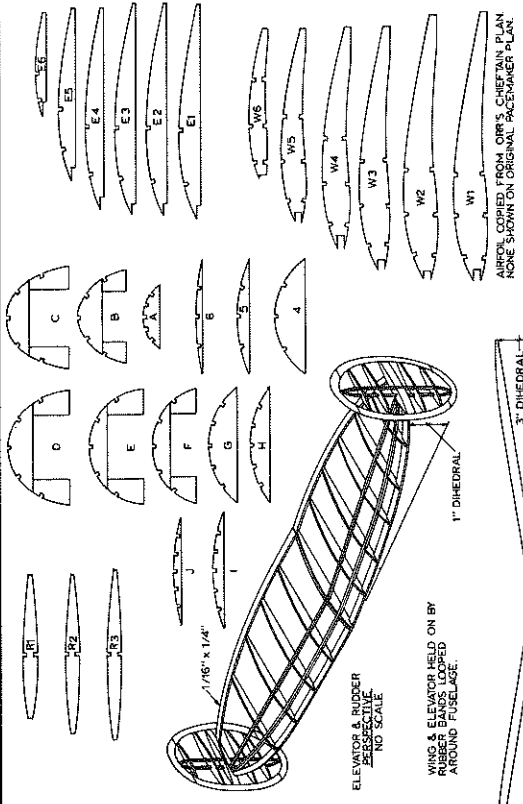
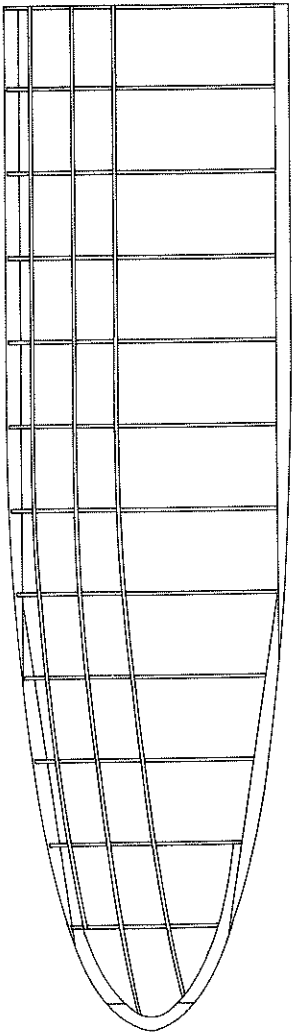


These views show off the elliptical wingtips and the small amount of dihedral incorporated into the stabilizer. While construction is a little more complex than the typical "box" fuselage and squared-off wings, it is not overly difficult for experienced builders. All of the elliptical surfaces are constructed by joining smaller pieces of straight sheet balsa to make the curved outlines. Could also be laminated from balsa strips.

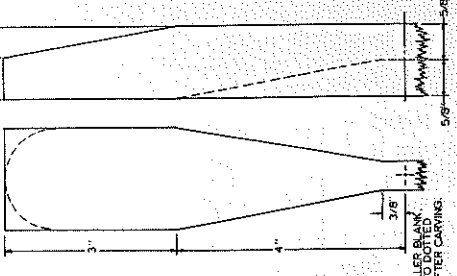
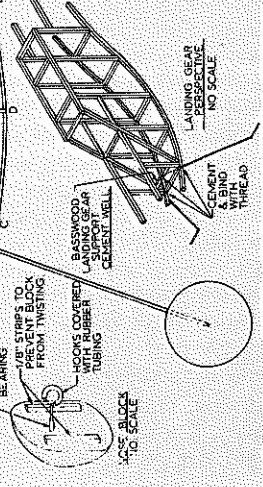
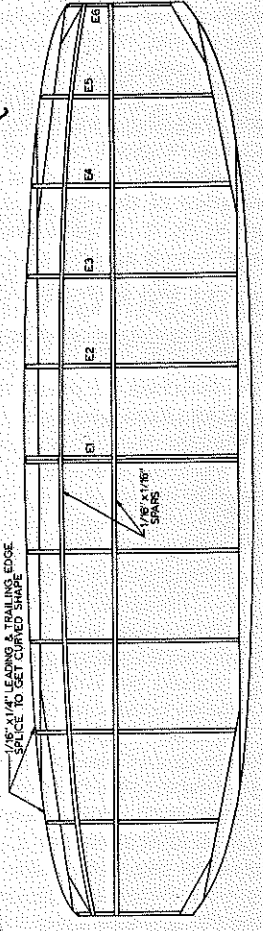
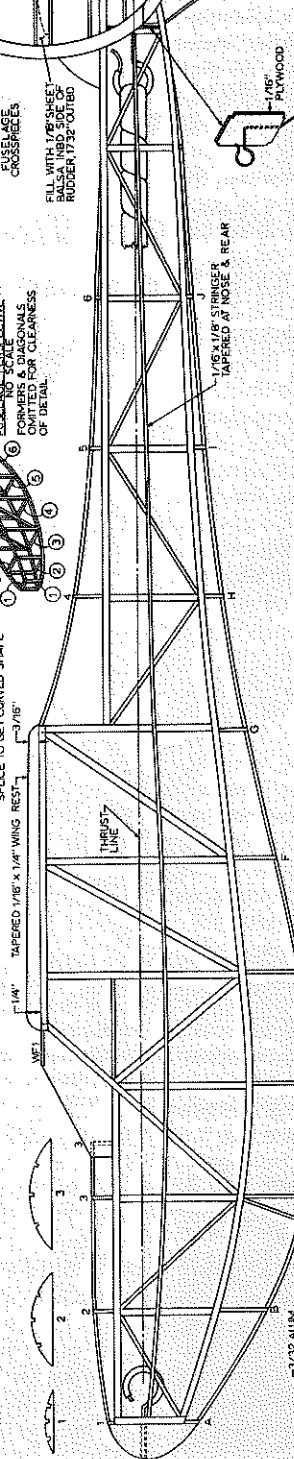
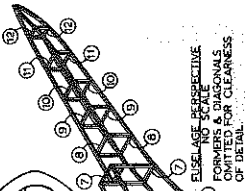
trailing edge of the wing, gluing the ribs in place and then slipping the leading edge into the rib slots. All spars can be added after the dihedral is installed. Both the leading and trailing edges of the stab can be pinned down and the ribs slipped in place. Stab spars work the same way as they do in the wing. Install them after the dihedral angle is glued in. Be sure the spar material for the stab is light and flexible. We don't need to induce warps as the spars are bent to fit the compound curvature of

the leading edge.

The twin fins are probably unnecessarily complex. Each consists of eleven separate pieces—six ribs of three sizes, four formers of two sizes and a center spar. Whew! They are, however, light and warp-free, so there is some compensation. Besides, classic twin-finned designs not only are unique-looking and draw more than their share of admirers on the ground, they're often easier to trim, as the rudders are out of the propwash. Once again, you'll



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12



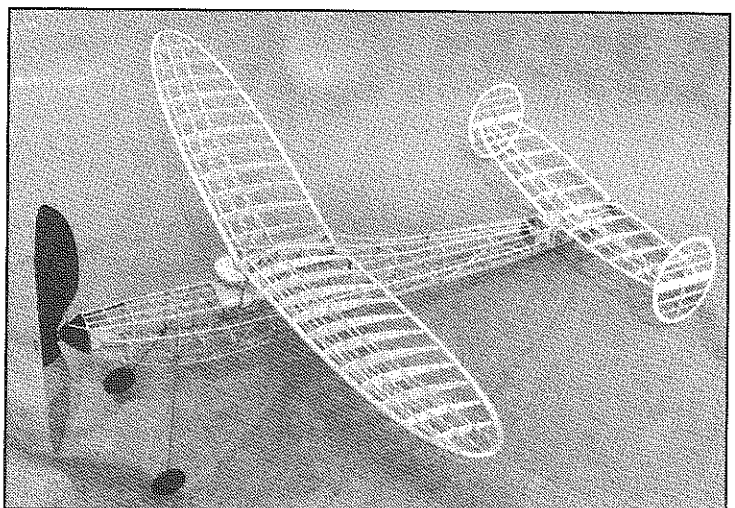
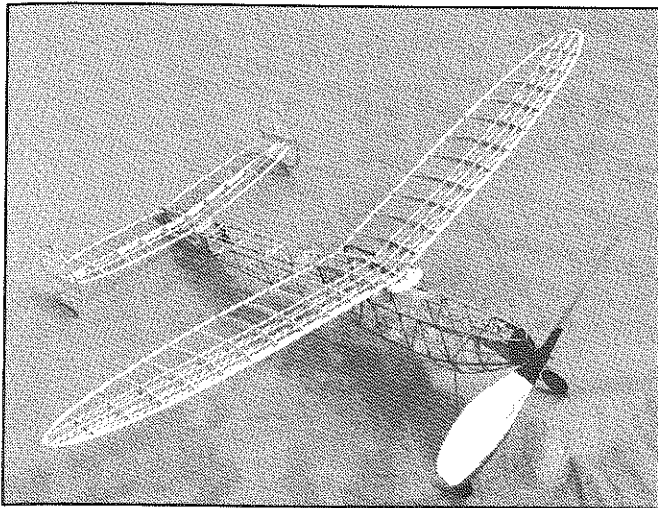
PLAN AS SHOWN IS FOR E. LINN ENTRY IN 1940
 GRASS COURSE & MODEL WAS TESTED FOR
 2 MIN 34 SEC BEFORE ENTRY. MODEL MADE
 ONE OFFICIAL FLIGHT DURING CONTEST OVER
 PROJECTED WING AREA, CALCULATED - 151.50
 IN. BY E. LINN 3/6/50.

THE PACEMAKER

WING SPAN	36 INCHES
WING AREA	154 SQ. INCHES
TOTAL WEIGHT	4.7 OUNCES
CLASS	OUTDOOR CABIN

DESIGNED BY - B. J. YOUNGMAN
ORR'S MODEL AIRCRAFT
 18-20 N. TOPEKA AVE., WICHITA, KANSAS

TRACED BY -
 E. LINN, 1950



Les DeWitt's Pacemaker in its bare-bones state. Les elected to cover his prop with silver Mylar for added visibility and ding-proofing. These photos give a good sense of perspective to the craftsmanship required to build this airplane.

need to get out the thinned white glue and small pieces of tissue to cover the airfoiled, elliptical shapes of the fins.

FLIGHT TRIMMING

While the plans don't show it, as is often the case with designs of this vintage, the model does require about 5

degrees of downthrust and 3 degrees of right thrust. The noseblock can be drilled out to accommodate those thrust requirements, or you can shim them in later. It's a much neater assembly, though, if the thrust settings are incorporated initially. The plane also requires about 3 degrees of negative incidence in the stabilizer,

which can be shimmed in during the initial hand glides.

The Pacemaker should balance at 50 percent of the wing chord without the rubber motor in place. All-up flying weight with a 24-inch, 16-strand braided motor of 1/8-inch FAI Tan installed is 4.2 ounces. Expect the motor to weigh about 1-1/3 ounces (33

grams), which leaves an acceptable airframe weight of just under 3 ounces for the plane itself. If you're someplace in that ballpark, you have a real competitor on your hands.

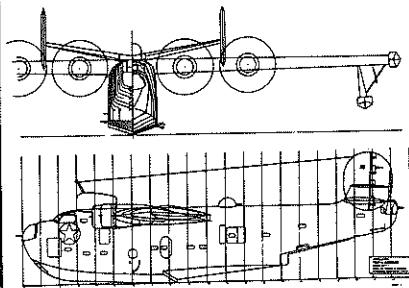
The model should be trimmed to climb steeply to the right on the initial power burst, then level out and open up as

continued on page 84

Hobby Supply South

404-974-0843 404-974-6243 (fax)

<h3>MB IOI</h3> <p>A revolutionary new program that provides a phased introduction to modeling. The non-profit Model Building 101 corporation provides training, materials and support for educators and group leaders. To help defray their expenses, they also make the materials available to the general public. For larger quantities of the materials or for more information on the program, contact Mr. J.J. Levine at 1891 Branchview Drive, Marietta, Georgia 30062.</p> <p>Step 1: Beginners Set</p> <p>Includes building board, pins, glue, complete Delta Dart kit and razor blade. The video is an excellent training tool for the educator or individual. It takes the viewer in real time through the complete construction of the Step 1 kit.</p> <p>MB101A0 Step 1 \$9.95 MB101AV Construction video \$19.95</p> <p>Step 2: Tenmyson Kit</p> <p>A cute, 20" span model featuring a pylon mounted built-up, tissue covered wing and tail feathers. Graceful slow flight.</p> <p>MB101B0 Step 2 Tenmyson Kit \$6.95</p> <h3>TOOLS</h3> <p>A nice drafting set at a great price. Set includes 12" multi-scale triangular ruler, 12x16" plastic pouch, lettering guide pad, 6" compass, 6" divider, 10" 30°/60° triangle, 8" 45°/90° triangle, 6" protractor, 6 3/4" french curve, soft pencil eraser, lead holder, mini-lead holder, erasing shield, 3 packs of 0.2 mm lead.</p> <p>ALBK1A Drafting Set \$37.95</p> <p>Precision ground and polished prismatic lenses of scratch resistant plastic, designed to converge at 14" from your eyes. Worn over the head with an adjustable soft plastic headband, it leaves the hands free to work. Lessens tension strain and fatigue. May be worn over prescription glasses.</p> <p>AL7744 Headband Magnifier \$16.95</p>	<h3>RADIO CONTROL</h3> <h4>Airsail</h4> <p>AS-RC01 Volkspine 51" \$109.95</p> <h4>Ben Buckle</h4> <p>HSS proudly announces it is now the US representative for this line of world class fine free flight and R/C assist old timers.</p> <p>AG-G324 Curtiss Jenny 26" \$30.95 AG-G320 Chipmunk 21" \$21.95 AG-G321 Auster J-4 23" \$21.95 AG-G322 Moth Minor 24" \$21.95 AG-G223 Eastbourne 19" \$18.95</p> <h4>easy built models</h4> <p>EB-FF13 Skatterbrain 30" \$8.00 EB-EB08 Aeronca 22" \$10.00 EB-FF03 P-39 Aircobra 35" \$12.00 EB-FF06 PT-19 35" \$12.00 EB-FF54 Pchld Ranger 50" \$25.00 EB-FF33 Fairey Fox 20" \$8.00 EB-FF69 Avenger 28" \$11.00 EB-FF75 Stuka 30" \$10.00 EB-FF53 Slim Voyager 50" \$25.00 EB-FF70 Corsair 28" \$10.00 EB-FF58 Lysander 48" \$28.00 EB-FF59 S.E.5a 50" \$30.00 EB-FF52 Taylorcraft 50" \$25.00</p> <h4>Herr Engineering</h4> <p>Amazing LASER cut kits</p> <p>HE-K101 Scout 30" \$29.95</p> <p>HE-K103 Piper Cub 36" \$38.95</p> <p>HE-K104 Ryan ST 30" \$36.95 HE-K105 Puker D-VIII 24" \$36.95 HE-K102 Fairchild 24 30" \$36.95</p>	<h3>FREE FLIGHT</h3> <h4>IGRA</h4> <p>IG-7653 Miles Magister 24" \$22.95</p> <p>IG-7654 Jodel D-7 25" \$24.95 IG-7655 Fokker E-III 22" \$20.95</p> <h4>WEST WINGS</h4> <p>WW-01 Dornier 335 25" \$24.95 WW-03 Sea Fury 22" \$21.95 WW-04 Spitfire 22/24 25" \$22.95</p> <p>WW-06 F-117 Stealth 16" \$18.95 WW-08 Puss Moth 24" \$19.95 WW-09 Hawker Hart 25" \$24.95 WW-10 Widgeon 24" \$18.95</p> <h4>Veron</h4> <p>VO-503 Bolkow Junior 23" \$14.95 VO-502 Calabria 23" \$14.95 VO-705 Deacon 53" \$39.95</p> <h4>KEIL KRAFT</h4> <p>KK-039 Fokker D-8 16" \$10.95 KK-036 S.E.5a 16" \$10.95 KK-037 Nieuport 16" \$10.95 KK-038 Camel 16" \$10.95 KK-040 Spitfire 18" \$10.95 KK-041 Hurricane 20" \$10.95 KK-043 Stuka 20" \$10.95 KK-044 F.W. 190 18" \$10.95 KK-045 Mustang 19" \$10.95 KK-046 ME 109 17" \$10.95</p> <h4>LSM Aviation</h4> <p>LSM-001 Phantom Jr. 20" \$12.95 LSM-002 Jabber Jr. 23" \$15.95</p>	<h3>POWERPLANTS</h3> <p>Free flight ducted fan anyone? This gorgeous little fan unit was designed as a model powerplant. Includes electric motor, shroud with built in stators, impeller, tailcone, etc. Unit has a 2.41" diameter at shroud flange with an impeller diameter of 2.23" and weighs 1.4 ounces. Produces 1.5 oz. of thrust with 3 cells and 2 oz. with 4 cells. For models weighing 5 oz or less ready to fly.</p> <p>EDFI Electric fan 2.23" \$19.59</p> <p>The Morley electric fan unit is intended as a powerplant for R/C use. Features a molded shroud with motor mount and stators. 2.5" nylon impeller and motor shaft adapter. For 20-22 turn electric motor (not included) on 7 cells. Produces 12-14 oz. of static thrust at 20,000 rpm with an efflux velocity of 100 mph!</p> <p>MORFAN Morley Jet-Elec \$24.95</p> <p>Hundreds of R/C and FPV kits from dozens of foreign and domestic manufacturers. Powerplants, servos, supplies, tools and much, much more!</p> <p>Fully Illustrated Catalog \$4.00</p> <p>Ordering Information</p> <p>Phone: Call us at 404-974-0843 between 10:00 am and 7:00 pm (EST) Monday thru Friday, and between 10:00 am and 5:00 pm on Saturday. Phone orders must be paid by credit card. A \$3.95 shipping & handling charge will be added to your order total.</p> <p>Fax: Fax your order to 404-974-6243. Please include credit card number and expiration date. Add \$3.95 postage and handling.</p> <p>Mail: Mail your order to 5060 Glade Road, Acworth, GA 30101. Please include credit card number and expiration date, check or money order. Add \$3.95 postage and handling.</p>
---	---	--	--



U.S. NAVY PATROL BOMBER
CONSOLIDATED PB2Y-5
CORONADO

SCALE 3-VIEW DRAWINGS

PB2Y-5 CORONADO	58"
PB4Y-2 PRIVATEER	74"
CULVER CADET	54"
KNIGHT TWISTER	51"
FAIRCHILD AMPHIBIAN	74"
SORRELL HYPERBIPE	72"
CASSUTT RACER	68"
DOUGLAS DOLPHIN AMPHIBIAN	84"

LARGE 55¢ S.A.S.E. FOR INFO & LIST
\$35 PER SET, POSTPAID.
IN TUBE, 1ST CLASS ADD \$7 P&H

ACME CONCEPTS

4826 169th Ave., S.E.
Snohomish, WA 98290

EASYWRITER

Customized Vinyl Lettering

For all your Lettering and Logo needs
Customize your Models to your own spec's

FAST AND EASY APPLICATION

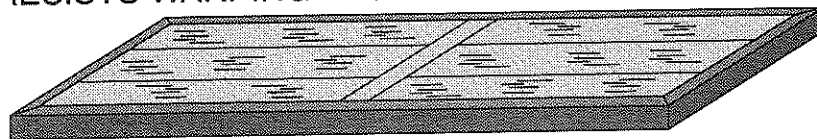
No more "PER LETTER" struggling application

FOR MORE INFORMATION: Call (310) 559-8087 or write to:

EASYWRITER 3405 Keystone ave #8, Los Angeles CA 90034

BALSA WORKBOARD

RESISTS WARPING BUILDS TRUE LONG LASTING



2 SIZES AVAILABLE

Add \$5.00 per board for shipping and handling
MA residents add 5% sales tax
Prices subject to change without notice

WB36 36"x14"x1" ... \$20.98 **WB48** 48"x14"x1" ... \$23.98



PAUL K. GUILLOW, INC., P.O. Box 229 Wakefield, MA 01880
617-245-5255 fax: 617-245-4738 INTERNET: GUILLOW@AOL.COM

HAVE YOU TRIED FULL-SCALE ?



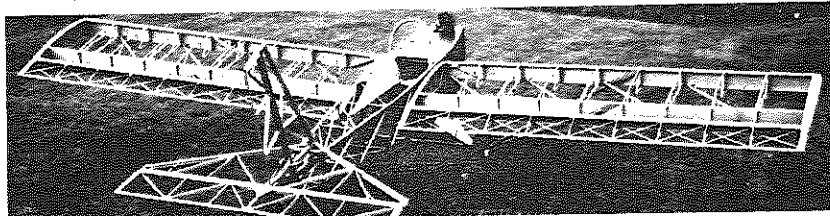
AFTER YOU DID ALL THE WORK, WHY LET YOUR
AIRPLANE DO ALL THE FLYING?



INFO \$5.00

BUILD & FLY THE miniMAX YOURSELF!

INFO \$5.00



AWARDED SUN-N-FUN '86 • Computer Designed • Wood Construction • Easy Construction
"Most Innovative New Design" • Part 103 Ultralight • 3 Axis Control **VIDEO AVAILABLE**
TEAM INC.-10790-MB IVY BLUFF RD., BRADYVILLE, TN 37026 -(615) 765-5397

"PACEMAKER" cont. from page 71

torque diminishes. The prototype was trimmed to transition into a left glide turn with no stall using stabilizer tilt to adjust the turn. In all probability, the model could be set up to fly right-right as well, simply by washing in the right wing panel about 1/8-inch. The big freewheeling prop will keep it turning to the right in the glide.



Kansas modeler Ernie Linn was involved in testing the prototype Pacemaker back in 1940. Ernie has been a moving force in SAM (the Society of Antique Modelers) for many years now. During this time he has resurrected several designs, including his own Kansas Wakefield that would have been lost to time had it not been for his efforts. The Pacemaker is one of those. Ernie may be pressed shortly to help resurrect Orr's other two designs, the J-Hawk and the Chieftain, both mentioned in this article.

Probably the most entertaining and compelling description of the Pacemaker's performance ability comes from Ernie Linn's first experience with the design, 56 years ago at Orr's 1940 annual contest. Dean Zongker was his helper.

"We finished our model," Linn says, "late Saturday night. Sunday morning, we were at the contest site early, ready to make our first test flight. It was a good day for flying—pleasant temperatures and wind about 5 to 10 mph. This was not the kind of day where the winning flight would be over 10 minutes duration, like the first J-Hawk contest, but it was better than average for Kansas.

"We put about 200 turns in the motor for our only test flight. The model performed perfectly and was up for 2 minutes 34 seconds. The climb and glide circles were acceptable, and there was no tendency to stall. We entered and had our Pacemaker processed (brief inspection and 4.5-ounce minimum weight).

"When it came our turn to fly, we wound over 400 turns into the rubber and launched. The model performed like it had made up its mind to clear up any doubts we might have had about its ability to do the job right. We did have doubts, and it was a finger-crossing type of situation, but in the next few minutes these tensions disappeared. The air was good and we logged a flight of just over 3 minutes in sight

of the timer—good enough, as it turned out, to claim 3rd place and a Herkimer OK .49 engine for the performance. Unfortunately, the model continued out of sight and was lost.

"Two other models also thermalled over 3 minutes, but were stalling in the glide and stalled out of their thermals. Ours was the only model lost that day. Sure wish we had known about dethermalizers! I never could get that OK .49 to run. I wish my Pacemaker had stayed in sight a little longer. I could have used the Brown Junior they were giving for 1st place."

As a postscript, Linn offers, "The body and wing of the Pacemaker are more difficult to cover than the other Orr's models, due to the excess of compound contours. The fuselage takes more time to construct, but this is a clean, simple, pretty model that gives one a lot of satisfaction. Hope you experience the Pacemaker syndrome."

Because of its numerous compound curves and relatively complex structure, [the Pacemaker] is not a good ship for the beginning builder to tackle. However, for the more experienced builder and serious competitor, it has a great deal to recommend it.

In a more modern context, the Pacemaker has performed very well. It has won numerous local and regional contests since its 1991 debut at Lawrenceville, Illinois, where it placed 2nd in Old-Time Rubber. In March of 1993, the Pacemaker, in the able hands of Les DeWitt, placed 1st in Class C Small Cabin at the prestigious SCIF meet in Taft, California. Well-known SAM competitor Jim Kutkuhn also has had great success with the design, placing high in several SAM Champs since its reintroduction.

Questions or comments about the Pacemaker are invited and may be directed to Ernie Linn, 3505 Mt. Vernon, Wichita, KS 67218-3959. Please include a self-addressed, stamped envelope if you need a reply. *MB*

BIRCH AIRCRAFT PLYWOOD

4mm (1/64")	50"x50"	\$39.16
.8mm (1/32")	61"x61"	\$35.81
other thickness available	1.0mm (3/64")	61"x61" \$35.50
upon request, up to	1.5mm (1/16")	61"x61" \$34.75
6.0mm.	2.0mm (5/64")	61"x61" \$52.50
1-800-222-7853;	2.5mm (3/32")	61"x61" \$52.50
FAX (206) 272-6431	3.0mm (1/8")	61"x61" \$56.72

B&D INTERNATIONAL, Tacoma, WA 98409
1711 Center St.

Liv Trickler

Plugs between your charger and wall socket. Provides constant, safe, trickle for radio or glo-starter chargers. \$9.95 + \$1.50 s&h

SPECIAL \$3 FOR \$27.00. WE PAY SHIPPING.

Check or m.o. to: R.K. PRODUCTS, P. O. Box 1607, Rocky Face, GA 30740

GYRO-KITE™

FUN, EXCITING, CHALLENGING & EDUCATIONAL

- hovers—does touch & goes
- takes off and lands vertically
- flies over 100 feet high
- year-round fun!

ONLY \$19.95!
PLUS \$4.50 SHIPPING & HANDLING
4-6 weeks delivery • VISA/MasterCard Accepted

"HAVE A GOOD FLIGHT"
GYRO-KITE™
1-800-99-ROTOR
2355 Fairview Avenue, #235 MB
Roseville, MN 55113

Patent #5381988 ©1996 All Rights Reserved

A REVOLUTIONARY NEW CONCEPT IN KITES

JETT™ The Only Way To Fly.

These Jett Engines are available in .40, .46 and .50 sizes, and like all Jett Engines, are the most powerful... at any price.

Call or write today and find out why Jett is...

The Only Way to Fly.

Available Directly from
JETT Engineering
6110 Milwee, Suite J • Houston, TX 77092
Phone: 713-680-8113 • Fax: 713-680-8164

Coming soon from JETT...
Sport-Jett .90 Lite

Quickie-Jett .40
OM-40
Jett F.I.R.E.
Fan-Jett R.E.R.I. (Also for F-1 and F-40)
Sport-Jett

Made in the U.S.A. Dealer Inquiries Welcome

WIRE BENDERS

K&S ENGINEERING
6917 W. 59th St.
Chicago, IL. 60638
(312) 586-8503

K&S ENGINEERING has two wire benders that will satisfy any craftsmen and modelers. They will solve most bending problems including music wire, square, and rectangular shaped metal.

The Coil Winder gives you the freedom to customize landing gears, steering, arms, springs, or any wire project you are building.

No. 322

No. 323

No. 324

Stock No.

322 Mighty Wire Bender
323 Mini Wire Bender
324 Coil Winder

SEND 50¢ FOR PRICE LIST AND CATALOG

K&S