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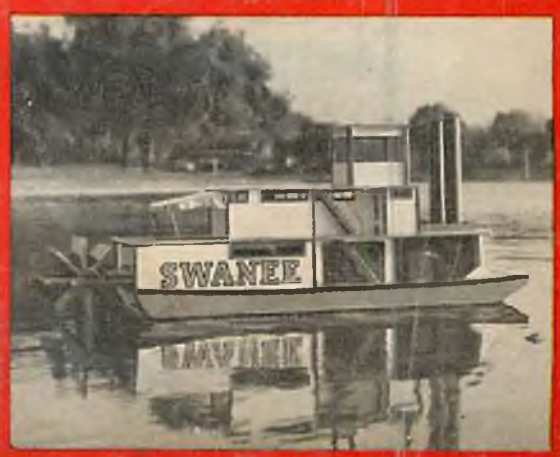

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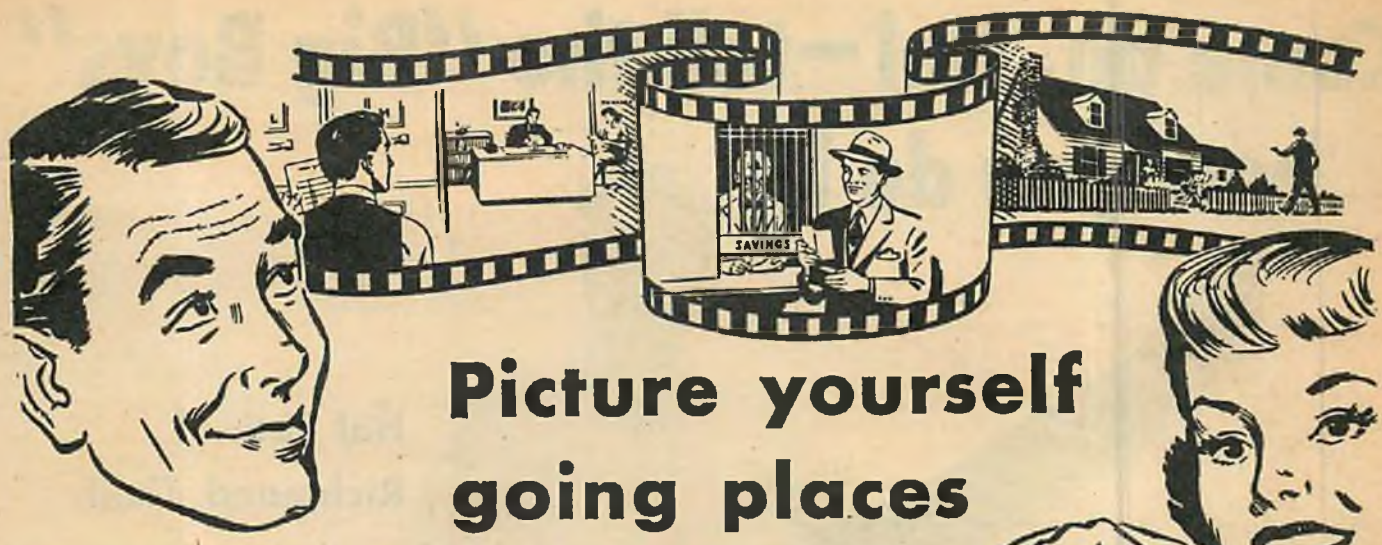

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Hal Roth of
Richmond, Calif.

Hal won a record-smashing first place in the model Clipper* Cargo PAA Load Event at the '53 NATS. His 6-oz. model carried 23¼ ounces of payload—a ratio of weight empty to payload which never has been approached by the "Big Boys" in full-scale aviation!

PAA LOAD EVENTS

You're reading about the hottest activity in competitive aviation modeling!

Sponsored first by Pan American in 1948, these weight-carrying events for free-flight gas models have caught on like wildfire. This year they will spark many local and regional meets—and the spotlight will be on PAA Load Events at the NATS.

In designing your entries, remember that the purpose of the event is to encourage the building and flying of model aircraft which resemble full-scale airplanes with respect to *carrying a payload safely through the air.* After all, isn't this the basic purpose of commercial aviation itself?

Start on your PAA Loader now. For rules and specifications for 1954, write to: Educational Director, Pan American World Airways, 28-19 Bridge Plaza North, Long Island City 1, New York.

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Air Trails model annual for 1954

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A TRIBUTE TO AMERICA'S NO. 1 MODELER!

WALKER

—the man of many wonders

Many-time winner of U.S. radio control championship, Walker starts take-off with 1950 entry; Jim's R/C stunt lawnmower (below) has amused thousands and is popular part of his show. The power mower can turn on dime, runs between JW's legs.

Jim utilizes trailer for his flying demonstrations; his "tractor" is sleek Buick Skylark here at Mitchel AFB.

■ Although Jim Walker of Portland, Ore., did not invent the model airplane, he has done more to popularize air-modeling than anyone else in the world. While his contributions to the sport are many, probably his greatest was the introduction of control line flying, or U-Control as he called it. Yet we must not overlook the countless thousands of modelplane fans who started out with one of Jim's A-J gliders or rubber models. Or the fellows who went into radio control because the peerless model pilot from Portland made it look like so much fun.

On further thought let's agree that Jim Walker's major air-modeling contribution is and has been that he makes the hobby-sport look like real fun . . . watch Jim perform at his one-man air show. He convinces everybody that here's a guy who's having a swell time.

Among Walker's many fascinating projects: U/C ship that barrel-rolled. Wing and fuselage center revolved.

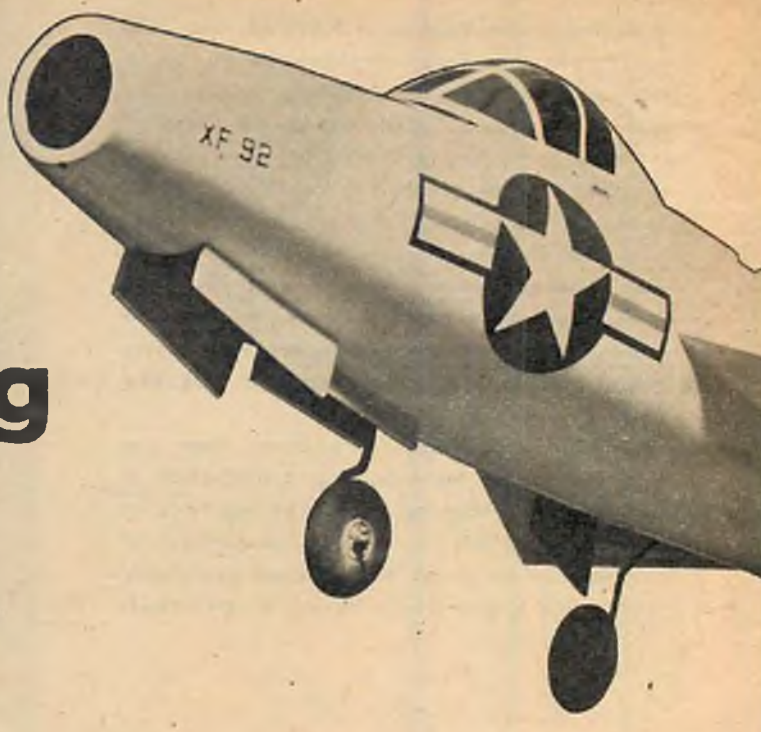
Jim's sonic-controlled glider received world-wide publicity. In country cow's moo jammed the receiver!

Not only did "Mr. A-J" invent U-control, he made the first prefabricated kit. Here, an early Fireball.

Walker's greatest crowd-pleaser: flying three U/C Fireballs at once. His helmet (see upper left) guides one.

JET POWERED MODEL:

Convair's Delta Wing XF-92A



By FRANK LASHEK
and
CAL SMITH

Thousands have seen this model fly; now you can duplicate it for powering with a Dyna-Jet engine

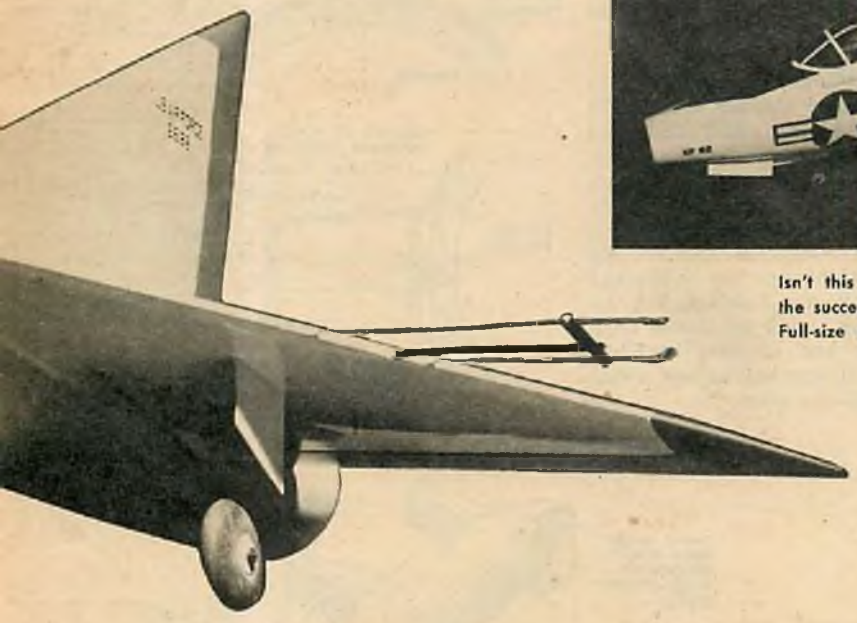
■ The paper dart finally came into its own with the advent of the delta-wing aircraft. Convair's XF-92 was built as a high-speed research aircraft and was the first completely successful design of this type flown anywhere. The flying equilateral triangle has turned in such fine performance that many designers and engineers believe this shape to be the most promising for future aircraft. From the experimental XF-92, Convair has developed the Sea-Dart, a twin-jet hydro-ski delta fighter, and the upcoming F-102, supersonic interceptor. The latest modification of the XF-92A features addition of afterburner to the J-33-A-29 turbojet, boosting thrust to over 5200 lbs.

Combining the Dyna-Jet and delta wing shape results in a scale model that is a real show-stopper. The white paint job is dazzling and the Dyna-Jet boosts the ship along at 95 mph. The model handles well and flies very smoothly. There has been no trouble with excess heat from the engine and the odd configuration will fly right if balanced properly. The model is scaled at 1″= 1′, making a pretty big job. Length is 41 in. and span is 31¼ in. This size is necessary so that there is ample clearance around the Dyna-Jet in the fuselage. Complete accurate data has not been released on the big XF-92A, so the model does not have all details complete, notably on the landing gear.

You will note on the plan side view that outlines of the scale tail cone are a bit higher than the model construction. The model was laid out with fuselage symmetrical about the center line for ease of building. If you should wish to match the scale outlines shown, the center line should angle up from former 7 to scale position at tail cone. The short cone at rear cannot be used because the tail opening would be too small.

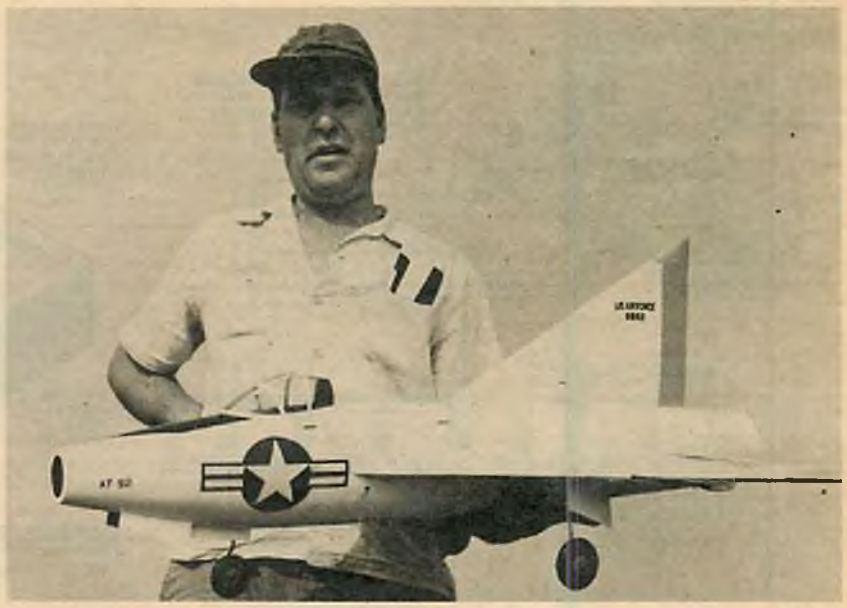
The nose air inlet opening on the big ship forms practically a knife edge; however, the fuselage planking does not permit this on the model, so outside

Isn't this just about the most beautiful model you've ever beheld? She's the successor to Mr. Lashek's widely publicized Dyna-Jet powered Panther. Full-size plans are available of the XF-92A; write Air Trails for info.

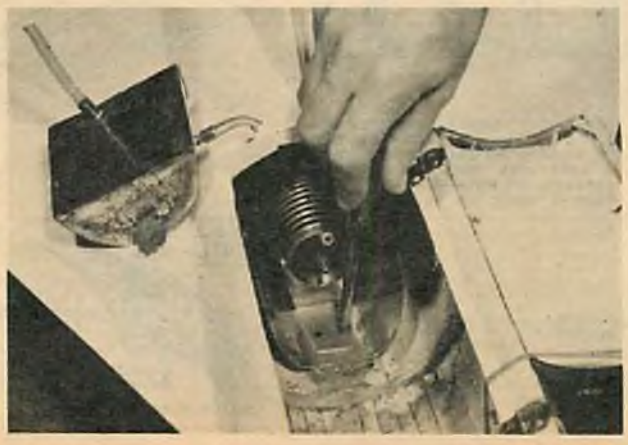


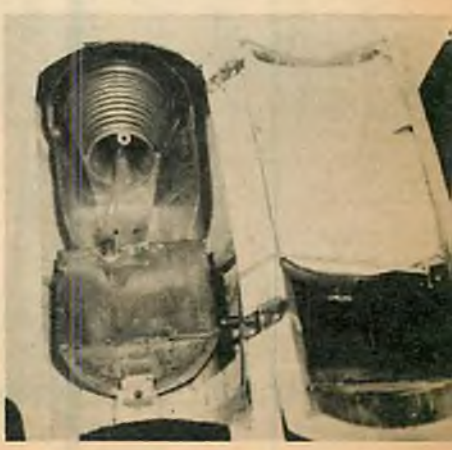
diameter is ¼" larger than scale. A turned aluminum ring could be made to proper size for the nose section. The main landing gear is a single strut rather than the complex scale gear, and the tread is wider for better ground stability. The drawings of scale landing gear are, based on photos, so the accuracy is not guaranteed. The gear could not be made retractable anyway, since there is inadequate room in the model fuselage.

Construction of the XF-92A is fairly complex and therefore not recommended for beginners. The fuselage is built on a jig made up of 1"x3" blocks at each former station (see construction steps drawing). The blocks are nailed or screwed to a 6" wide plank forming a base board. Lay out the fuselage center line and crutch positions on the top of 1"x3" blocks. Cut the formers from ⅛" plywood except #3 which is 3/16" plywood and #7 which is ¼" plywood. Make duplicate top segments of formers 3 and 6 for hinged hatch on top. To



And here's the master of jet-powered scale model flying—Frank Lashek of Asbury Park, N. J. His jet control line jobs have been duplicated around the world. Trailing edges are aluminum color.





save plywood, formers 1, 2 and 4 can be cut from same piece since they are concentric. Formers 8, 10 and 11 can also be cut in same way.

The crutch pieces are laid out over the jig block with formers 5, 6 and 7 slipped in place. Working from these formers toward nose and tail, cement the other formers to the crutch and pin crutch down to jig block as you go along. Formers should lie flat against the vertical face of jig blocks for good alignment. Leave center hole in formers 1 and 11 under-size for strength until planking is done, then opening can be filed out to proper size. Put strips of waxed paper between mating surfaces of hatch rails and hatch formers for ease of removal later.

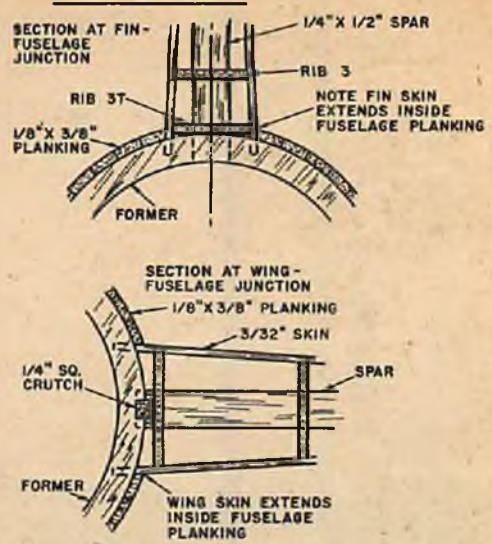
While basic fuselage structure is drying, proceed with construction of the fin. Build up frame consisting of leading edge, spars and ribs over the plan. Put 5/16" thick scrap blocks under leading edge and 3/8" thick blocks under spars so that ribs will clear work board. This fin frame can be planked on one side while still in place over the plan or it can be removed and planked in hand before attaching to fuselage. Either way check alignment as work advances.

Now cement fin in place on fuselage top. Note how spars extend down behind formers 8 and 9 and leading edge behind former 6. (See skin detail.) With fin in place, fuselage planking can be started. Use 1/8"x3/8" medium hard strips and make a snug fit along fin junction. Plank down to crutch top.

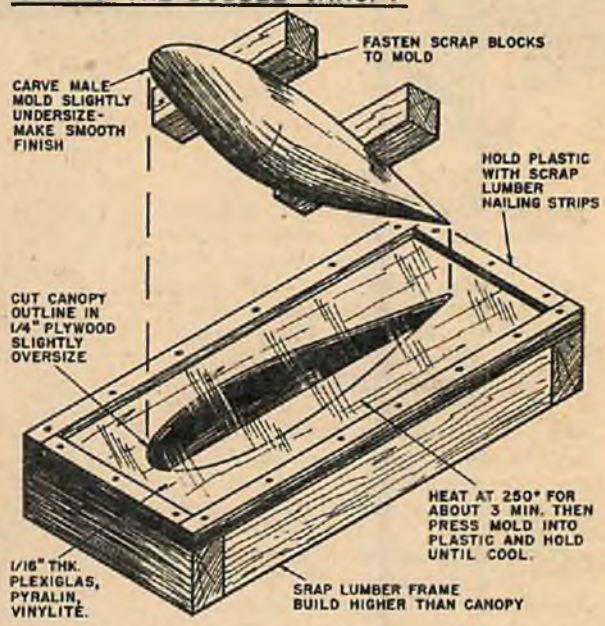
Build wing frames, leading edge, ribs and spars in same manner as fin. Fin and wing utilize same construction and duplicate ribs. Wing leading edge should be blocked up 9/16" and spars 5/8" for rib clearance. Note that right wing construction is same as fin while left wing has additional spar in the elevator. The right wing can be planked before joining to the fuselage, but the left wing should be left unplanked until it is attached and controls installed.

Complete building details are available on the full-size plans.

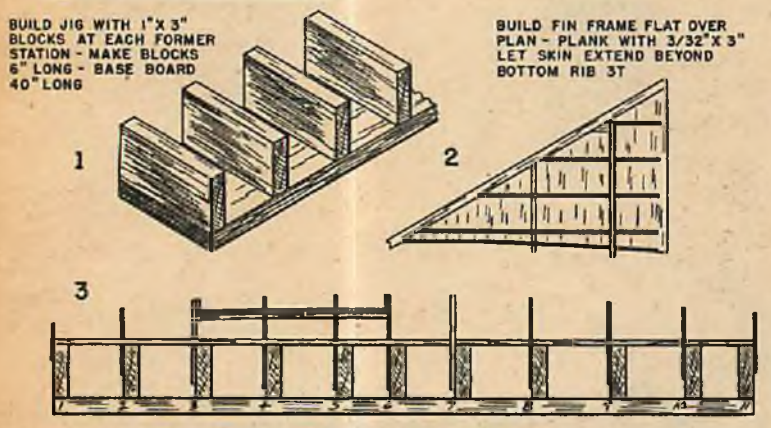
SKIN DETAILS

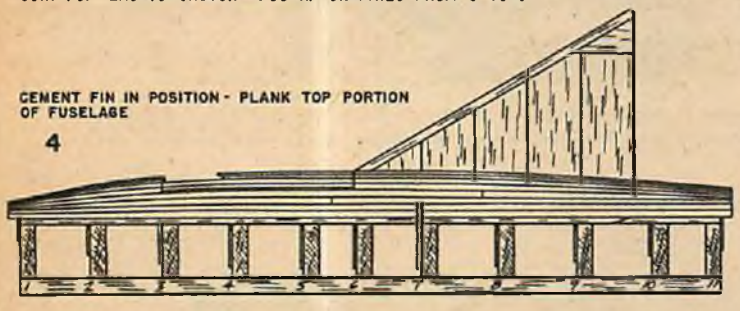


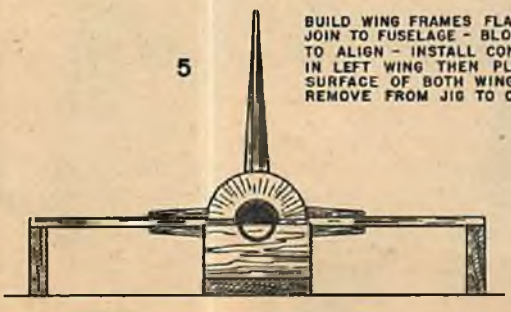
MAKING THE BUBBLE CANOPY



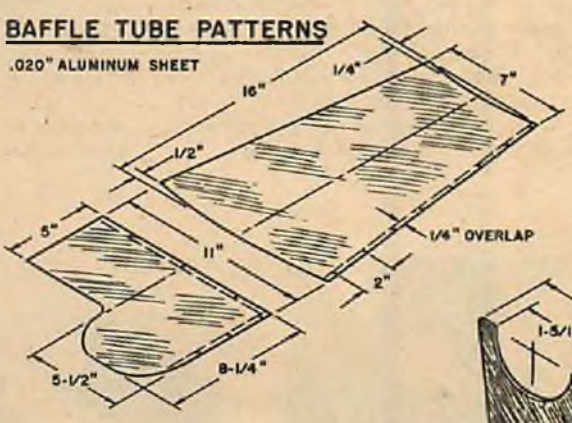
CONSTRUCTION STEPS







BAFFLE TUBE PATTERNS



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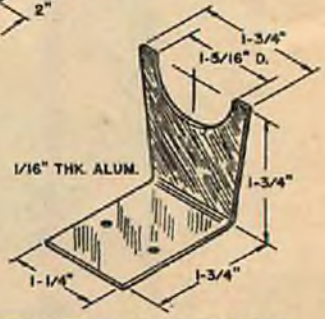
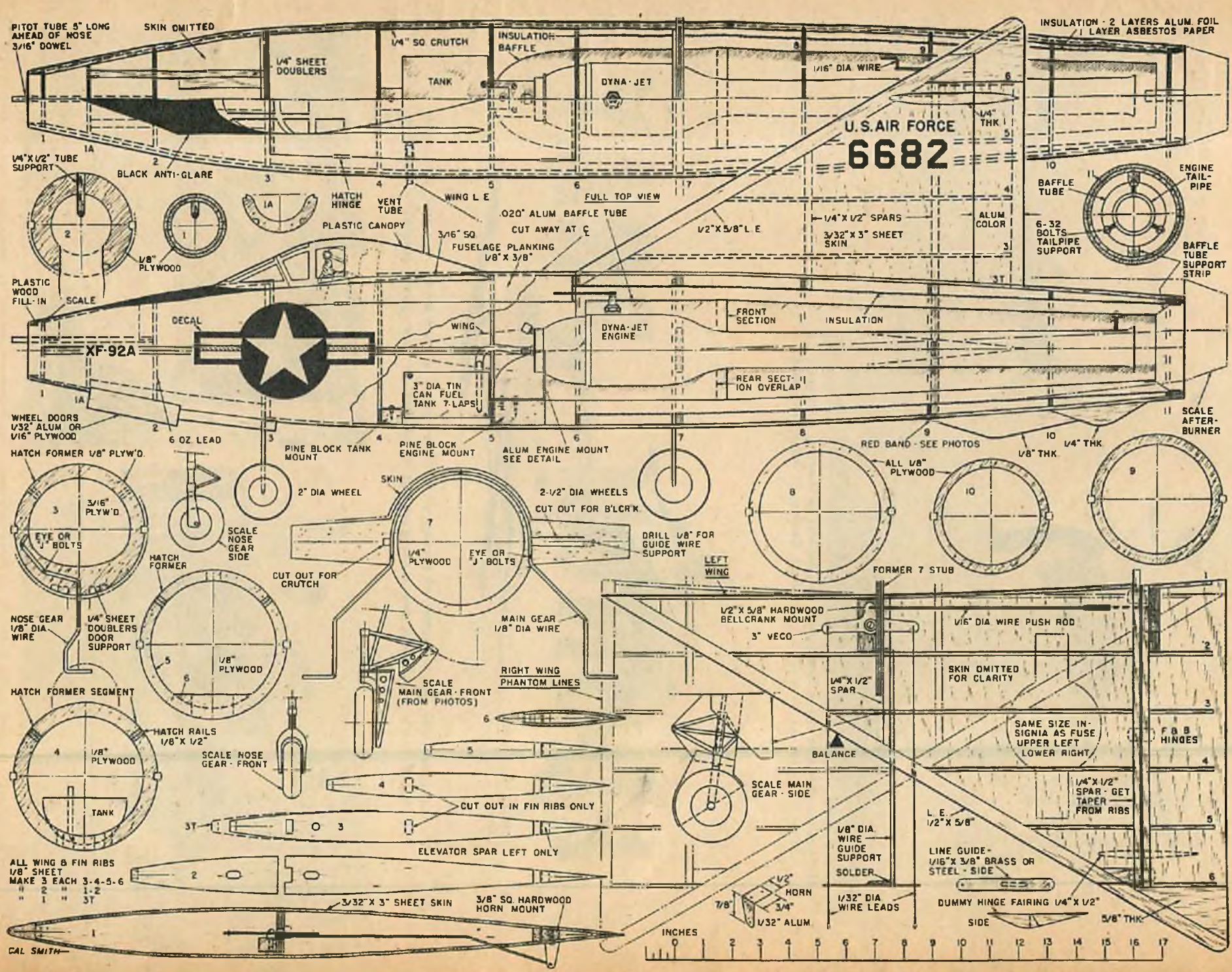


FRONT ENGINE MOUNT


PITOT TUBE 5" LONG AHEAD OF NOSE 3/16" DOWEL
SKIN OMITTED
1/4" SQ. CRUTCH
INSULATION BAFFLE
1/4" SHEET DOUBLERS
TANK
DYNA-JET
1/16" DIA WIRE
INSULATION - 2 LAYERS ALUM. FOIL 1 LAYER ASBESTOS PAPER
U.S. AIR FORCE
6682
1/4" THK
1/4"X 1/2" TUBE SUPPORT
BLACK ANTI-GLARE
HATCH HINGE
VENT TUBE
WING L E
FULL TOP VIEW
.020" ALUM BAFFLE TUBE
CUT AWAY AT ℄
1/2"X 5/8" L E
1/4"X 1/2" SPARS
3/32" X 3" SHEET SKIN
ALUM COLOR
PLASTIC CANOPY
3/16" SQ
FUSELAGE PLANKING 1/8" X 3/8"
1/8" PLYWOOD
BAFFLE TUBE
ENGINE TAIL-PIPE
6-32 BOLTS TAILPIPE SUPPORT
BAFFLE TUBE SUPPORT STRIP
PLASTIC WOOD FILL-IN
SCALE
DECAL
XF-92A
WING
DYNA-JET ENGINE
FRONT SECTION
INSULATION
REAR SECTION OVERLAP
3" DIA TIN CAN FUEL TANK 7-LAPS
WHEEL DOORS 1/32" ALUM OR 1/16" PLYWOOD
6 OZ LEAD
PINE BLOCK TANK MOUNT
PINE BLOCK ENGINE MOUNT
ALUM ENGINE MOUNT SEE DETAIL
RED BAND - SEE PHOTOS
1/8" THK
1/4" THK
SCALE AFTER-BURNER
HATCH FORMER 1/8" PLYW'D.
3/16" PLYW'D
EYE OR "J" BOLTS
2" DIA WHEEL
SKIN
2-1/2" DIA WHEELS
CUT OUT FOR B'LCR'K
DRILL 1/8" FOR GUIDE WIRE SUPPORT
ALL 1/8" PLYWOOD
SCALE NOSE GEAR SIDE
HATCH FORMER
1/4" PLYWOOD
EYE OR "J" BOLTS
CUT OUT FOR CRUTCH
LEFT WING
FORMER 7 STUB
NOSE GEAR 1/8" DIA WIRE
1/4" SHEET DOUBLERS DOOR SUPPORT
1/8" PLYWOOD
MAIN GEAR 1/8" DIA WIRE
1/2"X 5/8" HARDWOOD BELLCRANK MOUNT
3" VECO
1/16" DIA WIRE PUSH ROD
RIGHT WING PHANTOM LINES
SCALE MAIN GEAR - FRONT (FROM PHOTOS)
1/4"X 1/2" SPAR
SKIN OMITTED FOR CLARITY
HATCH FORMER SEGMENT
HATCH RAILS 1/8"X 1/2"
1/8" PLYWOOD
TANK
SCALE NOSE GEAR - FRONT
BALANCE
SAME SIZE INSIGNIA AS FUSE UPPER LEFT LOWER RIGHT
F B B HINGES
1/4"X 1/2" SPAR - GET TAPER FROM RIBS
SCALE MAIN GEAR - SIDE
CUT OUT IN FIN RIBS ONLY
L E 1/2"X 5/8"
1/8" DIA WIRE GUIDE SUPPORT
SOLDER
LINE GUIDE - 1/16"X 3/8" BRASS OR STEEL - SIDE
ELEVATOR SPAR LEFT ONLY
ALL WING & FIN RIBS 1/8" SHEET
MAKE 3 EACH 3-4-5-6
" 2 " 1-2
" 1 " 3T
1/2"
HORN
7/8"
3/4"
1/32" ALUM
1/32" DIA WIRE LEADS
DUMMY HINGE FAIRING 1/4"X 1/2"
SIDE
5/8" THK
3/32"X 3" SHEET SKIN
3/8" SQ. HARDWOOD HORN MOUNT
INCHES
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
CAL SMITH

Air Force-Nats-Plymouth champ Tommy Baker demonstrates his launching technique in the quarter-mile—oops, we mean Cl. B speed event. Dooling .29 drags him around.

Staten Island Sky Devils' member George Brown (lt.) flings away Cl. A McCoy .19 job; note follow-thru.

Ted Weber, Miami, Fla., practices arrested flip method; Torp .19 powered plane.

LAUNCH and PRAY

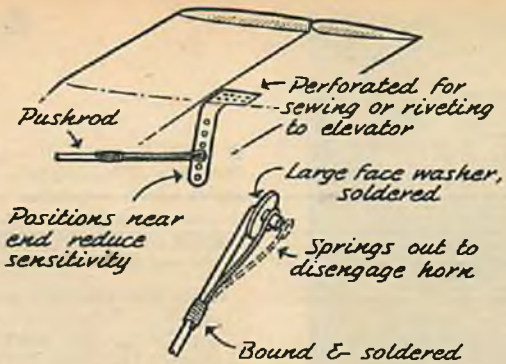
Once it was just a matter of getting your twin-pusher up and away . . . now you gotta be a track man-deep sea diver-gymnast combined—or just good decathlon material!

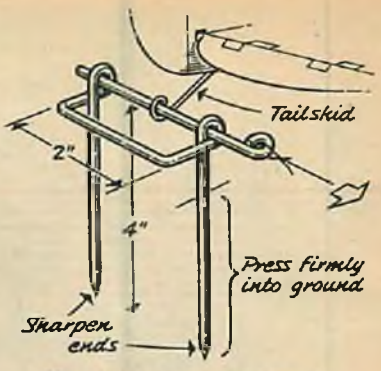
Prayerful attitude is assumed by Stu Richmond, Air Force lieutenant of Pinecastle, Fla., as he wills his ROW off during Nationals.

Iron nerves are needed by team race launchers, plus quick eye as starter drops the flag; just no place here for nervous folks.

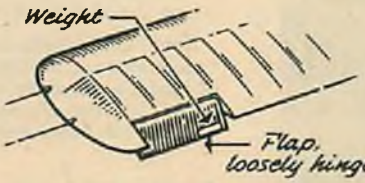
Whether your interest is speed, stunt, team racing or scale...look!

Circular Stuff

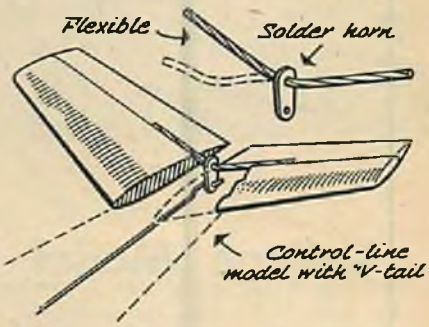




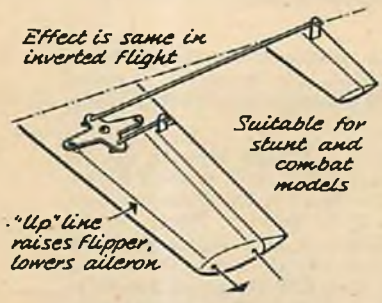
Ultra-simple "stooge" bent from coat hanger – Size variable; pin must fit freely



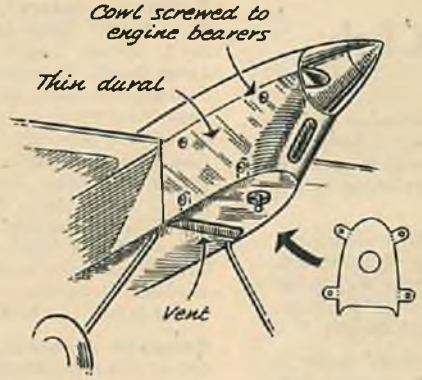
• Device keeps stunt job's inboard wing up, upright or inverted.



use the core of Flexible auto speedometer cable for neat linkage of elevators on swept or "V-tail" models —

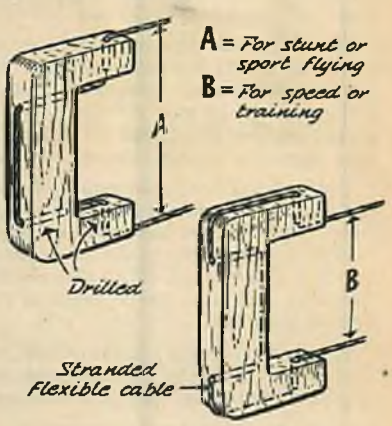


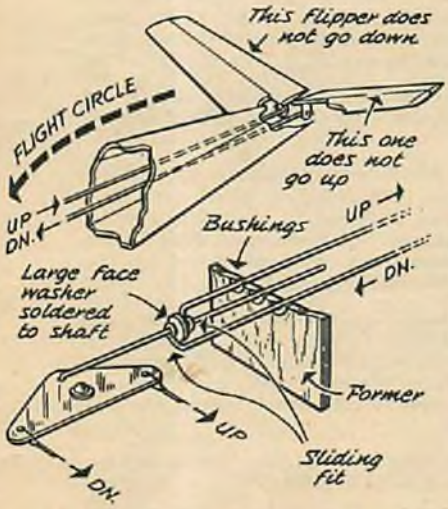
Coupled aileron control prevents inward bank when elevator goes up.



functional team racer cowl of dural. Bottom, of softer aluminum, is bolted or riveted in place —

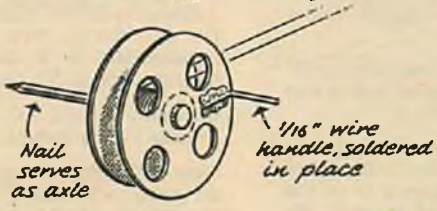
simple control handle which can have sensitivity quickly adjusted —



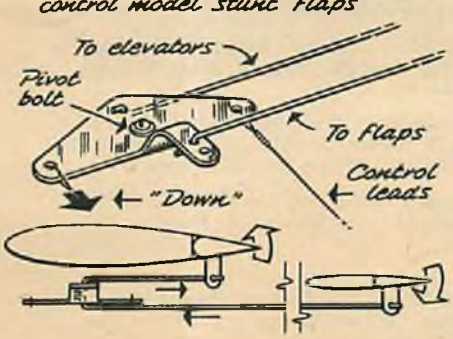


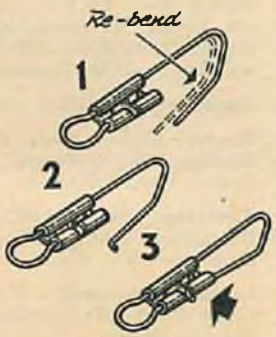
• Clever control linkage for "V" tail model affords built-in safety feature by assuring outward line pull in all control movements.

use discarded typewriter spool as reel for A½ linen or nylon lines.

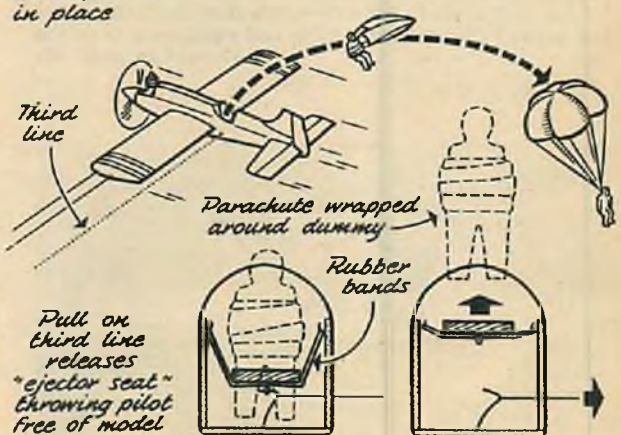


Modified design of bellcrank allows neat hookup for control model stunt flaps





make small change to snap clip to vastly increase its strength —



Pull on third line releases "ejector seat" throwing pilot free of model

• "Ejector seat" for dummy pilot (adaptable to freeflight using timer)

College Model Club

■ The Parks College Cloud Hounds were founded in 1946 to develop initiative, foster brotherhood and give technical assistance in aviation. A secondary purpose of the club is to provide amusement by fostering and developing model aviation on the Parks campus.

Open to all full-time students, the club is organized along the usual lines, the offices consisting of President, Vice President, Secretary, and Treasurer. Also, within the club proper are five committees: Membership; Emblem; Contests and Activity; Special Activities, and Supply.

Currently, the Special Activities Committee, under a newly initiated program, has begun intensive research into the field of fuels and lubricants. Test mixtures of fuel are distributed to the club members, and then they are tested under specified conditions with rpm, torque, and other engine operating factors coming into consideration.

The club has developed rapidly from 1946 to 1954, and has participated in many of the National and International contests. Its members have given many demonstrations for various organizations in the St. Louis area, both by invitation and sponsorship. They also aid in many of the school functions and have participated in every College Homecoming since 1946.

The club privileges consist of holding an executive position, voting, flying in the club area, and use of locker and engine testing facilities and a technical library.

Model building is not permitted in the dormitory rooms but the club members have their own shop and locker space and have all the necessary tools and equipment to do the most exacting work. (*Continued on page* 69)

ACTIVE AMERICAN

■ Since the end of the last war Air Trails has maintained a Directory of Modelplane Clubs. This lists those clubs currently active which responded to a questionnaire sent by mail. Organizations which do not appear here but are still active are urged to register immediately with Air Trails by filling out the coupon at the end of the listing.

Note: abbreviations are as follows: MAC—Model Airplane Club; MC—Model Club; A—Airplane Club; GMC—Gas Model Club; GMAA—Gas Model Airplane Association; MP&CC—Model Plane & Car Club; SME—Society of Model Engineers; MPC—Model Plane Club. The contact man's city is same as that in which the club is located if not otherwise listed.

Note: For information on organized contest activity, model regulations and meet sanctions in the U.S., contact the Academy of Model Aeronautics, 1025 Connecticut Ave., N.W., Washington 6, D. C. In Canada write the Model Aeronautics Association of Canada, 545 Josephine Ave., Windsor, Ontario.

Arizona: *Phoenix* Brophy Balsa Butchers, c/o George Meno. 4707 N. Central Ave. *Phoenix* MAC, c/o Quentin T. Webster, 934 E. Van Buren. *Tucson* Cholla Choppers. c/o Frank C. Townsend, 2751 N. Campbell Ave.

California: *Bakersfield* GMAA, c/o Francis Stewart, 900 21st St. *Oakland* Cloud Dusters, c/o Hal Roth, P.O. Box 602, Berkeley 1. *Fresno* Gas MAC, c/o Ocie Randall, 716 Waterman Ave. *Long Beach* Thunderbugs, c/o F. L. Swaney, 527 E. 55th St. *Lynwood Loopers*, c/o O. D. Barkhurst, 11721 Bullis Road. *Modesto* Aerial Robots, c/o Leland Reiswig, 1405 Pelton St. *Oakland* Two Cycle Terrors, c/o Dale W. Root, 6036 Telegraph Ave. *Oakland* East Bay Radio Controllers, c/o Dale W. Root, 6036 Telegraph Ave. *San Bernardino* Flying Wheels, c/o Wallace L. Short, 1325 College Ave., Redlands. *San Francisco* Vultures, c/o William Gunther, 1801 Ocean Ave. *San Leandro* Line Twisters, c/o Steve Marciel, 596 E. 14th St. *San Mateo* Peninsula Prop-Twisters, c/o Howard R. Yonkers, 100 So. B. St. *Santa Barbara* Modelers, c/o Stanley Hill, 15 Dawlish Place. *Twin Cities* MAC, c/o Mrs. Frank Hauser, P. O. Box 91, Yuba City.

Colorado: *Aurora* Prop Busters, c/o R. W. Bennett, 1910 Elmira. *Grand Junction* Modeleers, c/o Ralph Mulford, 379 S. Redland Road.

Connecticut: *Bridgeport* Air Barons of Fairfield County, c/o Earl "Bud" Gay, 629 Boston Ave. *Hartford* Model Aero Engineers, c/o Chester F. Ehman, 61 Grand St. *New Britain* MAC, c/o Mike Adajian, 39 Brooklawn St. *Southington* Flite Timers, c/o Willard R. Ballou, Stuart Drive. *Wallingford* Lufbery Circleers, c/o Theodore Koblish, 180 S. Orchard St.

Florida: *Daytona Beach* MP&CC, c/o William T. Thomas, 105 N. Halifax Ave. *Lakeland* Balsa Termites, c/o C. G. Logan, 117 Allamanda Drive. *Lakeland* Balsa Termites, c/o M. Jube Tack, 1117 So. Florida Ave. *Miami* Modeleers AC, c/o William J. Lumley, 9028 N. W. 22nd Ave. *Miami* Tropic Aeros, c/o L. J. Scoville, 1896 N. W. 36th St.

Georgia: *Albany* AC, c/o Charlie E. Bentley, 105 S. Jackson. *Atlanta* Flying Rebels, c/o Bob Barton, 992 Eden Ave, S. E.

Illinois: *Chicago* Model Nuts, c/o James J. Baron, 5025 N. Pulaski Road. *Chicago* U-Line Pilots, c/o Fritz Lindgren, 3622 N. Marshfield. *Washburne* GMC, c/o A. J. Heinmiller, 1225 Sedgwick St., Chicago. *DeKalb* "Cloud Dusters", c/o "Dutch" Hess, 137½ E. Lincoln. *Galesburg* MAC, c/o Ray Johansen, Ray's Hobby Shop, 224 East North Street. *Oaklawn* Aeromodelers, c/o Vernon A. Novak, 5211 W. 95th St. *Quincy* Hawks, c/o Harold Daebelliehn, 2020 Ohio. *Rockford* Aero Aces. c/o Howard Heminger, 836 Diamond Court.

Iowa: *Dubuque* GMA, c/o Lyle Hefel, 2929 Elm St.

Kansas: *Almena* Model Builders Club, c/o Elden D. Sprague. *Wichita* West Y-Flyers, c/o Jess W. Taylor, West Wichita Branch YMCA, 112 South Seneca.

Kentucky: *Louisville* MC, c/o H. O. Wise, 2802 Rodman Street. *Owensboro* MAC, c/o L. O. Davis, Jr., 1119 West Third St. *Owensboro* MC, c/o P. D. Wilson, Wilson Bros. Electrical.

Louisiana: *Alexandria* Flying Pelicans, c/o Donald J. Smith, 49 Linda Road. *New Orleans* AC, c/o Whalen J. Norman, 334 Baronne Street.

Maryland: *Riverdale* Sky Devils, c/o James G. Gray, 5602 54th Avenue. *Bethesda* Prop Twisters, c/o Kenneth Ingram, 104-30 Inwood Ave., Silver Spring. *Silver Spring* D.C./R.C. Club, c/o Herb Honecker, 8105 Tahona Drive.

Model Aero Clubs

Massachusetts: *Norwood* SME, c/o Albert L. Trefethen, 163 Oakdale Ave., Box 405, Dedham. *Pittsfield* Flying Maniacs, c/o L. Koziol, 6 Hayes Place.

Michigan: *Almont* Glow-Bugs, c/o E. N. Kuhn, Sky Bench, 710 South Main St. *Birmingham* Sky Bugs, c/o Gerald Messenger, 18679 San Diego. *Detroit* Sky Guys, c/o Jack Josaitis, 9830 Wyoming.

Minnesota: *St. Paul* Plaza Drugs Modelcers, c/o Dick Gebhard, 1011 W. Nebraska. *St. Paul* Polar Buzz Bugs, c/o Tom Kelleher, 1118 St. Paul Ave.

Missouri: *Affton* Greater St. Louis Modelers, c/o Gene Winn, 8027 Wynwood Drive. *Kirkwood* Thermaleers, c/o Parnell Schoenky, 125 E. Maple Ave. *Maplewood* Airvaleers, c/o Gilbert A. Frankenberg, 2302 Wismir Road, Overland, 14. *Rolla* Modelairs, c/o J. T. Harris, Harris Cabinet Shop. *St. Joseph* Vultures, c/o Floyd Pollock, 1013 Frederick.

Montana: *Red Lodge* Airscrews, c/o C. J. Erck, Box 214, 617 S. McGillen Ave.

Nebraska: *Lincoln* Aero-Design Flying Club, c/o Raymond H. Klone, 1212 S. 10th St. *Lincoln* Link Modelaires, c/o Bartlett's Hobbies & Toys, 1123 P St.

New Jersey: *Hillside* Aero Nuts, c/o Roscoe I. Mullican, Jr., 1303 Liberty Avenue. *Linden* MAC, c/o Frank M. Krysiak, Linden Recreation Commission, Old City Hall, So. Wood Ave. *Perth Amboy* MAC, c/o Richard S. Mikula, Fishkin Bros. Inc., 157 Smith Street. *Trenton* MAC, c/o Leo R. Fox, 78 California Ave. *Weehawken* Aero Zombies, c/o Jack Fischer, 20—48th St.

New York State: *Beacon* Air Trailers, c/o Leonard Bloomer, 71 Washington Ave. *Bronxville* Flying Maniacs, c/o Robert Jennings, 6 Milison Close. *Buffalo* Miniature Aircraft Engineers, c/o Harold Keller, 39 Lorfield Dr., Snyder. *Croton-on-Hudson* Westchester Flying Fleet, c/o Roger Grand, Albany Post Road, Route 9. *Oriskany* Hell Razors, c/o C. K. Nelson, 123 Oklahoma Ave. *Syracuse* MAC, c/o Harry C. Copeland, 101 Lincoln Ave. *Westbury* Modelcers, c/o Scott Lewis, 85 E. Cypress Lane.

New York City: *Bronx* Model Knights, c/o Art Hasselbach, 3087 Third Ave. *Staten Island* Group-CAP, c/o Capt. H. H. Rice, Miller Field, CAP Bldg.

North Carolina: Greensboro Prop-Twisters Model Club, c/o Wm. Harold Bunting, 311 S. Elam Ave. *Salisbury* Aeronauts, c/o Ralph N. Corelle, 723 S. Ellis St. *Winston-Salem* Skywriters M.A.C., c/o Ed Aldridge, 853 Watson Ave.

Ohio: *Lake Erie* Gas Model Club, c/o John W. Grega, 355 Grand Blvd, Bedford. *Celina* Flying Hornets Model Club, c/o Gene Klosterman, R. R. 6. *Chillicothe* Fly Guys, c/o Gene Osborne, Route 8. *Cincinnati* Controlliners, Inc., c/o John M. Kaeser, 2463 Madison Road. *Cleveland* American Airlines Gas Model Club, c/o Harry D. McCall, 9609 Lorain Ave. *Dayton* Buzzin Buzzards, c/o H. L. Roe, Jr., 3306 Harvard Blvd. *Cleveland* Reyburn Rocketeers, c/o Bill Strack, 2112 Reyburn Road, East Cleveland 12. *Euclid* U Liners Model Club, c/o G. Koepplinger, 19751 Naumann Ave. *Lima* Line Tamers, c/o J. W. Botkin, 417 S. McDonel St. *Shelby* Balsa Buzzards, c/o Howard L. Robinson, Shelby Pure Milk Co. *Wickliffe* Flying Tigers MAC, c/o Thomas D. Raney, Jr., 1815 Harding Drive.

Oklahoma: *Ada* Prop Spinners, c/o Roland E. Descans, 528 E. Main. *Oklahoma City* Flying Maniacs, c/o Harold Hardy, 1413 S. Reding.

Oregon: *Coquille* Glo-Devils, c/o Earl Butler, 290 E. 4th St. *Corvallis* Comets, c/o John N. Riley, 213 North 21st. *Irrigon* MC, c/o Bud Phaneuf, Box 43. *McMinnville* Skywolves, c/o Erling Thompson, 711 3rd Street. *Portland* "Oregon Aeromodelers," c/o Ken Thorstad, 6344 N. E. 8th Ave. *Salem* Capital Sky Cats, c/o Don Santee, 1759 S. Commercial. *Salem* MAC, c/o Elmer J. Roth, 2080 Market Street. *Tillamook* GMC, c/o Don H. Helfer, 5211 3rd St.

Pennsylvania: *Bristol* Aeromodeleers, c/o Albert E. Abrams, Jr., 1031 Pond Street. *Easton* Model Airplane Doctors, Easton Moose Lodge, So. 4th St. *Hazleton* Flying Gremlins, c/o Michael J. Gochalla, 128 N. Wyoming St. *Levittown* Aerobugs, c/o Johnny Garlich, 47 Grove Lane. *McKeesport* National Assoc. of Model Engineers' Keystone Clippers, c/o Andrew C. Kishner, 707 Hazel St. *Carlisle* Prop Spinners, c/o Joseph R. Auer, Box 64, Mt. Holly Springs. *Mt. Wolf* Skymasters, c/o C. M. Ehrhart, 21 South Fifth St. *Olney* Stunt Masters, c/o Lou Neebe, 5239 N. 2nd St., Phila. *Pottsville* Piston Pushers, c/o Jack W. Zimmerman, Brown's Hobby Shop, 207 North 2nd St. *Olean* MAC, c/o Elmer E. Evans, 7 Lincoln Ave., Shinglehouse.

Texas: *Sabine* Area MC, c/o E. D. Patterson, 2170 Pecos, Beaumont. *Kingsville* MC, c/o R. C. Blaikie, Jr., 821 E. Doddridge St. *Plainview* Skydusters, c/o J. B. Oberthier, 709 Oakland St. *San Antonio* GMAA, c/o Sonny Mosel, 530 Taft Blvd. *Tulia* Skyliners, c/o Herbert Jennings, Box 101.

Virginia: *Danville* Glue Daubers, c/o Neal Howard, Jr., 564 West Main St. *Hampton* BrainBusters, c/o Joseph Boyle, 219 Shenandoah Road.

Washington: *Bellingham* Flying Bec's, c/o Ralph C. Graham, 217 E. Holly St. *Bremerton* Prop-Spinners, c/o Doug Beagley, 116B Oak St. *Ephrata* Piston Poppers, c/o Andy Beaudry, 525 B St., N. W. *Everett* Model Air Force, c/o E. J. Sigmon, 2605 Colby Ave. *Mount Vernon* M.C., c/o Bud Peck, Dependable Motor Co. *Pasco* Lions Modelairs, c/o Mylo H. Candee, 321 W. Lewis St. *Spokane* Northwest Hobby MAC, c/o Hendrick S. Perry, So. 107 Wall Street. *Vancouver* Glo-Bugs, c/o R. K. Ragan, 2006 Main Street.

West Virginia: *Beckley* Modeleers, c/o Mrs. Gene Keatley, 217-219 Prince St., Box 348. *Weirton* Prop Twitchers, c/o Harry Gabler, 814 5th Street.

Wisconsin: *Beloit* Hangar No. 13 M.C., c/o John H. Bort, 1639 Sherman Ave. *Burlington* Flyin' Liars, c/o James Pihringer, Kendall Street. *Milwaukee* Flying Gremlins, c/o Fred Bretsch, 4667 N. 42nd St. *Sheboygan* Flying Tomahawks, c/o Donna Modiz, 1030 No. 14th St. *Manitowoc* Air Pirates MPC, c/o Kenneth Tate, 1028 S. 8th St.

If your Club is not listed register NOW!

Be sure that an official of your airplane model club fills out this form and returns it immediately to Air Trails, so that your group can be included in the master Directory listing. When changes occur in the officers of the club, be sure to notify Air Trails. This "AT" list is utilized by many sponsors to notify clubs of coming competitions and special events.

DIRECTORY OF MODEL AERO CLUBS, Air Trails
304 E. 45th St., New York 17, N. Y.

Please include the following model airplane club in your list of active aeromodeling organizations:

Name of club (print).....

Name of contact man (print).....

Street Address.....

City, Zone, State.....

Number of members?..... Organized when?.....

Sponsor, if any?.....

Sponsor's address.....

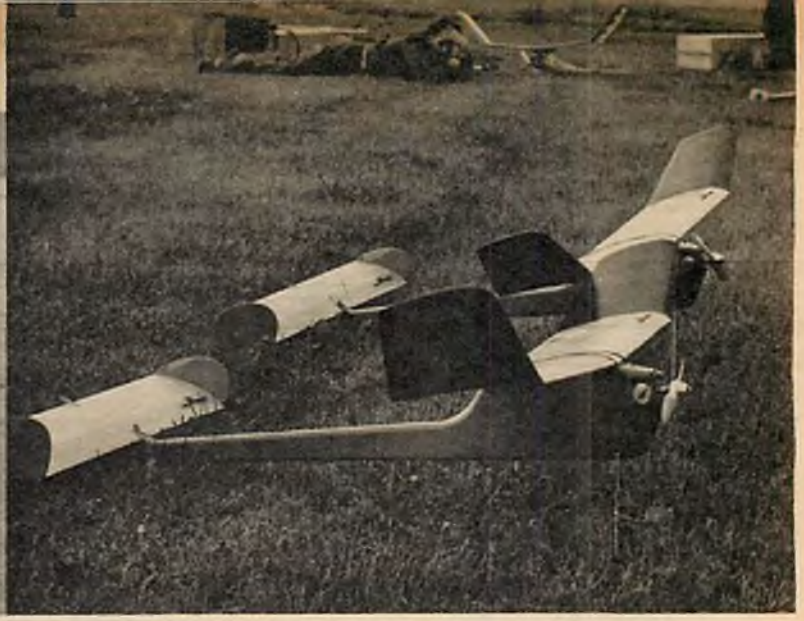
Meetings held where?..... When?.....

Number of members..... Are you seeking new members?.....

Does club specialize in one type of modeling? If so, what?.....

.....

International F.A.I. gas champ Dave Kneeland gets off to his 3rd maximum. Wing and tail are from Goldberg's Cumulus design.



Interesting pair of ships by John Carroll of Ireland. Small by international standards, they used Elfin 1.49 cc motors for power.

World Power Championships

As Kansas City Star requested before meet: "Advise our paper when Kneeland wins"—Dave did!

■ When all the shouting died down at Cranfield's College of Aeronautics field in Bedfordshire, England, the F.A.I. International power competition winners' listing read:

1. Kneeland, D.; U.S.A.; total—15:00
2. Fuller, G.; G. B.; total—13:18
3. Vidossich, G.; Italy; total—12:54

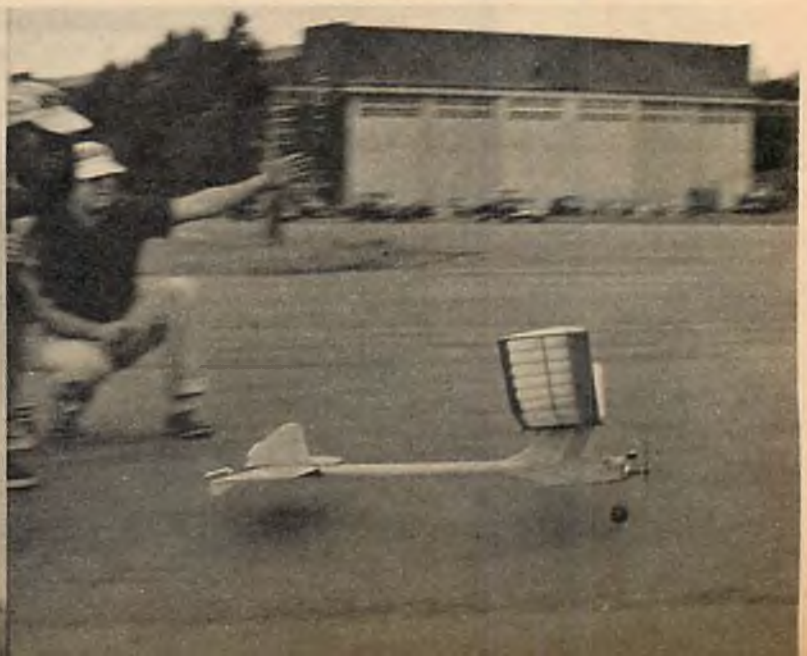
Four dozen entrants flew, representing 13 countries. The three other Americans placed 6th (Stan Hill with 12:02), 11th (Joe Elgin with 11:45) and 18th (Carl Wheeley with 10:15). The performance of these coupled with Kneeland's win gave the Team Power Trophy to the U.S.A., too.

The K&B .15 engine, used by all the American flyers, came in for some kind words by one British observer: ". . . there were many whose minds were already set on a high American position after viewing test flights and having heard their K&B Torpedo motors on test runs. It was, in fact, a victory for the K&B factory who equipped the U.S. team with standard production motors. . . ."

Annual's Man-of-the-Year: Dave Kneeland.

Unusual Belgian E.D. 2.46 powered non-pylon entry by George Lippens had high dihedral and small rudders. This placed 13th.

And away he goes—Carl Wheeley from Washington, D. C. with his Senator. Torpedo .15 proved to have too much power for model.



Fastest entry belonged to Joe Elgin, Cleveland. Wicked loop on 2nd flight: fini. Nordic tow hooks under removable fuselage pod.

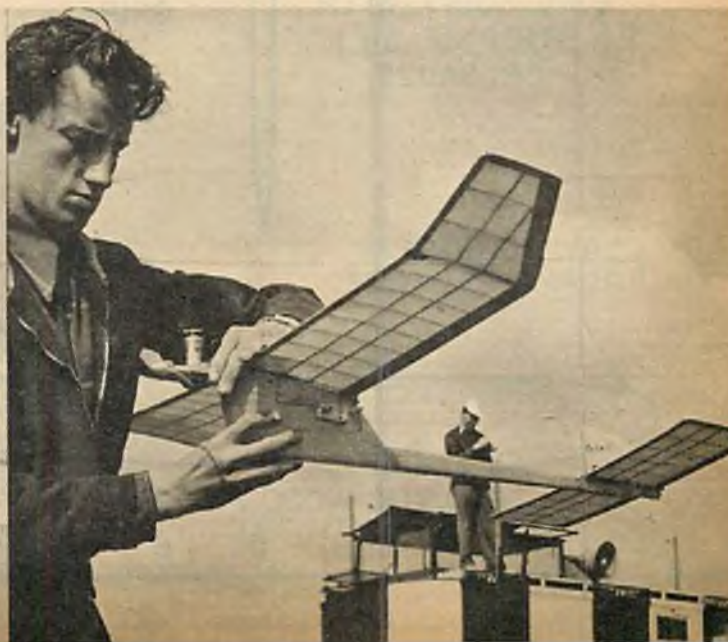
Diesel-powered Dutch entry of C. Kempen. Placed 9th, 11:49. Did well in Switzerland last year. Spirals tight; good recovery.

Third-place Italian entry by G. Vidossich; Super Tigre glow plug engine. Totaled 12:54. Zig-zag wing ribs utilized. Much admired.

High aspect ratios: 6-footer P. Broerse, Holland, and E.D. 2.46 cc powered entry. Nylon turbulators half-inch off wing; end plates.

Anton Ledered of Austria and unusual E.D. 2.46 powered design. Placed 5th, 12:27. Takes off at 80 deg.; climbs vertically. Co-o-o-l!

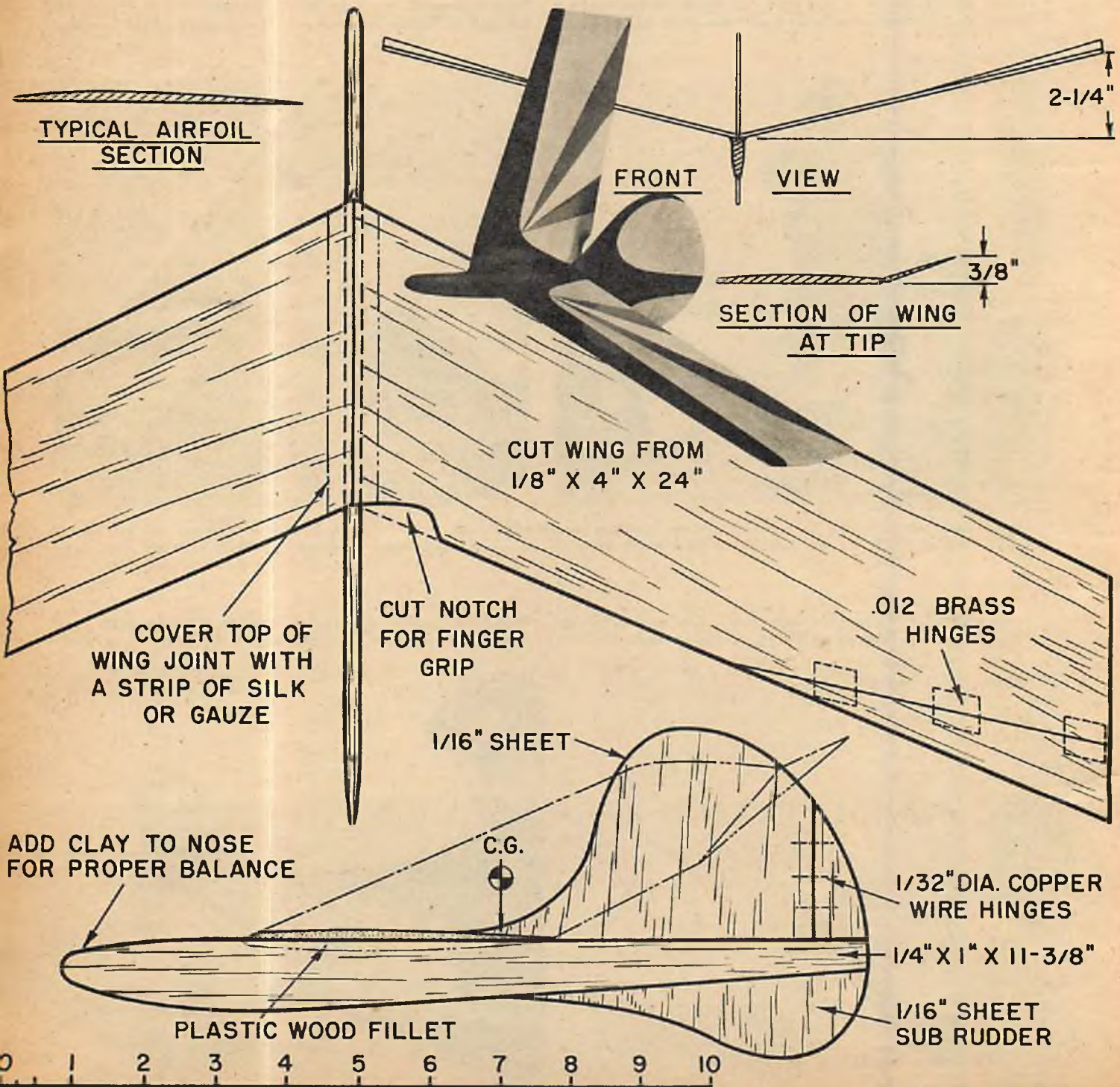
Proxy-flown Swedish entry by K. Ericssen illustrates high thrust line which finds favor overseas. Power is by E.D. 1.46 cc diesel.



SLINGER

by EARL CAYTON

■ For initial flight set elevons 3/8" negative at each tip; use 1/8" left rudder; add clay to nose to bring center of gravity to point shown. Add or subtract clay to obtain long, smooth glide; adjust rudder tab for gentle left turn. *Slinger* should be thrown with quite a bit of right bank, causing a sharp right climb and then "S"-ing out on top into a left glide. If model dives or climbs too shallow on throw, add a bit more negative to the elevons—1/8" at a time. If she loops in the throw, reduce the negative angle 1/8" each time. As you adjust the elevons, add or subtract clay to retrim the glide. After model is adjusted, spot-cement on each elevon to keep it from bending.



National Model Aircraft Records

GAS MODELS—FREE FLIGHT

ROG, A/2, Jr., 18:56.0, Don Puskarich, Oildale, Cal., 7/53
ROG, A/2, Sr., 17:28.0, Harvey Woien, Los Angeles, Cal., 4/53
ROG, A/2, Op., 29:32.4, Jack Oxley, Artesia, Cal., 10/53
ROG, A, Jr., 28:48.2, Ronald D. Rounds, Los Angeles, Cal., 4/53
ROG, A, Sr., 22:56.0, Don Bates, Arlington Hts., Ill., 8/53
ROG, A, Op., 35:29.6, F. L. Swaney, Long Beach, Cal., 10/53
ROG, B, Jr., 16:16.6, Wm. Schlarb, South Bend, Ind., 8/53
ROG, B, Sr., 27:42.0, D. Eisenbeiss, Long Beach, Cal., 8/53
ROG, B, Op., 34:00.4, Jack Oxley, Artesia, Cal., 3/53
ROG, C, Jr., 11:11.6, Joseph P. White, Sacramento, Cal., 6/53
ROG, C, Sr., 14:11.4, David Espen, New York, N. Y., 8/53
ROG, C, Op., 28:43.4, Jack Oxley, Artesia, Cal., 5/53
ROW, A/2, Jr., 7:11.8, Martin Wolff, Downey, Cal., 3/53
ROW, A/2, Sr., 9:19.2, Bob Gelvin, Topeka, Kans., 7/53
ROW, A/2, Op., 15:48.6, Jas. P. Taylor, Albuquerque, 1/53
ROW, A, Jr., 2:15.2, Jay Poggiali, Hicksville, L. I., N. Y., 7/53
ROW, A, Sr., 10:07.2, James Kelly, Mission, Kans., 7/53
ROW, A, Op., 9:04.0, James M. Coffin, Long Beach, Cal., 3/53
ROW, B, Jr., No Record Established
ROW, B, Sr., No Record Established
ROW, B, Op., 13:00.6, Sal Taibi, Long Beach, Cal., 7/53
ROW, C, Jr., No Record Established
ROW, C, Sr., No Record Established
ROW, C, Op., No Record Established
PAA, A/2, Jr., 13:15.2, Don Puskarich, Oildale, Cal., 4/53
PAA, A/2, Sr., 13:05.0, Lloyd Miles, Medford, Ore., 5/53
PAA, A/2, Op., 17:43.0, Tom Henebry, Chula Vista, Cal., 5/53
PAA, AB, Jr., 9:27.2, Martin Wolff, Downey, Cal., 10/53
PAA, AB, Sr., No Record Established
PAA, AB, Op., 19:26.4, Ray Van De Walker, Norwalk, Cal., 10/53
Cargo, Jr., No Record Established
Cargo, Sr., No. Record Established
Cargo, Op., 23¼ ozs., Hal Roth, Richmond, Cal., 7/53

GAS MODELS—CONTROL LINE SPEED

A/2, Jr., 74.97, Robert Chojnacki, Perth Amboy, N. J., 7/53
A/2, Sr., 78.23, Walter Vrablic, Perth Amboy, N. J., 7/53
A/2, Op., 94.70, J. E. Morrell, Bristol, Va., 8/53
A, Jr., 123.24 Walton Pyron, Decatur, Ga., 7/53
A, Sr., No Record Established
A, Op., 133.28, Thomas P. Baker, Kings Mountain, N. C., 8/53
B, Jr., 130.38, Walton Pyron, Decatur, Ga., 7/53
B, Sr., 124.69, Herbert L. Davis, Birmingham, Ala., 7/53
B, Op., 145.69, Harry Roe, Jr., Dayton, O., 8/53
C, Jr., 149.07, William Weissbrodt, Milwaukee, Wisc., 8/53
C, Sr., 155.11, Paul Hutt, Brooklyn, N. Y., 8/53
C, Op., 150.69, Frank Stone, Dallas, Tex., 8/53

JET MODELS—CONTROLINE SPEED

Jr., 138.62, Kenneth Mattingly, Hialeah, Fla., 8/51
Sr., 157.69, Herbert L. Davis, Birmingham, Ala., 6/51
Op., 154.95, Thomas P. Baker, Kings Mountain, N. C., 7/51

INDOOR MODELS

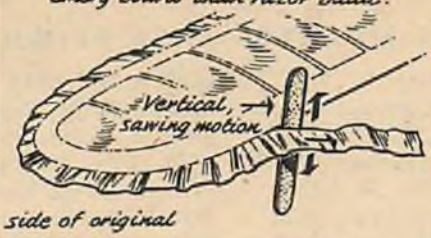
H.L. Stick, B, Jr., 21:08.2, Ron. Cummings, Los Angeles, 7/52
H.L. Stick, B, Sr., 25:37.6, Don Kennedy, Burbank, Cal., 4/48
H.L. Stick, B, Op., 26:53.6, W. F. Tyler, New City, N. Y., 9/48
H.L. Stick, C, Jr., 19:17.3, R. Jagiello (deceased), Chi., 7/40
H.L. Stick, C, Sr., 24:52.6, A. D'Alessandro, Phila., 8/49
H.L. Stick, C, Op., 32:19.8, Pete Andrews, Forest Hills, N. Y., 8/49
H.L. Stick, D, Jr., 15:06.4, Paul Simon, Detroit, Mich., 7/49
H.L. Stick, D, Sr., 22:54.6, Thomas Greet, Phila., 6/47
H.L. Stick, D, Op., 30:37.2, W. F. Tyler, New City, 9/49
ROG Cabin, B, Jr., 12:42.3, H. Kaczynski, Detroit, 7/40
ROG Cabin, B, Sr., 15:09.3, David Call, Philadelphia, 4/41
ROG Cabin, B, Op., 18:44.6, Don Kennedy, Burbank, 7/49
ROG Cabin, C, Jr., 11:32.3, R. Jagiello (deceased), Chi., 7/40
ROG Cabin, C, Sr., 16:52.5, Erwin Rodemsky, Detroit, 8/50
ROG Cabin, C, Op., 25:26.6, James B. Grant, Manchester, Conn., 7/53
ROW Cabin, B, Jr., 0:37.6, Hermann Andresen, Chi., 11/49
ROW Cabin, B, Sr., 13:13.0, David Call, Phila., 6/42
ROW Cabin, B, Op., 11:17.0, David Call, Phila., 9/47
Autogiro, Jr., 3:53.7, Edward A. Vargo, Chicago, Ill., 4/52
Autogiro, Sr., 2:51.2, Ralph Brown (deceased), Arlington, Mass., 4/40
Autogiro, Op., 2:45.5, Joseph P. Matulis, Chicago, Ill., 11/41
Ornithopter, Jr., 1:18.0, Edward A. Vargo, Chicago, Ill., 12/41
Ornithopter, Sr., 3:22.0, John Bock, Chicago, Ill., 1/42
Ornithopter, Op., 4:05.4, Carl Goldberg, Chicago, Ill., 8/41
Helicopter, Jr., 3:54.6, Dick Quermann, Bayside, N. Y., 1/41
Helicopter, Sr., 5:34.4, James Broderick, Chicago, Ill., 12/41
Helicopter, Op., 5:25.0, Carl Goldberg, Chicago, Ill., 11/41
HL Glider, Jr., 0:46.6, Dick Culver, Oak Ridge, Tenn., 7/53
HL Glider, Sr., 0:58.2, Charles Corbett, Brooklyn, N. Y., 7/53
HL Glider, Op., 1:09.6, William Dunwoody, Brooklyn, N. Y., 7/53

OUTDOOR MODELS—RUBBER AND GLIDER

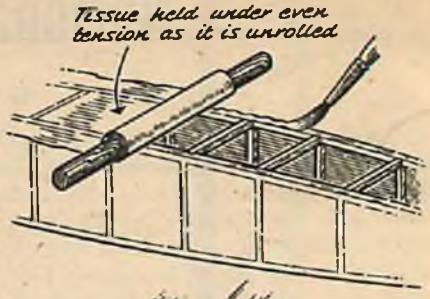
Limited Rubber, Jr., 12:18.4, Dennis Geiler, Omaha, 8/53
Limited Rubber, Sr., 21:52.0, Charles Sotich, Chi., 8/53
Limited Rubber, Op., 16:32.6, Merrill Combs, Encino, Cal., 6/53
Limited Rubber ROW, Jr., No Record Established
Limited Rubber ROW, Sr., No Record Established
Limited Rubber ROW, Op., No Record Established
Wakefield, Jr., 10:00.9, Gary Grenoble, Yuba City, Cal., 8/53
Wakefield, Sr., 12:04.2, Don Tune, Los Angeles, Cal., 8/52
Wakefield, Op., 15:00.0, Joe Bilgri, San Jose, Cal., 4/51
Wakefield, Op., 15:00.0, Tom R. Quermann, Bayside, 8/52
Autogiro, Jr., No Record Established
Autogiro, Sr., 0:20.2, Wm. F. Foshag, Washington, D. C., 7/48
Autogiro, Op., 0:50.4, Parnell Schoenky, Kirkwood, Mo., 5/51
Ornithopter, Jr., No Record Established
Ornithopter, Sr., 1:25.4, W. R. Bigge, Washington, D. C., 7/48
Ornithopter, Op., 0:48.4, P. Schoenky, Kirkwood, Mo., 7/48
Helicopter, Jr., 2:11.4, Thane Bopp, Kirkwood, Mo., 8/51
Helicopter, Sr., 5:22.6, H. S. Robbers, Jr., Oakland, Cal., 6/48
Helicopter, Op., 8:55.0, Frank Ehling, Jersey City, N. J., 7/48
HL Glider, Jr., 11:57.6, Wm. Schlarb, South Bend, Ind., 8/53
HL Glider, Sr., 10:42.4, Hermann Andresen, Chi., 8/53.
HL Glider, Op., 12:12.4, Rob. Barney, Salt Lake City, 8/53
TL Limited, Jr., 9:59.2, Edwin Ryan, Tempe, Ariz., 10/53
TL Limited, Sr., 11:46.0, Gable Ray, Smyrna, Ga., 7/53
TL Limited, Op., 12:13.0, Geo. Perryman, Decatur, Ga., 7/53
Nordic TL, Jr., 11:19.2, John Watson, Ft. Des Moines, Iowa, 6/53
Nordic TL, Sr., 13:07.8, Jerry Robertson, Phoenix, Ariz., 9/53
Nordic TL, Op., 12:02.2, S. S. Hachenburg, El Paso, Tex., 6/53

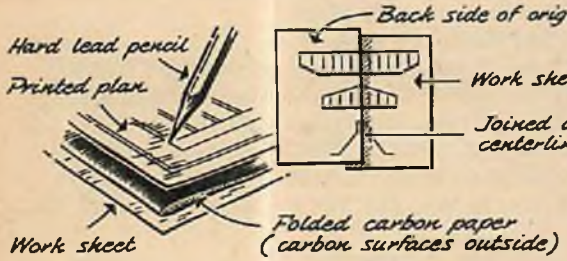
Construction Techniques

• Trimming covering tissue, is more easily done with emery board than razor blade.



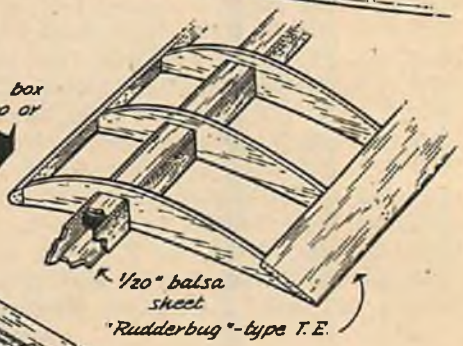
Tissue held under even tension as it is unrolled

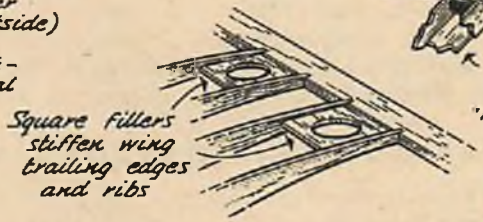




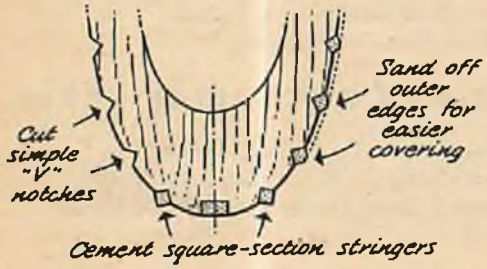
• Doubled carbon paper produces left- and right-hand halves of symmetrical parts in one tracing operation.

box spars (larger jobs two or more) for lightness





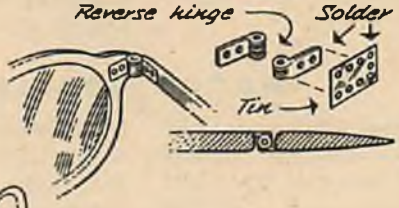
Stringer idea speeds up assembly of streamliners.

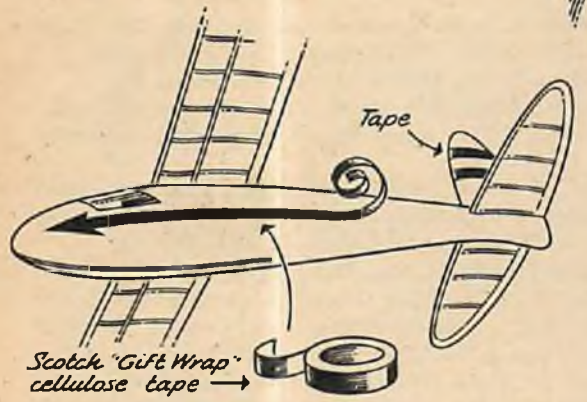


employ tape for holding seams during cementing—

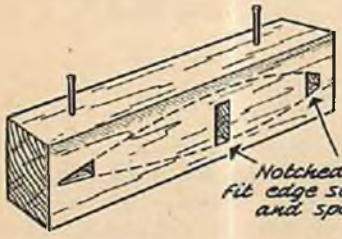
• Salvage hinges from old eye glasses.

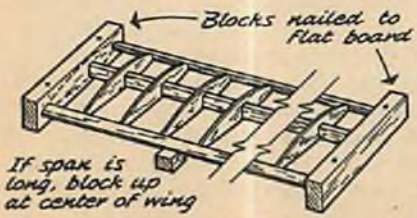
Ideal for U-Control hinges, other model devices—



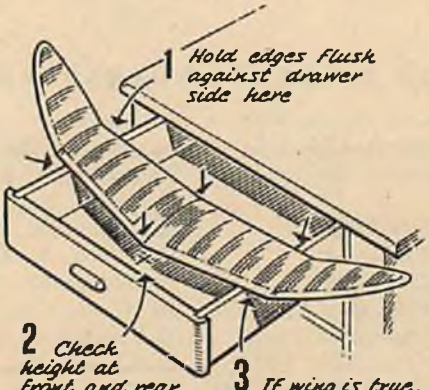


laminated wing tips; lighter & stronger ... Strips are soaked, bent around a soldering iron—

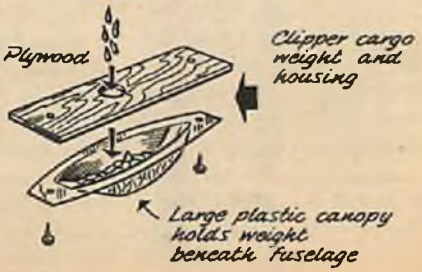




make spar-holding jig blocks for easier assembly of stunt wing sections. Reduces warps.

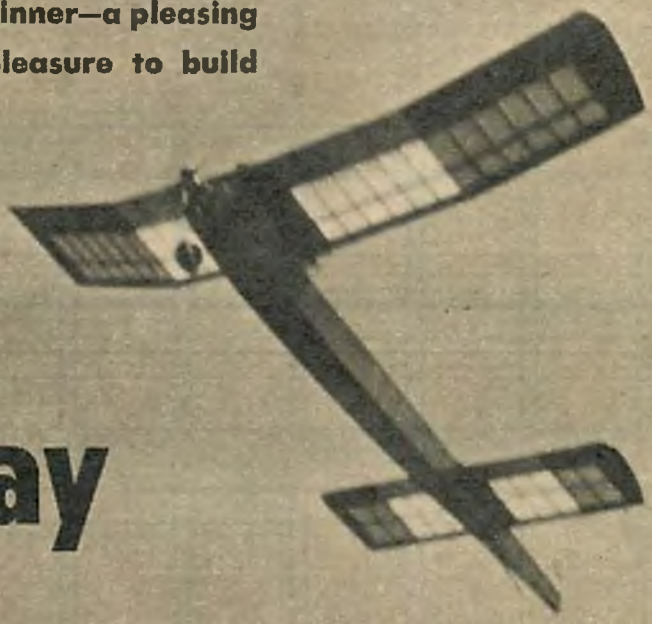


Use of any handy drawer permits quick & accurate check for wing warps



A proven contest winner—a pleasing configuration—a pleasure to build

A-Pay



By FRANK EHLING
Plans By
FRANK ZAIC

■ Since its total weight and drag will determine the performance of a model, you must consider these two factors when selecting wood and finishing that model.

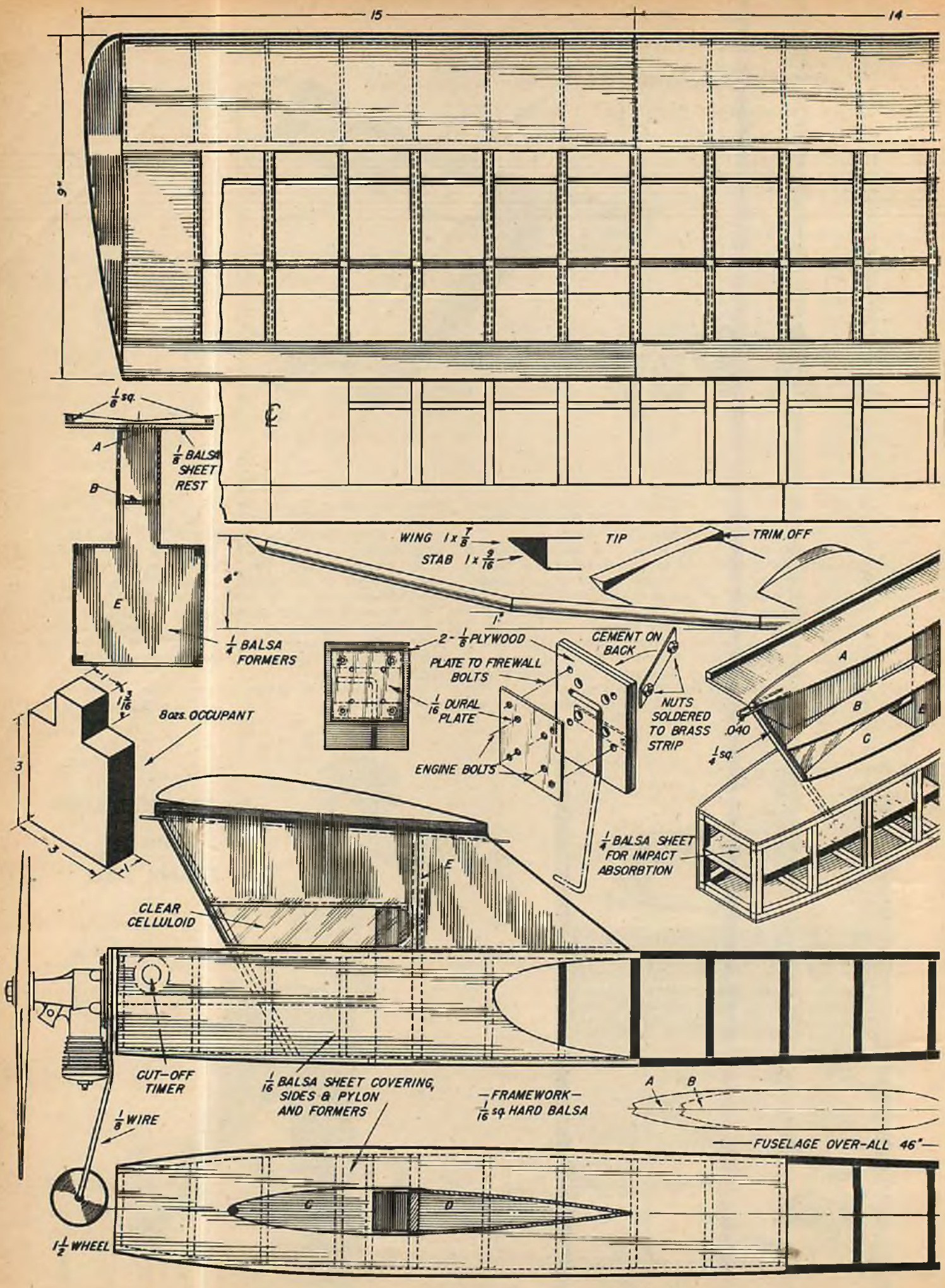
With a Torp .19 swinging a 9/4 prop, *A-Pay* climbs almost vertically. Select light wood for the stabilizer and rudder; go easy on doping from the dummy to the rear of the model. If the model stalls do not change the angles of the wing and stab; tilt the stab to obtain a left glide circle and then if it is still stalling, move the dummy forward.

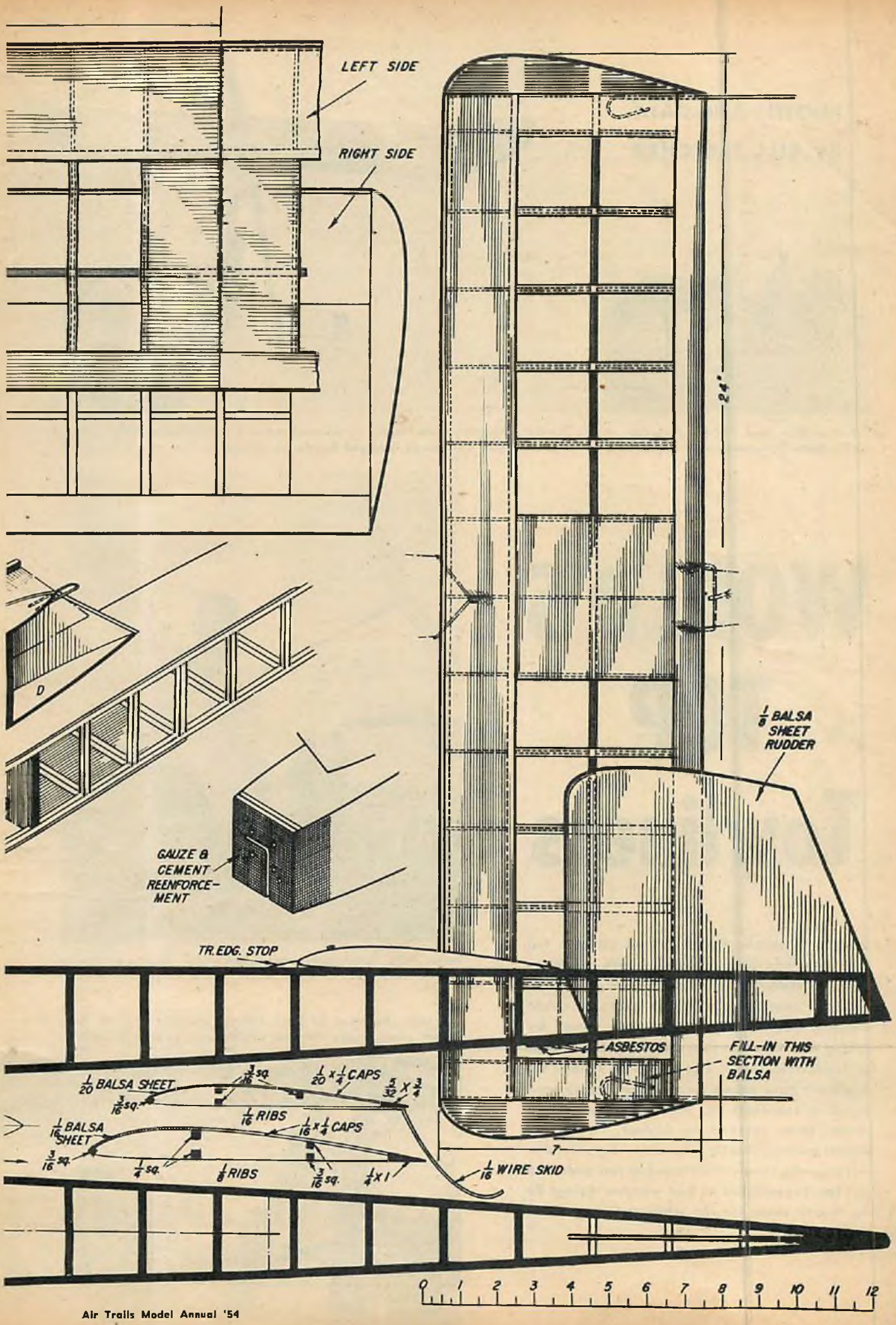
To start, lay out the fuselage sides; cement all joints well, leave the sides down until thoroughly dry. Cut impact absorption bulkhead and use as a guide for cementing sides together. Cut the pylon bulkheads and assemble plyon. The firewall can be cut and drilled and then cemented in position. The nose is sheeted along with the pylon. The wing planform is cemented in place. Trailing edge stock is cemented to the fuselage top for the stabilizer stop. Add the wing hooks, cement well. The nose is strengthened with gauze cemented around the firewall. The nose plate and gear are made up and bolted in place. The rudder is of sheet and cemented to the fuselage. Sand the edges round.

Cut the wing ribs and assemble wing over full size plan. As there are no gussets at the dihedral breaks, cement the spars well at each joint. Sheet the wing and cap the ribs to add strength. This sheeting can be soft. Add the tips and sand to shape.

Complete building details are available on the full-sized plans.

Bob Geyer, Woodhaven, N.Y., gets his A-Pay off to 6 min. OOS flight at last Nats (rt). One enterprising flyer converted his to seaplane at the Long Island Hydro Championships. Yessir, and she really flew, too.


15
14
9"
1/8 sq.
A
B
1/8 BALSA SHEET REST
E
1/4 BALSA FORMERS
WING 1 x 7/8
STAB 1 x 9/16
TIP
TRIM OFF
4"
1"
2 - 1/8 PLYWOOD
PLATE TO FIREWALL BOLTS
1/16 DURAL PLATE
ENGINE BOLTS
CEMENT ON BACK
NUTS SOLDERED TO BRASS STRIP
.040
1/4 sq.
A
B
C
E
1/4 BALSA SHEET FOR IMPACT ABSORBTION
1 3/16
8ozs. OCCUPANT
3
3
1
CLEAR CELLULOID
E
CUT-OFF TIMER
1/16 BALSA SHEET COVERING, SIDES & PYLON AND FORMERS
—FRAMEWORK—
1/16 sq. HARD BALSA
A
B
1/8 WIRE
FUSELAGE OVER-ALL 46"
C
D
1 1/2 WHEEL



PHOTOS AND DATA
By BILL FLETCHER

Christine Zaic and "Prof." Perryman in Bled-to-Lesce high-speed taxi (1 horsepower).

"Nordic" champion Hans Hansen of Denmark made 3 5-min. flights. Wide trailing edge on center wing panels is hinged flap to be utilized for final trim if necessary.

WORLD'S TOP Towliners

Italian "Eta Beta" entry had superb finish. Stab mount atop rudder tricky due to small hinge surface for pop-up action.

■ **After American flyers walked off with top individual and team honors in both the International Wakefield and F.A.I. power championships, it seemed only logical that we might make a clean sweep of the "big three" by taking the Nordic model glider championships in Yugoslavia. But it was not to be, though we could not have asked for a better experienced group to represent us. Some of the American models never reached the contest. Flying conditions were generally miserable. But most distressing—the competition was just too good and just too experienced at bad weather flying! So —a hearty cheer for the winning Danes!**

U.S. team: Perryman, Ed Smull, Fletcher and Miss Zaic; all made valiant effort despite the bad weather and poor field facilities.

Georgia's George ("The Professor") Perryman whose trip was sponsored by Lockheed Aircraft lost model for 20 hours in rain.

Defending Champion Bora Gunic of Yugoslavia with his highly successful design. He placed 4th with a respectable 824 sec.

High aspect ratio entry from Israel. Flyer Fred Meir also utilized a turbulator wire on wing ahead of leading edge. Commendable fly.

German fan; 103-inch wing. Aspect ratio 25.5 to 1; wing flexed greatly on tow. Turbulators; pod for cross section. Note raincoats.

Second-place entry took Germany's Nationals. Samann airfoil; 6 ft. wing. Wing at 0 deg., tail at 0 when still air battling.

Denmark won the individual Nordic championship and took team honors, too. All were members of one Copenhagen modeling club.

Motor and Auxiliary Controls for R/C

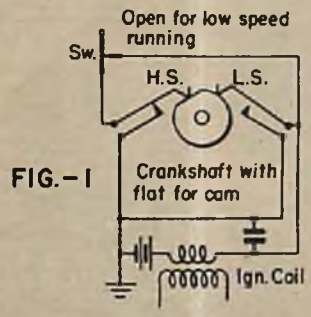


FIG.-1

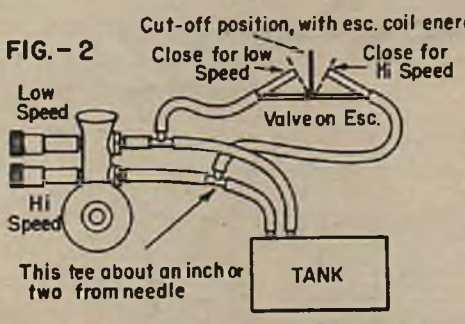


FIG.-2


FIG.-3

■ It isn't too long after a flyer has mastered rudder control before he has the urge to branch out and add other controls to his system. The usual second control is motor two-speed, though some flyers contend that elevator is more important. There is good reason to try motor two-speed as your first multi-operation. If the mechanism fails in either high or low speed—or if the motor stops—you still have rudder action to bring the plane back. In other words, failure of the motor speed-change arrangement is generally not fatal, even though it may be annoying. On the other hand, if your elevator control sticks in the down position—brother! So it is wise to experiment with the different control systems connected to the engine; then when you have gotten one that suits you, apply it to elevator, if you wish.

All right, how can you make an engine change speed? Probably the simplest way is by means of twin needle valves on the fuel intake system. There are several engines on the market that come with twin needle valves built in—the K&B .19 and .15 engines and the Cameron .19.

Users of spark ignition engines—yes, there are still quite a few in R/C—have a very neat means of changing speed, by employing timers with two sets of contact points; some years ago, dual-speed timers were sold for several engines, including those made by O&R. The latter timers have been adapted to many other makes of engines; these timers are still available in some hobby shops. The circuit for this dual point ignition arrangement is shown in Fig. 1; there are two sets of points, but only one condenser and coil. Only a SPST switch is required; as connected in this circuit, you will have high speed as long as SW is closed. In this situation, the high speed points fire the charge, since they operate before the low speed points, during every revolution of the cam. With the switch open, the low speed points do the firing job, and since they function when the cam has turned further than the high speed points, the ignition is "retarded" and the engine slows down.

Most engines can be slowed down very nicely by simply restricting the air intake. Since the needle valve is set for best high speed running, with the intake wide open, the engine will run rich when the air is partially closed off. A slight disadvantage of this system is that the engine loads up, when running in low speed, and will not take hold at high speed instantaneously, since it has to clear out the rich mixture. With proper adjustment of the needle valve, though, the recovery is reasonably fast; there is no delay in the change from high to low.

There are other methods of securing two-speed operation, but most of them call for precision work on the engine, so the construction details will not be covered here. For those who want to use manufactured parts, there are a couple of possibilities; ready-made throttles have been available from Engine Aid Products (Box 524, Rahway, N. J.), and from Thompson Model Supply (Box 372, Guthrie, Okla.). The former is made for engines in the .29-.35 sizes, while the latter covers a wider range of engines, but is a custom-fitted deal—you send the maker your engine and he fits the throttle to it, and makes the needed adjustments.

Another throttle possibility is the one used on the English Mills diesel; this throttle is a rotary affair, and could doubtless be adapted to other engines in the .074-.15 sizes. The Mills engine is sold in this country by Polk's (314 5th Ave., N.Y.C. 1), and the throttle is available separately.

Now, how can we operate the twin needle valve arrangement? The simplest way is to go out and purchase a Bonner Motor Control escapement, which was designed expressly for this purpose. This escapement has two air valves built into it; it is made so that either one or the other of the valves is open, when the escapement coil is *not* energized. When the current is on, both valves are open. The escapement is attached to the engine as in Fig. 2; since all connection between the engine and the control unit are of flexible tubing, there is no alignment problem, and if the engine is knocked askew in a hard landing, the two-speed system is easily set up again.

For low speed, the L.S. needle valve is allowed to work by *closing* the bleed pipe leading to it (the escapement valves make either of the needle valves inoperative by permitting air to enter the fuel line, thus preventing the needle valve from sucking up fuel from the tank). As was noted, high and low speeds are obtained by opening the valve line connected to the unwanted needle; when both lines are open, both needles are starved, and the engine stops, since it receives no fuel.

The same escapement has been used with engines having only a single needle valve, by utilizing it to reduce the air intake; but only small engines can be accommodated, since the Bonner motor escapement was not designed for this use, and the tubes are too small to allow enough air to pass through for larger engines. Probably the .074 size is the maximum that can be employed, and this adaptation is ideal with engines around .049. The setup was described in detail on page 10, March 1953 issue of A.T.

If you want to make your own valve, try one like that in Figs. 3 and 4; it was dreamed up by Claude McCullough, and as shown here, can be used in the regular way with double needle valves on the engine. It is made from the brass tubing carried in most hobby shops, and a good smooth fit is required to prevent air leakage between the rotor and the outer body. The only precaution Mac gives in construction is that the side tubes be soldered on *before* the holes are drilled for them. If this sequence is not observed, you are almost sure to have solder run through the hole and "weld" the two tubes together.

This same sort of rotary valve may be adapted to the air reduction system of two-speed, by building the unit as shown in Fig. 5. Select tubing big enough to pass all the air your engine requires, so that top speed will not be impaired. No side tube is necessary for the high speed hole, but you can fit one to the low speed hole, so that adjustment of low speed is possible.

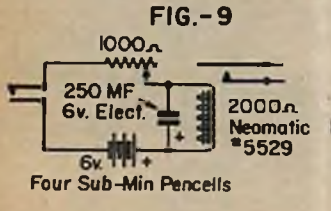


FIG.-9

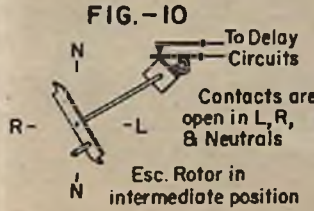


FIG.-10

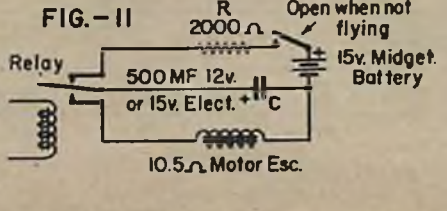


FIG.-11

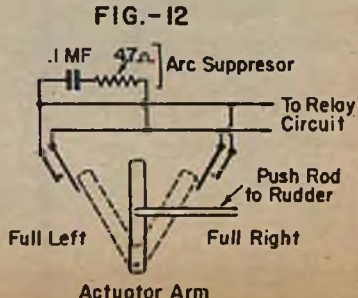


FIG.-12

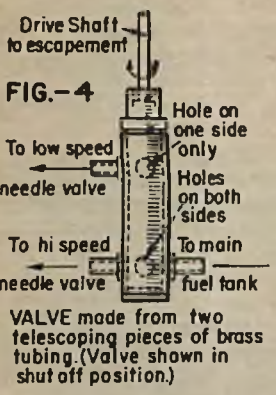


FIG.-4

VALVE made from two telescoping pieces of brass tubing. (Valve shown in shut off position.)

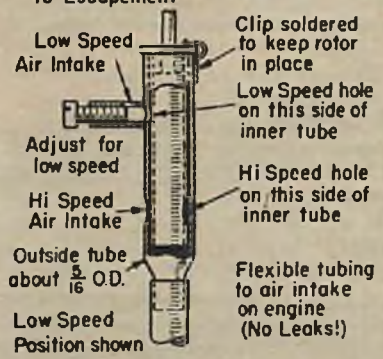


FIG.-5

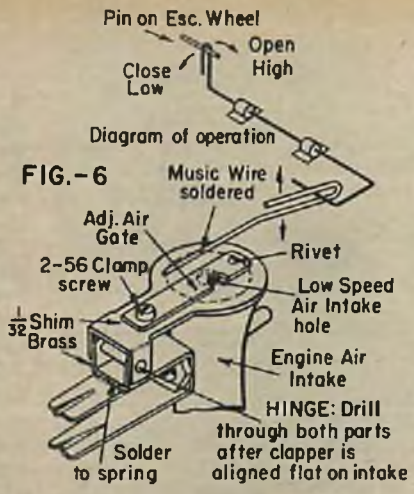


FIG.-6

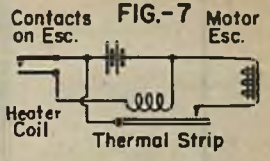


FIG.-7

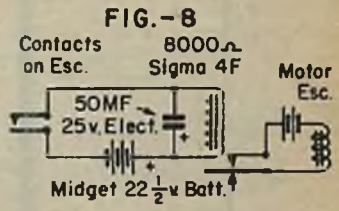


FIG.-8

Tubing of the size shown should be ample for any .19 engine, and larger engines can be adapted to this system with larger tubes. Needless to say, all joints must be tight. Some arrangement to cut off air entirely is handy, for choking the engine to start; a pad of felt may be held on a spring strip over the high speed hole, and pushed against it with a rod from the outside of the fuselage.

It is usual to place the Bonner motor escapement, or the valve of Fig. 5 inside the fuselage, and *above* the level of the needle valves on the engine, so that excess fuel doesn't drain back and gum up the works.

One last method for getting two-speed also utilizes the air cut-off system, but is intended for easy construction and fitting to engines with front rotary valves—which means the majority of those made today. Carl Schmaedig showed us the version described here. The valve is a clapper that is lowered over the air intake of the engine to reduce speed. The top of the intake may have to be filed off to get a smooth surface for the clapper, and a good tight fit here assures reliable operation. Carl attached the valve by soldering a hinge piece to the spring that supplies tension to keep the needle valve from turning. Since the air intake must be adjustable so you can set the low speed to suit, a little vane is pivoted over the center hole of the clapper. A 2-56 nut is soldered on the underside of the latter, and a screw to fit holds the vane tight, after it has been adjusted to the desired setting.

A simple linkage goes back to an escapement in the fuselage, and flexibility of the torque rod holds the clapper tightly shut, for low speed. It is only necessary to raise the clapper 1/16" to 3/32" for top speed.

We now know several proven ways to get two-speed—how are they to be operated by radio? Well, again the simplest way is to purchase an escapement with a pair of electrical contacts built in, which will allow you to work the motor control escapement at will. The Bonner Compound escapement has such contacts, and you can choose motor control at any time, by simply sending three pulses to the plane; the third will click the motor escapement, or you can hold this pulse, to get motor cut-off, if your particular system is set up for this.

Some of the English escapements sold in this country (E.D. and E.C.C.) have contacts on them that may be adapted for such use. Or you can easily fit any escapement with a pair of electrical contacts. The usual way to do this—if you are using a two-arm escapement—is to have the contacts close in one of the two neutral positions of the arm. Thus, to get motor change, you pulse to this particular neutral, the motor escapement shifts engine speed, then you pulse to the other neutral. All this can be done so fast that the plane does not deviate from a straight course.

Users of four-arm escapements have an ideal way to get a motor control pulse, as contacts may be arranged to close in one (or more) of the "half-positions," which are not normally needed for rudder action.

For this arrangement, and also for that where the added circuit is closed as a two-arm escapement passes one of the neutrals, a delay circuit is required, so that the motor control doesn't click into operation every time you pass through, in normal rudder movement. Two main types of delays have been used, the thermal, and the capacity-loaded relay. The thermal delay makes use of a strip of thermal metal, with a heating coil connected as in Fig. 7. It is necessary to hold the rudder escapement in the auxiliary position for several seconds to heat up the thermal strip and step the motor escapement along. As soon as the strip cools off, the contacts open and are ready for another operation. This system has been widely used and is simple and reliable, but it takes quite a lot of current, and is rather slow in operantion.

The capacity-loaded relay arrangement takes very little power, and can be made to operate as fast as you want; connections are shown in Fig. 8, with circuit constants for a Sigma 4F relay. In a circuit of this type, some of the tiny relays now on the market are entirely satisfactory, since the current change is from zero to the normal operate value. By using a relay such as a 2000 ohm Neomatic Model 5529, you can get a very lightweight setup, suitable for the smallest planes. It is helpful to add a variable resistor R, to control the delay. All the parts in Fig. 9 add up to only 2¼ oz., if you use cells similar to Eveready No. 912.

The same cells may be used to work the motor control escapement, if it has a reasonably high resistance, and doesn't take too much current. Or you can use your regular rudder escapement cells as part of the 6 V. auxiliary control circuit power supply, adding midget pencells as required to get up to the necessary 6 V. The circuit will provide enough delay so that you can pulse through the two-speed position without tripping it, but longer delay may be had by increasing the size of C. The next large standard size is 500 mf.

Another simple way to work your motor control escapement is depicted in Fig. 10. Here a square cam has been attached to the rudder escapement shaft; the contacts close four times per revolution of the shaft, but are open in all four of the normal operating positions. When the rudder escapement is either in neutral or in a turn position, the added contacts are open. To close the relay, and change motor speed, four quick pulses are sent; this charges up the delay condenser sufficiently to pull in the relay, and brings the rudder back to the position it had before you sent the sequence of pulses. The relay should be set with rather large contact spacing, and the tension adjusted so that the armature pulls on the four fast pulses. The cam contacts should be set as close as possible, but not so close that engine vibration might close them. An escapement with a tight well-fitting shaft is a necessity. Howard Bonner dreamed up this arrangement before he and Herb Owbridge had perfected the Compound escapement.

The circuit of Fig. 11 is of interest, as it takes very little power, and works the escapement with a real bang. In principle, it is something (*Continued on page 90*)

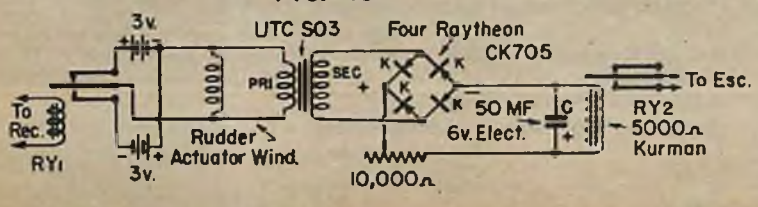


FIG.-13

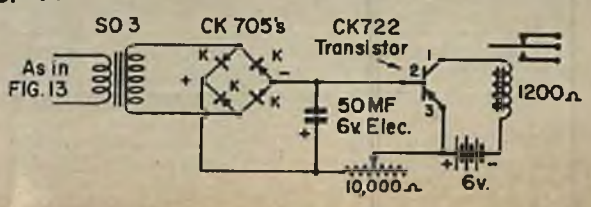
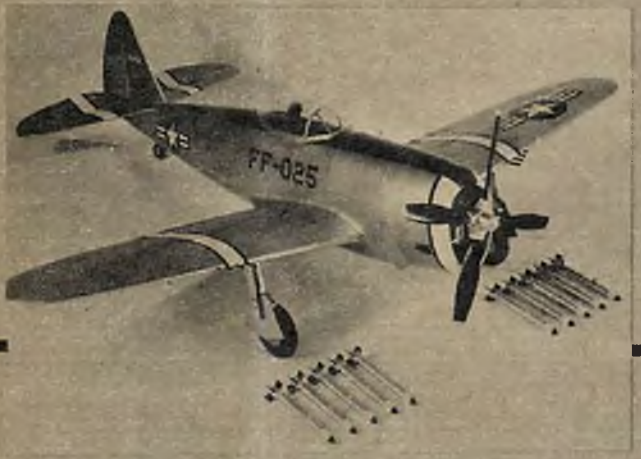


FIG.-14

P-47D-25 lifts off; this was the version which saw greatest service. Thunderbolt was designed as long-range bomber escort.

Designer Musciano found that most any engine from .13 to .35 cu. in. can be used to power your P-47. Those .19-.29 will be best.



Although this is the "D" model of Republic's famous fighter, you can turn out a "B" or "N" by following the supplementary data.

How proudly they flew! These P-47B's over Long Island were attached to 1st Army Air Force squadrons. Compare with "D" (top).

Republic P-47 B-D-N

Famous World War II "flying jug" is back as eye-catching control model

■ When Alexander de Seversky produced the P-35 pursuit plane in 1937, little did he dream that it would develop into the death-dealing monster of World War II known as the Thunderbolt. The U.S. Army Air Corps purchased 136 of the 310 mph, 1200 hp P&W powered P-35s. Gross weight of this craft was 6,035 lbs.

The last P-35 was reworked into the XP-41 equipped with turbo-supercharging which was quickly developed into the P-43 Lancer. The Lancer's ability to climb to 44,000 feet set the pace for the yet-to-come P-47. Two hundred and fifty-two of the 360 mph, 7800-lb. "Lancers" were delivered.

Stringent requirements worked out by the Wright Field Army Board in 1940 for a high-altitude escort, heavy firepower, armored fighter gave birth to the P-47—an enlarged and, of course, improved version of the Lancer. Speed of this early P-47B (P-47 and P-47A were canceled) was 429 mph, while it tipped the scales at 13,356 lbs. Power was the 2000 hp Pratt & Whitney twin row engine.

Externally, the Thunderbolt did not change until the middle of the "D" modifications. The P-47D-RE and P-47D-RA were revised to include a bubble canopy during 1943-1944. All subsequent models sported the canopy; later models included a dorsal fin for added directional stability. Speed of the P-47D was 420 mph and weight jumped to 14,500 lbs. Over 13,000 P-47D fighters were built!

Modifications continued up to the P-47N with speeds topping 510 mph on some experimental models. The P-47N was fitted with an enlarged wing and dorsal fin. Power was a 2100 hp P&W engine which upped the plane's speed to over 460 mph. The gross weight was 21,200 lbs., and 1,817 were built.

In view of the fact that the P-47D was, by far, the most widely used Thunderbolt, we decided to duplicate it in model form. For the benefit of those readers who are interested in the early P-47B and the later P-47N Thunderbolts, these craft have also been illustrated.

(We wish to thank Dr. Thad S. McCulloch and Mr. Leon Shloss for their kind efforts and generosity without which this article would not have been possible.)

Any engine from .14 to .35 cubic inch displacement will fit into the nose of this ¾" to the foot scale replica. The .14 size will provide much realism in view of the fairly slow speed that will result, while a .35 will really burn that circle. For flights of moderate speeds, install an engine of from .19 to .29 cu. in. displacement. Either upright or inverted power-

plant installation can be used successfully. An inverted engine has the advantage of being entirely or partially enclosed, thereby providing a more pleasing and realistic appearance.

Construction can begin with the wing by cutting the spars to the correct taper. Follow this by sawing the plywood joiner in one piece and cementing it to the spars, thus forming the correct dihedral automatically. While this is drying, cut the ribs to shape. The sheet covering can now be cut to outline shape and butt-joined to form the correct chord width. Cement the spar to the lower covering, holding it in place with straight pins until dry. Attach the ribs to both the spar and lower covering.

Bend the wire landing gear struts. Make sure to form one left and one right hand strut. These struts are then sandwiched between two plywood sheets. Use plenty of cement and hold together with clamps until dry.

Slip the strut through the wing lower covering, from the top, and cement the plywood securely to the ribs, lower covering and spar. Pour several coats of cement around this joint to insure a firm installation as this is a point of great stress.

Carefully bevel the leading and trailing edges until the bevel meets the angle of the rib upper camber. Sand well.

Cut the upper covering to shape, butt-join and cement it to the top of the spar. Hold in place with pins. Using a slow-drying cement, apply it liberally to the ribs and beveled portion of the lower covering. Attach the top covering to the cemented surfaces and hold in place with straight pins until dry. It is suggested that the wing be set aside to dry overnight after the solid wing tips have been cemented in place.

While the wing is drying, the fuselage horizontal keel can be cut to shape as well as the formers and firewall. If a beam type engine mount is contemplated, it should be firmly cemented to the keel at this time. The hardwood bellcrank mount should also be cemented firmly to the keel now. Follow this by attaching the formers and firewall to the top and bottom of the keel. Add the stabilizer pylon mount to the keel.

Sandpaper the wing thoroughly and then attach the fuselage frame to it by cementing the formers to the wing covering. Check for correct incidence during this operation. This should be zero.

Cut the tail surface to outline form and sand to a streamline shape. Cement the elevator halves to the dowel spar and add the control horn. Hinge the elevator assembly to the stabilizer using standard fabric hinges. This assembly should then be securely cemented atop the pylon mount.

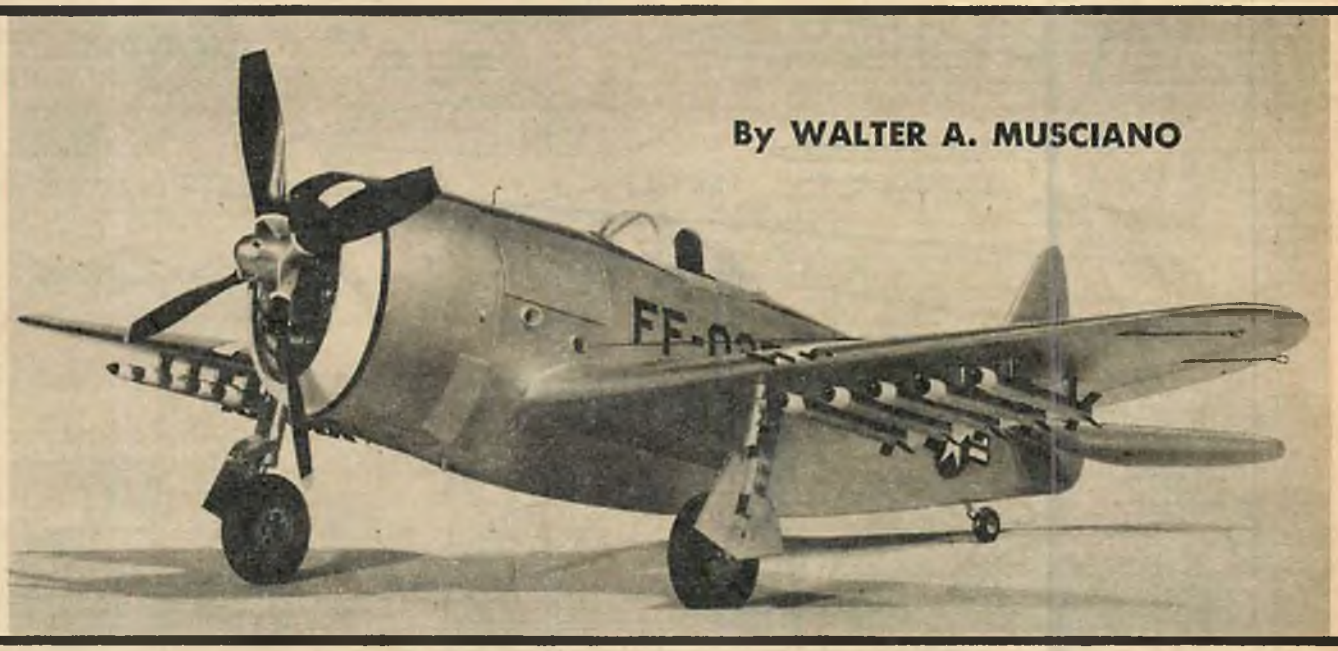
Many standard commercial metal or plastic bellcranks will fit your model. Attach the music wire lead-out lines securely by twisting and solder-sealing the twisted portion. The bellcrank is bolted to the mount after the wire control rod has been attached. Either offset-bend the ends of the rod as shown or solder a washer to the ends to prevent the control rod from slipping off the horn or bellcrank. Bolt the bellcrank to the mount in such a manner as to allow free movement of the control system. It is advisable to insert washers between the bellcrank and mount to total 1/16".

If the engine you choose has an attached tank—use it, otherwise many standard tanks can fit this model. Be sure to select the proper size fuel tank for your engine. This should be very firmly mounted within the fuselage. On some installations, it will be necessary to cut away the leading portion of the wing in order to fit the tank. Do not, however, ever cut away the spar or any portion of it. Add the plastic tubing filling, vent and feed line extensions at this time.

The fuselage is now planked after the remaining formers are cemented to the bottom of the wing. Begin by cementing one planking strip on each side and the very top and bottom of the fuselage. Hold these strips to the formers with pins until the cement has dried. Follow with another strip cemented to each side of the four already in place and continue in this manner. Make certain to cement all strips to the formers as well as to each other. Taper and bevel the last few strips in order to insure a good fit in the confined areas.

Fill in all cracks and crevices with Plastic Balsa, forcing the compound deep into the spaces with the fingers. When dry, the fuselage should receive a thorough sanding with 1/0 and then 3/0 sandpaper. It may be well to note that the forward ends of the planking strips rest on ledge formed by the difference in size of formers "A" and "B".

With sheet balsa as a pattern and foundation, the fillet is built of many layers of Plastic Balsa. This should be applied with the fingers to form a smooth contour between the fuselage and wing. Do not hesitate to apply added thickness to the fillet in order to be able to form a truly smooth fairing without the fear of oversanding. Much fillet sanding is done by wrapping the sandpaper around the fingers and sanding



By WALTER A. MUSCIANO

with rolling motion to achieve the smooth convex surface.

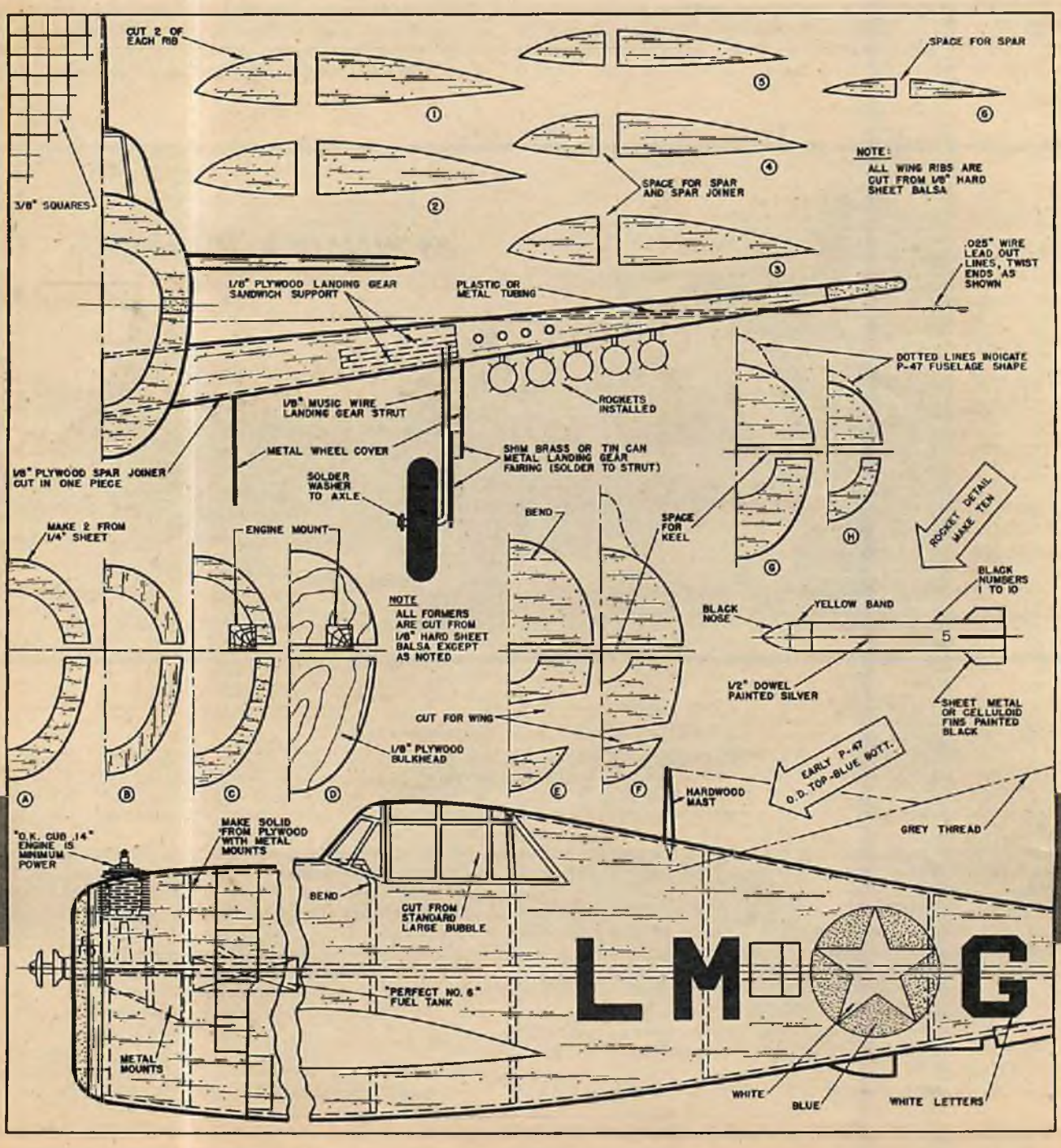
In view of the unusual dihedral, it was found necessary to run the control lead-out lines through the wing in lieu of using the more common guides. We could have raised the bellcrank location but this would cause a "mushing" tendency at high angles of attack. Carefully pass a sharpened shaft of 3/32" or ⅛" wire through the wing. Enlarge this hole with a long drill or by passing the wire through several times. Line these holes with plastic tubing. This should be the hard variety of plastic similar to the sipping straws available at the dime store. Cement these in place, and when dry cut ends flush with the upper and lower wing contour.

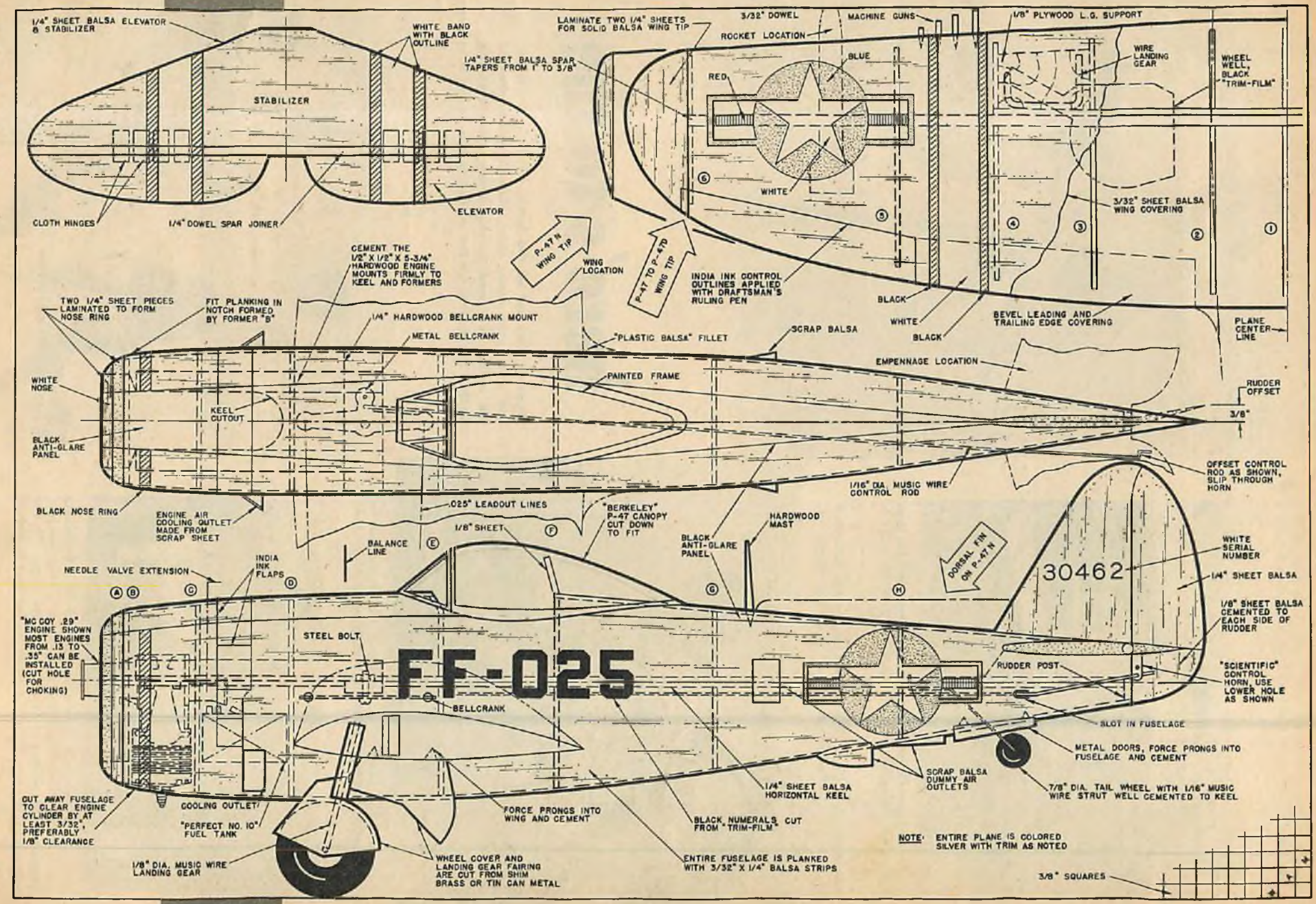
A decent finish cannot be attained without applying several coats of sanding sealer or similar wood-filling mixture before the paint is added. The first coat should be applied liberally with a brush and sanded with 3/0 sandpaper. Follow with at least four more coats and sand well. This can be continued if desired until glass-like finish results.

Carefully cut away the cockpit opening and the engine hatch using a very sharp razor blade. Apply silver dope to the cowl interior and follow this with several coats of clear fuel proofer. Fit the engine in place and bolt securely. We have successfully used ⅜" wood screws on engines up to .14" size; however, this is optional. The engine cylinder should clear the cowl by at least 3/32" and preferably ⅛". Openings must be cut for needle valve extension and for engine choking. It may be wise to add a rubber tube extension to engines with intakes at the rear. This extension can be led out through the fuselage side to insure easy choking and fresh air supply to the engine.

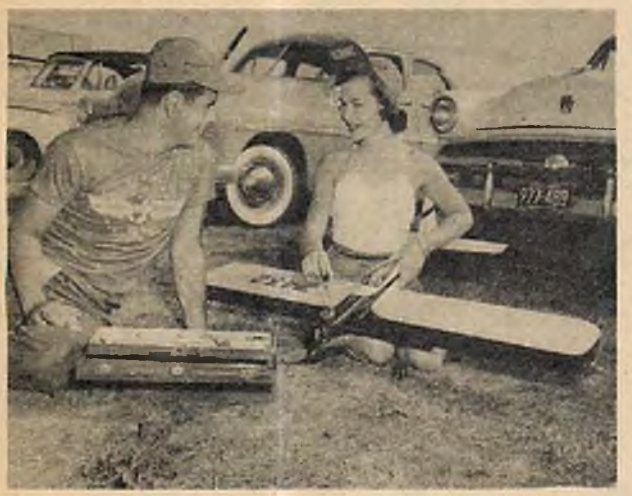
The entire model is painted silver with trim as illustrated. We brushed on six coats, thinning the last two progressively 10 and 25 percent. Sand the first two coats with very fine finishing paper. The last coat can be rubbed to a high luster by applying rubbing compound with a wad of absorbent cotton. Finish off with a soft flannel cloth.

Complete building details are available on the full-size plans.




FF-025
1/4" SHEET BALSA ELEVATOR & STABILIZER
WHITE BAND WITH BLACK OUTLINE
STABILIZER
ELEVATOR
CLOTH HINGES
1/4" DOWEL SPAR JOINER
LAMINATE TWO 1/4" SHEETS FOR SOLID BALSA WING TIP
3/32" DOWEL
MACHINE GUNS
1/8" PLYWOOD L.G. SUPPORT
ROCKET LOCATION
1/4" SHEET BALSA SPAR TAPERS FROM 1" TO 3/8"
BLUE
RED
WHITE
WIRE LANDING GEAR
WHEEL WELL, BLACK "TRIM-FILM"
3/32" SHEET BALSA WING COVERING
P-47 N WING TIP
WING LOCATION
P-47 TO P-47D WING TIP
INDIA INK CONTROL OUTLINES APPLIED WITH DRAFTSMAN'S RULING PEN
BLACK
WHITE
BLACK
BEVEL LEADING AND TRAILING EDGE COVERING
PLANE CENTER LINE
CEMENT THE 1/2" X 1/2" X 5-3/4" HARDWOOD ENGINE MOUNTS FIRMLY TO KEEL AND FORMERS
TWO 1/4" SHEET PIECES LAMINATED TO FORM NOSE RING
FIT PLANKING IN NOTCH FORMED BY FORMER "B"
1/4" HARDWOOD BELLCRANK MOUNT
METAL BELLCRANK
"PLASTIC BALSA" FILLET
SCRAP BALSA
EMPENNAGE LOCATION
WHITE NOSE
PAINTED FRAME
KEEL CUTOUT
RUDDER OFFSET
3/8"
BLACK ANTI-GLARE PANEL
1/16" DIA. MUSIC WIRE CONTROL ROD
OFFSET CONTROL ROD AS SHOWN, SLIP THROUGH HORN
BLACK NOSE RING
ENGINE AIR COOLING OUTLET MADE FROM SCRAP SHEET
.025" LEADOUT LINES
"BERKELEY" P-47 CANOPY CUT DOWN TO FIT
1/8" SHEET
BALANCE LINE
HARDWOOD MAST
BLACK ANTI-GLARE PANEL
DORSAL FIN ON P-47 N
WHITE SERIAL NUMBER
30462
1/4" SHEET BALSA
NEEDLE VALVE EXTENSION
INDIA INK FLAPS
1/8" SHEET BALSA CEMENTED TO EACH SIDE OF RUDDER
"MC COY .29" ENGINE SHOWN MOST ENGINES FROM .13 TO .35" CAN BE INSTALLED (CUT HOLE FOR CHOKING)
STEEL BOLT
RUDDER POST
"SCIENTIFIC" CONTROL HORN, USE LOWER HOLE AS SHOWN
BELLCRANK
SLOT IN FUSELAGE
METAL DOORS, FORCE PRONGS INTO FUSELAGE AND CEMENT
SCRAP BALSA DUMMY AIR OUTLETS
1/4" SHEET BALSA HORIZONTAL KEEL
7/8" DIA. TAIL WHEEL WITH 1/16" MUSIC WIRE STRUT WELL CEMENTED TO KEEL
CUT AWAY FUSELAGE TO CLEAR ENGINE CYLINDER BY AT LEAST 3/32", PREFERABLY 1/8" CLEARANCE
COOLING OUTLET
"PERFECT NO. 10" FUEL TANK
FORCE PRONGS INTO WING AND CEMENT
BLACK NUMERALS CUT FROM "TRIM-FILM"
1/8" DIA. MUSIC WIRE LANDING GEAR
WHEEL COVER AND LANDING GEAR FAIRING ARE CUT FROM SHIM BRASS OR TIN CAN METAL
ENTIRE FUSELAGE IS PLANKED WITH 3/32" X 1/4" BALSA STRIPS
NOTE: ENTIRE PLANE IS COLORED SILVER WITH TRIM AS NOTED
3/8" SQUARES

Winsome woman Wakefielder (right) Mrs. I. Samaan of Germany made 3 flights of 5, 5 and 4:34 min. to capture 8th place.



Oh, for mechanics like this! Above—Marlyn Olwin, St. Paul, helps hubby Dick at Plymouth meet. He was 8th in stunt, 9th in Sp. A.

Erwin Rodomsky of Detroit (below) gets kiss from the better half after 1st in A/2 Plymouth free flight. 3rd in A speed, too.

Ruth and Robert Edelstein from Mertztown, Pa., (rt.) set out for PAA-Load at Nationals. Notice she's carrying the heavy items.

Only a brief 5 seconds from a perfect score of 3 five-minute flights in Lord Wakefield International rubber contest was Mrs. Lucienne Ferber of Belgium team (above). She placed 5th and also led her team to 5th place standing. Best feat in history.

here's to the

Whether they put up the lunch, fly, help or just sit and watch, the nicest thing about aeromodeling is the ladies. It's hard to say which came first—the mother out rooting for her modeling son, or the wee

As we were saying, more mechanics like this (lt.). Pretty Eloise Mullins and John Leach, 16, who was sixth in jet at Plymouth.

Carolee Pritting (above) of Woodhaven, L. I., assists Richard Becker at Mirror Model Flying Fair as he readies Powerhouse B.

Florence Christy (below), only feminine entrant in Navy Carrier event at Mirror meet. Beautiful Skyraider flew with McCoy .60.

LADIES!

daughter shouting a word of encouragement to Pop out in the center of the circle. But be they grandmas, gal friends, mothers, daughters or wives—hooray for all the gals who help to keep 'em flying!

From Alexandria, La., (left) Mr. and Mrs. Donald J. Smith fuel up his entry in the Plymouth scale event. Don, 27, placed 2nd.

Lt. and Mrs. F. K. Heeb (above) prepare unusual Half-A entry for flight in National PAA-Load competition. Heeb is stationed at Wright-Patterson Field in Ohio; he is well known in rubber competition circles and a 2-time winner of Mulvihill Trophy.

Little Freak "27"

Here you have one of the thoroughly proven, very successful W. Coast Half-A radio control airplanes

By DALE ROOT

Dale Root, genial proprietor of Root's Hobby Hut, Oakland, Calif., with his Half-A radio control. He called it "Little Freq. #27" which we modified a little to "Freak."

■ This Half-A R/C stunt ship has all the features of good precision and stunt flying usually found in larger and heavier R/C models. *Little Freak "27"* travels fast and clean, giving good wind penetration. The incorporation of both rudder and elevator controls allows positive and very snappy flights. Yet it recovers from tight turns and maneuvers as fast as it enters them. It has 300 sq. in. of area and weighs 20 oz. ready to fly. Not too big for a Thermal Hopper engine on a 7/3 propeller..

The good flying characteristics of *Little Freak "27"* were developed over a period of testing and flying various force setups and airfoils. The semi-symmetrical airfoil has a low center of pressure travel which adds greatly to the longitudinal stability of the ship. The thrust line, wing, and stabilizer are nearly on the same line. The wing is close to the C.G. All heavy equipment such as batteries, escapements and receivers are as close to the center of gravity as is practical. These features make for quick maneuvers and quick recovery at a touch of rudder or elevator. Because the greatest weight of the ship is centered about the pivot point or C.G., it takes very little force of the control surfaces to change its flight path, and consequently the stabilizing force of the vertical and horizontal fins returns it quickly to level flight. So much for why you will have a good safe R/C stunt job.

An Aerotrol receiver of 2½ oz. was used, but any other receiver of a similar weight will work as well. The Twin tube receiver of North American Products is reliable and lightweight. A Bonner Compound escapement is used on the rudder. This escapement in turn will operate the elevator escapement. For elevator escapement, a Citizen-Ship PSN, or similar reliable lightweight escapement should be used. When flying you must remember the elevator works in a sequence; up-neutral-down-neutral-up etc. So if you wish "up" twice, for instance, you must run "down" off after the first "up" to get "up" again when you need it.

The compound escapement is an amazing and reliable bit of precision machinery. It gives you "right" when you want it and "left" when you want it. You obtain elevator by beeping three times rapidly. The controls will follow as fast as you can snap the transmitter button on and off. The ship will respond very rapidly to your signal. If at first you get confused attempting maneuvers with *Little Freak "27"* don't do anything; as the Cub instructors say, "the ship will come out level and flying safe."

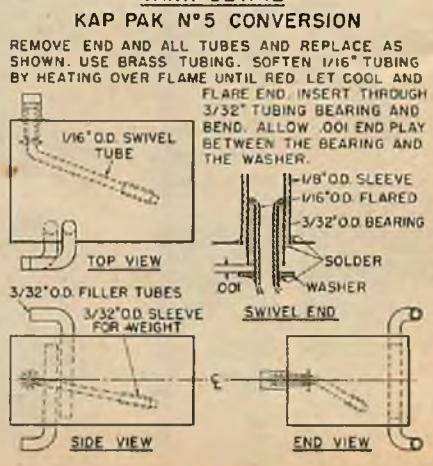
Perhaps taking you through one short flight would be of help when you're ready for the ship's first solo hop. Be sure you check and correct for warps in the wing, stabilizer and rudder. The escapements and controls must not be sticky or sluggish. They should work freely on a practically unwound loop of ⅛" rubber. Either R.O.G. or hand launch is safe. When the model has climbed twenty feet or more, beep the transmitter once. This gives right rudder. If you wish a full 360-deg. circle around the transmitter, keep beeping once and holding momentarily. You can get a tight turn or a wide circle depending on the number of beeps you give it. For left turns, do the same, except give two rapid beeps; holding the second beep will give left rudder. Keep the *Little Freak "27"* heading upwind while you're gaining altitude, but practice right and left turns. This way you'll get used to timing and response of controls.

When you have 100 ft. or more of altitude try your elevators, three beeps, and see whether you have up or down. The elevators, remember, work in a sequence. (You could check this before take-off with engine running so that "up" is the next elevator control.) Give it "down" elevator into the wind and dive for about 25 ft.; this will be about a 60 deg. dive. As soon as you release elevator, beep three times and hold it, giving "up" elevator as the ship levels out of the dive. You'll get two of the quickest and cleanest 10 ft. diameter loops you ever saw. If you want more than two consecutive loops you'll have to "work" the elevator after the first loop. Give it a touch of "up" at the bottom and touch of "down" after it goes over the top for as many loops as you want.

For a wing-over, dive 10 ft. to 15 ft. and release control. As it approaches a 45 deg. climb on the pull-out, hit right rudder once, and hold, until it goes over in a nice clean arc on the right wingtip. Release rudder and touch it again just as it levels out downwind; this will stop any zooming tendency it may have.

For an Immelman, dive downwind for 10 ft. to 15 ft. and release control. As the ship approaches the top of the loop hold right rudder until it rolls over, then release.

For barrel rolls you'll need enough rudder travel, with high airspeed, to overcome the tendency to zoom after a dive. If necessary, increase the rudder move-



ment from ¼" each way to about ⅜" and you'll have enough. Start your 25 ft. dive about 20 deg. to the left of upwind. As the ship starts the pull-out, just as it's level, hit left rudder two beeps and hold it until she rolls completely around. If you hold for only half a turn you'll get a half roll with a half loop, and pull out downwind. This makes a beautiful split "S".

If you want a fast dive-over on her back, do a three-quarter loop and hold down elevator. She'll dive about 10 deg. past the vertical and like a bomb. You'll swear the wingtips touched each other on the pull-out! Remember that in any manuever you do, you can get clean near-level pull-out by giving a touch of rudder as it passes the bottom of the dive.

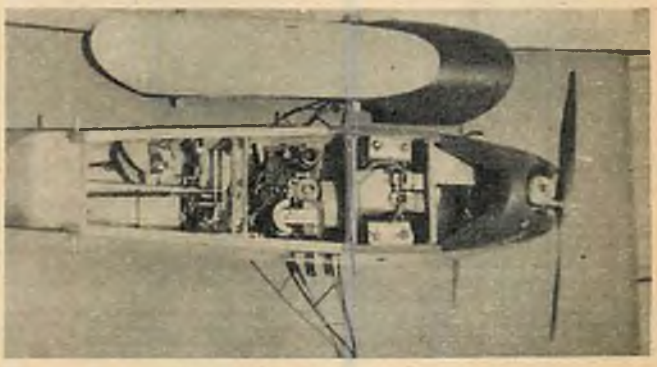
Upside-down flying is not so easy as other manuevers because of the wing dihedral. However, it is accomplished by doing a big half loop to maintain speed, starting down-wind. Just before the ship goes over the top, give "down" elevator and hold it there. If you're directly into the wind it will hold upside-down flight for 25 ft. or more. If you use less dihedral to improve this manuever, you're on your own! You'll lose your good stability for level flight, and the quick recoveries from all other maneuvers.

When the engine quits, *Little Freak "27"* will have a steady slow-sinking glide, into the wind or downwind. If you're overshooting the landing you can still turn close to the ground without worry of a severe drop-off, or a stall after the turn. I've circled the landing spot on the 100 ft. mark and landed cross-wind with success.

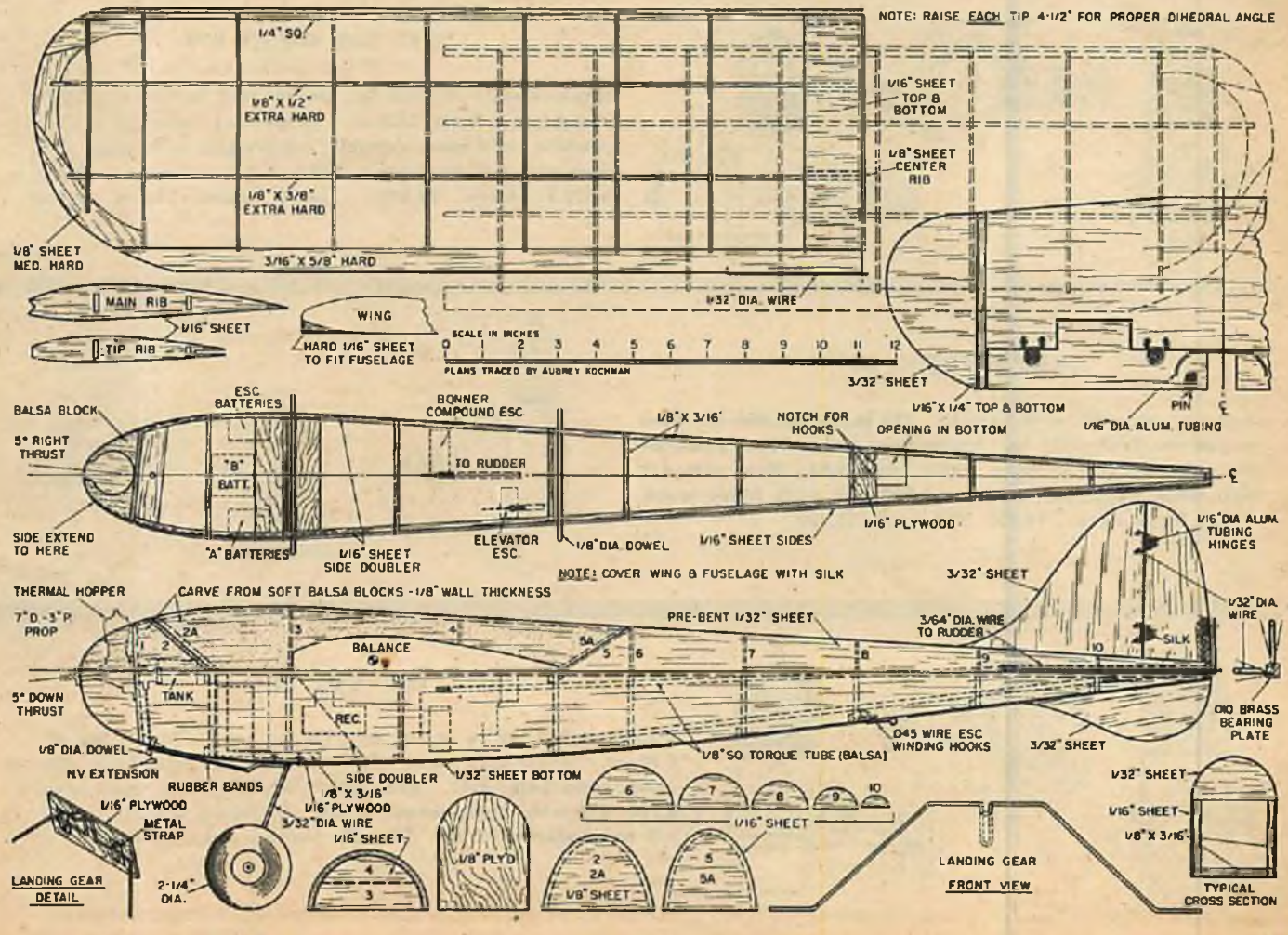
Before your next flight, wind those escapement rubbers, because you'll use up a lot of knots before landing again. I've found that Jasco rubber lube, or a similar lubricant, prolongs escapement rubber life and elasticity by several days of flying.

Complete building details are available on the full-size plans.

Full-size plans for quick construction of this simplified design are available. Send self-addressed, stamped envelope to Air Trails for plan data on this and other models in Annual.



Control Department: Dale uses the Super Aerotrol as developed by Berkeley Models. A Bonner compound escapement is the other key item. For his power friend Root utilized a Thermal Hopper.

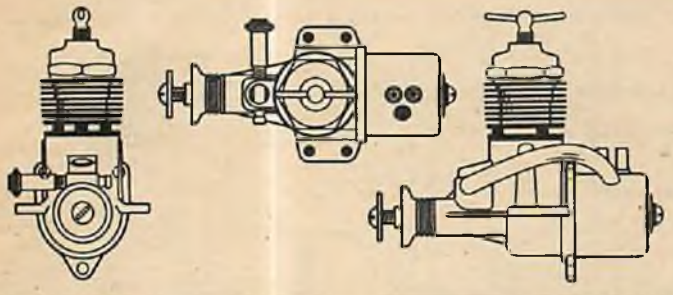


Popular Power Plants

■ The most fortunate model builders live in the United States of America! How can we (1) make a statement like that, and (2) what proof have we? All you'd have to do is show this and the following 4 pages to any model fan anywhere in the world, explain that these inexpensive miniature powerplants are for sale throughout your country at prices a lot less than he'd encounter anywhere else.

You know what that foreign modeler would exclaim? "Gee, American modelers are the luckiest in the world!"

Now how does a lucky fellow like yourself ever decide just what engine you want? One way is to hold membership in an active model aero club and check with older and more experienced members. Then there's your hobby shop man; when he knows what you want to use your engine for (contest or sport? free flight or control line? speed or stunt?) he can offer good advice. If you're the contest-minded type you'll find the National and Plymouth meet data in this Annual of much interest, since it lists most of the winning engines. Sorry to say, Allyn's Sky Fury, the new Fox .19 and Cameron's .09 marine engine were not released early enough to appear here, but coverage of these will be found in Air Trails. *The three-view drawings are just HALF SIZE for quick "sizing up" by you.*

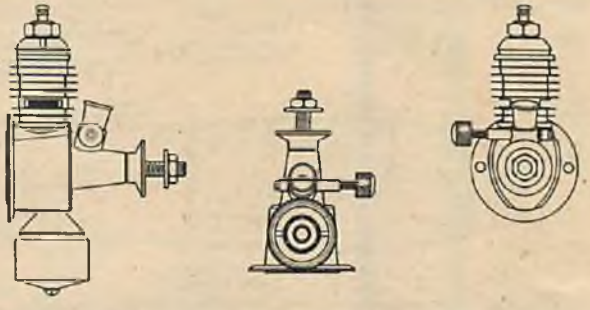


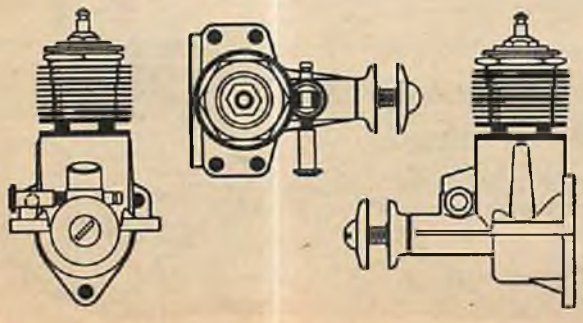
"OK" CUB DIESEL 075

Displacement: .075 cu. in.; stroke: .417 in.; bore: .478 in. Weight, less tank: 2.03 oz. Stroke-bore ratio: .87. Compression ratio head: variable; compression ratio base: 1:47. Rpm with 8/6 wood prop, 7,800; 7/4 wood-plastic, 12,200; 5.5/2.2 plastic, 16,800. Spring loaded contra piston.

K&B TORPEDO 049

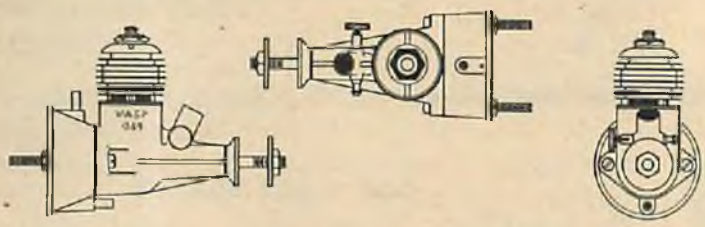
Displacement: .049 cu. in.; stroke: .380 in.; bore: .406 in. Bare weight, less tank: 1.37 oz. Stroke-bore ratio: .935. Compression ratio head: 5.8; comp. ratio base: 1.62. Rpm with 6/3 wide blade wood-plastic prop, 10,800; 5/4 wide blade wood, 12,500; 5.5/3 plastic, 13,700; 5/3 wood, 15,300.





"OK" CUB 14

Displacement: .149 cu. in.; stroke: .530 in.; bore: .600 in. Weight: 2.74 oz. Stroke-bore ratio: .88. Compression ratio head: 8.0; comp. ratio base: 1:47. Rpm with 9/6 wide blade wood prop, 8,700; 8/6 wide blade wood, 11,400; 7/4 wood plastic, 16,000; 5/6 wood-plastic, 17,300; 6/3 wide blade wood, 18,500.

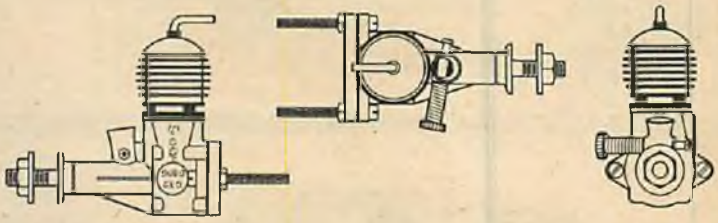


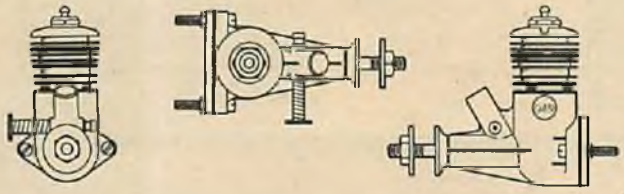
HOLLAND WASP 049

Disp: .049; stroke: .356; bore: .421. Weight, with tank: 1.33 oz. Stroke-bore ratio: .846. Comp. ratio head: 6.4; comp. ratio base: 1.66. Figures are early Wasp (new version is H-ported): 5/3, 15,000.

McCOY DIESEL 049

Disp: .049; stroke: .386; bore: .405. Weight: 1.5 oz. Stroke-bore ratio: .93. Comp. ratio head: variable; comp. ratio base: 1.52. Performance: 6/3 Plasti-cote, 16,250 rpm; 6/4 Top Flite, 14,500.



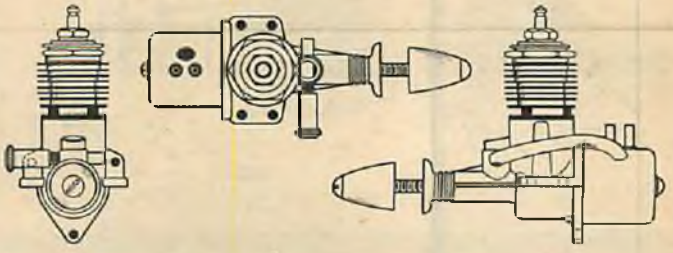


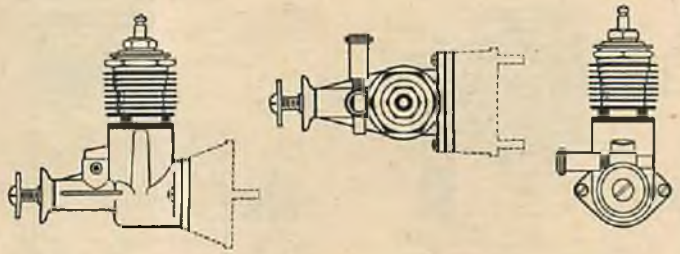
ATWOOD 049

Disp: .049; stroke: .360; bore: .420. Weight, less tank, 1.1 oz. Stroke-bore ratio: .86. Comp. ratio head: 5.5; comp. ratio base: 1.41. With 6/4 wood, 10,500; 5/3 wood, 17,000.

"OK" CUB 049B

Displacement: .049; stroke: .360; bore: .420. Weight, less tank: 1.27 oz. Stroke-bore ratio: .857. Compression ratio head: 6.0; comp. ratio base: 1.44. Performance with 6/3 wood prop, 11,900 rpm; with 5.5/4 plastic prop, 13,500 rpm; with 5/3 wood prop, 16,200 rpm.



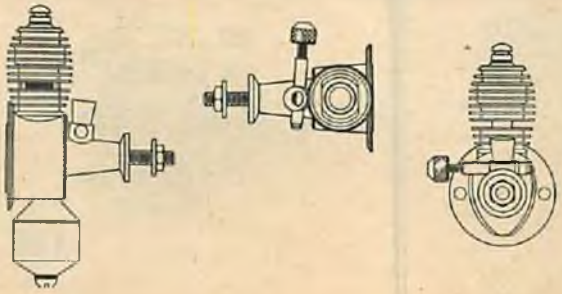


"OK" CUB 049X

Displacement: .049; stroke: .360; bore: .420. Weight, less tank: 1.38 oz. Stroke-bore ratio: .857. Compression ratio head: 6.0; comp. ratio base: 1.44. Performance with 6/3 Cub prop, 11,800 rpm; with 6/3 narrow blade wood, 12,100; 5.5/4 plastic, 13,700; 5/3, 17,200.

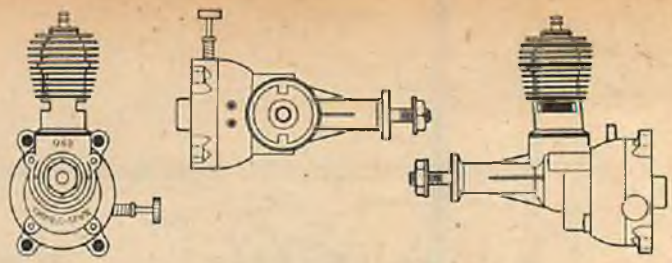
K&B TORP JUNIOR 035

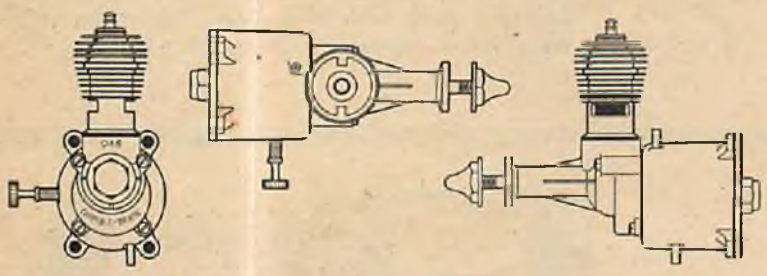
Displacement: .035; stroke: .380; bore: .343. Weight, less tank: 1.09 oz. Stroke-bore ratio: 1.11. Compression ratio head: 4.75; comp. ratio base: 1.50. Performance with 5.5/3.5 wood prop, 10,200 rpm; 5.5/3 plastic prop, 13,100 rpm; 5/3 wood prop, 13,800 rpm. All parts machined from bar stock.



COX SPACE BUG JUNIOR 049

Displacement: .049; stroke: .386; bore: .406. Weight, with tank: 1.31 oz. Stroke-bore ratio: .95. Compression ratio head: 6.2; comp. ratio base: 1.41. Rpm performance: 5.5/2.5 plastic, 15,500; 5/3 wood-plastic, 16,000.



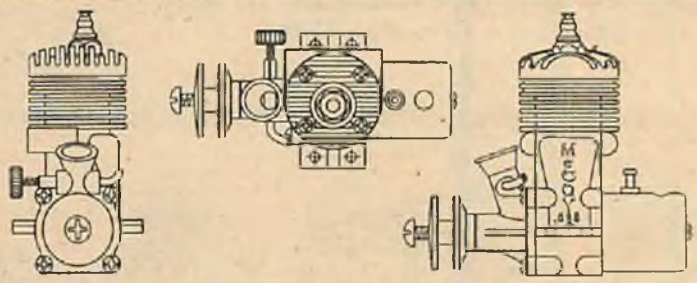


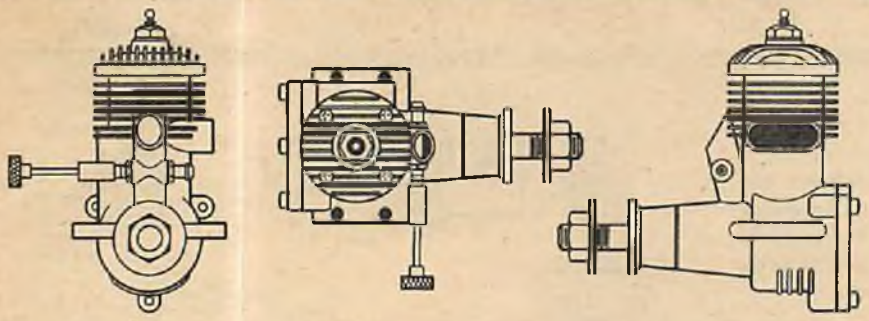
COX SPACE BUG 049

Disp. .0499; stroke: .386; bore: .406. Weight, with tank, 1.6 oz. Stroke-bore ratio: .95. Comp. ratio head: 6.5; comp. ratio base: 1.41. With 7/4 wood, 10,500 rpm; 5/3 plastic-wood, 19,600 rpm.

McCOY "9" 098

Displacement: .098; stroke: .500; bore: .500. Weight, 2.6 oz. Performance with McCoy "9" prop, 13,000 rpm; 7/3 wood prop, 13,000; 7/4, 12,000. First McCoy with crankshaft rotary valve.



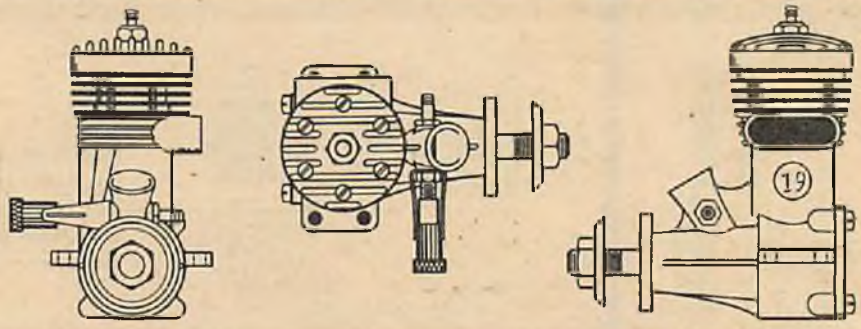


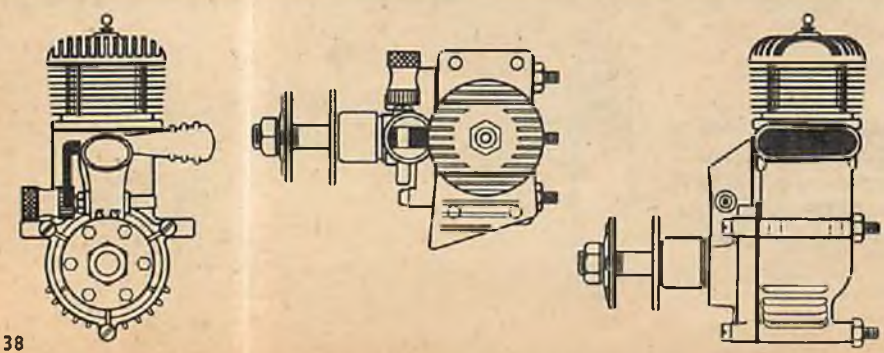
CAMERON 19

Lapped version disp: .193; stroke: .630; bore: .625. Stroke-bore ratio: 1.02. Comp. ratio head: 5.5. 15,400 with 7/4 wood-plastic prop. *Ring version* disp: .199; stroke: .630; bore: .635. SBR: .992 CRH: 6.6. 16,300 on 7/4 wood-plastic.

K&B TORPEDO 19

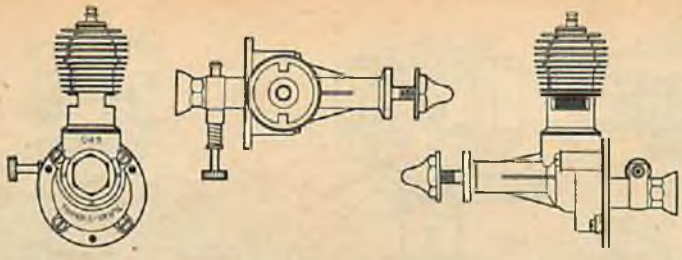
Displacement: .199; stroke: .620; bore: .624. Weight: 5.96 oz. Stroke-bore ratio: .993. Compression ratio head: 8.3; comp. ratio base: 1.35. Rpm with 10/6 wood prop, 7,500; 8/8 wood, 11,600; 7/6 wood-plastic, 17,500.





CHEMINOL O&R 33

Interchangeable with O&R 23 and O&R 29. Displacement: .33; stroke: .730; bore: .760. Weight: 5.37 oz. Stroke-bore ratio: .961. Compression ratio head: 7.8; comp. ratio base: 1.37. 10/8 wide blade wood prop. 7/500; 8/6 narrow, 14,200; without venturi, 15,000.

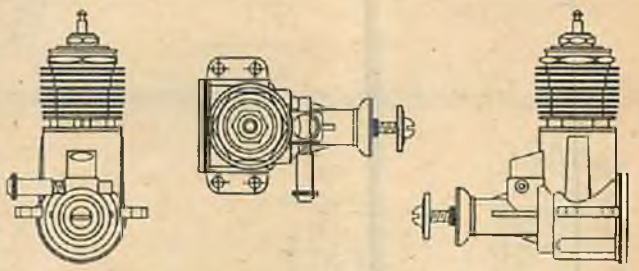


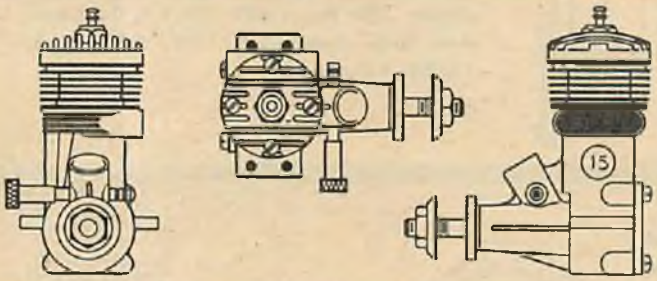
COX THERMAL HOPPER 049

Disp: .049; stroke: .386; bore: .406. Weight: 1.39 oz. Stroke-bore ratio: .95. Comp. ratio head: 6.5; comp. ratio base: 1.41. Performance: 7/4 wide blade prop, 10,500; 6/4 wide blade, 13,000; 6/3, 15,200; 5/3, 19,500.

"OK" CUB 099

Disp: .099; stroke: .480; bore: .515. Weight, 1 7/8 oz. Performance: 8/6 prop, 7,800 rpm; 8/3.5, 10,000; 7/4, 13,000; 7/3, 13,000. Connecting rod is cast aluminum; piston is steel, fully lapped with slightly domed head.



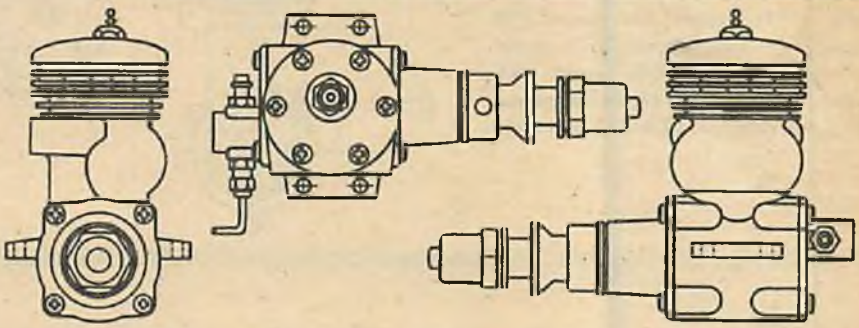


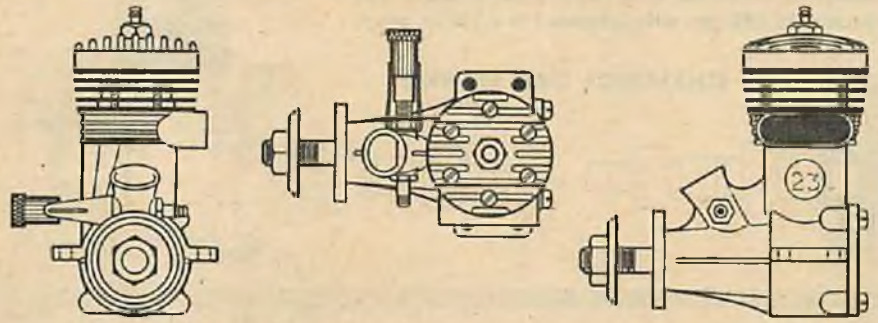
K&B TORPEDO 15

Disp: .15; stroke: .550; bore: .581. Weight: 3.32 oz. Stroke-bore ratio: .95. Comp. ratio head: 6.4; comp. ratio base: 1.52. Performance: 8/8 narrow wood prop, 9,300 rpm; wide 8/3.5, 13,500; narrow 7/4, 17,200.

DOOLING 29

Disp: .298; stroke: .594; bore: .800. Weight, less tank: 6.5 oz. Rated by maker to develop 3/4 hp at 17,500 rpm. Performance: with 9/10 prop, 15,500 rpm; 8/10 prop, 16,600 rpm. Exceptionally large bypass; no gaskets used.



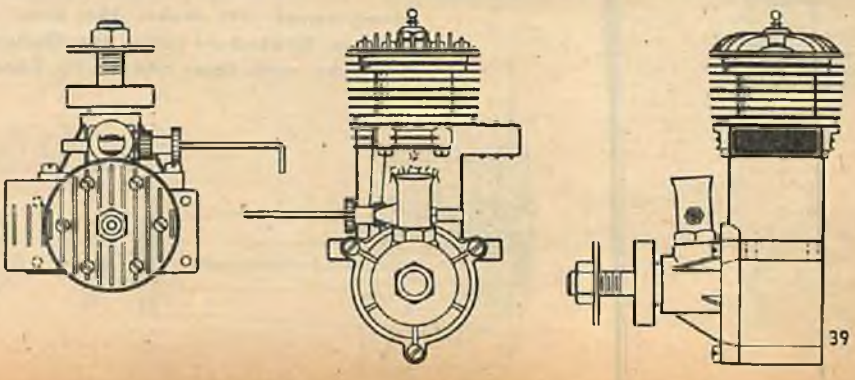


K&B TORPEDO 23

Disp: .23; stroke: .624; bore: .680. Weight, 5.9 oz. Stroke-bore ratio: .915. Compression ratio head: 7; comp. ratio base: 1.44. Rpm: 10/6 wide blade wood prop, 8,000; 8/6 wood, 15,000; 8/3.5 (venturi removed), 16,800.

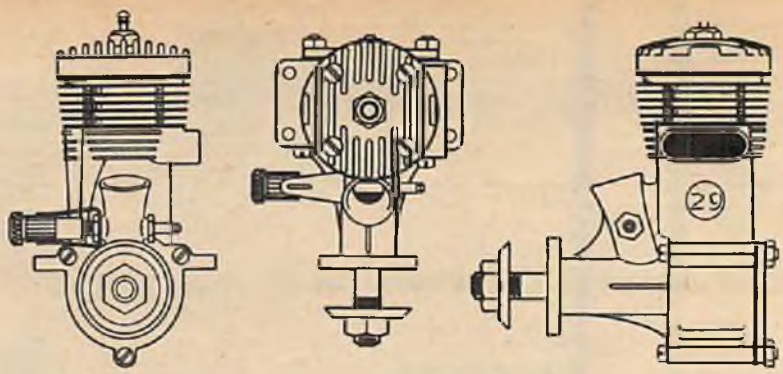
FORSTER 29

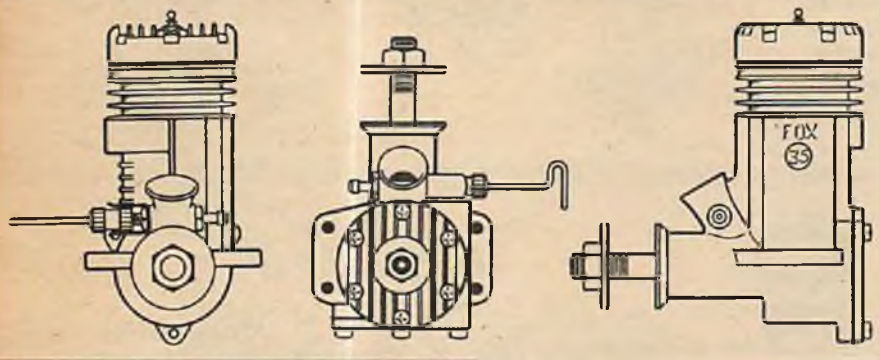
Disp: .29; stroke: .665; bore: .750. Weight, bare: 5.91 oz. Stroke-bore ratio: .886. Compression ratio head: 7.6. Comp. ratio base: 1.5. Rpm with 10/6 wide blade wood prop, 8,300; 7/4 wood-plastic, 18,000. Racing mixtures increase rpm in high-speed range.



K&B TORPEDO 29

Displacement: .299; stroke: .724; bore: .725. Weight: 6.84 oz. Stroke-bore ratio: 1. Compression ratio head: 8.9; comp. ratio base: 1.47. Performance: 10/6, 10,600; 9/6, 12,200; 8/8, 13,300; 7/9, 15,000; 8/6 wide blade, 16,000. Fuel level test 10 in. at 10,600.



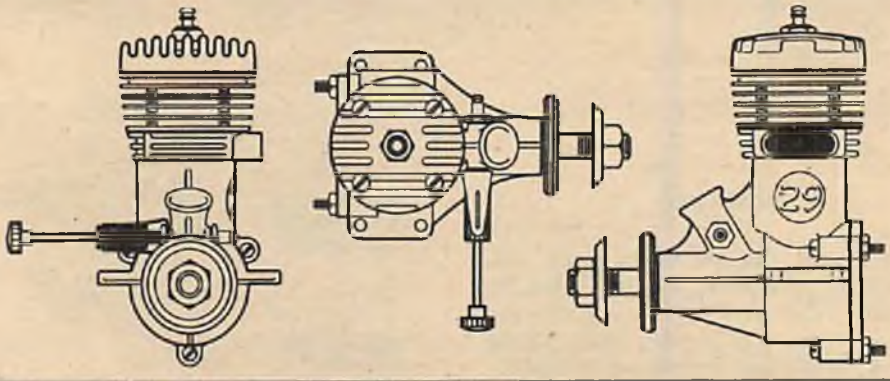


FOX 29 & 35

Disp: .2991; stroke: .700; bore: .738. Wt: 6.22. Compression ratio head: 6.6. 10/6, 9,800; 8/8, 13,000; 8/6, 15,000. Disp: .352; stroke: .700; bore: .800. Wt: 5.9. Compression ratio head: 6.4. 10/8, 8,500; 9/6, 13,400; 8/6, 16,500.

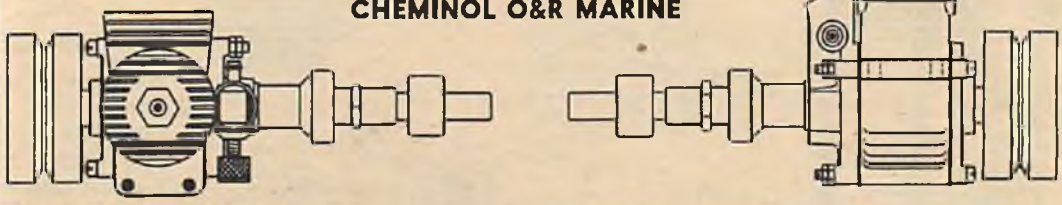
VECO 29

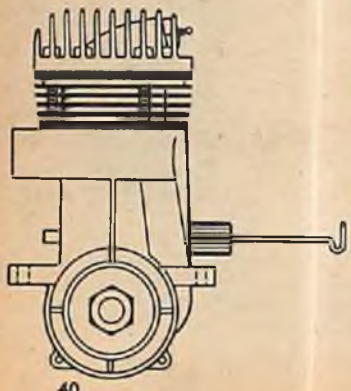
Disp: .299; stroke: .724; bore: .725. Bare wt: 7.05. Stroke-bore ratio: 1. Compression ratio head: 8.5; comp. ratio base: 1.47. Performance: 10/6, 10,300; 9/6, 11,800; 8/6, 15,000.



Displacement: .295; stroke: .653; bore: .758. Weight with flywheel, universal and thrust bearing: 11 oz. Stroke-bore ratio: .862. Compression ratio head: 8. Performance: 15,000 rpm with 2-blade 1⅛ x 1⅛ in. prop.

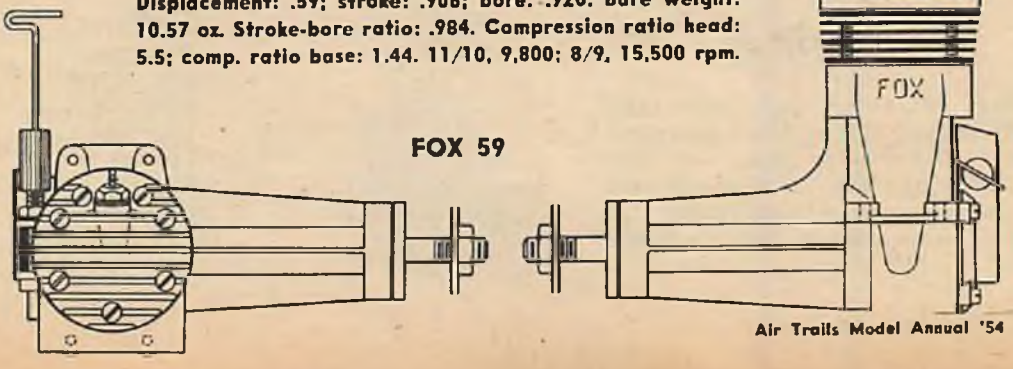
CHEMINOL O&R MARINE





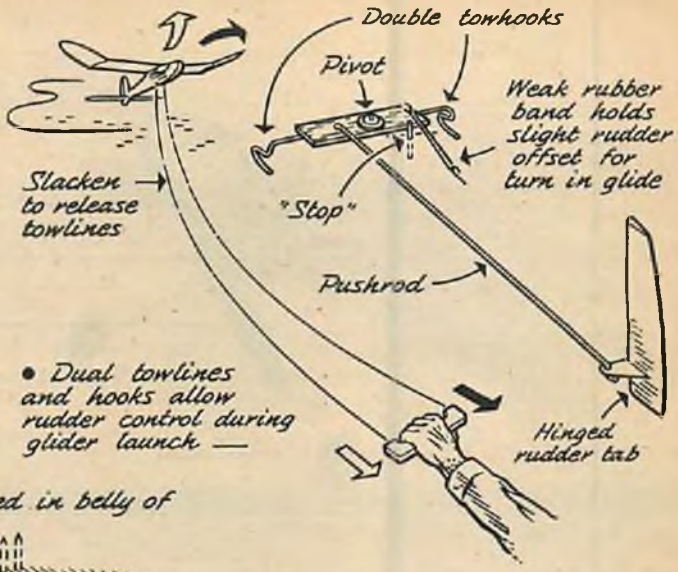
Displacement: .59; stroke: .906; bore: .920. Bare weight: 10.57 oz. Stroke-bore ratio: .984. Compression ratio head: 5.5; comp. ratio base: 1.44. 11/10, 9,800; 8/9, 15,500 rpm.

FOX 59

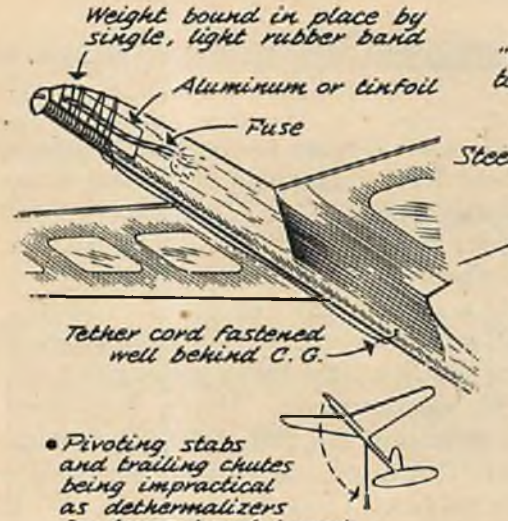


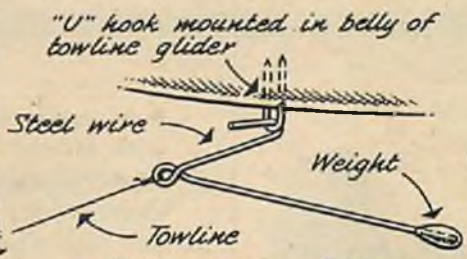
Model Soar-cery

Forget the batteries, fuel, pump and extra plugs . . . let's go gliding; it's fun!



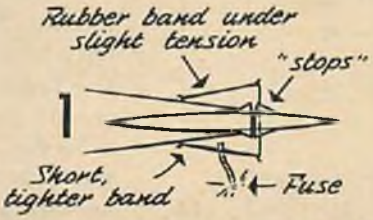
• Dual towlines and hooks allow rudder control during glider launch —



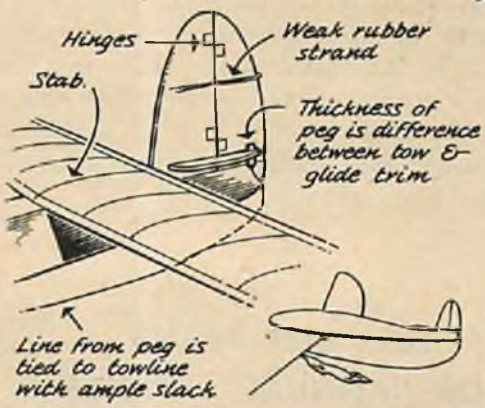


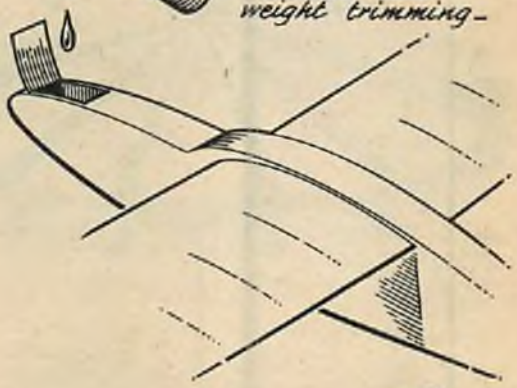
• Self-releasing fitting prevents "loop-offs" in launching towliners,

• Pivoting stabs and trailing chutes being impractical as dethermalizers for large hand-launch gliders,

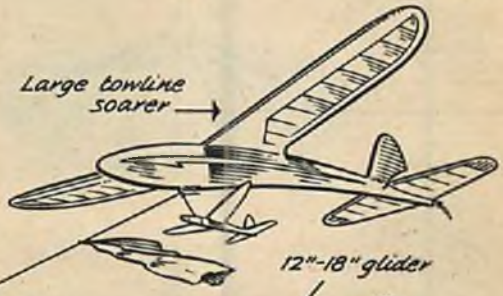


• Melted candlewax is handy for ballast and weight trimming —

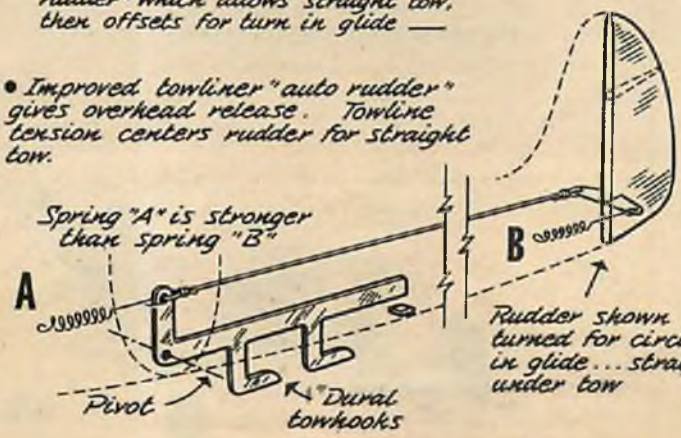


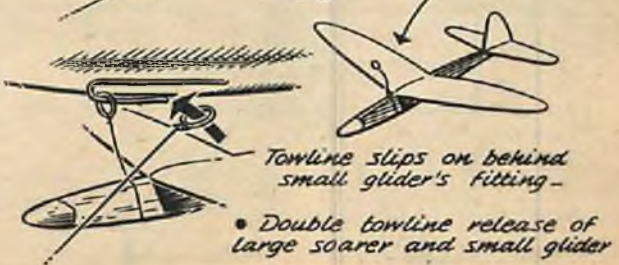


this thoroughly tested "auto-rudder" which allows straight tow, then offsets for turn in glide —



• Improved towliner "auto rudder" gives overhead release. Towline tension centers rudder for straight tow.

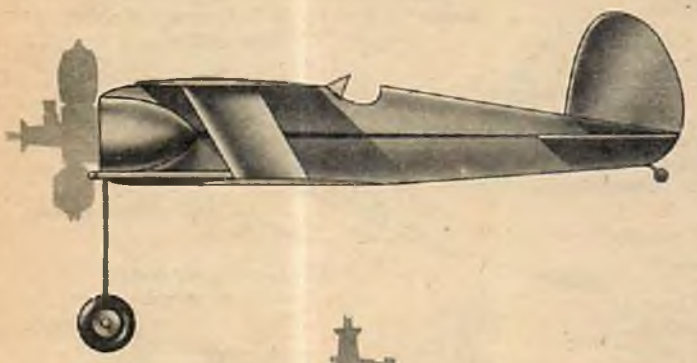


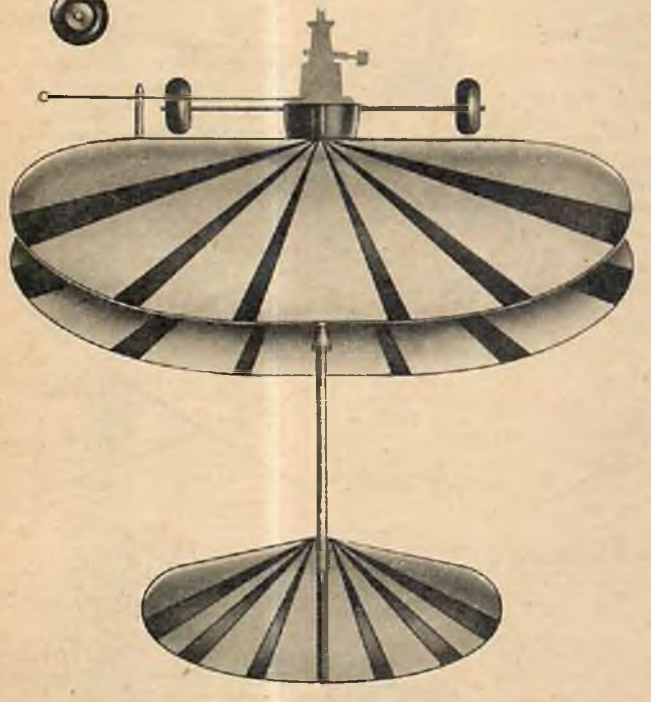


• Double towline release of large soarer and small glider

CRAZY CRATE

By TED GRZESZCZAK



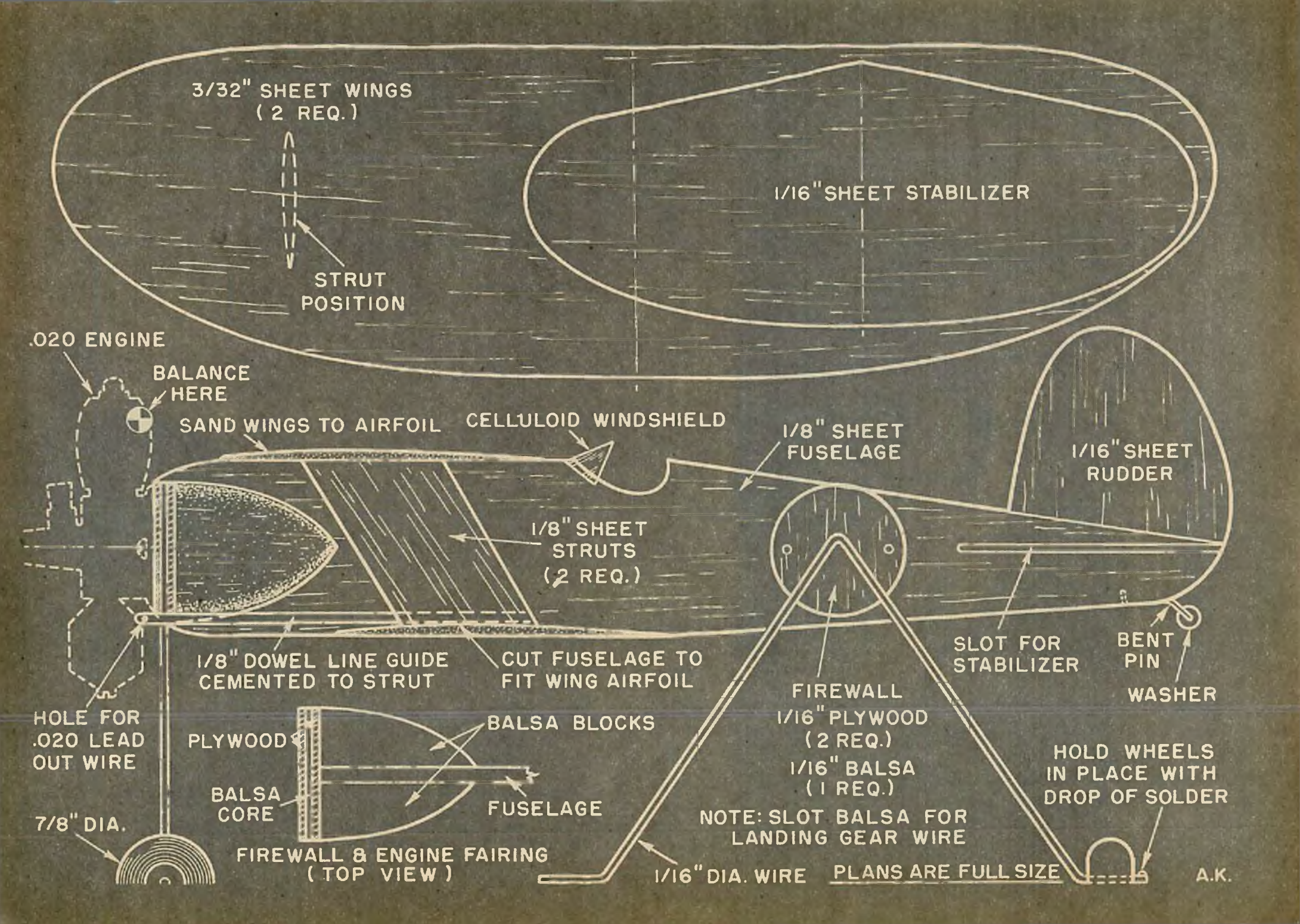


■ If you're one of those fortunate individuals with an old K&B Infant engine or you know someone who is no longer using his, then Crazy Crate is your dish. This little crackpot is a tether line job, which means that it flies by itself on the end of a single guide line with no controls.

The full-size plans will enable you to produce the Infant size in a jiffy; for larger engines just double all measurements. Attach the tether wire to a mounting bolt and run it out through the dowel. This serves as a guide. The model should be balanced along this line.

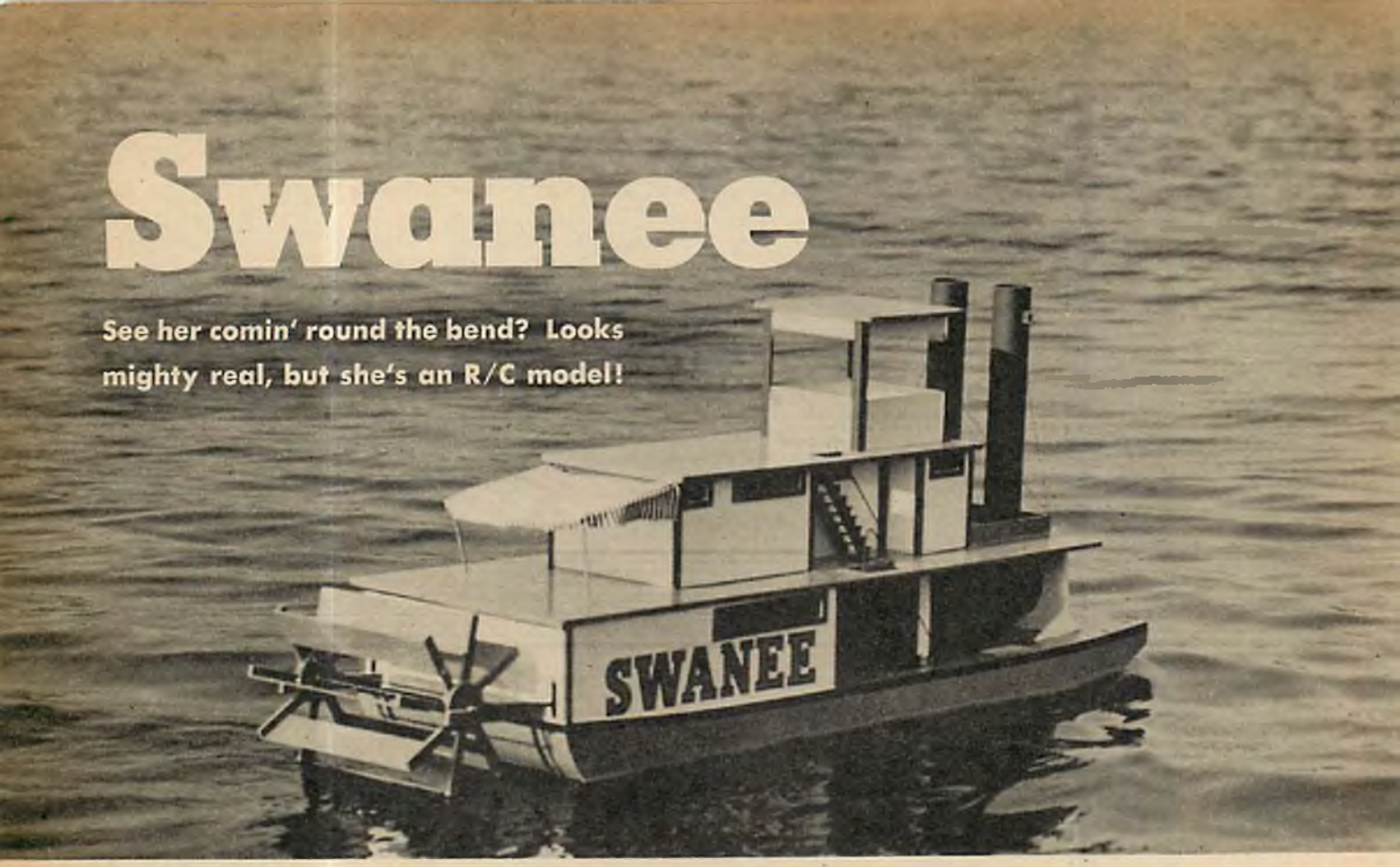
To fly, hold one end of the flying wire; have your mechanic start the engine. Just hang on and allow the model to take off by itself. It will as it picks up speed. Because the center of gravity is so far ahead of the wing, the wing acts like a stabilizer during flight, preventing pitching.

Keep your Crate as light as possible. Dope it with clear, then spray on fuel proofing.


3/32" SHEET WINGS
(2 REQ.)
STRUT
POSITION
1/16" SHEET STABILIZER
.020 ENGINE
BALANCE
HERE
SAND WINGS TO AIRFOIL
CELLULOID WINDSHIELD
1/8" SHEET
FUSELAGE
1/16" SHEET
RUDDER
1/8" SHEET
STRUTS
(2 REQ.)
1/8" DOWEL LINE GUIDE
CEMENTED TO STRUT
CUT FUSELAGE TO
FIT WING AIRFOIL
SLOT FOR
STABILIZER
BENT
PIN
WASHER
HOLE FOR
.020 LEAD
OUT WIRE
FIREWALL
1/16" PLYWOOD
(2 REQ.)
1/16" BALSA
(1 REQ.)
HOLD WHEELS
IN PLACE WITH
DROP OF SOLDER
PLYWOOD
BALSA BLOCKS
BALSA
CORE
FUSELAGE
7/8" DIA.
NOTE: SLOT BALSA FOR
LANDING GEAR WIRE
FIREWALL & ENGINE FAIRING
(TOP VIEW)
1/16" DIA. WIRE
PLANS ARE FULL SIZE
A.K.

Swanee

See her comin' round the bend? Looks mighty real, but she's an R/C model!



■ With flying fields now getting as scarce as hen's teeth *Swanee* puts the fellow in business who has a little pond or cove to wade in. With no interference he can operate at will, and if any interference is around, he is not at the mercy of gravity.

Swanee was built to test proportional control without endangering the equipment in a crash if things went wrong. It has plenty of room, which is a help when first testing any new system.

The paddle wheel propulsion involved too many gears and levers to operate in scale manner, so we used a standard propeller and let the paddle freewheel. This deception cannot be detected in actual operation, so realistically does the paddle wheel rotate when the craft starts moving.

An electric motor was used to give us a relief from the vibration and oily dirt that a glow or ignition engine is bound to produce. Also, many city ponds may be closed to engine power while none is for electric power. A simple neoprene tube universal proved O.K.; perfect motor alignment is not necessary.

Do not let the detailed look scare you from building. The entire model can be built in a few evenings.

Cut the hull sides to outline. Cement enough ¼" sheets together to form the bottom. Cement the sides to the bottom, and add cross bulkheads. Finish hull by cementing in bow blocks and planking the stern, and adding extra bulkheads behind the bow and in front of stern.

This is a good place to prepare your hardware, rudders and prop shaft and sleeve. Position them temporarily to locate holes.

The main deck is also made by cementing ¼" sheets together on a flat surface and sanded to provide even surface. When cementing main deck to hull, be sure to have weights hold the deck against hull so that cement will contact all portions.

Now, position the rudders and the shaft tubing. Force the eyelet and the washer, which are soldered to the tube, into the deck so that there will be no chance of it becoming loose. Be generous with cement. Note the two types of rudders; one is for manual adjustment while the other is controlled by radio.

Cut the sides of the main deck cabin. Cement them together over plan (upside down) to assure squareness. Then cement unit to the main deck. The wind board can be cut and cemented to the deck. This is braced with triangular blocks.

Second deck is made from 3/16" sheets. And second-deck cabin can be made in same manner as the lower cabin. In this case the second-deck cabin is cemented to the second deck which is mounted above the first deck cabin so that it can be lifted off for inspection and adjustment of the equipment. Coal rail, which is around the smokestacks, is also cemented to the second deck. Cover the second cabin with 3/16" sheet "deck," and make the pilot house on the third deck.

Make the paddle wheel as shown. Cement all joints well to keep them waterproofed. Bend the wire axle and solder the spoke hub eyelets to it. The connecting rods "freewheel" in the watertight box.

The boilers and smokestacks are cardboard mailing tubes, with a coat of primer to seal pores.

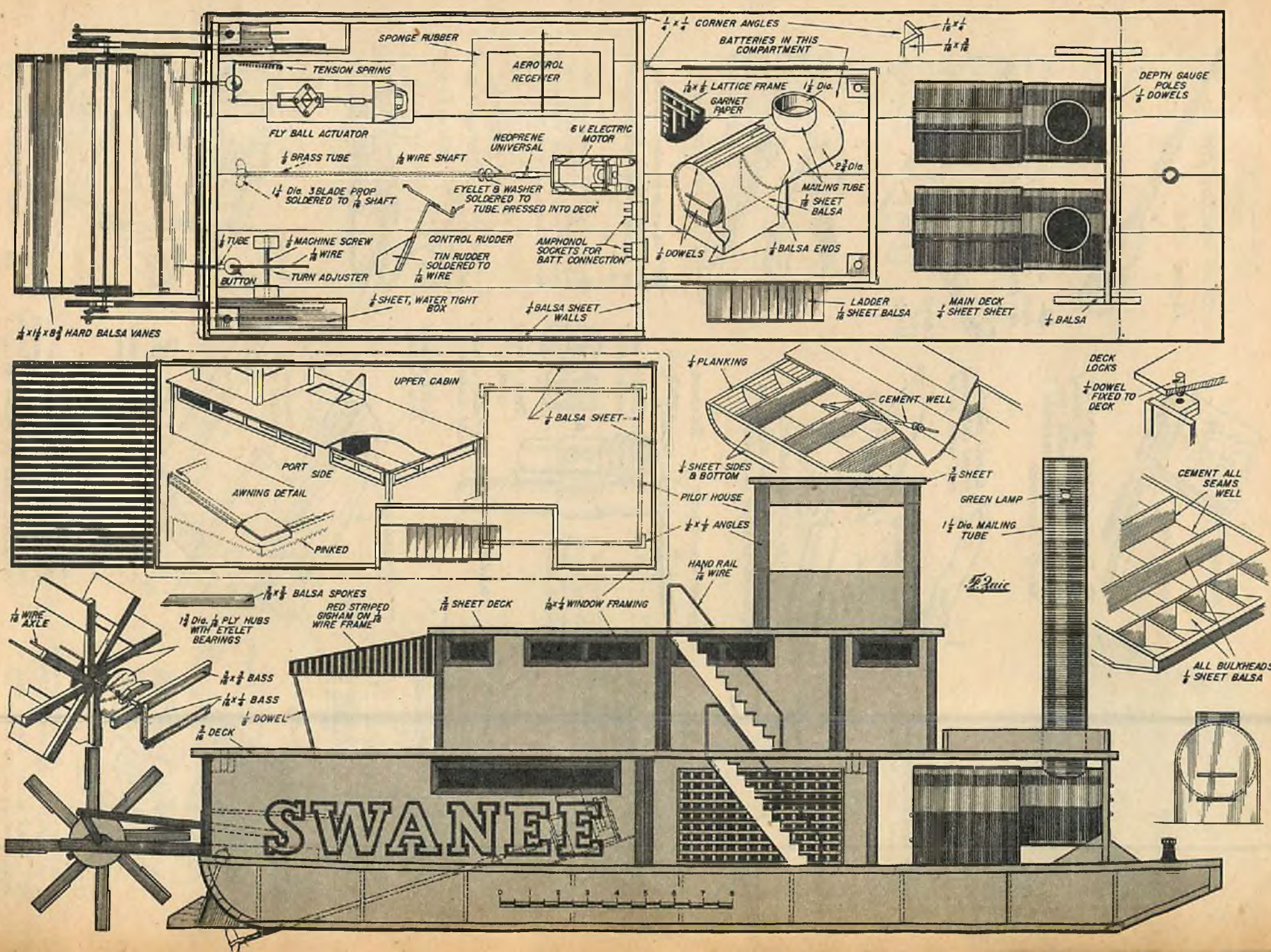
This is a good time to start painting. The exact color combination and type of paint is up to you. However, it is advisable to use enamel. The original model had white sides and grey decks. Hull was green with a black Mystic tape along the upper edge.

While paint is drying, make the stairs and other odds and ends, such as corner angles. Paint corner angles red, and cement them in place after the paint is dry. Do likewise with window trimming and lattice work, and the stairs. The awning can be best made by your womenfolk on the sewing machine. It is a "must" as it provides an authentic air to the model. Use wire frame to hold it taut.

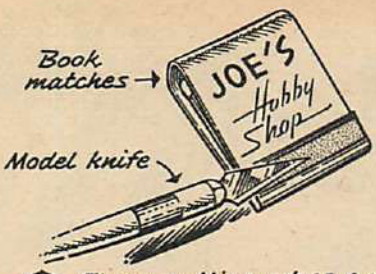
The controlling equipment can be varied. We used a Fly-Ball Actuator for proportional control, which works well with a pulser. An E.D. mechanical escapement can also be used. It has the advantage of a four-way escapement.

The amount of control that can be accomplished is not limited by lack of space or maximum weight. It is more or less limited to your ability, knowledge and pocketbook.

By CAP'N FRANK VAN BUREN

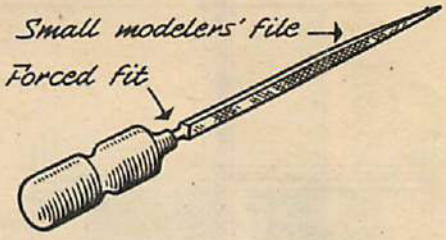

SPONGE RUBBER
AERO-ROL RECEIVER
TENSION SPRING
FLY BALL ACTUATOR
NEOPRENE UNIVERSAL
6 V ELECTRIC MOTOR
BRASS TUBE
WIRE SHAFT
DIA. 3 BLADE PROP SOLDERED TO SHAFT
EYELET & WASHER SOLDERED TO TUBE. PRESSED INTO DECK
TUBE
MACHINE SCREW
WIRE
BUTTON
TURN ADJUSTER
CONTROL RUDDER
TIN RUDDER SOLDERED TO WIRE
AMPHONOL SOCKETS FOR BATT. CONNECTION
SHEET, WATER TIGHT BOX
BALSA SHEET WALLS
HARD BALSA VANES
CORNER ANGLES
BATTERIES IN THIS COMPARTMENT
LATTICE FRAME
GARNET PAPER
DIA.
MAILING TUBE
SHEET BALSA
DOWELS
BALSA ENDS
LADDER
SHEET BALSA
MAIN DECK
SHEET SHEET
BALSA
DEPTH GAUGE POLES
DOWELS
UPPER CABIN
BALSA SHEET
PORT SIDE
AWNING DETAIL
PINKED
PLANKING
CEMENT WELL
SHEET SIDES & BOTTOM
PILOT HOUSE
ANGLES
HAND RAIL WIRE
SHEET
GREEN LAMP
DIA. MAILING TUBE
DECK LOCKS
DOWEL FIXED TO DECK
CEMENT ALL SEAMS WELL
ALL BULKHEADS SHEET BALSA
BALSA SPOKES
WIRE AXLE
DIA. PLY HUBS WITH EYELET BEARINGS
RED STRIPED GINGHAM ON WIRE FRAME
SHEET DECK
WINDOW FRAMING
BASS
BASS
DOWEL
DECK
SWANEE

Shop Talk and Tool Techniques

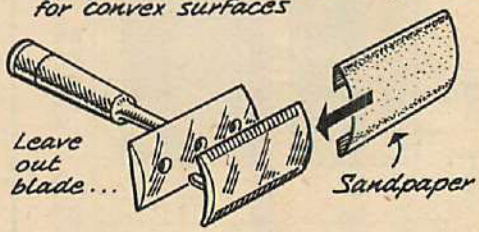


Sharp cutting edges are conducive to good modeling.. Abrasive strike patch on package of book matches is handy sharpener

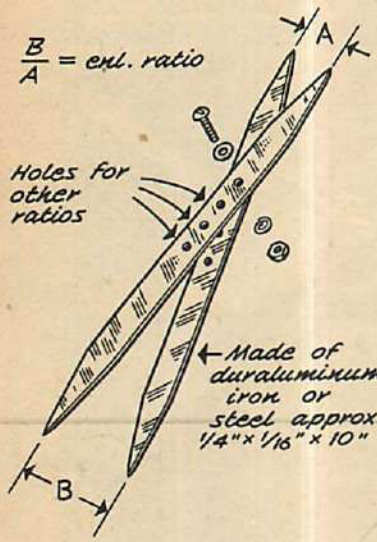
• Handy uses for empty CO_2 capsules

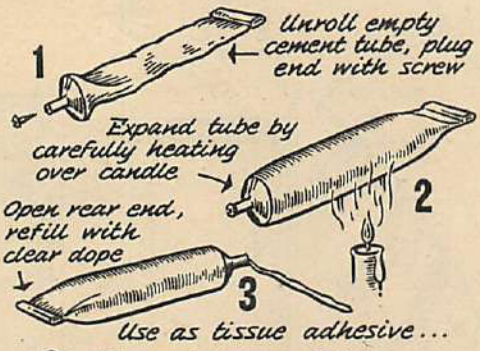


Old safety razor (Gillette type) makes useful sanding tool for convex surfaces



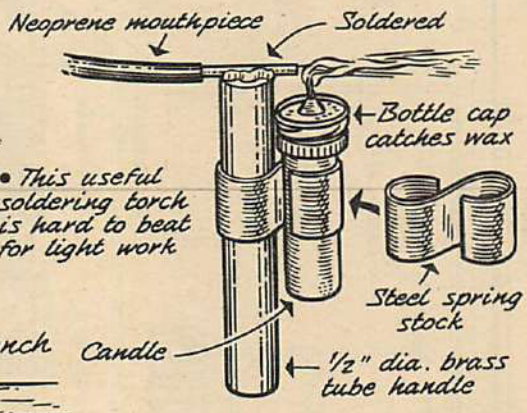
• Enlarging model plans is greatly simplified by use of these homemade proportional dividers.





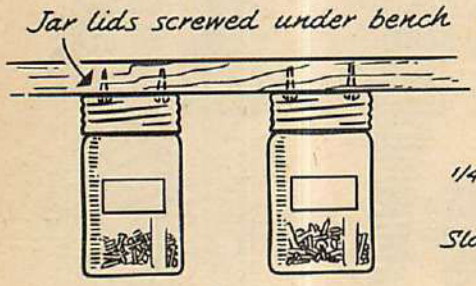
Discarded cement tubes are reclaimed as dope dispensers

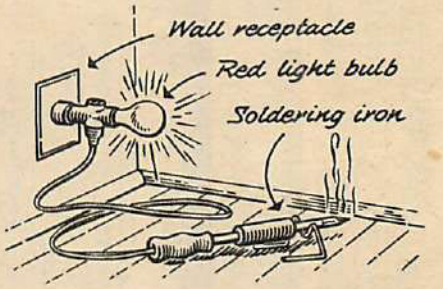
Fine propeller-carving tool and utility knife can be made from old straight razor

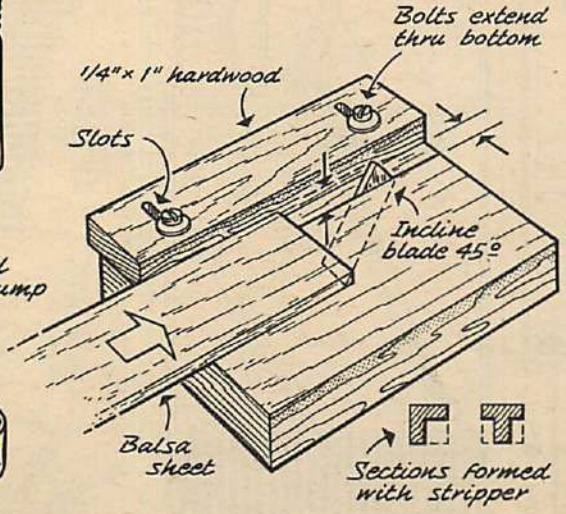


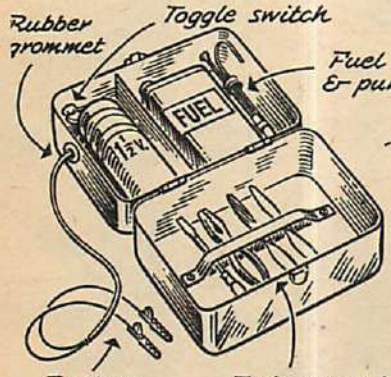
• This useful soldering torch is hard to beat for light work

A constant reminder to disconnect electric soldering iron after use and eliminate fire hazard is provided in tip



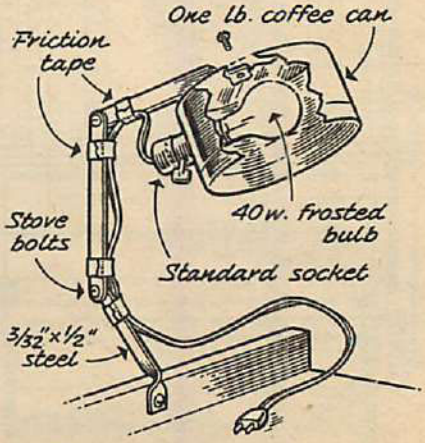






Small metal lunch box, modified, is ideal field kit

• Balsa stripper, has variable width and depth; utilizes Schick or similar razor blade. Channels, angles, T-sections for efficient structures can be made easily—



Dandy modelers' lamp

A.M.A. MODEL PLANE RULES IN QUIK-CHEK FORM

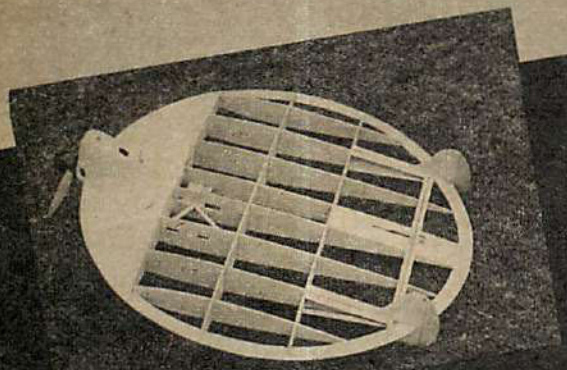
Compiled by Leon Shulman, Chairman, Academy of Model Aeronautics Contest Board

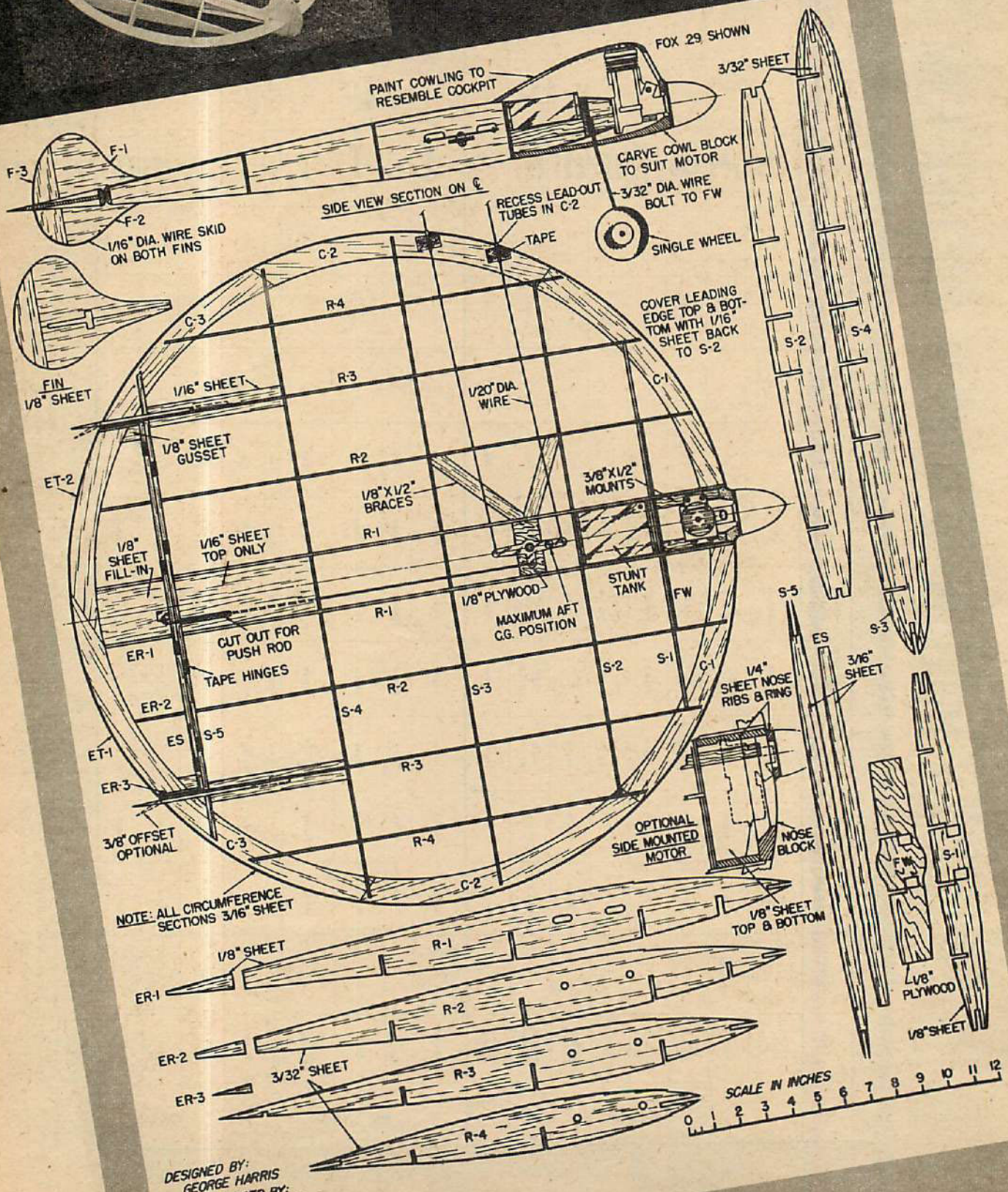
TYPE	Event	Classes	Minimum Weight	Maximum Weight	Minimum Wing Area	Maximum Wing Area	Cross Section Required	Power Loading	Landing Gear Required	Maximum Engine Run	Maximum Flight Time	No. of Laps Required	How Winner is Determined	Line Lengths	Distance Flown	Number of Attempts	Number of Flights	Number of Models
FREE FLIGHT	Free Flight Gas	A/2: 0-.05 A: .051-.20 B: .021-.30 C: .301-.65	100 oz. per cu. in.	7 lbs.	None	None	None	100 oz. cu. in.	Yes	ROG:20 sec. HL: 15 sec.	6 min.		Max. flight time			6	3	1
	Rubber	U. S. "Limited"	5 oz.,	None	None	200 sq. in.	None	None	No		6 min.		Max. flight time			6	3	1
	H. L. Glider	1	None	None	30 sq. in.	130 sq. in.	None		No		6 min.		Max. flight time			9	9	3
	Half-A F/F Scale	1	None	None	None	None	None	150 oz. per cu. in.	Yes		3 min.		Ratio: duration/ Motor run			4	Best	1
	Wakefield	1	8.113 oz.	None	263.5 sq. in.	294.5 sq. in.	10.015 sq. in.	None	Yes		5 min.		Max. flight time			9	3	2
	Limited Towline	1	10 oz.	None	None	350 sq. in.	None	None	No		6 min.		Max. flight time	328 ft.		6	3	1
	Nordic Towline	1	14.46 oz.	None	496 sq. in.	527 sq. in.	Support surface/ 100	None	No		5 min.		Max. flight time	328 ft.		6	3	2
	Radio Control	1	None	15 lbs.	None	None	None	None	No		8 min.		Flight points			Option of C.D.	Option of C.D.	1
CONTROL LINE	Speed	A/2: .0-.05 A: .051-.20 B: .201-.30 C: .301-.65	None	4 lbs.	None	None	None	None	No			A/2:6 A: 4 B: 7 C: 6	Max. speed	A/2: 35' A: 52.5' B: 60' C: 70'	A/2 ¼ mi. A: ¼ mi. B: ½ mi. C: ½ mi.	3	3	1
	Jet Speed	1	None	4 lbs.	None	None	None	None	No			6	Max. speed	70 ft.	½ mi.	3	3	1
	Stunt	1	None	None	None	None	None	None	Yes		Start: 3 min. Flight 5 min.		Points	52.5 ft. to 70 ft.		3	2	1
	Team Racing	1	None	None	125 sq. in.	None	Width: 2 in. Height: 3.75 in.	None	Yes			21 35 70 140	Points	60 ft.	1.5 mi. 2.5 mi. 5 mi. 10 mi.	Must qualify	1 per race	1
	Combat	1	None	None	None	None	None	None	No		5 min.		Points	60 ft.		2	2	2
	Scale	1	None	None	None	None	None	None	Yes			10	Points	Varies from 35' to 70'		2	1	1
INDOOR	H. L. Glider	1	None	None	None	100 sq. in.	None	None	No				Max. flight time			9	9	3
	Stick	B: 30-100 C: 100-150	None	None	B: 30 C: 100	B: 100 C: 150	Max. L2/150	None	No				Max. flight time			6	3	3
	Cabin	D: 150-300 sq. in.	None	None	D: 150 sq. in.	D: 300 sq. in.	Min. L2/100	None	Yes				Max. flight time			6	3	3

Note: For complete, detailed listing, "Official Model Aircraft Regulations," send 25c to Academy of Model Aeronautics, 1025 Connecticut Ave., N. W., Washington 6, D.C. For handy pamphlet of PAA-Load event rules, diagrams and suggestions contact Mr. George Gardner, Educational Director, Pan American World Airways, 28-19 Bridge Plaza North, Long Island City 1, New York. For information on U. S. Navy's Model Carrier Competition write to Lt. Commander Howard B. Eddy, USN, Office of Information, Room 4D718, Pentagon Building, Department of the Navy, Washington 25, D. C.

Sassy Saucer

By GEORGE P. HARRIS





Have a hankering to do 12 foot square loops? This pixilated plate circulates at 75 mph!

"G.P." is a design draftsman in San Diego, Calif. At 25 he's had quite a career in aviation: worked on the Comet jet airliner in its experimental phases, was with de Havilland for 6 years. Hobbies include photography and designing full-size Fiberglas sports car. Likes stunt, R/C and Jetex jobs; married, wife's name is Yvonne; has 150 hours dual in lightplanes; started modeling in '39. Member S. D. Airliners and Hutchinson, Kans., Balsa Butchers.

■ The flying saucer is by no means a new idea although very few control line models of this type have been successful to date. The circular wing form is recognized as being very efficient in that the entire surface contributes to the lift and such unnecessary items as the fuselage and tail are eliminated, thus reducing weight and drag.

Our *Sassy Saucer* is the last of a series of circular wing models, the first of which was built in 1946 in England after the designer witnessed a demonstration of a flying saucer at a model meet. The first few models showed promising signs of being highly maneuverable but were all slightly unstable in certain ways. Further experimenting with airfoils and C.G. positions eliminated the stability problem and resulted in a very successful stunt model, a number of which were built and flown by modelers on the West Coast. This particular design was also in action at the 1952 Nationals when no less than five were flown in one circle. (*And stole the show!*—EDITOR'S NOTE.) After obtaining a satisfactory performance, attempts were now made to improve the appearance of the model and to clean up a few constructional details. The final result was *Sassy Saucer*.

The model is stable at all speeds and is very easy to fly, in fact the designer's wife practiced with one while learning to fly.

Due to the absence of a fuselage or other encumbrances the finished ship is exceptionally light for its size and is easily overpowered. A good .19 will pull it through the full stunt pattern with ease, a .29 makes the ideal combination, while a .35 turns the ship into a tethered firecracker. Most of the test models were flown with a Fox .29 up front and circulated at about 75 mph.

The main point to remember in building *Sassy* is that the C.G. should *not* be any further *aft* than the position shown on the plans or the model will make like a wildcat. The forward position is not critical and has varied as much as two inches in some of the models. The further aft the C.G. is located the more sensitive the model will be, so the position depends on your flying ability.

The construction is simple and rugged enough to withstand plenty of rough treatment. All the ribs and spars are interlocking and if the slots are cut true the finished structure will automatically be aligned and virtually warp-proof.

The first step is to cut out all the ribs and spars and slot them together in their correct positions as shown on the plans. After cementing all joints carefully, the framework may be laid aside while the circumference sections are cut from 3/16" sheet balsa. The circumference sections are then fitted into place and aligned to form a perfect circle, the elevator being built in place along with the main structure if desired.

The motor mounts are firmly cemented to the ribs R1 and all surrounding structure, care being taken to use a good penetrating cement at this point. Next the bellcrank mounting plate may be added together with the ⅛" x ½" bracing strips. These bracing strips have saved the day on many occasions as it is highly embarrassing to try and loop the control system while the model heads into the wild blue yonder.

The fuel tank is added along with the landing gear which is bolted or bound to the plywood spar FW. All of the test models were fitted with a single wheel gear or with no gear at all, although a conventional two-wheel gear may be used if preferred. However, *S.S.* takes off so fast that any extra wheels are a sheer waste.

The leading edge should now be sheeted and the various sections sheeted in where indicated on the plans. When installing the cap strips around the fins, care should be taken to make the slots a good fit as the fins are not added until after covering.

The entire structure is now sanded, the circumference edges rounded and the spar S5 and the elevator spar ES also rounded. The type of elevator hinges shown will hold the elevator firmly without play and yet allow free movement for the full range of control which should be about 40 deg. up and down. Excessive movement of the elevator produces unusual results such as the model stopping in midair although this will not occur in normal stunting.

The motor is installed and the cowling carved from block or built up as preferred. The designer is experimenting with molded Fiberglas cowlings which may prove desirable.

Covering the model is not as difficult as it looks. Use two layers of heavy paper or one of silk, the latter being preferable; apply wet. A complete side may be covered in one piece by first doping the covering along the straight edge of the leading edge sheeting. Next dope the covering to the rest of the sheeting; the curves are large enough to allow the wrinkles to be lost without much trouble. The rest of the structure is covered by working back along the ribs R-1 and pulling out to the sides to remove wrinkles. Overlap all edges.

After doping to the required consistency, the covering over the fin slots may be cut out and the fin parts F-1 and F-2 pushed into place together with plenty of cement. Next add the remaining fin part F-3 and fit the wire skids in place. The fins should be covered with silk for added strength.

Painting and flying details may be found on "AT" full-size plans.

Bill of Materials

8 sheets 3/32"x3"x36" balsa. 3 sheets 1/16" x3"x36" balsa. 2 sheets 3/16"x3"x36" balsa. 2 sheets ⅛"x3"x36". 1 ⅜"x½"x12" hardwood (motor mounts). 1 ⅛"x3"x10" plywood. 1 3/32" dia.x36" piano wire. 1 1/20" dia.x36" piano wire. 1 2¼" dia. wheel. 12 ins. tape for hinges. 1 2"x4"x6" block balsa for cowling. 1 ½ ins. 1/16" dia. alum. tube for lead-out guides. 8 ins. 1/16" dia. piano wire for fin skids.

• THE MIRROR MEET:

Mobs and Models

Early morning radio controlled flight. Frank P. Jacobs of Woodridge, N. J., captured the event. Relatively few flew, most came to talk.

"Flying Idiots" included Bill Hutchinson (2nd from lt.), cartoonist, and Bob Yeomans (2nd from rt.), who was the beauty event winner.

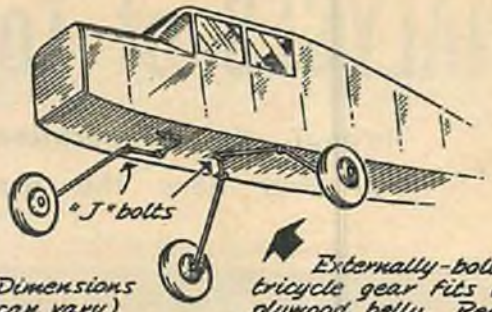
The most recent New York Mirror Model Flying Fair, like the preceding seven competitions, was unique for its sponsorship, its size and its schedule. The Mirror is the largest paper completely sponsoring modelplane contests today. The MMFF results in more competitive activity embracing more flyers in a shorter period of time than any other meet, and as if that wasn't enough the Flying Fair really dares to be different by getting underway at 6 a.m. and dividing contestants into two logical age groups—"Youth," 18 and under, and "Adult," over 18. About $10,000 worth of savings bonds, merchandise prizes and model equipment was handed out as prizes. Spectators numbered 100,000 and were treated to a full-scale military air show.

For the first time the Model Flying Fair was held at Floyd Bennett Field in Brooklyn; previously Grumman played host to the modelers at Bethpage, L. I.

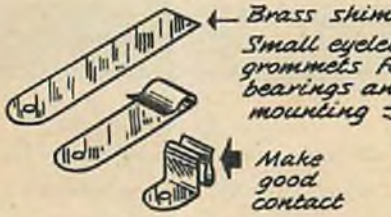
Joe Kovel (rt.), famed co-designer of the early "KG" gassie, once again active with PAA-Load model. Johnny Zaic checks out motor.

Ivan Ortiz (right) built this Dyna-Jet powered flying scale British Boulton Paul P.111. Model crashed during the contest flight.

Radio Control Sketches

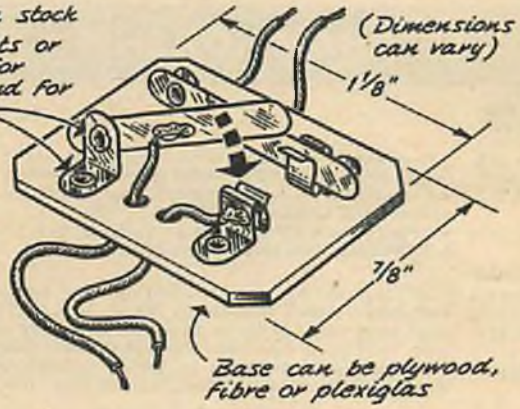


Externally-bolted tricycle gear fits against plywood belly. Rear legs longer than front strut—



• Miniature "knife" switches for radio models

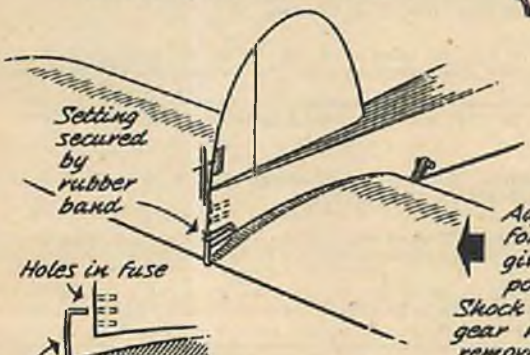
Action is positive ... vibration will not open contacts—



Base can be plywood, fibre or plexiglas

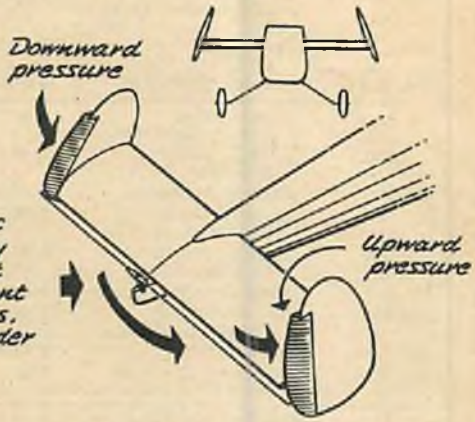
Female parts soldered to leads in wiring system

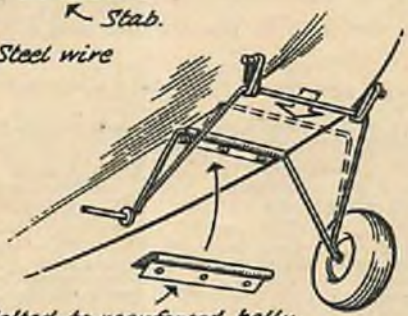
• Quickly replaceable battery



Adjustable trim device for stabilizer incidence gives accurate and positive settings ...

Shock absorbing landing gear may be entirely removed with screw driver...

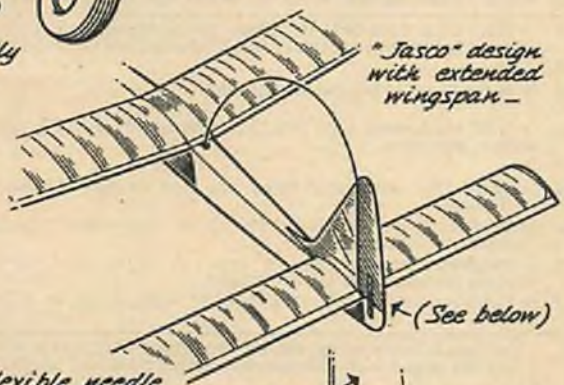




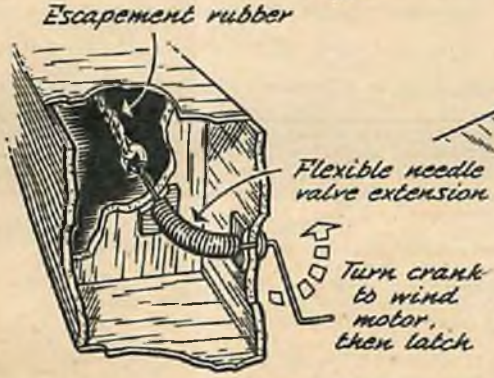
• Lateral bank is automatic when R/C model turns, by using twin fins canted at inward angle. Arrangement would prevent usual skids, slips associated with "rudder only" control —

Bolted to reenforced belly

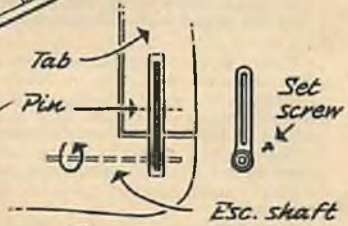
Gear can absorb heavy head-on jolts



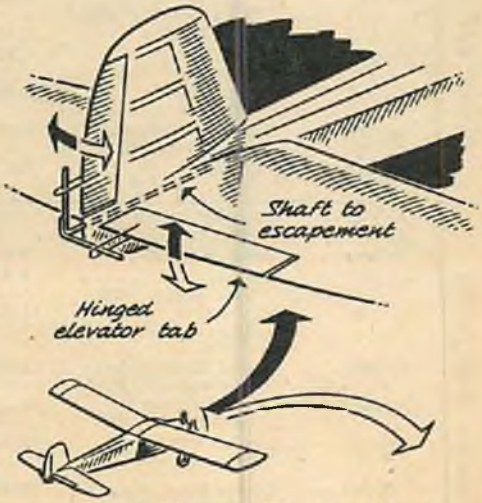
• Gadget adds elevation control to "rudder-only" radio model.



permits easy external winding of radio model's escapement rubber motor. No dismantling or winder necessary...



Unusual antenna and inset rudder tab control device on sailplane



Left rudder position produces climbing turn ... right rudder a descending turn—

ANALYSES of Top-Place Meet Winners

Through the cooperation of America's top contest winners you find here the most detailed listing ever presented

U. S. NATIONAL CHAMPIONSHIPS OF 1953

	EVENT PLACE	FLYER	TIME OR PTS.	DATA
Indoor Stick	Jr. 1st	Robert Petrushka Parma, Ohio	4:33.2	• Featherette kit model with larger stab. Jap tissue covered. One loop 1/16" T-56, castor oil lubed. 1500 turns. Right under power, left glide.
	Jr. 2nd	Ronald Brick Cleveland, Ohio	3:49.2	• Featherette kit with different prop and boom. Testor's microfilm. 7/6 prop. One loop 3/32" rubber. 1200 turns. Jaseo lube.
	Jr. 3rd	Dick Culver Oak Ridge, Tenn.	2:13.4	• Original with 22" span, 66 sq. in. area. Wt. is ¼ oz. Tissue covered. 8/15 prop with 2 loops 5/64" rubber; 1200 turns, Jasco lube. Left turn.
	Sr. 1st	Ronald Plotzke	18:03.3	
	Sr. 2nd	Paul Simon Detroit, Mich.	17:49.2	• 34" span, 150 sq. in. B-7 airfoil on wing and stab. Microfilm covered. 17/36 prop with one loop 5/64" rubber, Jasco lube, 1800 T. Left circle, 50 ft. diameter. 22 min. prop run. .045 oz.
	Sr. 3rd	Charles Sotich Chicago, Ill.	16:21.4	• 30" wing with 125 sq. in. 38 sq. in. stab. Own airfoils, micro covered. 1/64" sheet tube fuselage. 14/24 prop with one loop 5/64 rubber, 1900 T. Green soap & glyc. lube. .042 oz.
	Op. 1st	Merrick Andrews Rego Park, N. Y.	30:15.5	• 44" wing with 299.999 sq. in. 100 sq. in. stab. 4% foil on wing, 6% on stab. 24/48 prop with one loop 7/64 x 1/30" rubber, lanolin lube. 1500 T. .077 oz. wt.
	Op. 2nd	Stanley Stanwick	29:00.8	
	Op. 3rd	George DeLaMater St. Johns, Mo.	28:30.6	• Scaled up version of his design in A.T. 40" span wing. 200 sq. in. B-7 airfoils. 20/40 prop with one loop ⅛" T-56, Jasco lube, 1650 T. Plagued by poor rubber, sez "Wait'll next year!" .058 oz. wt.
Indoor Cabin	Jr. 1st	Harry Capper Phila., Pa.	0:18.5	• Microfilm covered. One loop of 1/32" T-56 with green soap and glyc. lube. 700 turns.
	Sr. 1st	Ronald Plotzke	13:29.9	
	Sr. 2nd	Charles Sotich Chicago, Ill.	11:59.3	• 30" wing with 125 sq. in. Own airfoils. Warren truss fuselage. .056 oz. weight. 12/19 prop with one loop 5/64 T-56 rubber, soap & glyc. lube, 2000 T.
	Sr. 3rd	Dave Domizi	8:26.9	
	Op. 1st	James Grant Manchester, Conn.	25:26.6	• Conventional nichrome braced wing, 29.75" span with 149 sq. in. Warren truss fuselage with larger ring at center for area. Weight less rubber, .044 oz. 17/30 prop with one loop 5/64" T-56, castor lube, 2000 turns.
	Op. 2nd	Joe Bilgri San Jose, Cal.	21:17.7	• Own airfoil on 31" wing with 148 sq. in. 55 sq. in stab. Warren truss fuselage. Single spar 18/28 prop with single loop 5/64" T-56, Jasco lube, 2000 T. Left turn adjustment. .045 oz.
	Op. 3rd	Stanley Stanwick	19:45.9	
Indoor H/L Glider	Jr. 1st	Dick Culver Oak Ridge, Tenn.	0:46.5	• 16½" span wing with about 60 sq. in. 2 coats sanding sealer. Left climb, right turn. 2¼" polydihedral. 20 sq. in. stab. .7 oz. wt.
	Jr. 2nd	Arthur Slater Brooklyn, N. Y.	0:46.2	• Ed Luca design; has made 1:03. 13" wing with 30 sq. in. Finished with sanding sealer. 20 grams weight. Right climb, left glide.
	Jr. 3rd	Francis Williams	0:37.0	
	Sr. 1st	Charles Corbett Brooklyn, N. Y.	0:58.2	• Ed Luca design; 17" wing with 65 sq. in. CY airfoils. 16 sq. in. stab. 1 oz. wt. Straight-up climb, left glide.
	Sr. 2nd	Charles Sotich Chicago, Ill.	0:57.4	• 18" wing with 64 sq. in. area, original airfoil. Symmetrical 18 sq. in. stab. 3 coats Midwest dope on wing, 2 on other parts. .7 oz. weight. Right climb, left glide.
	Sr. 3rd	Paul Crowley	0:54.8	
	Op. 1st	Bill Dunwoody Brooklyn, N. Y.	0:69.6	• Wing has 17" span, 62 sq. in., 3/16" thick, 1/16" undercamber. Testor's sealer, Lac-O-Loid dope. .8 oz. Climb ½ turn to right, glide left in 100 ft. dia. circles.
	Op. 2nd	Carl Rambo	0:67.5	
	Op. 3rd	Lawrence Conover Iowa City, Iowa	0:64.8	• Outdoor "Flanger" glider. 18" span with 65 sq. in. area. Own airfoil. 3 coats sealer. Balsa wing, bass fuselage. 1 oz. wt. Right spiral climb, left snap roll and pull-out.
Outdoor H/L Glider	Jr. 1st	Francis Williams Hicksville, N. Y.	4:26.5	• 12½" wing with 34 sq. in. Sheet balsa throughout. .9 oz. Right climb, left glide. Same glider placed 3rd in Indoor H/L event. Too small for outdoor use.
	Jr. 2nd	Robert Lahde	3:13.5	
	Jr. 3rd	Dick Culver Oak Ridge, Tenn.	2:56.0	• Same specs as his indoor winner.
	Sr. 1st	Dave Domizi Rocky River, Ohio	7:14.5	• 3/16" thick wing with 16½" span, 60 sq. in. 15 sq. in. stab. 3 coats nitrate dope. .68 oz. Right climb, left glide.
	Sr. 2nd	Raymond Fry	6:47.7	
	Sr. 3rd	Paul Simon Detroit, Mich.	5:57.6	• Balsa 17½" wing with 60 sq. in., pine fuselage. 3 coats Testor's Sealer. 1 oz. Right climb, left glide.
	Op. 1st	Ed Krause Milwaukee, Wis.	8:40.1	• 24½" built up wing with 110 sq. in. Jap tissue covered. Own airfoil. 33 sq. in. flat stab. 5 coats nitrate dope. 1⅜ oz. wt.
	Op. 2nd	Seymour Hertzson Beachwood, N. J.	8:07.2	• Papered built-up wing, 20" span, 65 sq. in. area. 18 sq. in. flat sheet stab. Pine fuselage. 3 coats acetate dope. 1½ oz. weight.
	Op. 3rd	Joe Bilgri San Jose, Cal.	7:25.0	• Balsa construction throughout. 18" wing, 50 sq. in. V dihedral. 1 oz. Right climb, left glide.
Towline Glider Limited	Jr. 1st	William White Jr. Sacramento, Cal.	6:58	• 40" multi-spar wing, 225 sq. in., Goett. 602 mod. airfoil. Rectangular fuselage. Silkspan covered with 3 coats nitrate. No center dihedral. 300 ft. towline. 10 oz. Fuse detherm.
	Jr. 2nd	John Watson	2:57	
	Jr. 3rd	Dick Culver Oak Ridge, Tenn.	0:47	• Tissue covered multi-spar wing, 54" span. Geodetic stab, solid fuselage. Fuse detherm. Polydihedral. 10 oz. weight. 300 ft. towline.
	Sr. 1st	Ray Gable Smyrna, Ga.	11:46	• Single spar wing, planked L.E., 51" span, 288 sq. in. Multi-spar stab. Slab-sided fuselage. Rudder forward of stab, 25% area underslung. MUA301 wing airfoil. 10 oz. 300-328 ft. line with side tow hooks. Fuse detherm.
	Sr. 2nd	David Kiremidjian Hackensack, N. J.	3:52	• Sheeted L.E. and T.E. on 48" wing, 3 spars with diagonals. Sheeted box fuselage. Silk covered with 5 coats nitrate. Fuse pop-up stab. detherm. 10½ oz. 250 ft. line.
	Sr. 3rd	Donald Fedak Brantford, Ont.	2:53.3	• Mag. model, Skysail covered, with 6 coats Berryloid dope. Fuse pop-up tail detherm. 275 ft. towline.
	Op. 1st	George Perryman Decatur, Ga.	12:13	• "Little Nordic." 50" span sheeted L.E. wing with 290 sq. in. area. Benedek B8356 airfoil. Clark Y 59 sq. in. stab. Triangular sheet balsa fuselage. Poly stab. with auto rudder. Fuse stab. detherm. 10 oz. Jap tissue, 5 coats dope. 328 ft. line.
	Op. 2nd	Glenn Hubbard & Kenneth Collins, (team), Kansas City, Kans.	10:34.7	• 48½" planked L.E. wing with 256 sq. in. NACA 6409 airfoil. Circular planked fuselage. Fuse detherm. 81 sq. in. stab., 6409 airfoil with flat bottom. 10 oz. 320 ft. towline.
	Op. 3rd	Bert Coffee	8:08.2	

EVENT	PLACE	FLYER	TIME OR PTS.	DATA
Nordic Glider	Jr. 1st	John Watson	8:07.4	
	Jr. 2nd	Harry Capper Phila., Pa.	6:33.5	• Jasco Nordic. Silkspan covered with 3 coats nitrate dope. Pop-up detherm. 328 ft. line.
	Jr. 3rd	Bob Surrency Memphis, Tenn.	4:15	• Jasco Nordic kit. Pop-up stab detherm. Paper covered, 5 coats Testor's dope. 327 ft. line.
	Sr. 1st	Ray Gable Smyrna, Ga.	9:53.8	• 66" wing with 417 sq. in., single spar with planked L.E. MUA 301 airfoil. Multispar stab, 99 sq. in. Built-up box fuselage with diagonal planking. Silkspan covered. 14½ oz. 300-328 ft. line.
	Sr. 2nd	Gareth E. Lucier Windsor, Ont.	8:00.8	• 50" wing with 397 sq. in., NACA 6409. 110 sq. in. modified Clark Y stab. Sheet balsa sided fuselage. Jap tissue covered with 4 coats Berryloid. Pop-up tail. 17 oz. 328 ft. line.
	Sr. 3rd	C. Hill Hutchins, Jr. Spartanburg, S. C.	7:46.8	• Jasco kit. Silkspan covered with 2 coats dope. Pop-up detherm. 300 ft. line on fishing reel. Fell in gully during tow, on first official!
	Op. 1st	James A. Patterson Holloman AFB	10:32.9	• 64" span wing with 350 sq. in., geodetic capstrips. Own airfoil. 175 sq. in. Clark Y stab. Box fuselage. 14½ oz. Fuse detherm. 328 ft. line.
	Op. 2nd	Matt Basta Cleveland, Ohio	10:26	• Jader 60 model designed by D. Butler. Planked fuselage with double-tissue-covered wings. Pop-up detherm. 300 ft. line.
	Op. 3rd	Bruno Markiewicz Detroit, Mich.	10:23.6	• Jasco Nordic. Jap tissue covered with 5 coats Berryloid. Fuse detherm. Beefed-up wing somewhat. 328 ft. line.
Limited Rubber	Jr. 1st	Joseph P. White Sacramento, Cal.	6:44	• 36" span wing, Duster airfoil. Same on stab. Areas, 153 and 55. Multi-spar wing, with square Warren truss fuselage. 5 oz. Single blade folding 19/27 prop. 6 loops ¼" T-56 with castor lube. 785 turns.
	Jr. 2nd	John Watson	4:25	
	Jr. 3rd	James La Malfa Milwaukee, Wis.	3:34	• 34" single spar wing mounted on wire "bird cage." Eiffel 400 airfoil, Clark Y on stab. Areas, 153 and 47 sq. in. Box type spar fuselage. 16 strands ¼" T-56 with castor lube. 6 oz.
	Sr. 1st	Thomas Alden Swarthmore, Pa.	7:05	• Cole's "Cirrus Cruiser"; 150 sq. in. area. Cabin type fuselage. Fuse detherm. Jap tissue covered with 4 coats Testor's. 17/30 prop with 9 loops 3/16" T-56, Jasco lube. 600 turns.
	Sr. 2nd	Paul Crowley	6:04	
	Sr. 3rd	Stuart B. Savage Dayton, Ohio	5:23	• 36" geodetic wing with sheeted L.E., 144 sq. in. area. Warren truss box fuselage. Jap tissue covered with 3 coats nitrate. 15/22 prop with 5 loops of ¼" Dunlop rubber, castor lubed. 1200 turns. 5.4 oz.
	Op. 1st	Francis Heeb Connersville, Ind.	13:34.0	• 36" span wing with 148 sq. in., NACA 6409 airfoil, 2 spars. Split rib 51 sq. in. stab. Box fuselage. Jap covered, doped with linoleum lacquer. Fuse detherm. 5 oz. 17½/28 prop with 5 loops ¼" Dunlop rubber. 640 turns. Own lube.
	Op. 2nd	William Purtell, Jr. W. Hartford, Conn.	12:34.0	• Multi-spar 40" wing with Joukowski airfoil, 148 sq. in. 50 sq. in. Clark Y stab. Jap tissue, nitrate dope with added camphor. Warren truss fuselage. 5½ oz. Single blade 18/31.4 prop with 6 loops ¼" Pirelli rubber; soap, castor, glyc. lube. 800-900 turns.
	Op. 3rd	James Tangney Aurora, Ill.	11:55.0	• 37" wing with RAF 32 airfoil, Clark Y stab. 142 and 47 sq. in. areas. Twin rudders. Tissue covered, with Howe & French dope. 16/19 prop with 4 loops ¼" Pirelli. Soap, castor, glyc. lube. 1100 turns. 5 oz. Same model made National record. 16:01.
Wakefield Rubber	Jr. 1st	Dick Culver Oak Ridge, Tenn.	6:54	• Wing is 50" with NACA 6412 airfoil, 222 sq. in. area. Clark Y 70 sq. in. stab. Box fuselage. 9 oz. 18/20 prop with 8 loops ¼" T-56. Castor lubed. 750 turns. ROG, as do all Wakefields.
	Jr. 2nd	Robert Petrushka	2:28.7	
	Sr. 1st	James Bowers, Jr. Cleveland, Ohio	7:03.6	• Multispar 44" wing with 220 sq. in. and poly. 72 sq. in. stab, twin rudders. Warren truss fuselage. 9¾ oz. Jap tissued. 21/28 prop with two motors and return gears; each 7 loops of ¼" Pirelli, green soap and glyc. lube. 1080 turns.
	Sr. 2nd	Charles Sotich Chicago, Ill.	6:59.2	• 48" wing with alternate sliced and solid ribs, 212 sq. in., Joukowski airfoil. Clark Y 70 sq. in. stab. Warren fuselage Jap tissued, 3 coats Midwest dope with added castor. 9 oz. 22/30 prop. 16 loops 3/16" T-56. 850 turns.
	Sr. 3rd	Herbert Robbins Akron, Ohio	3:41.0	• Sliced rib wing, 45" span, 213 sq. in. Own airfoil. 72 sq. in. Clark Y stab, twin rudders. One blade folding prop, 18/25, with 7 loops ¼" Dunlop; castor lube. 1000 turns. 8½ oz.
	Op. 1st	Robert Hatschek Bayside, N. Y.	14:04	• 40" monospar wing, original 5510 airfoil, 220 sq. in. Trussed box fuselage. Acetate dope over Jap tissue. 72 sq. in. 8% flat stab. 19/25 prop with 14 strands corded Pirelli 1 x 6 mm. rubber. 1000-1100 turns. 8½ oz.
	Op. 2nd	William Weaver Wichita, Kans.	13:31	• No data on model. 2 motors; each 14 strands ¼" MRL rubber. Best-by-Test Lube. 1140 turns.
	Op. 3rd	Willard Blanchard	12:49.8	
PAA Rubber	1st	T. L. Gonzoph Phila., Pa.	6:05.6	• 33" sparless wing, NACA 4409 with flat bottom. 145 sq. in. 52 sq. in. stab, same airfoil. No detherm. 7 oz. with dummy. 10/15 prop with 5 loops ¼" T-56; Becker lube. 1400 turns.
	2nd	Willard Blanchard	4:50.9	
	3rd	James F. Tangney Aurora, Ill.	3:29.1	• Same model as in Limited Rubber, with cabin built on fuselage, wing cut to 33" span, L.G. attached. 135 sq. in. area. 5 oz. plus dummy. 4-blade 10/19 prop with 3 loops ¼" Pirelli, lubed. 1000 turns.
Clipper Cargo	1st	Hal Roth Richmond, Cal.	23¼-42	• 72" wing, 4 spars, 500 sq. in. 10% airfoil, flat bottom. 110 sq. in. stab. Poly with 5 breaks. One coat nitrate dope over Jap tissue. 6½ oz. McCoy .049 diesel, McCoy fuel. Top Flite 7/4.
	2nd	Ernie Shailor Detroit, Mich.	22½-56	• 50" box spar wing, 400 sq. in., Goldberg airfoil. 110 sq. in. stab. Sheet balsa fuselage. 7 oz. Space Bug .049 engine, Thimble Drome fuel. Tornado 6/3 prop. Straight flight pattern.
	3rd	Lawrence H. Conover Iowa City, Ia.	19-44	• Broggini Cargowing—flying wing design. 64" span and 460 sq. in. area. Planked leading edge. 5.6 oz. Straight climb, right glide. Thermal Hopper .049 with Thimble Drome fuel. Tornado 6/3 prop.
Half-A PAA-Load	Jr.-Sr. 1st	Jim Bowers, Jr. Cleveland, Ohio	8:16.2	• Modified PAA-Master. 4 coats Aerogloss. McCoy .049 diesel with McCoy fuel. Tornado 6½/4 prop.
	Jr.-Sr. 2nd	George Grant Fort Worth, Tex.	8:12.6	• PAA-Master. Atwood .049 engine with Supersonic 1000 fuel. Top Flite 6/3 prop.
	Jr.-Sr. 3rd	Tom Marden Highland Park, Mich.	7:38	• Jasco Space Master; motor attached with rubber bands to absorb hard landings. Pop-up detherm. Thermal Hopper .049 with Thimble Drome fuel. Torpedo 6/3 prop.
	Op. 1st	Richard McGrath	12:59	
	Op. 2nd	John Bishop Vienna, Va.	12:29.6	• 40" 2-spar wing with split ribs, 272 sq. in., 10% Clark Y airfoil. 1/16" sheet fuselage with pylon triangular after section. 6½ oz. Silkspan with 3 coats of Sta. Atwood .049 with thinned plug gasket and Supersonic 1000 fuel. Top Flite 5¾/3 prop.
	Op. 3rd	James Ripken	12:00.5	
Hiller Helicopter	1st	Parnell Schoenky Kirkwood, Mo.	121.41	• Three models entered; rubber model failed to ROG, got no points. "JH-2"—2 Jetex 150's on boom, driving 2-bladed 42" dia. rotor. Skewed hinges. Fuselage like on small one-man helio. "XH-4"—Atwood .049 powered; 30" dia. 4-bladed rotor on Clough independent feathering principle. 17" long fuselage. O&R "AA" fuel.
	2nd	Bob Tennenbaum New York, N. Y.	76.88	• Modified Jeticopter 100 kit (only rotor system used). Blade pitch lowered. Fuselage has Jetex 50 pusher engine. About 5 oz. wt.
	3rd	James Graves and Joseph Stefani	55.42	
R/C	1st	Jack C. Port Fairborn, Ohio	121	• 55" wing with 490 sq. in., 160 sq. in. symmet. stab. Trike L.G. with rear wheels in front of C.G. Silk covered. Controlaire hard tube receiver and escapement. K&B .19 engine with Tornado 10/6 prop. Weighs 65 oz. Power Mist fuel.
	2nd	Howard T. Bonner Los Angeles, Cal.	114	• 76" multispar wing with 864 sq. in., NACA 6515 airfoil. Rudderbug stab and rudder. Fiberglas reinforced nose. Nylon covered. Fox .35 with twin needle valves, Tornado 11/4 prop. Curry AF tone selection receiver; rudder, motor, elevator on escapements. 6 lbs. wt.
	3rd	Richard C. Allen Elmira, N. Y.	111	• Modified Livewire kit. 2" added to wing span, 1" to stab, 3 sq. in. to rudder area. Trike gear, C.G. ¾" behind rear wheels. Silk covered. ED .15 diesel with Tornado 10/5 prop. Escapement for rudder. 52 oz. wt.
Beauty Award	Trophy Prize	E. Burt Nelson Spring Lake Hts., N. J.		• Hawker Typhoon; 35 in. span; Orwick .29 ignition; 15-30 coats Testor's dopes.

	EVENT PLACE	FLYER	TIME OR PTS.	DATA
PAA-Load—Cl. A-B	Jr.-Sr. 1st	Edward Mahler Ozone Park, N. Y.	8:06.8	• 60" wing with 464 sq. in. area. 6409 airfoil. 185 sq. in. stab with Clark Y. Sheet fuselage. Silk covered with 7 coats Ace dope. 24 oz. Torp .19 with Supersonic 1000. Top Flite 9/4 prop. Called the "Gold Bug," has been consistent winner.
	Jr.-Sr. 2nd	David Kiremidjian Hackensack, N. J.	5:51.1	• 58" 3-spar wing with 510 sq. in., 6409 airfoil. 200 sq. in. Clark Y stab. Sheet box fuselage with cabin pylon. 23 oz. empty weight. Arden .19 with K&B fuel. Top Flite 10/6 prop.
	Op. 1st	Lew Mahieu Long Beach, Cal.	13:56.1	• PAA-Check kit model. 61" double spar wing with 575 sq. in., Mahieu 1038F airfoil. 191 sq. in. stab with Mahieu 1034SS airfoil. Skysail covered with 6 coats nitrate, one coat plastic. 35 oz. with dummy. Torp .19 with K&B 1000 fuel. Torp 9/4 prop.
	Op. 2nd	Jack Oxley	11:18.5	
	Op. 3rd	Darrel D. Dolgner Washington, D. C.	9:52.2	• NACA 6409 on 62" D-tube wing with 576 sq. in. Fubar type stab, 230 sq. in. Semi-crutch sheeted fuselage. Jap tissue covered. 32 oz. K&B .19 with own fuel. Aero 9/6 prop.
Half-A Scale Free Flight	Jr. 1st	John Sparnicht Hempstead, N. Y.	8.73	• Nieuport 11 with 31" top wing. Clark Y airfoil on wings, flat stab. 8 oz. wt. Silk covered with 7 coats Aerogloss. Cub .049 engine and Thimble Drome fuel. Top Flite 6/3 prop. ROG.
	Jr. 2nd	Jim Watson	7.76	
	Sr. 1st	Charles Corbett Brooklyn, N. Y.	173.52	• Aeronca C3 with 36" wing, Clark Y airfoil on wing and stab. Jap tissue with 9 coats Lac-O-Loid. 7½ oz. 2¾" dihedral. 40 sq. in. stab. Wasp .049 on K&B 1000 fuel. Tornado 6/2 prop.
	Op. 1st	Edward Stoll Detroit, Mich.	290.22	• Berkeley Fairchild 24 "Rancher." Some structural modifications. Jap tissue covered with 10 coats Testor's dope. Wasp .049 on Thimble Drome fuel. Power Prop 6/3. Best flight 1:58.
	Op. 2nd	Edward Luca Brooklyn, N. Y.	139.73	• Veco Taylor Cub kit; interior cabin details added. Silkspan covered with 6 coats Testor's dope. Wasp .049 with Supersonic 1000 fuel. Tornado 6/3 prop. Best Flight, 1:40.1.
	Op. 3rd	Bruno Markiewicz Detroit, Mich.	134.64	• Cleveland Fokker D8; beefed-up somewhat. Jap tissue covered with 4 coats Berryloid. Wasp .049 with Thimble Drome Fuel. Plastic 5½/4 prop. Best flight, 89 sec.
Free Flight—Half-A	Jr. 1st	Bobby Kopski Freeland, Pa.	13:53	• Sparless planked and capped wing, 34" span, 220 sq. in. Thin low drag airfoil on wing and stab. Sheet box fuselage. Thermal Hopper .049 on K&B 1000. Tornado 6/3 prop. 5½ oz.
	Jr. 2nd	Ray Harlan Yeadon, Pa.	10:39	• Semi-geodetic 36" wing with 196 sq. in. area. Box sheeted fuselage. Thermal Hopper .049 on Thimble Drome fuel. Tornado 6/3 prop. 5 oz.
	Jr. 3rd	Gerald S. Seidel, Jr. Norristown, Pa.	7:05.9	• Zeek kit with shortened nose moment. Silkspan covered. 3 coats Testor's dope, one of Comet Proofer. K&B .049 with O&R AA fuel. Tornado 6/3 prop.
	Sr. 1st	Ray Gable Smyrna, Ga.	14:14	• 38" multispar wing with 220 sq. in. Slab-sided fuselage. Low pylon, rudder forward of stab. 6 coats Aerogloss on Jap tissue. Thermal Hopper .049 with Power Mist fuel. Tornado 6/3 prop. 5½ oz. ROG.
	Sr. 2nd	Thomas Alden	10:30.5	
	Sr. 3rd	Fred Teal, Jr. & Thomas Finch Takoma Park, Md.	9:10.1	• Kiwi wing and stab. Pylon fuselage. Skysail covered, 3 coats butyrate. Thimble Drome .049 with Supersonic 1000 fuel. Kaysun plastic 6/3 prop. ROG.
	Op. 1st	Jack Oxley Artesia, Cal.	13:05	• 44" wing with 300 sq. in.; Goldberg airfoil. Framework fuselage. Jap tissue on wings, silk on fuselage. Left-turn adjustment. Space Bug .049 on Thimble Drome fuel. Tornado 6/3 prop. 6½ oz. ROG.
	Op. 2nd	Sal Talbi Long Beach, Cal.	12:35.9	• Half-A Spacer kit. Tissue covered with 3 coats nitrate and one proofer. No side or down-thrust. Space Bug .049 with Supersonic 1000. Kaysun 5½/4 prop.
	Op. 3rd	Russell McLennan Alexandria, Va.	12:31.4	• 36" wing with 174 sq. in. NACA 6409 airfoil. 72 sq. in. stab with Clark Y. Diamond sheet fuselage. Skysail covered. K&B .049 with Supersonic 1000. Top Flite 6/3 prop. 5¼ oz.
Free Flight—Cl. A	Jr. 1st	Jud Stone Topeka, Kans.	14:06.2	• Zeek kit. Skysail covered, 2 coats Testor's dope. Arden .199 with O&R #2 fuel. Top Flite 9/4 prop.
	Jr. 2nd	Bob Kopski Freeland, Pa.	13:29.5	• Zeek with modified fuselage. Silkspan covered. 5 coats Testor's dope and one proofer. Torp .19 engine with K&B 1000 fuel. Top Flite 9/6 prop.
	Jr. 3rd	William M. White, Jr. Sacramento, Cal.	13:15.6	• Rival kit. Jap tissue covered. Cub .099 engine with O&R Gold Seal fuel. Kaysun 8/4 prop. ROG.
	Sr. 1st	Carl Curtis Yuba City, Cal.	12:00	• Spacer A-B kit, 2-wheel L.G. and heavier wing mounts. Silkspan. Hillcrest detherm. Fox .19 on Ohlsson Gold Seal ½-A fuel. Top Flite 10/3½ prop. ROG. Engine held down to ¾ power on all flights.
	Sr. 2nd	Ervin Shaw Sumter, S. C.	11:59	• Zeek with diamond fuselage, lower pylon, longer tail moment. Skysail and Silkspan covered. 6 coats butyrate. OK Cub .15 with Ohlsson AA fuel. Power Prop 8/6. ROG.
	Sr. 3rd	Bruce Hillman Warren, Ohio	10:50.9	• 56" span conventional wing with 504 sq. in. area. 224 sq. in. stab. Sheet and strip fuselage. Silk covered with 8 coats Aerogloss. K&B .19, reworked piston and cylinder. Top Flite 9/4. ROG. 30 oz.
	Op. 1st	Dick Duvendeck Portsmouth, Ohio	22:08.2	• Made high time of meet. Zeek with changed balance, and wing tab. Silk covered, 6 coats dope. ED .15 diesel with own fuel. Top Flite 9/6 prop.
	Op. 2nd	Frank Hauser	17:58.9	
	Op. 3rd	Fred W. Salmon Lubbock, Texas	15:48	58" wing with diagonal ribs, 498 sq. in. area. 50% stab. Tissue covered. Box fuselage. Torp .19 on K&B 1000 fuel. Fuel passages smoothed out. Tornado 9/4 prop. ROG. Right-right flight pattern. 24 oz.
Free Flight—Cl. B	Jr. 1st	Harry Capper Phila., Pa.	11:52	• Sandy Hogan kit, parachute detherm. Nitrate dope with proofer. Torp .29 and Power Mist fuel. Top Flite 10/6 prop. ROG.
	Jr. 2nd	Richard Heist Jr. Fort Worth, Tex.	10:56	• Perfidio from A.T. plans. Clark Y airfoil on stab. 14 coats dope over Jap tissue. 29½ oz. Torp .29 with K&B fuel. Top Flite 9/6 prop.
	Jr. 3rd	Robert Kiehl	8:42	
	Sr. 1st	Ronald Wood	13:35	
	Sr. 2nd	Donald L. Orr Norfolk, Va.	13:20	• Powerhouse 56. Silkspan with 6 coats butyrate. Forster .29 with Cheminol #2 fuel. Top Flite 9/6 prop. ROG.
	Sr. 3rd	A. C. Walker	12:12	
	Op. 1st	Marvin Burley, Jr. Spartanburg, S. C.	17:19.4	• Senator from A.T., with increased span, constant chord. 32 oz. wt. Silkspan with 3 coats nitrate. K&B .29 with O&R #2 fuel. Top Flite 11/4 prop.
	Op. 2nd	Daniel Sobala So. Hadley, Mass.	17:19.0	• 64" span 2-spar wing with 537 sq. in. Senator airfoil on wing and stab. Zeek style fuselage. Retracting wheel L.G. Right-right flight pattern. 30 oz. K&B .29 with Gold Seal ½-A fuel. Top Flite 10/6. ROG.
	Op. 3rd	Eugene Comontofski Lexington, Mass.	13:57	• Cumulus with glide tab added. Skysail covered, 5 coats Sta. Ohlsson .23 on Supersonic 1000. Power Prop 9/6.
Free Flight—Cl. C	Jr. 1st	Bill Gregory Springfield, Ohio	4:38.8	• No data on plane. Atwood .62 with K&B 1000 fuel. Top Flite 13/5½ prop.
	Jr. 2nd	Dick Culver Oak Ridge, Tenn.	0:40.5	• No data on plane. K&B .32 with K&B fuel. Top Flite 10/3½ prop.
	Sr. 1st	David Espen New York, N. Y.	14:11.4	• Berkeley Sandy Hogan with reduced wing incidence. Silkspan covered. Parachute detherm. Fox .35 with Thimble Drome fuel. Top Flite 11/6 prop.
	Sr. 2nd	David Kiremidjian Hackensack, N. J.	12:04.6	• 68" wing with 610 sq. in. and Clark Y airfoil. 238 sq. in. Clark Y stab. Box fuselage. Silkspan covered. K&B .32 engine with K&B fuel. Top Flite 11/6 prop. ROG. 32 oz. wt.
	Sr. 3rd	N. K. Itterly	11:15.2	
	Op. 1st	Alvin Grenoble Yuba City, Cal.	17:13.0	• Sailplane enlarged to 1020 sq. in. wing area, and with sheeted fuselage. Hillcrest detherm. GM tissue covered with 5 coats Testor's. Fox .59 on Ohlsson Gold Seal fuel. Top Flite 12/5 prop.
	Op. 2nd	Daniel Sobala So. Hadley, Mass.	17:06.5	• Same plane that took Class B 2nd place. K&B .32 engine on Ohlsson Gold Seal fuel. Top Flite 10/6 prop. ROG.
	Op. 3rd	Fred Salmon Lubbock, Texas	17:02.2	• Same model as used in Class A, but with Torp .32 engine and Top Flite 10/3½ prop. ROG. 32 oz. Used in Class C only because B-C model was lost.
Flying Scale Jet	1st	Frank Lashek Sea Girt, N. J.	——	• Grumman Panther with wood and paper covering. 40 coats dope and car paint. 42" span, 42" length. 4½ lbs. Dyna-Jet running on gas. 70 ft. lines.

	EVENT PLACE	FLYER	TIME OR PTS.	DATA
Navy Carrier—Half-A	Jr. 1st	Harry Burr Corpus Christi, Tex.	137.0	• Skyraider AD-2. 23" wing. Silkspan covered. 4 oz. Thimble Drome engine on K&B fuel. Flo-Torque 6/3 prop. Nylon lines.
	Sr. 1st	William Davies Maplewood, N. J.	240.8	• Comet $1 rubber model converted to glow. Silk covered. Wasp .049, relapped. Own fuel. Power 6/3 prop. Sullivan 35 ft. Dacron lines.
	Op. 1st	Gail Eckstein San Lorenzo, Cal.	253.0	• SBD from 50¢ Comet kit. Fuselage planked with 3/32" balsa, wing covered with 1/32". 12 coats Aerogloss. Thermal Hopper adapted for dual needle valves. K&B Ultra Glow fuel. Power Prop 5¼/4. Model-Aire handle.
	Op. 2nd	E. Burt Nelson Spring Lake Hts., N. J.	241.8	• Ryan Fireball. 24" wing, tissue covered. Stringer and bulkhead fuselage. 6 oz. Space Bug on Ohlsson ½A fuel. Top Flite 6/4 prop. Safety pin handle with 35 ft. lines.
	Op. 3rd	Robert C. Blaikie, Jr. Kingsville, Tex.	240.5	• F7F-1, silk covered, with 6 coats Aerogloss. Two Royal Spitfires on O&R XL-AA fuel. Tornado 6/2 props. E-Z-Just handle.
Navy Carrier—Cl. A-B-C	Jr. 1st	Wm. M. White, Jr. Sacramento, Cal.	147.8	• Stearman N3N biplane. Upper wing span 41". Symmetrical airfoils. Nylon covered with 12 coats Aerogloss. Fuselage planked from cockpit forward; stringers to rear. 60 oz. Atwood .49 with Supersonic 1000. Motor control added. Power Prop 11/8. 60 ft. lines with U-Reely.
	Sr. 1st	Dave Domizi Rocky River, Ohio	391.5	• 30" semi-symmet. sparless wing. Crutch and block fuselage. 22 oz. Fox .35 on Power Mist Hi-Thrust fuel. Top Flite 9/6. Choke valve for 2 speeds; high was 68 mph, low 26 mph.
	Sr. 2nd	William Davies Maplewood, N. J.	273.5	• Eagle F6F-3 Hellcat. Planked, with 12 coats dope. McCoy .49 on 3-1 methanol-castor oil mixture. Power 11/8 prop. E-Z-Just handle.
	Sr. 3rd	Thomas Deville	253.5	
	Op. 1st	Frank Stanton Doylestown, Pa.	379.9	• Dmeco Super Wildcat, changed to F4F. Nylon covered with 16 coats nitrate dope. Bunch .45 engine, spark ignition with 2-speed timer. Castor oil and gas fuel. Snafu 10/12 prop. Engine 9 years old. High speed, 75 mph, low 38 mph.
	Op. 2nd	Gail Eckstein San Lorenzo, Cal.	325.4	• Berkeley SNJ. Long arresting gear. 2-speed tank with K&B Shur-Stop and two needle valves. Planked. Torp .19 Supersonic 1000. Clipped Tornado 8½/5. Model-Aire handle.
	Op. 3rd	Vincent J. Calano Hartford, Conn.	323.5	• Douglas AD2 Skyraider from A.T. Engine beam mounted. Covered with 3/32" sheet balsa. Fox .35 with Testor's 39 fuel. Top Flite 10/6. Remoto handle.
Combat	Jr. 1st	Richard Heist, Jr. Ft. Worth, Tex.	460	• Own design—"Patches #3." 36" wing, multispar, with 351 sq. in. area. 30 sq. in. flat stab. Profile fuselage. Jap tissue covered. 20 oz. Fox .29, K&B 1000 fuel. Top Flite 9/6. H.L.
	Jr. 2nd	John Dunbar Opelousas, La.	80	• No data on plane. Fox .29 engine with O&R #2 fuel. Top Flite 10/6 prop. E-Z-Just handle.
	Jr. 3rd	Wm. M. White, Jr. Sacramento, Cal.	60	• Sterling Ringmaster kit. Silkspan covered. Fox .29R on O&R Gold Seal fuel. Power Prop 9/6. ROG. U-Reely handle.
	Sr. 1st	G. F. Wagner	560	
	Sr. 2nd	Claude E. Lee, Jr. Burlington, N. C.	520	• 28½" wing with flaps. 238 sq. in. area. Profile fuselage. Silkspan covered. 20½ oz. Fox .35 with O&R #2 fuel. Top Flite 9/6 prop. Sullivan wood handle.
	Sr. 3rd	Dell Davidson Chicago, Ill.	460	• Dmeco small All American—40" wing. No L.G. Silk covered. K&B .32 with Nitro X. Tornado 9/7. H.L.
	Op. 1st	William Andrews Easton, Pa.	520	• Ringmaster kit. Skysail covered, 5 coats Aerogloss. Fox .35; head gasket removed, head lapped to liner. Testor's 39 fuel. Top Flite 9/6 prop. U-Reely handle. ROG.
	Op. 2nd	Chris A. Schuck New York, N. Y.	520	• 40" wing with 350 sq. in. Sheeted box fuselage. Silk covered, 6 coats Speed-O-Lac. 20 oz. Fox .35 with K&B 1000 fuel Tornado 9/6 prop. U-Reely handle.
	Op. 3rd	Wesley M. Dick Arcadia, Ohio	240	• 47" wing with 430 sq. in. Sheet box fuselage. Silk covered. 28 oz. Fox .35 with Power Mist fuel. Top Flite 9/6 prop.
Free Flight ROW	Jr. 1st	John M. Clapp Greenfield, Mass.	7:02.6	• 36" span single spar wing, 180 sq. in. 75 sq. in stab. Own airfoils. Sheet fuselage. Skysail with 4 coats Testor's. Torp .049 with K&B 1000 fuel. Top Flite 6/3 prop. 6 oz.
	Jr. 2nd	Wm. M. White, Jr. Sacramento, Cal.	6:11.1	• Philly Whiz from A.T. Jap tissue with 3 coats dope. Timer detherm. Atwood .049 with Ohlsson Gold Seal fuel. Kaysun 6/3 prop.
	Jr. 3rd	Jud L. Stone Topeka, Kans.	3:39.4	• Kiwi with Skysail and 2 coats thinned Aerogloss. Atwood .049 with K&B 1000 fuel. 5½/4 prop.
	Sr. 1st	James W. Kelly Mission, Kans.	10:07.2	• Zeek. Skysail with 8 or more coats butyrate dope. Elfin diesel with McCoy fuel. Top Flite 9/4 prop.
	Sr. 2nd	Bob Gelvin	9:19.2	
	Sr. 3rd	Stuart B. Savage Wright-Patterson AFB, Dayton, Ohio	8:39.0	• 40" 2 spar wing with 240 sq. in. area, 105 sq. in. stab. 7% Clark Y airfoils. Sheet fuselage. Atwood .049 with Supersonic 1000 fuel. Kaysun 5½/4 prop. Right-right adjustment. 5.35 oz.
	Op. 1st	Sal Taibi Long Beach, Cal.	13:00.5	• 66" span 2-spar wing with 575 sq. in. and own airfoil. 33% stab with 7% Clark Y airfoil. Crutch fuselage. Double Jap tissue covered. Torp .23 engine with O&R XL2 fuel. Top Flite 9/4 prop. 24 oz. wt.
	Op. 2nd	John E. Jenista Brookfield, Ill.	11:32.6	• Exact half size Sandy Hogan from A.T. plans. Single front float with twin stab floats. Wasp .049 with K&B 1000. Kaysun 5½/4 prop. 5½ oz.
	Op. 3rd	E. J. Comontofski Lexington, Mass.	11:48.8	• Same plane as flown in Class B, with floats added.
Half-A Speed	Jr. 1st	Robert Chojnacki Perth Amboy, N. J.	74.97	• 9" symmetrical wing, 18 sq. in. area. 3 oz. 4 coats Aerogloss. Thermal Hopper .049 with Thimble Drome Racing fuel. Tornado 5/6 prop. Cast aluminum handle.
	Jr. 2nd	M. Maciag, Jr.	68.15	
	Jr. 3rd	Harry Dong L. I. City, N. Y.	68.15	• Hell Razor without cowl. Thermal Hopper .049 with Ohlsson AA fuel. Tornado 5/5 cut to 5/4.
	Sr. 1st	Walter Vrablic	78.22	
	Sr. 2nd	Herbert Davis Birmingham, Ala.	74.97	• 10" wing with 14 sq. in. area. Clark Y airfoil on wing and stab. Metal pan fuselage with balsa top. 3 oz. Thermal Hopper .049 with Thimble Drome Racing fuel. Tornado 4/6 prop. Model-Aire handle.
	Sr. 3rd	Tommy Dong L. I. City, N. Y.	70.28	• 10" bass wing with 15 sq. in. area, RAF 28 airfoil. Ply stab, no rudder. Mahogany fuselage bottom with pine top. Thermal Hopper on O&R AA. Tornado 5/4.
	Op. 1st	Will Stewart Trenton, N. J.	84.66	• 8" hard balsa wing with Clark Y airfoil. Sheet box fuselage. 12 sq. in. wing area. 1⅞ oz. Thermal Hopper with Arden .19 needle valve and reduced comp. Thimble Drome racing fuel. Power prop 4 3/8/6 1/2.
	Op. 2nd	Wm. T. Thomas, Jr. Daytona Beach, Fla.	76.72	• 8¾" pine wing with 17½" sq. in. area. Pine fuselage with dural bracket for engine. 4 oz. Space Bug .049 with Hop Up kit. Own fuel. Modified Scamper prop, 4½/4. Tommy Handlereel.
	Op. 3rd	Albert Rittman Cheltenham, Pa.	75.53	• 8" wing with 12 sq. in. area. Symmetrical stab. 1/16" sheet box fuselage. 6 coats Sta, 2 oz. Thermal Hopper .049 with Thimble Drome Racing fuel.
Speed—Cl. A	Jr. 1st	Walton Pyron Decatur, Ga.	123.29	• 12" solid balsa wing, 22½ sq. in., near symmet. airfoil. Carved balsa fuselage. Silkspan covered, 9 coats Aerogloss. 12½ oz. Torp .19. Tornado 6/10 prop. 3-wheel pin dolly.
	Jr. 2nd	Alfred Davis Birmingham, Ala.	114.65	• 12" pine wing with 21 sq. in. Clark Y airfoil on wing and stab. Metal bottom fuselage, pine top. Torp .19 with own fuel. Tornado 6/10 prop. Locking dolly.
	Jr. 3rd	Larry Parkerson Gastonia, N. C.	113.92	• 12" wing with 24 sq. in. area. Symmetrical stab. Metal bottom fuselage, with balsa top. 12 oz. 10 coats Aerogloss. McCoy .19, reduced fin dia. and cut-off exhaust stack. Own fuel. Tornado 6/10 prop. 3-wheel pin type dolly. E-Z-Just handle.
	Sr. 1st	Ronald Marchese	125.00	
	Sr. 2nd	Ronald Plotzke	121.62	
	Sr. 3rd	Herbert Davis Birmingham, Ala.	118.42	• 12" pine wing with 21 sq. in. area. Clark Y airfoil on wing and stab. Metal bottom fuselage with pine top. 12 oz. Torp .19 with own fuel. Tornado 6/10 prop. Locking dolly.
	Op. 1st	Thomas P. Baker Kings Mountain, N. C.	130.43	• 12½" aluminum sheet wing with beech spar; 28½ sq. in., semi-symmetrical. Sym. stab. Balsa fuselage. 11½ oz. Silk covered. 6 coats nitrate dope. Torp .19, reworked. Home brew fuel. Tornado 6/10 prop. 3-wheel pin dolly.
	Op. 2nd	Wm. T. Thomas, Jr. Daytona Beach, Fla.	120.00	• 11⅛" pine wing with 27.6 sq. in. Hell Razor pan, balsa top shell, metal cowl. 16 oz. K&B .19 with lightened piston, crankshaft bored 1/32" larger. Own fuel. Tornado 6/10 prop. Tommy Handlereel. H.L.
	Op. 3rd	Ernest R. Bosetti Wilmington, Del.	120.00	• 12½" wing, maple spar, rest balsa. 20 sq. in. NACA 2412 airfoil. Metal bottom fuselage, pine top with balsa cowl. 13 oz. One coat Dulux car paint. Torp .19. Tornado 6/10. H.L.

	EVENT PLACE	FLYER	TIME OR PTS.	DATA
Speed—Cl. B	Jr. 1st	Walton Pyron Decatur, Ga.	130.43	• 13" balsa wing with 26 sq. in. Nearly sym. airfoil. Carved balsa fuselage. Silkspan covered with 9 coats Aerogloss. 13 oz. Dooling .29 with own fuel. Tornado 7/9 prop. 3-wheel pin dolly.
	Jr. 2nd	Alfred Davis Birmingham, Ala.	126.76	• "Bounder" Dooling .29 with own fuel. Tornado 7/9 prop. Locking dolly.
	Jr. 3rd	Harry Dong L. I. City, N. Y.	125.43	• 12" poplar wing with 24 sq. in. area, Clark Y airfoil. Entire fuselage of magnesium. 16 oz. Dooling .29 with own fuel. Tornado 7/10. H.L.
	Sr. 1st	Herbert Davis	125.00	• Bounder. Same as Alfred Davis, above.
	Sr. 2nd	Ronald Plotzke	124.13	
	Sr. 3rd	Harris Grimes	123.28	
	Op. 1st	Leo Holliday Mesquite, Tex.	129.44	• 14" wing with 42 sq. in. area; 2 sheets of balsa around center spar. Magnesium pan attached to bass wood crutch. Balsa top. Dulux finish. 16 oz. Dooling .29. Tornado 7/9. Cobra dolly.
	Op. 2nd	R. W. Elliott Atlanta, Ga.	128.29	• 12" solid wood wing with mod. Clark Y airfoil. Same on stab. No rudder. 15.5 oz. McCoy .29, refitted, ported. Own fuel. Tornado 7/9 prop. Pin dolly.
Speed—Cl. C-D	Jr. 1st	Alfred Davis Birmingham, Ala.	142.86	• 18" solid pine wing with 42 sq. in. Clark Y airfoil on wing and stab. Metal fuselage pan with wood top. 1¾ lbs. McCoy .60 with own fuel. Tornado 9/12 prop. Locking dolly.
	Jr. 2nd	Robert Chojnacki Perth Amboy, N. J.	138.46	• 18" symmetrical wing with 54 sq. in. 25 oz. McCoy .60 with Supersonic 1000 fuel. Power Prop 9/12. Hand launched.
	Jr. 3rd	Joseph P. White Sacramento, Cal.	135.34	• 17" aluminum sheet wing with 60 sq. in. Ply stab. Aluminum pan, plywood crutch with hollowed balsa top. 30 oz. McCoy .60, lugs. Exhaust filed. Tornado 9/12. Roots handle.
	Sr. 1st	Sam Dehelean Detroit, Mich.	153.85	• Top speed of Nats. 16" solid wing with flat bottom airfoil. Solid carved fuselage with Champion pan. 44 sq. in. area. 25 oz. McCoy .60, enlarged bypass, lightened piston, opened intake, squared bypass holes, etc. Star Dust H fuel with additives. Reworked 9/11 Power Prop. Hand launched.
	Sr. 2nd	Clifford Telford	151.26	
	Sr. 3rd	Ronald Marchese	148.76	
	Op. 1st	Guy Rogers Jr. Corpus Christi, Tex.	151.70	• 17" Clark Y wing with 42.5 sq. in. Champion metal pan on fuselage with maple crutch and wood top. 27 oz. McCoy .60 ported, changed timing and comp. ratio. Stardust H fuel. Tornado 9/12 prop. 3-wheel pin dolly.
	Op. 2nd	Dalton C. May Jr. Chamblee, Ga.	145.16	• 16" solid hard balsa wing with 42 sq. in. area. Magnesium pan with ply and balsa cowl and balsa top. Jap tissue covered, Testor's sealer and nitrate dope. 27 oz. McCoy .60 with own fuel. Rev-Up 9/11 prop. 3-wheel single pin dolly.
	Op. 3rd	Wm. M. Dunwoody Phila., Pa.	145.00	• 18" bass wing with 45 sq. in. Hell Razor pan with bass top. Finished with Sta. 28 oz. Dooling .61, ports cleaned, head fitted to piston. Home-brew fuel. Rev-Up 8⅝/13 prop. H.L.
Jet Speed	Sr. 1st	Sonny Mosel San Antonio, Tex.	144.46	• Solid 20" wing with 60 sq. in. area. Hollowed fuselage. .25 oz. Dyna-Jet with white gas. Stanzel Mono-Line control used; proved very satisfactory.
	Sr. 2nd	Wayne Sutherland Baltimore, Md.	133.33	• Hot Canary from A.T. plans. Dyna-Jet with Amoco gas. E-Z-Just handle.
	Sr. 3rd	Edward Halligan, Jr. Sheppard AFB, Tex.	132.06	• 16" built-up wing with 44 sq. in. area. Symmet. airfoils on wing and stab. Carved fuselage. Silk covered, 8 coats Testor's. 21 oz. Dyna-Jet Blue Sunoco. 4-wheel dolly. E-Z-Just handle.
	Op. 1st	Norman D. Smith N. Muskegon, Mich.	141.39	• 16" built-up wing with flat bottom. 36 sq. in. area. Block balsa fuselage with hollowed tank. 8 coats Aerogloss. 20½ oz. Dyna-Jet on white gas and JP-4. Skid launch.
	Op. 2nd	Albert Rittman Cheltenham, Pa.	137.40	• 18" hard balsa wing with 54 sq. in. area. Sheet metal stab. Solid balsa fuselage. 5 coats Dulux. 29 oz. Dyna-Jet on Amoco gas.
	Op. 3rd	J. D. Kirn	137.09	
Team Racing	1st	Bob Huffer Annapolis, Md.	12:01.2	• 25" solid balsa wing with semi-symmetrical airfoil; 130 sq. in. area. Built-up fuselage. 24 oz. Fox .29R engine with Power Mist fuel. Top Flite 9/8 prop. Sullivan plastic handle.
	2nd	Gerald Flamm Reading, Pa.	12:07.9	• 27" built-up wing with 127 sq. in. area. Hardwood crutch fuselage with 1/16" sheet planking. Silk covered; dope and Dulux finish. 31 oz. Fox. .29 with chromed liner. Power Prop 9/8.
	3rd	Harvey A. Thomasian Worcester, Mass.	13:02.8	• 25" built-up wing with modified NACA 6409 airfoil. 152 sq. in. area. Sheet stab. Sheet sided fuselage with top and bottom blocks. Silk covered, with 12 coats Aerogloss. 24 oz. Fox .29R engine on O&R #2 fuel. Power Prop 9/8.
Control Line Stunt	Jr. 1st	Walton Pyron Decatur, Ga.	354	• P-40 Black Tiger from A.T. plans. 23 coats Aerogloss over Silkspan. Fox .35 with Testor's 39 fuel. 10/6 Top Flite prop. 63 ft. lines.
	Jr. 2nd	Melvyn Cook Atlanta, Ga.	315	• Smoothie. 18 coats Aerogloss over Silkspan. Fox .35 on Testor's 39. Top Flite 10/6 prop. 60 ft. lines.
	Jr. 3rd	Lee Frey	311.25	
	Sr. 1st	Geo. M. Aldrich Dallas, Tex.	337.75	• Nobler #2. 52" D-tube wing, 540 sq. in. 85 sq. in stab; own airfoils. Monocoque fuselage. Fox .35 with KB 1000. Y&O 10/5 prop. 60 ft. lines. ROG. 52 oz.
	Sr. 2nd	C. Hill Hutchins, Jr. Spartanburg, S. C.	335.75	• 48" span wing with 528 sq. in., fitted with flaps. 39 oz. Fox .35 with own fuel. Tornado 10/6 prop. 63 ft. lines. 25 coats Aerogloss.
	Sr. 3rd	Ervin B. Shaw Sumter, S. C.	311.25	• 52" standard stunt wing, 598 sq. in. area. Slab-sided fuselage with top and bottom blocks. 41 oz. Orwick .29 engine on O&R #4 fuel. Top Flite 10/6 prop. 70 ft. lines. Fixed L.G.
	Op. 1st	Robert W. Elliott Atlanta, Ga.	372.5	• Black Tiger P-40. 45" D-tube wing with 450 sq. in. Box type fuselage. 35 oz. 20 coats Aerogloss over Silkspan. Fox .35 with Testor's fuel. Tornado 10/6 prop. 62 ft. lines.
	Op. 2nd	Thornton L. Hoffman Lansdowne, Pa.	359.5	• 49" wing with 484 sq. in., including flaps. 75 sq. in. stab. 32¾ oz. Veco .29 engine with Testor's 39 fuel. Tornado 9/7 prop. 60 ft. lines with U-Reely handle.
	Op. 3rd	Wesley M. Dick Arcadia, Ohio	357.5	• Still's Stuka from A.T. plans. Silk covered. 3 coats filler, 3 of Aerogloss. Fox .29 on Power Mist. Top Flite 9/6. 60 ft. lines.
Control Line Scale	Jr. 1st	Barry Burr Corpus Christi, Tex.	114.0	• Miniature Models P-47, highly modified. Planked. 10 coats Aerogloss. K&B .29 with Thimble Drome fuel. Top Flite 10/6 prop.
	Jr. 2nd	H. Lee Gregory California, Pa.	61.0	• Sterling SE-5, Silkspan covered. 7 coats Sta. Fox .35 with Testor's 39 fuel. Top Flite 10/6 prop. Tommyreel with 60 ft. lines.
	Sr. 1st	C. Hill Hutchins, Jr. Spartanburg, S. C.	97.0	• Berkeley Mustang with modifications. Sheet balsa covered. 28 coats Aerogloss; finished to simulate Bendix racer. Fox .35 with Power Mist. Power Prop 10/4, 4 blades.
	Sr. 2nd	R. Carlin, Jr.	95	
	Sr. 3rd	Bob Stucker	93.5	
	Op. 1st	Thomas Dean Corpus Christi, Tex.	170.7	• Aeronca Champion crop duster. Silk covered with 10 coats dope. Cameron (ring) .19 with O&R XL4 fuel. Top Flite 9/6 prop. 52 ft. 6 in. lines.
	Op. 2nd	John Susaywich Phila., Pa.	138.5	• Curtiss F7C-1, sheet covered. Testor's dope. Madewell .49 engine with Power Mist. Top Flite 11/6 prop.
	Op. 3rd	Lawrence H. Durham Baltimore, Md.	136.0	• Reworked Cleveland B-25; changed to B25-H. Heavier formers and ribs. Wood and silk covered. 12 coats Aerogloss, sanded. Former and stringer fuselage, filled in. Fox .35 with Thimble Drome fuel. Power Prop 10/6 cut to 9½". E-Z-Just handle.

PLYMOUTH INTERNATIONAL MEET OF 1953

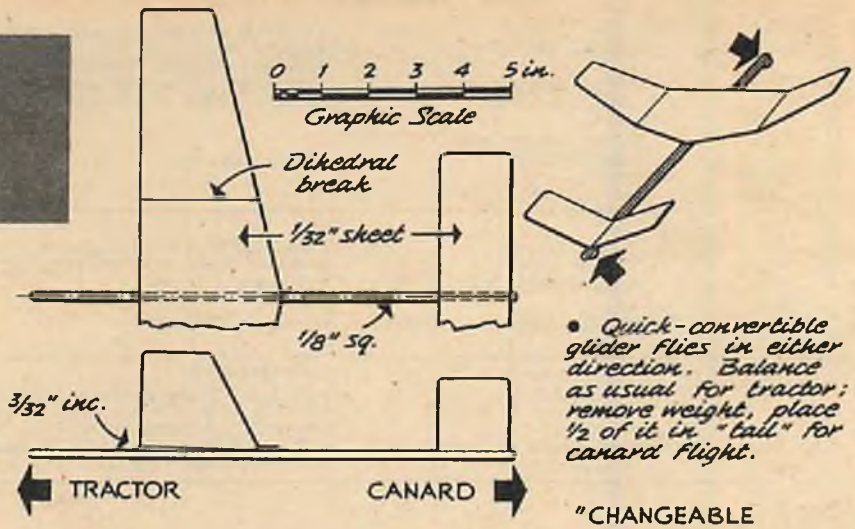
	EVENT PLACE	FLYER	TIME OR PTS.	DATA
Outdoor Rubber Special	Fresh. 1st	Ronnie Drude St. Paul, Minn.	244.7	• Stringer fuselage, sheeted nose and rear. 27" span, 81 sq. in area poly wing. Modified Davis airfoil. 37 sq. in. stab. 14/22 prop with 4 loops ¼" Pirelli rubber, lubed. 50 sec. average motor run. 117 sec. was best flight. No detherm.
	Fresh. 2nd	Santo Pino	208.6	• Original model.
	Fresh. 3rd	Alden Hanson	157.4	• Original model.

	EVENT PLACE	FLYER	TIME OR PTS.	DATA
Limited & Wakefield Rubber	Jr. 1st	Dennis Geiler	738.3	• Original limited.
	Jr. 2nd	John Hotze	602	• Original limited.
	Jr. 3rd	Gary Grenoble Yuba City, Cal.	600.9	• Original Wakefield.
	Sr. 1st	Robert Hotze Webster Groves, Mo.	667.6	• Box fuselage. Own airfoil in 34" span wing. 148 sq. in. area. Polydihedral. 6 min. pop-up detherm. Right turn under power and glide. 10 loops 3/16" T-56 rubber; 1100 winds. 1:20 motor run. 6 deg. downthrust.
	Sr. 2nd	Herman Andresen Chicago, Ill.	659.6	• 41" span, 185 sq. in. area poly wing, sliced ribs. Cheeseman foil, turbulator thread. 90 sq. in. stab at 0 deg. Right, right flight. 20/26 prop. 18 strands ¼" T-56. Consistent winner at many large meets. Best flight was 4½ min.
	Sr. 3rd	Louis Ebner Phila., Pa.	603.0	• Geodetic fuselage. Single spar wing, 32" span, 150 sq. in. area. 6412 foil. Flat bottom stab with 50 sq. in. Twin rudders. 1½-2 min. prop. run. 7 oz. wt.
	Ldr. 1st	Robert Dunham Tulsa, Okla.	858.2	• Semi-geod. fuselage. Single spar, constant chord 48" wing. 216 sq. in. area.; 72 sq. in. stab with Clark Y foil. Return gears at rear with 1-1 ratio. 19/28 prop. Two motors—14 strands ¼" T-56. 8½ oz.
	Ldr. 2nd	Jerry Bahula	791.2	• Original limited.
	Ldr. 3rd	Edward Stoll Detroit, Mich.	637.8	• Warren truss fuselage. 44" wing, 215 sq. in. area, Davis 5 airfoil. 72 sq. in. thinned Clark Y stab. 21/30 prop. 28 strands 3/16" T-56, 970 turns. 1:30 motor run. 8½ oz. 354 sec. best flight. Right, right adj.
H/L Glider	Fresh. 1st	Robert Thayer	288.7	
	Fresh. 2nd	Eddie Jackson	159.1	
	Fresh. 3rd	Alden Hanson	102.4	
	Jr. 1st	William Schlarb	717.5	
	Jr. 2nd	Raymond Pawloski	272.5	
	Jr. 3rd	Larry Surhigh	239.1	
	Sr. 1st	Herman Andresen Chicago, Ill.	642.2	• 12" span wing with 31 sq. in. area; undercambered. Flat 12 sq. in. stab. Zero-zero settings. 1/8" sheet hard wing with V dihedral. ⅜ oz. Right-left pattern in flight. Best flight 4:48.
	Sr. 2nd	James Ahearn	449.0	
	Sr. 3rd	Charlie Gray	426.4	
	Ldr. 1st	Lt. Stuart Richmond Pinecastle AFB	310.4	• 3/16" thick, 18" span; 54 sq. in. area. Thin Clark Y section with slight polyhed. 3/16" sheet fuselage. Clear butyrate doped. Very thin Clark Y stab. 234 sec. best flight.
	Ldr. 2nd	James Asher	294.7	
	Ldr. 3rd	Alfred St. Clair Williams AFB	272.6	• "Yardstick" fuselage, balsa wings. 18" span with 60 sq. in. Straight dihed. Clark Y wing. Symmet. stab. Right-right flight pattern. Dope and talc finish. ⅝ oz. wt.
Free Flight—Half-A	Jr. 1st	Donald Pelton	762.4	• Zeek; McCoy Diesel.
	Jr. 2nd	William Schlarb	708.8	• Original; Wasp.
	Jr. 3rd	Joseph Lobbia Fresno, Cal.	591.8	• Kiwi kit. Fuse detherm. Fuller's dope. Atwood .049 engine with K&B 1000 fuel. Top Flite 6/3 prop.
	Sr. 1st	Lyman Slack, Jr. Cincinnati, Ohio	892.6	• Jasco Liftmaster kit, rebalanced for F/F. Skysail covered. 7 min. fuse detherm. Thermal Hopper engine with Thimble Drome Racing fuel. Tornado 6/3 prop. 4 coats nitrate dope.
	Sr. 2nd	Ronald Wood	864.8	• Original; McCoy .049.
	Sr. 3rd	Gerald Venier Toronto, Ont.	841.4	• Jasco Streak kit with added stab platform, changed engine mount. Jap tissue with 4 coats Model Craft dope. Thermal Hopper on Thimble Drome Racing fuel. Tornado 6/3 prop.
	Ldr. 1st	Erwin Rodemsky	942.0	• Original; Wasp.
	Ldr. 2nd	Leon Gray	675.5	• Fubar; McCoy Diesel.
	Ldr. 3rd	Jerry Stebbins	665.0	• Original; McCoy Diesel.
Free Flight—Cl. A	Jr. 1st	Joseph Lobbia Fresno, Cal.	904.6	• Senator wings from 1949 A.T. design. Own fuselage. 27 oz. Torp .19 on K&B 1000 fuel. Champion glow plug. Top Flite 9/4 prop. 6 coats Fuller's dope. Jap tissue covered.
	Jr. 2nd	Kenny Kaelon Rosemead, Cal.	805.3	• Triangle fuselage. 72" span wing with 648 sq. in. NACA 6409 airfoil on wing and stab. Multi-spar wing with poly. 35 oz. wt. 12 coats dope. K&B .19 on Ohlsson fuel. Power Prop 9/6.
	Jr. 3rd	William Schlarb	797.6	• Original; K&B .19.
	Sr. 1st	Robert Stucker	1225.0	• Zeek; Cub .14.
	Sr. 2nd	Jay MacIntyre Royersford, Pa.	1023.8	• Zeek with more polyhedral. Silkspan covered, with nitrate dope. Atwood .051 engine on Thimble Drome fuel. Kaysun 5½/4 prop.
	Sr. 3rd	John Korta Hamilton, Ont.	884.6	• Zeek, fuse detherm. Mac .19 engine with Power Mist fuel. OK glow plug. Top Flite 9/4 prop. 4-year-old engine.
	Ldr. 1st	Bruno Markiewicz	1741.1	• Original; E.D. .14.
	Ldr. 2nd	Robert Dunham Tulsa, Okla.	848.4	• Zeek unmodified. Silkspan covered. Arden .19 engine with Arden plug. K&B 1000 fuel. Tornado 9/6 prop.
	Ldr. 3rd	Lester Smith	764.0	
Free Flight—Cl. B-C	Jr. 1st	William Schlarb South Bend, Ind.	976.4	• 72" span original with 720 sq. in. area. Own airfoils used. Box fuselage. 2 coats dope & 2 fuel proofer on Silkspan. Torp .29 with K&B 1000 fuel. Champion glow plug. Top Flite 10/6.
	Jr. 2nd	Michael & Joseph Scuro	581.4	• Cumulus; O&R .23.
	Jr. 3rd	Stephen Hoadley	579.8	• Fubar; K&B .32.
	Sr. 1st	John Marett Toronto, Ont.	910.6	• Powerhouse 56 kit with cockpit front to cut drag. Hurricane .24 engine, 6 years old. on glow. Nitromic fuel and Top Flite 10/6 prop. Right climb and left glide. 24.2 oz.
	Sr. 2nd	Edwin McGowan Napa, Cal.	850.6	• Jasco Super Flash kit. Hillcrest detherm. 4 coats Nason's clear dope. Torp .23 engine with K&B 1000 fuel. Tornado 9/6 prop.
	Sr. 3rd	Donald Bates	847.0	• Original; K&B .23.
	Ldr. 1st	Lester Smith	1001.6	• Original "Zoomulus"; K&B .23.
	Ldr. 2nd	Kale Harden	1000.4	• Hogan; K&B .32.
	Ldr. 3rd	Joe Kubina	939.0	• Original; Atwood .49.
C/L Speed—Cl. A	Fresh. 1st	Alden Hanson	74.66	
	Fresh. 2nd	Santo Pino	67.13	
	Fresh. 3rd	Paul Lawrisuk Chicago, Ill.	64.12	• Solid 15" span wing. 50 sq. in. Own airfoil. Zero incidence in wing and stab. Profile fuselage. K&B .19 engine and home-brew fuel. Tornado 7/8. Sullivan handle. ROG. 17 oz.
	Jr. 1st	James Stewart	119.00	• Original; 12 oz.; K&B .19.
	Jr. 2nd	Arthur Pawloski	117.75	• Original; 12 oz.; K&B .19.
	Jr. 3rd	Larry Kazyak	115.63	• Original; 10 oz.; K&B .19.
	Sr. 1st	Danny Kiewicz	122.15	• Original; 12 oz.; K&B .19.
	Sr. 2nd	Gerry Blake Dearborn, Mich.	120.43	• "A" Winder from A.T. plans. 12 oz. wt. Torp .19. Star Dust "H" fuel. Tornado 6¾/9 prop. Plastic handle. Peg type dolly.
	Sr. 3rd	Ken Mattingly Hialeah, Fla.	117.29	• 12" span original with 21 sq. in. area. 9 sq. in. stab. Wing balsa covered, with Silkspan over ply stab. Fuselage has balsa sides, ply top. Torp .19 engine. Fuel: 20% castor, 40% meth. prop., 50% methanol. Tornado 6/10 prop. Modelaire handle.
	Ldr. 1st	Thomas Baker	133.28	• Original; 12 oz.; K&B .19.
	Ldr. 2nd	James Clem Mesquite, Tex.	117.75	• 12" span, 27 sq. in.; Champion metal pan, bass wood fuselage top. Plywood stab, 9 sq. in.; hardwood leading edge on wing, balsa trailing edge. Length, 13.75"; 11 oz. C.G. at 20%. 2.25 sq. in. rudder. McCoy .19 with homemade sleeve, piston. Lapped, ringless piston. Homemade backplate, rotor, venturi, extension shaft. O&R racing plug. Tornado 6/10. 3-wheel lock on dolly. Tuff fuel proofer.
	Ldr. 3rd	Erwin Rodemsky	117.45	• Original; 9.5 oz.; K&B .19.

	EVENT PLACE	FLYER	TIME OR PTS.	DATA
C/L Speed—Cl. B	Jr. 1st	Thomas Tomoser	119.71	• Original; 15.5 oz.; Dooling .29.
	Jr. 2nd	Shirley Ann Austin Kirkwood, Mo.	119.00	• 17" span Clark Y wing, 36 sq. in.; solid balsa. White pine fuselage. McCoy Red Head .29 engine with own fuel. Tornado 7/9 prop. E-Z-Just handle. Trigger type dolly. 17½ oz. wt.
	Jr. 3rd	Larry Kazyak	118.30	• Original; 13 oz.; Dooling .29.
	Sr. 1st	Edwin McGowan Napa, Cal.	128.43	• 12½" span aluminum wing. Symmetrical airfoil, 38 sq. in. area. Turned mahogany fuselage. ½ degree wing incidence. McCoy .29 with own fuel. Tornado 7/10 prop cut to 10½" pitch. Peg type dolly. 13 oz.
	Sr. 2nd	Clifford Telford Cincinnati, Ohio	125.82	• 14" white pine wing with 26 sq. in. area. White pine fuselage. Original wing airfoil. Dooling .29 engine, ported and polished. Own fuel. Tornado 6¾/9 prop. Hand launched. 15.5 oz.
	Sr. 3rd	Karl Caldwell	125.74	• Original; 14 oz.; Dooling .29.
	Ldr. 1st	Thomas Baker	131.53	• Original; 14 oz.; McCoy .29.
	Ldr. 2nd	Jim Nightingale Phoenix, Ariz.	129.82	• Alum. wing, 15" span, 34 sq. in. area, semi-sym. airfoil. Sym. ply stab. Fuselage has alum. half pan, plus wood. McCoy .29 with own sleeve, back plate, balanced shaft. Tornado 7/9 prop. 3-wheel dolly.
	Ldr. 3rd	Alfred Stegens	126.71	• Original; 14 oz.; McCoy .29.
C/L Speed—Cl. C	Jr. 1st	Jules Johnson Shelby, N. C.	142.69	• 18" wing with original airfoil, 45 sq. in. area. 19 sq. in. sym. stab. Wing and fuselage of wood. McCoy .60 stock engine. Tornado 9/11 prop. 3-wheel lock-on dolly. Metal handle.
	Jr. 2nd	Robert Zimmerman	142.01	• Original; 29 oz.; McCoy .60.
	Jr. 3rd	Harold Michelis Inkster, Mich.	137.04	• 17" span wing with 51 sq. in. area. 20 sq. in. stab. 4 coats Dulux overall. McCoy .60 engine, 5 years old. Supersonic 1000 fuel. Tornado 9/11 prop. Hand launched. 30 oz.
	Sr. 1st	Thomas Davis Atlanta, Ga.	150.32	• Wing has 49 sq. in. area, 17½" span. Plane is 17" long, weighs 27 oz. McCoy .60 engine, new. Own fuel. Rev-Up 9/11 prop. Peg-type dolly.
	Sr. 2nd	Richard Wilson Lockport, N. Y.	149.32	• Modified Hell-Razor; mag. pan and bass wood top on fuselage. Pine wing. 5 coats Testor's Sealer. 31 oz. wt. Dooling .61, Farabend piston and chrome-plated sleeve. Tornado 9/11 prop. E-Z-Just handle. Hand-launched.
	Sr. 3rd	Edwin McGowan Napa, Cal.	147.00	• Aluminum wing, 17½" span and 53 sq. in. area. Tunnel fuselage of pine. No rudder. 29 oz. Engine is "McHornet 65." Own fuel. Tornado 9/12 prop, cut to 12½" pitch. Peg-type dolly. 7 coats Testor's Sta. Root handle.
	Ldr. 1st	Frank Stone	150.69	• Original; 24 oz.; McCoy .60.
	Ldr. 2nd	Jim Nightingale Phoenix, Ariz.	148.82	• Semi-symmetrical airfoil on 20" alum. wing. Fuselage has alum. half pan and wood top. 28 oz. wt. 4 coats Aerogloss. McCoy .60 with own sleeve, back plate and balanced shaft. Own fuel. Tornado 9/12 prop. 3-wheel dolly.
	Ldr. 3rd	James English Flint, Mich.	145.81	• 16" bass wing with modified Clark Y airfoil. Alum. stab. 44 sq. in wing area. 28 oz. weight. Hollowed mahogany fuselage. McCoy .60 engine ported and polished. Star Dust "H" fuel. Tornado 9/11 prop. Wing-lock dolly. 10 coats rubbed Aerogloss dope.
C/L Jet Speed	Jr. 1st	Roger Welden	140.68	• Original; Dyna-Jet.
	Jr. 2nd	Jerry Henson	135.08	• Original; Dyna-Jet.
	Jr. 3rd	Jim Vogel	132.98	• Dyna-Jet powered original.
	Sr. 1st	Gerry Blake Dearborn, Mich.	144.64	• 16" span original. Flat bottom airfoil, 40 sq. in. area. Model weighs 32 oz. Lapped-in head on Dyna-Jet; restrictor removed. Peg-type dolly. 10 coats of dope.
	Sr. 2nd	Richard O'Harrow	141.56	• Original; Dyna-Jet.
	Sr. 3rd	James Todd	139.70	• Original; Dyna-Jet.
	Ldr. 1st	Norman Smith N. Muskegon, Mich.	141.23	• Built-up wing, 16" span, 36 sq. in. area. Flat bottom airfoil. Hollowed block fuselage. 8 coats Aerogloss. Dyna-Jet engine; white gas and JP-4 fuel. Skid launch.
	Ldr. 2nd	Thomas Baker	140.35	• Dyna-Jet.
	Ldr. 3rd	Vincent Chimera Niagara Falls AFB, N. Y.	136.31	• 16" span solid pine wing, 45 sq. in. area. Hard balsa circular fuselage with balsa tank. 4 coats clear Aerogloss, 4 coats color, sprayed on. 20 oz. wt. Dyna-Jet with Blue Sunoco gas. Skid launch. Phil-Ley handle.
C/L Flying Scale	Jr. 1st	Donald Pelton	207	• Curtiss Robin (original plans); McCoy Diesel.
	Jr. 2nd	Barry Burr	206	• P-47 (kit); K&B .29.
	Jr. 3rd	Frederick Betz	42	• Airacobra; Fox .29.
	Sr. 1st	Roger Harney Berwyn, Ill.	311	• Spad model with scale construction throughout. 39½" span wing. Silkspan covered, 30 coats Aerogloss. 3¾ lbs. Atwood .51 engine with Top Flite 11/6 prop. Supersonic 1000 fuel. Wing and stab airfoils to scale.
	Sr. 2nd	Dennis Patera River Forest, Ill.	302	• Long Midget racer, 32" span. Weighs 2½ lbs. Paper covered with 12 coats Aerogloss. Fox 29 engine, head cut down to fit cowl. Supersonic 1000 fuel. Top Flite 9/6 prop. A.T. plans.
	Ldr. 1st	James Asher	188	• Waco UPM (original); Forster .29.
	Ldr. 2nd	Donald Smith Alexandria, Va.	148	• SE 5 from Sterling kit. More ribs and other details added. Silk and Silkspan covered, with 15 coats Aerogloss. Fox .29 engine and O&R #2 fuel. Top Flite 10/6 prop.
	Ldr. 3rd	Alfred St. Clair Williams AFB, Ariz.	41	• DH-4 from A.T. plans. Tissue covered. 8 coats Testor's dope, one coat Dulux clear. Super-Cyke .60 engine. Testor 39 fuel. Top Flite 10/8 prop.
Precision Aerobatics	Fresh. 1st	Paul Lawrisuk Chicago, Ill.	156.0	• Lil Duper Zilch kit. Silkspan covered, 8 coats Super Fuel Proof dope. K&B .19 engine with own fuel. 8/6 Power Prop. E-Z-Just handle.
	Fresh. 2nd	Bill Butters Franklin, Pa.	69.0	• All American kit. Weighs 25 oz. 4 coats Testor's over Silkspan. K&B .19 with own fuel. Tornado 9/5 prop. E-Z-Just handle.
	Fresh. 3rd	James Bach	62.0	
	Jr. 1st	Tom Ebejer	334.0	• Fox .35; same design as Senior 1st.
	Jr. 2nd	Arthur Pawloski	307.0	• Fox .35; same design as Senior 1st.
	Jr. 3rd	Lee Frey	285.0	• Fox .35.
	Sr. 1st	James Ebejer Detroit, Mich.	342.5	• 50" span original with 550 sq. in. area. Daly type wing with 130 sq. in. flap area. Sheet and block fuselage. Jap tissue covered, with butyrate dope over nitrate; 15 coats. 38 oz. wt. Fox .35; Power Mist with added castor. Y&O 10/5 prop.
	Sr. 2nd	Donald Ferguson, Jr.	338.5	• Fox .35.
	Sr. 3rd	C. Hill Hutchins, Jr.	321.5	• Fox .35.
	Ldr. 1st	Don Still Beaumont, Texas	343.0	• Original 47" span Stuka scale model with 465 sq. in. D-tube built-up wing. Sheet and block fuselage. Silkspan with 14 coats Aerogloss .32 oz. Sym. wing and stab. Fox .29 engine on O&R #2 fuel. Top Flite 9/6 prop.
	Ldr. 2nd	Norman Smith N. Muskegon, Mich.	299.0	• 48" span wing with 480 sq. in. area. Silk covered, with 10 coats Aerogloss. 36 oz. wt. Fox .35 engine with Power Mist fuel. Power prop 10/6.
	Ldr. 3rd	Vincent Chimera Niagara Falls AFB	289.0	• Dmeco All American. Silk covered, 10 coats of Aerogloss. Fox .29 with Supersonic 1000 fuel. Tornado Sport 9¾/5 prop. Rigid 2-wheel l.g.
Combat—Cl. ABC	Jr. 1st	Phillip Zaharoff Detroit, Mich.	800	• Original with 42" span and 420 sq. in. area. Paper covered, 4 coats Aerogloss. 72 sq. in. stab area. 20 oz. wt. Fox .35 engine with O&R #4 fuel. Power Prop 10/6.
	Jr. 2nd	Don Stanford	540	• Stuntwagon and Ringmaster; Fox .35.
	Jr. 3rd	Paul Newman, Jr.	540	• Ringmaster with Fox .35; original with K&B .29.
	Sr. 1st	James Ebejer Detroit, Mich.	760	• 40" tapered wing with flaps, 400 sq. in. total area. 21 oz. weight. Daly wing construction. Thick profile fuselage. Jap tissue covered with 10 coats clear Berryloid butyrate dope. Fox .29 engine. Power Mist with castor added. Tornado 10/5 prop.
	Sr. 2nd	Dell Davidson Chicago, Ill.	580	• Dmeco All American, 40" span. No landing gear—hand launched. Silk covered, with 6 coats Aerogloss dope. K&B .32 with Nitro X fuel. Tornado 9/7 prop.
	Sr. 3rd	William Hilpisch N. St. Paul, Minn.	540	• Ringmaster kit with cut-down body and no L.G. Silk covered with butyrate dope. Fox .35 with own fuel. Y&O 9/7 prop.
	Ldr. 1st	Leon Gray	500	• Original; Orwick .29.
	Ldr. 2nd	Donald Hutchinson	420	• Original; Orwick .29.
	Ldr. 3rd	Don Still Beaumont, Tex.	40	• Original with 42" span symmetrical wing. 520 sq. in. area. Silkspan covered, with 5 coats Aerogloss. 17 oz. wt. Fox .35 engine with O&R #2 fuel. Aero prop, 9/6.

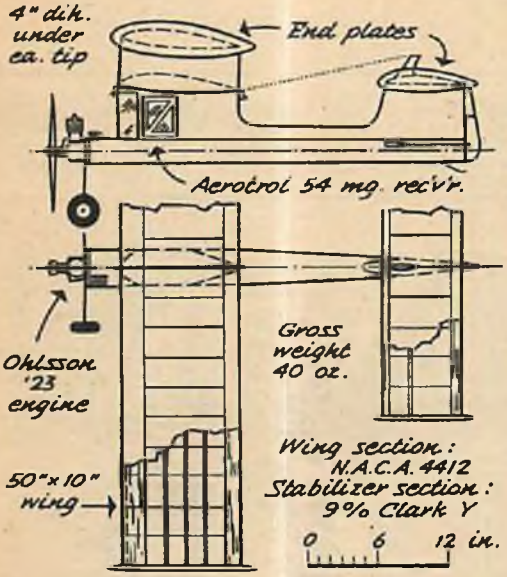
	EVENT PLACE	FLYER	TIME OR PTS.	DATA
Team Racing	1st	Charlie Gray Miami, Fla.	712.5	• Original with 28" span wing; symmetrical airfoils on wing and stab. Zero incidence. Wing sheet balsa covered. Hollowed-out fuselage. 20 coats Testor's dope. 27 oz. Torp .29 engine with K&B 1000 fuel. Tornado 9/7 prop.
	2nd	William Manuel, Jr. Winston-Salem, N. C.	714.2	• 130 sq. in. original, 29" span solid balsa Clark Y wing. Built-up sheeted fuselage. 14 coats Aerogloss. K&B .23 with Spitzy Nitromic fuel. Tornado 9/7 prop. 22 oz. weight.
	3rd	Walter Brownell, Jr.	775.2	
	Style & Beauty Award	Lowell Secrist		• "Key"; Fox .29.
Navy Carrier	1st	William Davies Maplewood, N. J.	578.6	• Hellcat F6F-3 from Eagle kit. Planked covering with 12 coats dope. McCoy .49 engine, 5 years old. 3 to 1 glow fuel. Power Prop 11/8.
	2nd	Richard Karp	469.0	• Bearcat.
	3rd	Don Stanford	468.0	• Trixter; Fox .29.
R/C	1st	Louis Andrews	74	• Trixter Beam.
	2nd	William Johnke Uniondale, N. Y.	32	• Berkeley Super Brigadier. Butyrate dope on silk. 7 degree V dihed. Nose lengthened. O&R .19 with Nitromic fuel. Power Prop 9/6. Control Master trans. on 27¼; RK61 rec. Home-made escapement on rudder.
	3rd	Frank Madl Chicago, Ill.	28	• Modified Custom Cavalier; 12-year-old plane. 12½ lbs. Orwick .65 with spark ignition. Rite-Pitch 14/6 prop. No data on radio equipment.

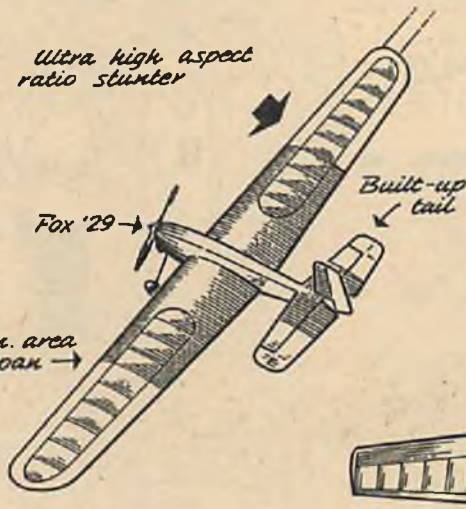
Off-Beat Models



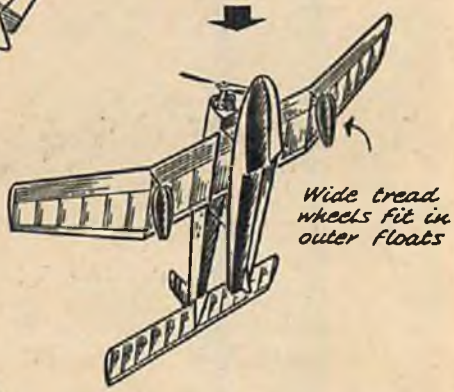
• Quick-convertible glider flies in either direction. Balance as usual for tractor; remove weight, place ½ of it in "tail" for canard flight.

"CHANGEABLE CHARLIE"





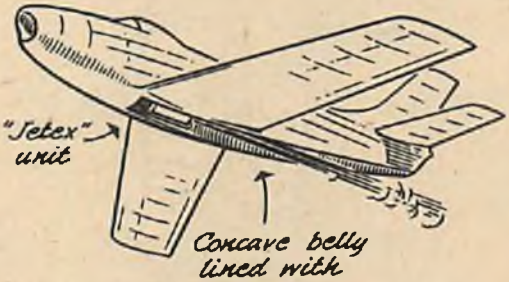
low-wing was convertible R.O.G. & R.O.W. entry (also payload) ... Made all water take-offs successfully —



• "T" tail configuration and use of end plates on wing and stabilizer are key features of original

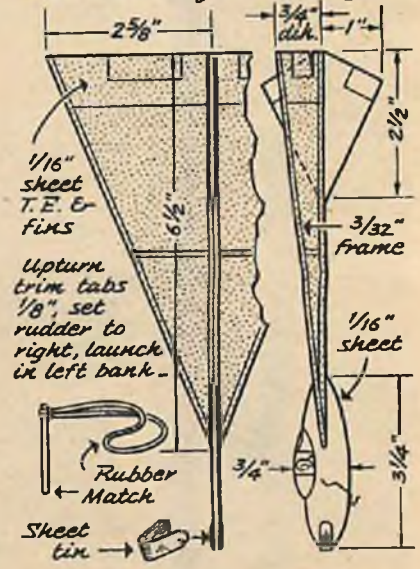
downthrust is more effective due to prop. blast under high stab. Adjustments to longitudinal trim by packing under stabilizer do not affect fixed fin tab settings ...

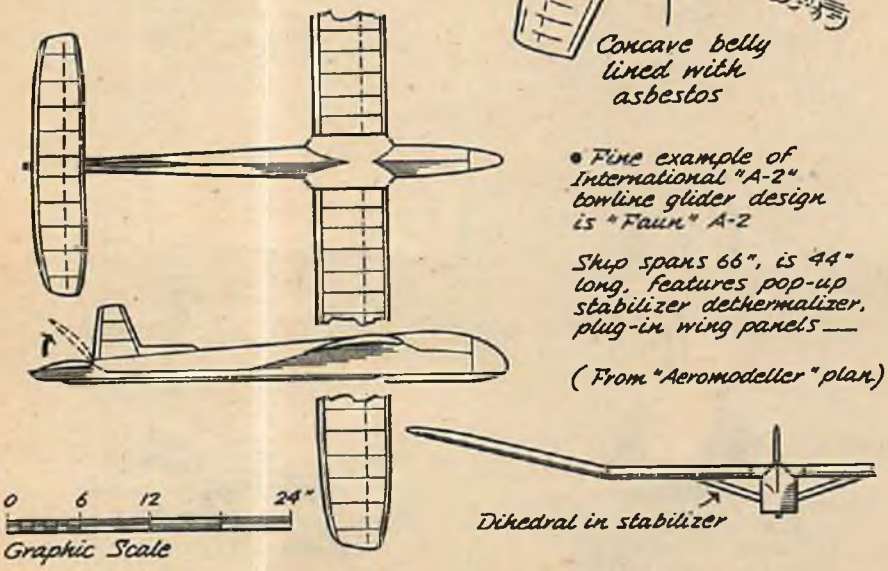
• Jet-powered free-flight scale model



• Delta soarer evolved from simple folded paper glider

has light built-up frame & tissue covering ... Fine flyer!

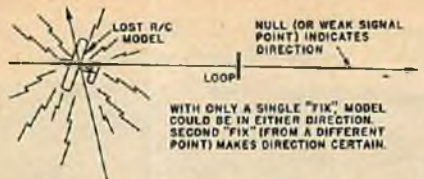




• Fine example of International "A-2" towline glider design is "Faun" A-2

Ship spans 66", is 44" long. Features pop-up stabilizer dethermalizer, plug-in wing panels —

(From "Aeromodeller" plan.)



SIMPLE DIRECTION FINDING

D/F o R/C

This'n's a grand club deal for finding a lost plane checking xmtrs & soft music

■ The unit shown was made with a switching arrangement, so that it may be used on two ranges of frequencies—the entire 50-54 mc. ham band, and a range of about 26.950-29.50 mc. The latter covers the 27 mc. ham band, the 27.255 mc. R/C spot, and most of the ham 10 meter band. The finder is thus of considerable use to a wide variety of R/C operators and is an ideal club construction project, for this reason.

The case was made from a cut-down cigar box, with the cover upon which the loop is mounted made of 1/16" thick linen Bakelite. The case as shown is plenty big enough to hold long-lasting batteries, and yet small enough to be tucked away in a tool box when not in use. A single 22½ V. battery of the type used by a majority of R/C flyers in their planes supplies the high voltage, but room is provided for the next larger size, if desired. The A cell may be any of the various flashlight units up to the size D. Spring clips make contact with the power supply, and may be bent to fit the various sizes mentioned; the batteries are held in by rubber bands.

One unusual feature is the RF chokes in the phone leads. These were found to make the direction finding action considerably better, since they isolate the headphones and their leads, which otherwise act as an antenna.

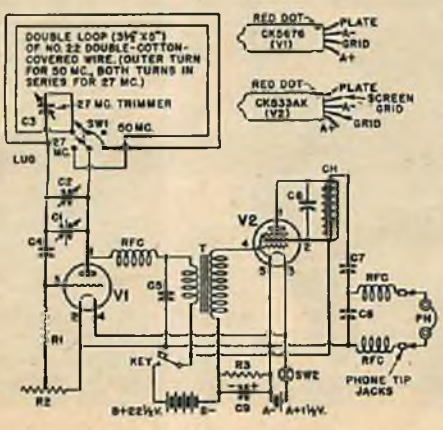
Make up the box first and cut and drill the "chassis." The tuning condenser C1 is made by altering the parts of a National UMA-25 condenser to make a so-called split stator condenser. This is required in order to be able to tune the condenser without troublesome hand-capacity. Remove all the fixed plates but four from the long screws, and reassemble these with the spacers. Then on two additional #4 screws, assemble another four fixed plates. Heat the rear bushing of the variable plates with a soldering iron and remove. Take off all but three plates, put on two spacers, then three more plates and clamp tight, with the upper and lower groups of three 180 deg. apart.

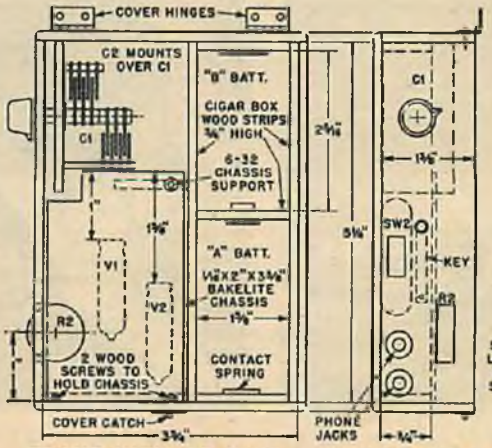
The tubes, transformer, and rheostat R2 are on the Bakelite chassis, and may be wired up before the assembly is fastened in the case. You can use sockets for the tubes, or solder the leads right into the circuit, using eyelets or small lugs, as in some of the commercial R/C receivers.

The loop is wound in two turns, with the ends soldered to the switch terminals. The turns are supported away from the cover on fiber or Bakelite washers, and the wire should be fairly heavy. Very thin flexible hookup wire was used here, but something around #22 DCC will do as well.

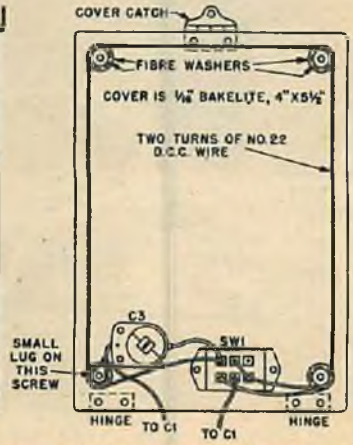
The suggested location for the phone jackets and rheostat are different than in the model, as they will be easier to mount. As a matter of fact, several changes have been made in the unit since it was first built and photographed. There is now a trimmer for each band, that for 50 mc. being attached to the two stator sections of C1 (this is shown in the photo), and C3—the trimmer for 27¼ mc. is on the cover. A little key was inserted in the B+ lead, which enables the unit to be keyed rapidly to check escapements, etc. These improvements are shown in the drawings.

The use of CH makes it possible to employ the Finder as a test transmitter without having to have the phones plugged in. If the choke were omitted and the phones connected from plate to screen grid of V2, the latter would be damaged, if the plate voltage were turned on with no phones connected. There is plenty of room for both CH and T under the chassis, but the cores should be (*Continued on page* 68)





FRONT VIEW OF CASE — SIDE VIEW

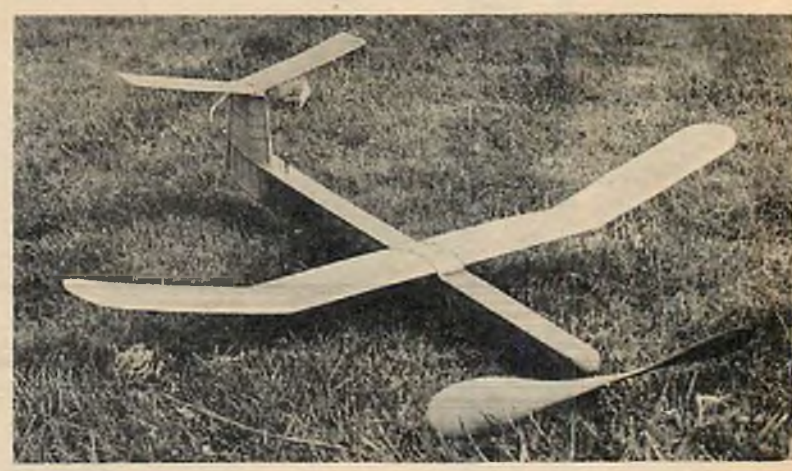


COVER AND LOOP ANTENNA

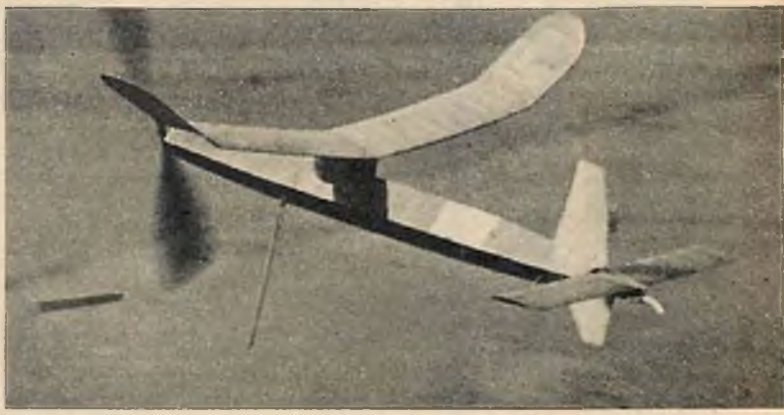
Photos and Comments by Bill Fletcher

USA's Joe Foster, Wakefield winner, gets off in hurry.

Swedish entry flown by C. Moberg; first one went O.O.S., then this spare dethermalized losing stab in thermal for 2nd round max.



John O'Donnell's "Maxie" off on long flight. Hughie is John's young brother; both flew similar ships. John totaled 13:47 for 13th.



International Wakefield

George Reich, Cleveland, totaled 14:59, missed tying for Cup by 1 sec. George is brother-in-law of Dick Korda, ex-Cup champ.

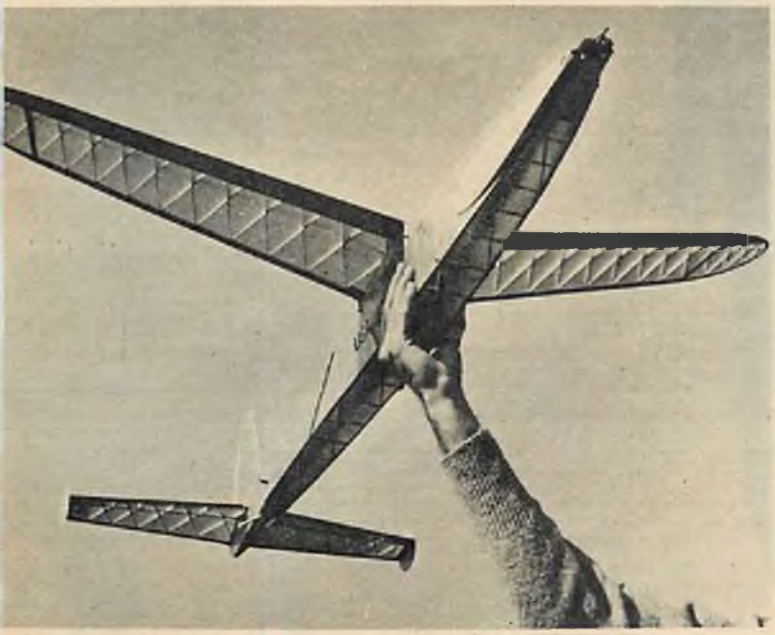
14-year-old Hughie O'Donnell, England, weighs for fly-off. Ex-champ Chesterton aids. Prop: 2' with 2' pitch, 5½ oz. motor.

Ted Evans, famous contender, has placed on many British teams. His model was timed at 4:34 out-of-sight straight up overhead.

Cliff Montplaisir, USA, with geared entry. Glide circle on 2nd flight was too tight; he got 5, 4:02 and 5 for a 12th place.

Championships

Most closely contested Blue Ribbon event in the annals of aeromodeling



Carl Hermes of U.S. had clean design, good workmanship. Knotting rubber held his total time to 10:55. Propeller is Bilgri X type.

Argentineans Colombo (holding) and Elisio Scotto (winding). Elisio in a three-way tie for 1st, did 2:44 on 4th round fly-off.

Director's Eye-view of the

By HAROLD deBOLT

Competition Manager of U.S. Radio Control Meet

You've heard everybody else talking and writing about the big go-round; here's the chap with the real inside scoop—he was boss in charge of it all!

■ The really feverish interest was in the multi-channel stuff. Several entrants from the West Coast were using resonant reed tone rigs. The basic system was originated by E. L. Rockwood and flown to first place by Alex Schneider in the '52 Nats. Lyle Sewell had the best luck with it this year.

His group sacrificed weight wherever necessary in order to get trouble free operation. They came up with a rather bulky but sound unit and they were not a bit skimpy on batteries—whatever the size necessary for power, they did not hesitate to use it. These resonant reed-tone systems provide 5 separate channels, so they were able to use powerful motor-driven servos that have enough torque to twist the rudder right off most any model. They made their servos as large as necessary to achieve reliability. They built a model around this equipment capable of handling it; these 7′ span .60 engine powered ships performed well all week long!

Another interesting multi-system was flown to 2nd place in the meet by Howard Bonner. His flying mate John Curry developed the radio gear. Their radio was a 2-channel affair which operated compound escapements, this giving them the additional controls. The radio was a modulated tone receiver using the "band pass" system to detect the desired tones. A "band pass" is an assembly of tubes, condensers, resistors, etc., which are so balanced electronically that they will only accept one certain tone. In the Curry receiver, there were two such assem-

National R/C Event

blies; consequently you could send all sorts of tones to the receiver but it would only pass the two tones to which it was tuned. To each of these tuned circuits, they had connected a separate relay which was in turn connected to a compound escapement. Since each escapement would provide for operation of two controls, they wound up with the equivalent of a four-channel receiver operating escapements.

Curry's and Bonner's identical models were about "Rudderbug" size; with Fox .35s for power they really scooted along. They both provided plenty of thrills with their fast, smooth and very precise flying, much in the manner of full-scale fighters maneuvering.

Several of Frank Schmidt's fabulous new commercial-built 5-channel resonant reed-tone modulated systems were flown. Basic principle of this outfit is the same as the original Rockwood, but there is where the similarity ends. The "Channel Master" system is designed for use in smaller models. You immediately notice the effort that has been put forth to get light weight and compactness, the whole unit requiring but very little more room than the usual single channel outfit. With only slightly more weight than a simple single channel, this system offers 5 channels with all controls servo operated. It is normally flown in the .15 to .19 size models.

In the single channel system there did seem to be a trend away from gas tubes to the hard types. Also present were several tone-modulated outfits on a single channel. Walt Good did well with his which uses 3 hard tubes and is very compact and light. Walt likes this type for its reliability and the protection that it affords from outside interference.

In the gadget department there were many modifications to the normal escapement, mostly to obtain some second control. Probably most outstanding was Bonner's compound and its many home modifications. An example was Lou Andrews' version; the compound escapement operated the rudder. To the compound's switch was connected another s-n escapement which operated both the elevator and engine speed. On the s-n escapement, the normal neutral positions constituted high and low engine speeds, the two hold positions gave either up or down elevator as desired. This seemed mighty hard to beat if you are fast enough on the transmitter button!

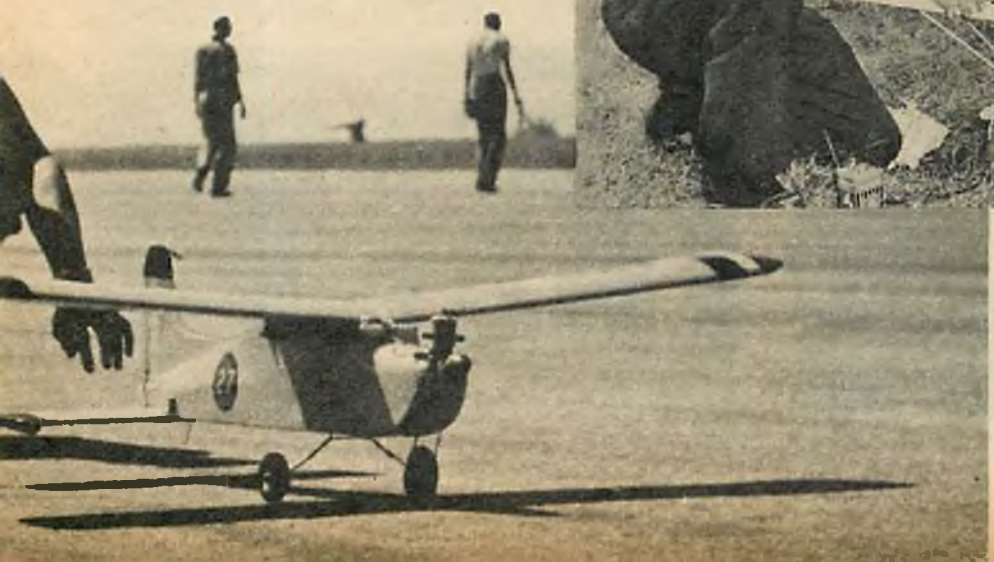
Also outstanding were the many pulse-rate systems present. Using a magnet actuator, F. R. Adams flew a small .09 powered model using rudder only. This little ship held first place for several days and probably flew as many flights as any model in the meet! The others varied from this simple pulsing rudder job to quite elaborate layouts; some looked like miniature T-V stations in operation. The desire seemed the same—get as much as you can with that single channel.

Vernon Macnabb showed up with a ship using both 465 and 27 mc! He used one channel to operate the rudder through a compound escapement and the other to operate the elevator by the same means. Thus, he had both elevator and rudder plus *two more* controls if he so desired!

Kit jobs were well represented; one came close to winning the meet. The really high-performance ships all looked pretty much alike and seemed to leave very little choice performancewise. A look-see into what may be coming in the future was given by Mr. Vivell and his Fibreglas ships. It seemed as though the landing gear controversy might be solved at this meet once and for all, but at the end it was just as garbled as ever. Over 90% of the models R.O.G.'d well. It apparently made no difference how many wheels they had except for Claude McCullough who came down from 5 to 2 wheels and thus made several quite pretty take-offs this year. The answer seems to lie in getting the wheels placed correctly in relation to the C.G., the closer to it the better; otherwise, tail wheels seem to be out—they steer the model too much.

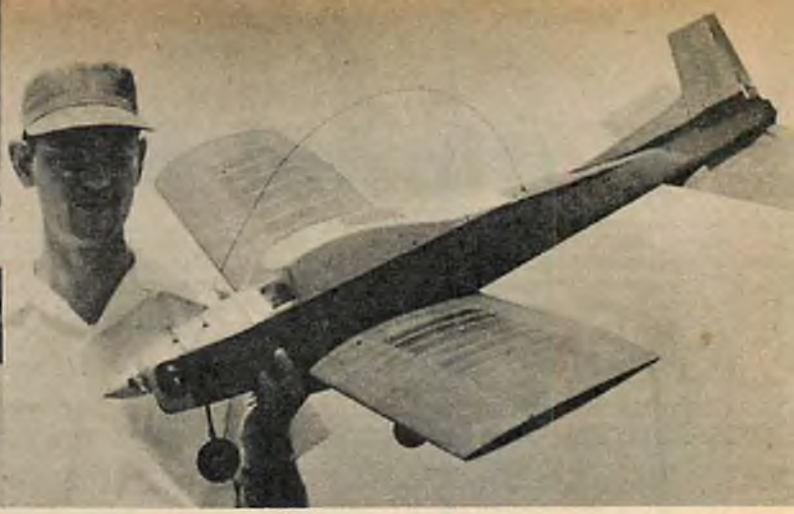
The general trend seemed to be toward smaller models than in other years, the .19 engine being the most popular. This may account for the increased performance, especially in the wind and on the take-offs.

Flying boiled down to a battle between multi-channel ships and those which were rudder-only. The closeness of the final results shows how



Director-reporter deBolt (right) with Ed Manulkin and Sterling's Tri-Pacer. Ex-Navy man deBolt is addicted to the corn-cob pipe which apparently helps him maintain composure when all about him are going to pieces . . . both models and modelers. Harold was assisted by Red Hillegas of Cleveland in running R/C.

Fran McElwee's entry (held by Schmaedig) started as low-winger.



Brayton Paul (Balto.) and extremely clean, simple low wing.

spirited was the battle and how well our rules have been written to strike a balance between these two types of models. Sixteen of the 22 maneuvers can be performed well with rudder-only. Even though the best multi-channel flyers in the country were present, it was they who had the uphill fight since the rudder-only flyers led practically throughout the meet! The spot landing points seem out of proportion; the rules allow 57 points for landings which usually are more luck than anything else. By comparison, you get only 54 points for three perfect consecutive horizontal rolls and outside loops.

Airmanship definitely won the meet. One of those who had the most confidence in his model and flying ability was Jack Port whose simple rudder-only ship walked away with the meet in the last few minutes of flying time. Jack was tied for 2nd place several points behind the first-place man as he went up for his last flight with a 200 ft. overcast and rain present. With a real show of confidence in his model he brought it in for that perfect spot landing which won the contest.

It was pathetic to see how many of the radio "experts" did not understand their own rules, and this was one thing which beat a lot of them. On the comparatively simple precision pattern the highest score was hardly 60% of the maximum—low indeed! The main reason was lack of practice, for you do have to practice this pattern even if it is simple looking.

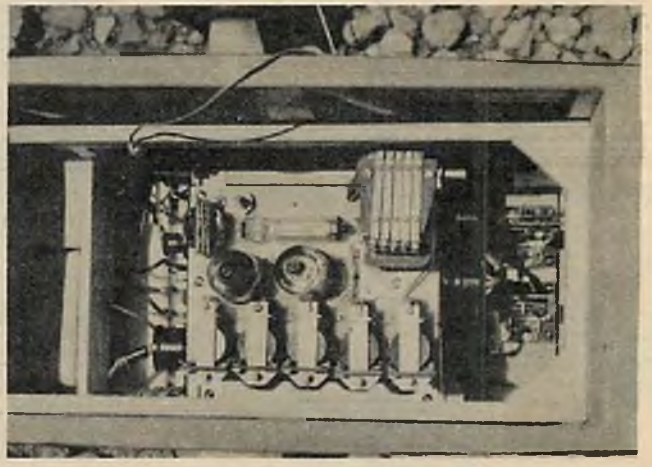
Models may be said to fall into three categories. First is the high-powered, small, all-out stunt model which tears around the sky doing rolls at the drop of the hat. This was the type of model which won the meet. Second comes the strictly "precision" model which flies very much like a full-scale airplane and performs maneuvers that are real pretty to look at, although it usually must be retrimmed for all-out stunt flying. This type of model naturally excels on the precision pattern. The newest addition to the fold is the combination stunt and precision model which is a direct result of the multi-channel radio systems. In this you have a precision type model with elevators added so that its trim can be changed in flight. These are in the minority, yet are the ones which fly the prettiest and maneuver the hottest.

No matter what style the model, attention must be given to windy weather performance. At the Nats one of the things which was lacking in so many of the otherwise "hot" ships was good wind penetration. It was agonizing to see these models practically standing still while flying into a relatively light wind or else skyrocketing all over the place each time they turned into it.

Using the 1953 meet as a basis, let's think about the ship that could win next year's event. The model must have a superior design, not just any old reliable "clunk" will do. It must have exceptional windy weather performance coupled with good takeoff and landing characteristics. A well-balanced force setup must be used which will not sacrifice turning and stunting ability, yet will provide excellent wind penetration. A good clean-line model would seem imperative. It must be a "usable" model, one which is simple to build and maintain without fancy gadgets that need constant attention. It seems logical to expect that a multi-channel will win the next meet.

The control system must be bug free and require very little attention at the field. For really tight maneuvering and those down-elevator maneuvers, lots of power must be available at the actuators, hence, motor-driven servos or heavy rubber on the escapements would appear necessary. The elevator should be either proportional or else trimmable, for only with this type can you get the very realistic style of maneuvering. Let's see how many words we have to eat next year!

A. T.'s McEntee ponders Ronald Chandler's giant size craft.



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The Power BEHIND MORE FIRST PLACE WINNERS THAN ANY OTHER

Standard of the Model World

Results of 1953 NATIONALS
based on signed statements

		FUEL USED
½A SCALE FREE FLIGHT		
Junior	J. Spornicht, Hempstead, N.Y.	O&R AA
Senior	Charles Corbett, Brooklyn, N.Y.	O&R #2
Open	Ed Stoll, Detroit, Michigan	O&R AA
FLYING SCALE CONTROL		
Junior	Barry Burr, Corpus Christie, Texas	O&R #2
Senior	C. Hill Hutchins, Jr., Spartanburg, S.C.	O&R #4
Open	Thomas Dean, Corpus Christie, Texas	O&R #4
COMBAT CONTROL LINE		
Senior	Gerald Wagner, West Cheshire, Conn.	XL #4
½A NAVY CARRIER		
Senior	William Davies, Maplewood, New Jersey	O&R AA
½A SPEED CONTROL LINE		
Open	William Stewart, Trenton, New Jersey	O&R #4
CLASS C SPEED CONTROL LINE		
Junior	Alfred Davis, Birmingham, Alabama	O&R #4
Senior	Sam Dehelson, Detroit, Michigan	O&R #4
CLASS B SPEED CONTROL LINE		
Senior	Herbert L. Davis, Birmingham, Alabama	O&R #4
STUNT CONTROL LINE		
Junior	Walter Pyron, Decatur, Georgia	O&R #2
Senior	George Aldrich, Dallas, Texas	O&R #4
CLASS A FREE FLIGHT		
Junior	Judson Stone, Topeka, Kansas	O&R #2
CLASS B FREE FLIGHT		
Senior	Ronald Wood, Pittsburg, California	O&R #4
Open	Marvin Burley, Jr., Spartanburg, S.C.	O&R #2
CLASS AB PAA PAYLOAD		
Jr. — Sr.	Edward Mahler, Queens, New York	O&R AA
HILLER HELICOPTER CONTROL LINE		
	Parnell Schoenky, Kirkwood, Mo.	O&R AA
R.O.W. FREE FLIGHT		
Open	Sal Taibi, Lakewood, California	XL-#2

2½ Times More Winners Than the Nearest Competing Fuel

"It's performance-proved"... says Sal Taibi

A. M. A. Record holder, whose A B Spacer won 1953 ROW Open Championship.

"Cheminol's fuel engineers proved to me there's a difference in fuels. And when I put Cheminol's specific purpose fuel in my engine I could feel that all-important surge of extra power!"

Cheminol Corporation

Los Angeles, California • Middletown, Delaware
Canadian Hobby Craft, Toronto, Canada

D/FoR/C

(*Continued from page 61*)

at right angles to each other.

The two RF chokes on the jacks are the same as the one in the plate circuit of V1, and should be kept near the jacks and away from other wiring as much as possible.

There is nothing to getting the set into operation except turning on the switch and varying the rheostat till a good strong hiss is heard in the phones. Then set condenser C2 so that the tuning dial covers the 50 mc. band. Switch to 27 mc., and set this band with C3.

In use, the cover is opened and turned upward as shown in one of the photos; then the whole set is turned, after a signal is tuned in, till a decided weak direction is noted. There will be two of these weak spots, 180 deg. apart, and there is no simple way to tell which way to go, to get to the plane. However, if you start off the wrong way, the signal will soon get weaker. Another way to double-check the direction is to make several observations a hundred feet or so apart; the lines from the loop to the plane will intersect at the desired point.

It has been found best to adjust the rheostat until the plane receiver gives a strong squeal in the phones. Then in the direction of the plane, the squeal will vary noticeably in tone as the loop is rotated. You will also notice that the signal gets weaker every half wave, as you walk toward or away from the plane; these weak points will be about 9 ft. apart on the 50 mc. band and 16 ft. or so on 27.

With a strong signal from the receiver, you can get a much more accurate "take" on the plane, if you move to one of these weak points. Conversely, if you don't hear the plane when you first turn on the receiver, move around a bit, as you may be in a "dead" spot.

A little practice will soon show how to use the finder to best advantage, and how the output from different types of receivers sounds. But be sure you *do* practice—and before the plane is lost, not after! If the rheostat is turned to the zero resistance point, tube V1 will cease supering, but will act as a very low power transmitter. In this condition it is ideal for checking plane receivers for sensitivity.

Parts List

R1—20,000 ohm, ½W. R2—2 meg. variable, CRL type B16-122. R3—1500 ohm ½W. C1—Modified National UMA 25. C2, C3—3-13 ceramic trimmer, CRL 822BZ. C4, C8—100 mmf, CRL D6-101, C5, C7—.005 mf, CRL DM-502. C6—.001 mf, CRL DM-102. C9—5mf, 50 V. electrolytic. V1—Raytheon CK 5676 V2—Raytheon CK 533 AX. T—Miniature 3-1 A. F. trans., UTCSSO—2. SW-1—DPDT slide sw. SW2—SPST slide sw. PH—Telex Monoset, 2000 ohms, with phone tips on cord. A—1½V, Winchester size D. B—22½V, Olin O915. RFC—135T #34 en. wire on form ¼" dia. x 1" long. Sockets—5 prong subminiature, Cinch. CH—Miniature AF choke, UTC SSO5. Key—2 metal strips Bakelite button.

College Model Club

(*Continued from page* 14)

The Parks College campus is about the only area in East St. Louis where there is enough room to fly free flight. The college is situated near the village of Cahokia, Illinois, and comprises about 300 acres of land, with the majority of it being the flying field, and so it offers opportunity to fly all types of model aircraft.

At the beginning, with all this large flying area, free flight was the vogue, but after a short period control line entered upon the scene and has predominated ever since.

The control line phase has been enlarged to include speed, stunt, team racing, scale and novelty events, and some of the present members would like to make the carrier event part of the club's activities, so a deck is planned in the near future. Free flight takes over in the scale department and there are many fine scale aircraft flown on the campus restricted to Half-A and small A.

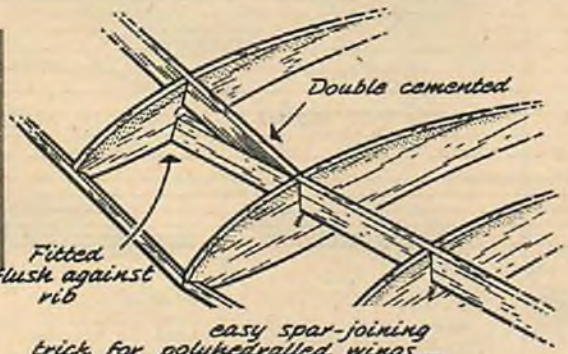
"Say what you like, Snorting Bear—but Hughes built *his* out of wood."

Next in line is PAA-Load, a favorite event in this area, and the Cloud Hounds together with one of the local clubs run the PAA-Load events every year in East St. Louis.

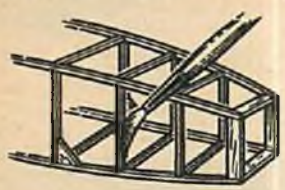
Most interesting of the club's activities is design. The club members are always coming up with a new design, or innovation that turns the club meetings into a seminar on low drag airfoils, flow patterns or better control systems. Some of the club members have experimented on rotating panel aircraft stunt models with balanced elevators, heat dissipating finishes and pressure flow cowlings. Often the young engineer, whether Aeronautical or Maintenance, will choose a design project as Thesis material and use the college wind tunnel in the testing and modification of his design project.

—Eugene Kranz, President, Parks College Cloud Hounds

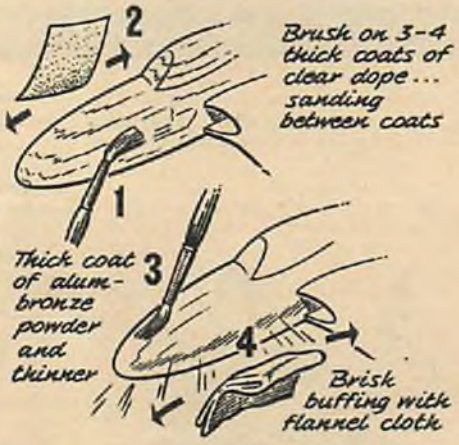
Finishing Touches



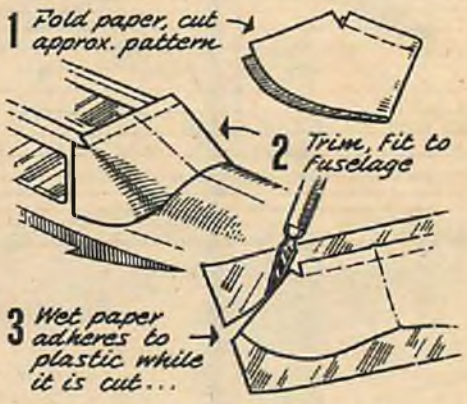
easy spar-joining trick for polyhedralled wings— Ideal for rubber models and light gassies . . . no gussets necessary—



• Rubber lubricant, spattered inside fuselage has serious weakening effect . . . can be prevented by brushing fuelproofer on frame & covering

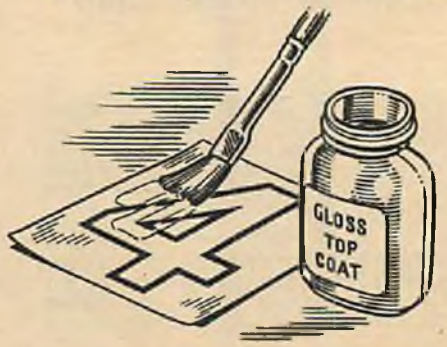


Swedish solid modeler, sought "real metal brilliancy"; finally gained it with this model finishing procedure —



Knack of fitting cabin windshield is greatly simplified in this procedure

(also handy for metal cowls)



Old decals which fall apart when moistened can be salvaged by first brushing on "Gloss Top Coat"

More Thrust—Less Torque

PROPELLER RECOMMENDATION CHART

ENGINE		Free Flight	Payload and Radio Control	STUNT		SPEED	
K & B Infant	.020	5-2*					
K & B	.035	5-3*	6-2*	5-3			
OK Cub	.039	6-2*	6-2*	5-3			
Spitfire	.045	6-2*	7-2*	5-3	6-3	5-4	5-5
Cub	.049	6-3*	7-2*	5-4	6-3	5-5	5-6
Cub	.049x	6-3*	7-2*	5-3	6-3	5-5	5-6
K & B Torpedo	.049	6-3*	7-2*	5-4	6-3	5-6	5-7
Duro Glo (Diesel)	.049	7-4	7-4	5-5	6-4		
Space Bug	.049	6-3*	7-2*	5-4	6-3	5-6	5-7
Spitfire	.049	6-3*	7-2*	5-4	6-3	5-6	5-7
Wasp	.049	6-2*	7-2*	5-3	6-3	5-6	5-7
Wenmac	.049	6-3*	7-2*	5-4	6-3	5-6	5-7
Spitfire	.065	7-3*	7-3*	6-4	7-4	5-7	5-8
Cub	.074	8-3	8-3	7-4	8-5	5-7	5-8
Cub	.09	8-4	9-3	7-6	8-5	6-7	5-8
K & B	.09	8-3	9-3	7-4	7-6	6-7	5-9
McCoy	.09	8-3	9-3	7-4	7-6	6-7	5-9
Mills (Diesel)	.45cc	8-4	9-3				
Cub	.14	9-4	10-3	8-5	8-6		
Cub (Diesel)	.15	9-4	10-4	8-6	8-8		
Cameron	.19	9-4	11-4	8-6	8-8	6-9	7-8
K & B Torpedo	.19	9-4	11-4	8-6	8-8	6-10	7-9
McCoy	.19	9-4	10-4	8-5	8-6	6-9	7-8
K & B Torpedo	.23	9-5	11-4	8-6	8-8		
Ohlsson	.23	9-6	10-4	8-8	8-8		
Dooling	.29	9-5	11-4	9-6	8-8	7-9	7-10
Fox	.29	10-5	12-4	9-6	10-5	7-10	
Forster	.29	10-5	12-4	9-6	10-5	7-9	7-10
K & B Torpedo	.29	10-6	12-4	10-5	10-6		
McCoy	.29	10-5	12-4	9-6	10-5	7-9	7-10
Ohlsson	.29	10-6	12-4	10-5	10-6		
Veco	.29	10-6	12-4	9-6	10-6		
Veco	.31	10-6	12-4	10-6	9-7		
K & B Torpedo	.32	10-6	12-4	10-6	9-7		
Fox	.35	10-6	12-4	10-6	9-7		
Atwood	.49	12-6	12-5	12-6	11-8	8-11	9-10
McCoy	.49	11-6	12-4	11-6	10-8	8-11	9-10
McCoy	.60	12-6	12-6			9-11	9-12
Dooling	.61					9-10	9-11

Narrow Blade Series

Radio Control Propeller

(recommendations)

Engines	First Flights and Low Altitude	High Altitude and Maneuvers
All .049's	7 in. dia. 2 in. pitch	7 in. dia. 3 in. pitch
Cub .074	8 " " 3 " "	8 " " 3 " "
.09's	10 " " 2 " "	9 " " 3 " "
.14's and .15's	10 " " 3 " "	10 " " 4 " "
McCoy .19	11 " " 3 " "	10 " " 4 " "
Cameron .19	11 " " 3 " "	11 " " 4 " "
K&B .19	12 " " 3 " "	11 " " 4 " "
Fox .19	12 " " 3 " "	11 " " 4 " "
K&B .29	12 " " 3 " "	12 " " 4 " "
Fox .29	12 " " 3 " "	12 " " 4 " "
McCoy .29	12 " " 3 " "	12 " " 4 " "

GET THE MOST FROM YOUR ENGINE AND YOUR FUEL with Tornado Propellers

PROP TALK by GRISH

● Plasticote Propellers available in 5, 6, 7, 8, 9, 10 inch diameters.

For free flight,
R. C.,
Stunt,
Speed, and
Team Racing.

● 11, 12, inch diameter Propellers in Laquer finish hardwood only.

TEAM RACING (Courtesy Keith Storey)	
8-8	
8-8	
8-8	cut to 7½-8
8-8	
8-7	
9-8	cut to 8½-8
9-7	
9-8	cut to 8½-8
9-7	
9-8	cut to 8½-8

All speed models using larger than 1¼" spinners add equal amount to diameter of prop. by using next larger diameter and cutting proper length from tip.

Example: 1½" Spinner on .49 diameter should be 8¼" to 8½.

All recomendations are based on average model aircraft. It is a known fact that larger wing area, or span, will require larger diameter and less pitch, smaller models, shorter props, more pitch, this applies to all but speed models.

It is almost impossible to recommend a definite diameter and pitch for every model, generally there are six factors to remember:

(1) Wing section. (4) Type of engine.
(2) Wing loading. (5) Type of fuel.
(3) Airfoil Used. (6) Velocity needed.

EXAMPLE: Free flight .049 engine - recommended prop 6-3, you should also try 5-4, 6-4, 7-2, 7-3, and 7-4, a little experimenting will go a long way to get the most out of your ship, engine, fuel and propeller.

On Class D engines spinners up to 1½" may be used with 9 inch diameter prop.

NOTE: All speed props shown, are for present line requirements.

CLASS ½A 35 ft. .006 Lines
CLASS A 52½ ft. .010 Lines
CLASS B 60 ft. .012 Lines
CLASS C 70 ft. .014 Lines
CLASS D 70 ft. .016 Lines

RADIO CONTROL NOTES

When flying R. C. it is necessary to reduce venturi opening from 25 to 50% on almost all engines. Large props slow your engine R.P.M., reducing suction. The model does not fly level at all times . . . dives and stalls are encountered changing the fuel force. Plug the venturi opening to such an extent that you get the power you want from your engine. Too much speed in R.C. can be disastrous.

GRISH BROS.

ST. JOHN, INDIANA

FOR CONSISTENT HIGH QUALITY, ASK FOR TORNADO PROPS AT HOBBY SHOPS EVERYWHERE.

AIRCRAFT INDUSTRY DIRECTORY

U.S.A.—AIRCRAFT

Aerocar, Inc., Longview, Wash.
Aerocar roadable airplane.

Aero Design & Engineering Co., Tulakes Airport, Oklahoma City, Okla.
Aero-Commander, 2-engine, 5-7 place light transport.

Aeronca Manufacturing Corp., Middletown, Ohio
Champion, 2-place lightplane. Sedan, 4-place lightplane.

American Helicopter Co., Inc., Manhattan Beach, Calif.
XH-26, 1-place pulse jet helicopter.

Anderson Greenwood & Co., Houston, Texas
AG-14, 2-place light pusher monoplane.

Beech Aircraft Corp., Wichita, Kan.
Bonanza, 4-place personal plane. Mentor, T-34 military trainer. Twin Bonanza, 2-engine light transport (AF, YL-23). Twin-Beech, 2-engine transport (AF, C-45, Navy JRB). T-36, 2-engine advanced trainer.

Beecraft Associates, Inc., 1536 Missouri St., San Diego, Calif.
Honey Bee, 1-place, ultra-light plane.

Bell Aircraft Corp., Buffalo, N. Y.
X-1B and X-2, experimental high speed research planes. X-5, variable sweep wing research plane.

Bell Aircraft Corp., Fort Worth, Texas
Model 47D-1 helicopter and its military versions H-13, HTL. YH-12, 8-10 place helicopter. XHSL-1, anti-submarine helicopter.

Bellanca Aircraft Corp., New Castle, Del.
Crusair, 4-place personal plane. Cruismaster, 4-place personal plane

Boeing Airplane Co., Seattle, Wash. and Wichita, Kan.
Stratocruiser, commercial transport. C-97, Stratofreighter, military transport. KC-97, aerial tanker. B-52 Stratofortress, 8-jet heavy bomber. B-47 Stratojet, 6-jet medium bomber (Wichita Div.). KB-47 Stratojet, 6-jet aerial tanker (Wichita Div.).

Call Aircraft Co., Afton, Wyo.
Callair, 2-place low wing light plane.

Cessna Aircraft Co., Wichita 15, Kan.
Model 170, 4-place all-metal light plane (L-19A military liaison). Model 180, 4-place personal plane. Model 190 & 195, 4-place personal plane. Model 310, 2-engine light transport. T-37, 2-jet military trainer.

Chance Vought Aircraft Division, United Aircraft Corp., Dallas, Texas
F7U-3 Cutlass, 2-jet naval carrier fighter.

Chase Aircraft Co., Inc., West Trenton, N. J.
C-122, 2-engine military assault transport. C-123B, 2-engine military assault transport. C-123A, 2-jet experimental military transport.

Consolidated Vultee Aircraft Corp., San Diego, Calif. and Fort Worth, Texas
B-36, 6-engine and 2-jet heavy bomber (Fort Worth div.) C-99, 6-engine, heavy military transport. R3Y-1 (P5Y-1), 4-turboprop flying boat. XF-92A, delta wing experimental jet fighter. F2Y-1, Sea Dart, delta wing, hydroski fighter. XF-102, delta-wing jet fighter. Model 340, 2-engine commercial transport. T-29, C-131, military versions of Convair 240 and 340, some powered by turboprop engines.

Continental Inc., Danbury Airport, Danbury, Conn.
Fulton FA-2 Airphibian, 2-place roadable airplane.

Custer Channel Wing Corp., Route 4, Hagerstown, Md.
CW-5, 5-place channel wing, 2-engine airplane.

Doman Helicopters, Inc., Danbury, Conn.
LZ-4, 6-place utility helicopter. YH-31, military helicopter.

Douglas Aircraft Co., Santa Monica & El Segundo, Calif.
DC-6, 4-engine commercial transport, and military version. DC-7, 4-engine commercial transport. C-124 Globemaster, 4-engine, heavy military transport. R4D-8, 2-engine military transport (Super DC-3). AD series Skyraider, piston-engine Navy attack plane. A2D-1, Skyshark, turboprop Navy attack. A3D-1, 2-jet Navy attack (AF RB-66). F3D-2 Skyknight, 2-jet all-weather carrier fighter. F4D-1 Skyray, delta wing, carrier interceptor. D-558-2 Skyrocket, research plane. X-3, high-speed research, 2 Westinghouse jets totaling over 10,000 lbs. thrust.

Fairchild Engine & Aircraft Corp., Hagerstown, Md.
C-119 G & H Packet, 2-engine military cargo transport. XC-120 Pack-Plane, 2-engine military transport with detachable cargo pod. Chase C-123B, assault transport.

Fletcher Aviation Corp., Pasadena, Calif.
FD-25 Defender, 1-place light ground support airplane.

Grumman Aircraft Engineering Corp., Bethpage, N. Y.
F9-5 Panther, carrier jet fighter. F9F-6 Cougar, carrier jet fighter. AF-2S & W Guardian, piston-engine anti-submarine planes. S2F-1, 2-engine anti-submarine plane. Albatross, 2-engine air-sea rescue amphibian (AF, SA-16A, Navy UF-1). Mallard, 2-engine commercial amphibian.

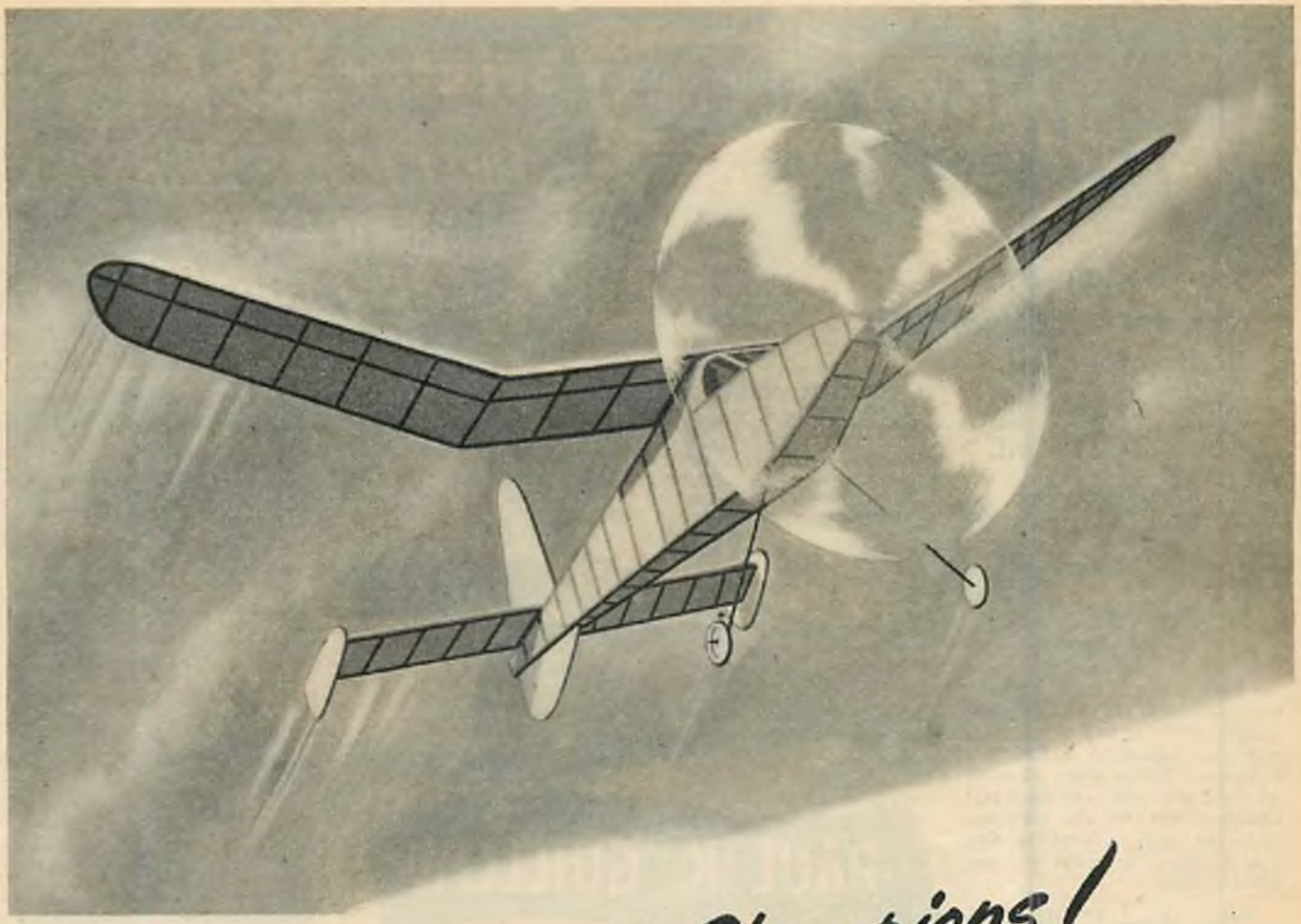
Gyrodyne Co. of America, St. James, L.I., New York.
G.C.A.-2, 5-place helicopter. G.C.A.-2A Helidyne (convertiplane).

Helio Aircraft Corp., Norwood, Mass.
Courier, 4-place plane. YL-24, military version of the Courier.

Hiller Helicopters, Inc., Palo Alto, Calif.
Model 360, 2-place commercial helicopter. H-23B (AF), HTE-2 (Navy). Hornet, 1-place ramjet helicopter (YH-32, military version).

Kaman Aircraft Corp., Bradley Field, Windsor Locks, Conn.
HTK-1 & HOK-1, 3-4 place Navy helicopters. K-225, turbine powered helicopter.

Lockheed Aircraft Corp., Burbank, Calif.
Constellation and Super-Constellation, commercial transports; C-121, WV-2, & R7V-1 military versions. XC-130, turbo-



The Power of Champions!

T-56®

There's nothing like long-lasting, power-packed T-56 for rubber-powered planes. Made of fine Brazilian para rubber, "T-56" is scientifically compounded to take maximum winding . . . return a high percentage of power . . . give consistent propulsion, *flight after flight.* Insist on T-56 and be "power sure."

UNITED STATES RUBBER COMPANY

ROCKEFELLER CENTER, NEW YORK

prop military assault transport. P2V-5 & 6 Neptune, Navy patrol-bomber. F-94C Starfire, all-weather jet fighter. XF-104, light-weight jet fighter. T-33A (AF), TV-2 (Navy) 2-place jet trainer.

The Glenn L. Martin Co., Baltimore, Md.
Model 404, 2-engine commercial transport. P5M Marlin, 2-engine anti-submarine flying boat. XB-51, 3-jet ground attack plane. B-57A Canberra, 2-jet light bomber & night intruder. B-61 Matador, pilotless jet bomber.

McCulloch Motors Corp., Los Angeles 45, Calif.
YH-30, tandem rotor helicopter (civilian MC-4).

McDonnell Aircraft Corp., Lambert-St. Louis Airport, St. Louis, Mo.
F2H-2, 3 & 4 Banshee, 2-jet Navy fighters. F3H-1 Demon, Navy jet fighter. F-101, AF jet fighter. XH-20, ramjet helicopter (Little Henry). XHJD-1, 2-engine helicopter.

Mooney Aircraft, Inc., Kerrville, Texas
M-18 Mite, 1-place personal plane. M-20, Scotsman, 4-place personal plane.

Nelson Specialty Corp., 440 Peralta Ave., San Leandro, Calif.
Dragonfly, 2-place powered sailplanes.

North American Aviation, Inc., International Airport, Los Angeles 45, Calif.
F-86E, F and H Sabre, jet fighters. F-86D Sabre, all-weather jet interceptor. F-100 Super-Sabre jet fighter. FJ-2 & 3 Fury, Navy jet fighters. AJ-1 Savage, 2-piston engine-1-jet Navy attack bomber. XA2J-1, 2-turboprop experimental attack bomber. T-28A, piston engine trainer.

Northrop Aircraft, Inc., Hawthorne, Calif.
F-89D Scorpion, 2-jet all-weather interceptor. X-4, high speed jet research airplane.

Piasecki Helicopter Corp., Morton, Pa.
HRP Rescuer, Navy helicopter (H-21 USAF & U.S. Army). HUP Navy general purpose helicopter (H-25 USAF), YH-16, USAF & U.S. Army, 40-place transport helicopter.

Piper Aircraft Corp., Lockhaven, Pa.
PA-18 Super-Cub (L-18 & L-21 military liaison). PA-20 Pacer, 4-place personal plane. PA-22 Tri-Pacer, 4-place personal plane (tricycle gear). Apache, 2-engine personal plane.

Regent Aircraft, Inc., Edinburg, Texas
Rocket 260, 5-place personal plane (260 hp). Rocket 400, 5-place personal plane (400 hp).

Republic Aviation Corp., Farmingdale, L.I., N.Y.
F-84G, Thunderbolt, 1-jet fighter (straight wing). F-84F Thunderstreak, 1-jet fighter (swept wing). RF-84F Thunderstreak, reconnaissance jet fighter, air intakes in wing roots. XF-91, inverse-taper wing experimental fighter, jet and rocket. XF-103, experimental fighter. XF-105, experimental fighter.

Ryan Aeronautical Co., Lindbergh Field, San Diego, Calif.
Navion, side-by-side trainer.

Schweizer Aircraft Corp., County Airport, Elmira, N. Y.
SGC 1-23D, 1-place, all-metal high-performance sailplane.

Sikorsky Aircraft, Division of United Aircraft Corp., Bridgeport, Conn.
S-52, 3-4 place helicopter (Navy HO3S-1). S-55, 12-place transport helicopter (USAF H-19, Navy HO4S, Marine HRS). S-56, large transport helicopter (Marine XHR-2S-1). XHSS-1, anti-submarine helicopter.

Taylorcraft, Inc., Conway-Pittsburgh Airport, Conway, Pa.
Model 19 Sportsman, 2-place lightplane. Tourist, 4-place personal plane.

Temco Aircraft Corp., Dallas 2, Texas
YT-35 Buckaroo, 1-engine military trainer. Plebe, 1-engine military trainer.

U.S.A.—ENGINES

Aircooled Motors, Inc., Liverpool Rd., Syracuse 8, N. Y.
6V6-245-B16F, 6 cyl. opposed, air-cooled, 245 hp. 6V4-200-C32, 6 cyl. opposed, air-cooled, 200 hp.

Allison Division, General Motors Corp., Speedway, Indianapolis 6, Ind.
J33-A-35, centrifugal flow turbojet, 4600 lbs. thrust. J35-A33A, axial flow turbojet, 5000 lbs. thrust. J71, axial flow turbojet, 9700 lbs. thrust. T-38, turboprop, 2765 hp. T-40, turboprop, 5525 hp.

Continental Aviation & Engineering Corp., 1470 Algonquin Ave., Detroit, Mich.
Turbomeca Pimené, Marboré & Palas, light jet engines, built under license to Turbomeca of France.

Continental Motors Corp., Market St., Muskegon, Mich.
C85-12, 4 cyl. horizontal opposed air-cooled engine, 85 hp. C145-2, 6 cyl. horizontal opposed air-cooled engine, 145 hp. E185-1, 6 cyl. horizontal opposed air-cooled engine, 205 hp. O470, 6 cyl. horizontal opposed air-cooled engine, 225 hp.

Fairchild Engine Division, Fairchild Engine & Airplane Corp., Farmingdale, L.I., N.Y.
J44 turbojet, for guided missiles, 1000 lbs. thrust.

Frederic Flader, Inc., 583 Division St., No. Tonawanda, N.Y.
J-55 axial flow turbojet, 770 lbs. thrust.

General Electric Co., Aircraft Gas Turbine Div., P.O. Box 196 Cincinnati, Ohio.
J47-GE, axial flow turbojets, various models, 5200 lbs. thrust and over. J73-GE, axial flow turbojet, 9000 lbs. thrust.

Jacobs Aircraft Engine Co., Pottstown, Pa.
R-755, 7 cyl. radial air-cooled, 225 hp. R-951, 7 cyl. radial air-cooled, 300 hp.

Lycoming-Spencer Division, Avco Mfg. Co., Williamsport 38, Pa.
O-145, 4 cyl. opposed, air-cooled, 65 hp. O-290-D2, 4 cyl. opposed air-cooled, 100 hp. GO-435-A, 6 cyl. opposed air-cooled, 260 hp.

Marquardt Aircraft Co., 7801 Hayvenhurst Ave., Van Nuys, Calif.
C-20 ramjet engines, 1450 lbs. thrust.

McCulloch Motors Corp., International Airport, Los Angeles 45, Calif.
Model 4318A, 4 cyl. 2-cycle air-cooled engines for target drones.

Pratt & Whitney Aircraft, Div. of United Aircraft Corp., 400 Main St., East Hartford, Conn.
Wasp S1H (R-1340), 9 cyl. air-cooled radial, 600 hp. Double Wasp (R-2800), 18 cyl. air-cooled radial, 2400 hp. Wasp Major

WORLD'S CHAMPION POWER ENGINE...

K&B TORPEDO .15

INTERNATIONAL WORLD POWER CHAMPIONSHIPS
CRANFIELD, ENGLAND

Dave Kneeland of Hickman Hills, Missouri, USA, flew to an overwhelming victory in the Individual Power Event. His model, powered by a K&B Torpedo .15 engine, defeated some 60 contestants from 14 nations. Kneeland scored with a perfect of 3 5-minute flights . . . topping by almost 2 minutes, his nearest competitor.

INTERNATIONAL WORLD POWER CHAMPIONSHIPS
CRANFIELD, ENGLAND

The American team of Stan Hill, Carl Wheeley, Dave Kneeland, and Joe Elgin swept to a clear-cut victory in the Team Power Event. All flying K&B Torpedo .15 engines, they brought the prized Franjo Kluz Team Power Trophy to the USA with a total time of 38 minutes, 47 seconds.

THE TRUTH ABOUT FUEL CLAIMS!

Many claims are made for fuels . . . most are just "claims." The proof, of course, is performance in competition. K&B Supersonic Fuels stand on the Official Record. MORE FIRST PLACES WON AT THE 1951, 1952 AND 1953 NATIONALS WITH K&B SUPERSONIC FUELS THAN WITH ALL OTHERS COMBINED!

SUPERSONIC 1000
SUPERSONIC ULTRA GLO
SUPERSONIC 100

TORPEDO ENGINES

K&B

K & B MANUFACTURING CO.
224 East Palmer Avenue, Compton, California

(R-4360), 28 cyl. air-cooled radial, 3500 hp. J-48 turbojet, 7000 lbs. thrust. J-57 turbojet, over 8500 lbs. thrust. T-34-P-2, turboprop, 6500 hp.

Reaction Motors, Inc., Sicle Ave. & Elm St., Rockaway, N. J.
RM 6000C4 liquid rocket motor, 6000 lbs. thrust.

Westinghouse Electric Corp., Aviation Gas Turbine Div., Lester Branch P.O., Philadelphia, Pa.
J-34 turbojet, 3250 lbs. thrust. J-40, turbojet, 7500 lbs. thrust.

Wright Aeronautical Division, Curtiss-Wright Corp., Wood Ridge, N. J.
Cyclone 7 (R-1300), 7 cyl. radial air-cooled, 800 hp. Cyclone 9HE (R-1820), 9 cyl. radial air-cooled, 1525 hp. Cyclone 18 (R-3350), 18 cyl. radial air-cooled, 2500 hp. Turbo-Cyclone (R-3350-30W), 18 cyl. radial air-cooled, 3250 hp. J-65, turbojet, 7250 lbs. thrust.

CANADA—AIRCRAFT

A. V. Roe Canada, Ltd., Malton Nr. Toronto, Ont.
CF.100, 2-jet, 2-place long-range interceptor. C.102 Jetliner, 4-jet, 40-place experimental jet airliner.

Canadair, Ltd., Cartierville Airport, Montreal, Que.
Canadair 4, 4-engine (Rolls-Royce) airliner based on DC-4. Canadair 5, 4-engine (2000 hp radials) airliner based on DC-6. Sabre, 1-jet fighter (F-86E built under North American license), Canadian engine.

De Havilland Aircraft of Canada, Ltd., Postal Station "L," Toronto, Ont.
DHC-2 Beaver, 1-engine, 7-place utility aircraft (military version for U.S. Army & AF, L-20). DHC-3 Otter, 1-engine, 9-13 place utility aircraft. Chipmunk, 1-engine, 2-place low wing trainer.

Doman-Fleet Helicopters, Ltd., Port Erie, Ont.
LZ-5 helicopter.

Found Brothers Aviation, Ltd., Hangar #5, Malton Airport, Toronto, Ont.
FBA-2, 4-place single engine personal plane.

CANADA—ENGINES

A. V. Roe Canada, Ltd., Gas Turbine Div., Box 430, Terminal "A," Toronto, Ont.
Orenda, axial flow turbojet, 6000 lbs. thrust.

GREAT BRITAIN—AIRCRAFT

Airspeed Division of the de Havilland Aircraft Co., Ltd., Hatfield, Herts.
Airspeed Ambassador, 2-engine airliner.

Sir W. G. Armstrong Whitworth Aircraft, Ltd., Baginton, Nr. Coventry
Meteor NF11, 2-jet night fighter.

Auster Aircraft, Ltd., Rearsby
Auster civilian lightplanes and military liaison. B-4, light single-engine freighter and multi-purpose aircraft.

A. V. Roe & Co., Ltd., Greengate, Middleton, Manchester
Avro 707A and 707B, delta, jet research plane. Avro 707C, delta jet trainer. Vulcan, 4-jet delta bomber. Shackleton, 4-piston engine Navy patrol bomber. Anson, 2-piston engine military trainer. Atlanta, delta wing airliner.

Blackburn & General Aircraft, Ltd., Brough, East Yorks
Universal Transport, 4-piston engine freighter (military or civilian).

Boulton Paul Aircraft, Ltd., Wolverhampton
P-111A, 1-jet, delta, high-speed research aircraft. Balliol, 1-piston engine military trainer.

Bristol Aeroplane Co., Ltd., Filton, Bristol
Britannia, 4-turboprop, 90-passenger airliner. Freighter, 2-piston engine, passenger & cargo aircraft. Type 173, 2-engine, 13-passenger helicopter. Sycamore, 5-place helicopter.

De Havilland Aircraft, Ltd., Hatfield, Herts
Vampire, 2-jet fighters and trainers. Venom, 2-jet fighter-bomber. D.H.110, 2-jet all-weather fighter. Dove, 2-piston engine light transport. Heron, 4-piston engine light transport. Comet, 4-jet airliner. Chipmunk, 1-engine trainer.

English Electric Co., Ltd., Queen's House, Kingsway, London W.C.2
Canberra, 2-jet high-altitude medium bomber.

Fairey Aviation Co., Ltd., Hayes, Middlesex
Gannet, turboprop anti-submarine aircraft. Firefly, 1-piston engine anti-submarine aircraft and advanced trainer. F.D.1, 1-jet, delta research plane.

Gloster Aircraft, Ltd., Hucclecote, Glos.
Javelin, 2-jet, delta-wing all-weather fighter. Meteor, 2-jet fighters and trainers.

Handley Page, Ltd., Cricklewood, London N.W.2
Victor, 4-jet crescent wing heavy bomber. Marathon, 4-piston engine commercial feeder line and military transport.

Hawker Aircraft, Ltd., Kingston-on-Thames, Surrey
Hunter, 1-jet fighter. Sea Hawk, 1-jet naval shipboard fighter. Sea Fury, 1-piston engine naval shipboard fighter and advanced trainer.

Percival Aircraft, Ltd., Luton Airport, Luton, Bedfordshire
Provost, 1-piston engine trainer. Prince, 2-piston engine light civilian and military transport.

Saunders-Roe, Ltd., Osborne, East Cowes, Isle of Wight
Princess, 10-turboprop commercial flying boat. Skeeter, 1-piston engine light helicopter.

Scottish Aviation, Ltd., Prestwick Airport, Ayrshire, Scotland
Prestwick Pioneer, 1-piston engine military communication plane.

Short Brothers & Harland, Ltd., Queen's Island, Belfast, N. Ireland
S.A.4, 4-jet bomber. S.B.5, variable sweep, jet research aircraft. Sherpa, aero-isoclinic wing, light twin-jet research aircraft. Sealand, 2-piston engine amphibian.

Slingsby Sailplane, Ltd., Kirbymoorside, Yorkshire
Sky, high-performance sailplane. Gull, high-performance sailplane. Tutor, training glider. Sedbergh, 2-place training glider. Motor-Tutor, powered glider.

Vickers-Armstrong, Ltd., (Supermarine) Hursley Park, Winchester, Hants
Swift, 1-jet fighter. Type 508, 2-jet experimental fighter. Attacker, 1-jet naval fighter.

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Keeps your flying lines off the ground and ready for instant use. Make quick take-offs unassisted, reel in to land. With stainless steel cable lines..... **$8.50**

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Does 19 different stunts with ease. 12¼" cambered wing, smooth streamlined fuselage..... **10c**

A-J INTERCEPTOR

Folds its wings for launching, automatically spreads them to soar. 16½" cambered wing, complete with launching stick..... **50c**

A-J HORNET

Will R.O.G. and fly 500 feet! Unbreakable plastic prop, 18" cambered wing, heavy duty rubber motor **50c**

CEILING WALKER

This helicopter flies straight up and hops along the ceiling. Outdoors it climbs straight up 'til unwound, then does aerobatics coming down... **25c**

WORLD'S LARGEST MANUFACTURER OF READY-TO-FLY MODEL AIRCRAFT

Vickers-Armstrong, Ltd., Weybridge
Valiant, 4-jet bomber. Viscount, 4 turboprop airliner. Viking, 2-piston engine airliner & military transport (Varsity).
Westland Aircraft, Ltd., Yeovil, Somerset
Wyvern, turboprop naval strike fighter. Dragonfly helicopter (Sikorsky S-51 built under license). S-55 helicopter (built under Sikorsky license).

GREAT BRITAIN—ENGINE MANUFACTURERS

Alvis, Ltd., Hollyhead Road, Coventry
Leonides, 9-cyl. radial air-cooled piston engine, 550-600 hp. Leonides Major, 14-cyl. radial air-cooled piston engine, 870 hp.
Armstrong Siddeley Motors, Ltd., Coventry
Sapphire, axial flow turbojet, 8300 lbs. thrust. Viper, axial flow turbojet, 1900 lbs. thrust. Snarler, liquid fuel booster rocket, 2200 lbs. thrust. Mamba, turboprop. 1320 hp plus 400 lbs. jet thrust. Double Mamba, turboprop, 2640 hp plus 800 lbs. jet thrust.
Blackburn & General Aircraft, Ltd., Brough, East Yorks
Pimene, turbojet, 242 lbs. thrust. Palas, turbojet, 352 lbs. thrust. Marbore, turbojet, 880 lbs. thrust. All built under French Turbomeca license.
Bristol Aeroplane Co., Ltd., Filton Nr. Bristol
Olympus, axial flow turbojet, 9700 lbs. thrust. Proteus, turboprop, 3750 hp plus 1200 lbs. jet thrust. Centaurus, 18-cyl. radial air-cooled, sleeve valve piston engine, 2675 hp. Hercules, 14-cyl. radial air-cooled, sleeve valve piston engine, 2080 hp.
Cirrus Engine Division of Blackburn & General Aircraft Ltd., Brough, East Yorks
Minor, 4-cyl. inverted in-line air-cooled piston engine, 100 hp. Major, 4-cyl. inverted in-line air-cooled piston engine, 158 hp. Bombardier, 4-cyl. inverted in-line air-cooled piston engine, 180 hp.
De Havilland Engine Co., Ltd., Stonegrove, Edgeware, Middlesex
Ghost, centrifugal flow turbojet, 5000 lbs. thrust. Goblin, centrifugal flow turbojet, 3350 lbs. thrust. Sprite, cold rocket motor, 5000 lbs. thrust. Gypsy Queen, 6-cyl. inverted air-cooled piston engine, 250 hp. Gypsy Major, 4-cyl. inverted in-line air-cooled piston engine, 145 hp.
D. Napier & Son, Ltd., Acton, London W.3
Nomad, 12-cyl. horizontally opposed, 2-stroke compression-ignition compound engine with exhaust-driven turbine, 3000 hp plus 320 lbs. of jet thrust. Eland, turboprop, 3000 hp, including jet thrust.
Rolls-Royce, Ltd., Derby
Avon, axial flow turbojet, 9500 lbs. thrust. Derwent, centrifugal flow turbojet, 3100 lbs. thrust. Nene, centrifugal flow turbojet, 5000 lbs. thrust. Tay, centrifugal flow turbojet, 6250 lbs. thrust. Dart, turboprop, 1540 hp plus 400 lbs. thrust. Griffon, 12-cyl. "V" liquid-cooled piston engine, 2500 hp. Merlin, 12-cyl. "V" liquid-cooled piston engine, 1725 hp.

MODEL AIRPLANE INDUSTRY DIRECTORY

The manufacturer's name and address precedes the list of his kits. Each kit has a designation as to the type, this being found at the left of the listing. Where a kit has more than one use, additional letter designations are given. After the "type of kit" letter designation comes the name of the kit, its wing span in inches and then the type of power recommended by the manufacturer. A plus sign (+) after the wingspan means it may be up to ⅞ inch larger.

The following designations are used:

A—Control line scale
B—Control line stunt
C—Control line jet
D—Control line speed
E—Control line sport
F—Control line semi-scale
G—Control line ready-to-fly
H—Control line team racer
J—Free flight gas duration
K—Free flight gas PAA-Load
L—Free flight gas scale
M—Free flight gas sport
N—Free flight scale rubber
P—Rubber duration contest
Q—Gliders hand-launched contest
R—Gliders towline
S—Gliders semi-scale catapult
T—Jetex powered scale
U—Jetex duration non-scale
W—Helicopter powered scale
X—Helicopter powered non-scale
Y—Scale—built-up or solid—non-flying
Z—Radio control boat
RC—Radio control free flight
SP—Sea plane
RS—Rubber sport
COM—Control line combat

Allyn Sales Company, Inc., 6425 McKinley Ave., Los Angeles 1, Cal.

Y	Douglas Skystreak	6+	
Y	Douglas Skyrocket	6+	
Y	Douglas Globemaster	12	
Y	Douglas Skyknight	12+	
Y	Douglas Skyshark	12+	
Y	Douglas Skyraider	12+	
Y	Boeing Strato-Jet	9+	
Y	Boeing Strato-Cruiser	11+	
Y	Boeing Strato-Freighter	11+	
Y	Convair XF-92A	7+	

American Junior Aircraft Co., 1166 N.E. 31st Ave., Portland 12, Ore.

B, E, G	Jim Walker Firebaby	19+	.035-.065
B, E, G	Jim Walker Firebaby Biplane	19+	.049-.065
B, E,	Jim Walker A-J Fireball	30	.23-.49
B	Jim Walker Firecat	44	.23-.49
B	Beechcraft Profile	20+	.065
B	North Amer. T-28 Profile	20+	.065

American Telasco Ltd., 166 Spring Rd., Huntington L. I., N. Y.

T	McDonnell F-88A Voodoo	14	Jetex 50
U	"P-13" Delta	9	Jetex 50
X	Twin-engine Helicopter	24	Jetex 50's
Z	Wavemaster	34	.14-.40

Berkeley Models, Inc., 25 Railroad Ave., W. Hempstead L. I., N. Y.

X	Cloud Copter "TR"	25	.049-.075
X	Cloud Copter "D"	26	.049-.075
J	Sandy Hogan	70	.29-.35
J	Mini-Hogan 45	45	.074-.099

28 First place winners at the '53 nationals used TOP FLITES and POWERPROPS

25 firsts for the four other competing brands combined

Will Stewart, Trenton, N. J., created a sensation at the Nationals when his tiny original racer streaked to victory in the Class ½ A Speed, Open event, at a speed of 84.66 m.p.h. The hot little number has an 8" span, 2 oz. weight. Will used a Thermal Hopper engine with original fuel and a **4⅜/6½ POWER PROP.** The balding fellow on the left is Carl Goldberg of **TOP FLITE MODELS INC.**

Class B Free Flight, Jr.
Harry Capper
Philadelphia, Pa.
11 min. 52 sec.
Engine: Torp 29
PROP: 10/6 POWER PROP
Plane: Sandy Hogan
Fuel: Power mist

Class B Free Flight, Open
Marvin Burley, Jr.
Spartanburg, S. C.
17 min. 19.4 sec.
Engine: K & B 29
PROP: 11/4 TOP FLITE
Plane: Modified Senator
Fuel: O & R #2

C. Hill Hutchins, Jr., Spartanburg, S. C., has good reason to flash that smile. His sleek Bendix Trophy Mustang, powered by a Fox 35, Power mist fuel, captured top honors in the Control Line Flying Scale Senior event. **Four blade 10/6 POWER PROP.**

Control Line Flying Scale, Jr.
Barry Burr
Corpus Christi, Texas
Engine: Torp 29
PROP: 10/6 TOP FLITE
Plane: P-47D
Fuel: Thimble Drome Racing

Control Line Fly. Scale, Open
Thomas Dean
Corpus Christi, Texas
Engine: Cameron 19
PROP: 9/6 TOP FLITE
Plane: Aeronca Champion Duster
Fuel: O & R XL-4

R.O.W. Free Flight, Jr.
John M. Clapp
Greenfield, Mass.
7 min. 2.6 sec.
Engine: Torp .049, Thermal Hopper head
PROP: 6/3 TOP FLITE
Plane: Original
Fuel: K & B 1000

Uncle Sam can be justly proud of **Jim Kelly.** This inland sailor from Mission, Kansas won the R.O.W. Free Flight Senior event with his Zeek. Jim used a **9/4 TOP FLITE,** harnessed to an Elfin .15 engine, his winning time–10:07.2, fuel–McCoy Diesel.

P.A.A. Clipper Cargo
Hal Roth
Richmond, Calif.
23¼ oz., 42 sec.
Engine: McCoy Diesel
PROP: 7/4 TOP FLITE
Plane: Blue Boy (Original)
Fuel: McCoy Diesel

Team Racing
Bobby Huffer
Annapolis, Md.
Engine: Fox Racing 29
PROP: 9/8 POWER PROP
Plane: Little Bess (Original)
Fuel: Power mist

Class C Speed, Sr.
Sam Dahelean
Detroit, Michigan
153.85 m.p.h.
Engine: McCoy 60
PROP: 9/11 POWER PROP
Plane: Original
Fuel: Original

½ A Scale Free Flight, Open
Ed Stoll
Detroit, Michigan
Engine: Wasp .049
PROP: 6/3 POWER PROP
Plane: Fairchild 24
Fuel: Thimble Drome Racing

Here's Sal Taibl spinning the **9/4 TOP FLITE** on the original Payload he used to win the R.O.W. Free Flight Open event. Mrs. Taibl (standing in background), traveled with Sal from Lakewood, California, to lend her moral support. Engine is a Torp 23, flight time was 13:00.5, fuel –O & R XL-2.

Class A Free Flight, Sr.
Carl Curtis
Yuba City, Calif.
12 min.
Engine: Fox 19
PROP: 10/3½ TOP FLITE
Plane: Spacer A B
Fuel: Ohlsson Gold Seal 1/2A

Young **Walter Pyron,** Decatur, Georgia, is proud of his Black Tiger. Powered by a Fox 35 with a **10/6 TOP FLITE,** the Tiger racked up 354 points to win the Junior Stunt event, fuel–Testors 39.

Class A Free Flight, Open
Dick Duvendeck
Portsmouth, Ohio
22 min., 8.2 sec.
Engine: E.D. 15 (Diesel)
PROP: 9/6 TOP FLITE
Plane: Zeek
Fuel: Simpson Special

Combat, Junior
Richard J. Heist
Ft. Worth, Texas
460 points
Engine: Fox 29
PROP: 9/6 TOP FLITE
Plane: Patches (Original)
Fuel: K & B 100

LOOK FOR THIS PROP CABINET AT YOUR LOCAL DEALER
It contains FREE prop charts showing what size prop to use in the average engine-and-airplane combination.

Combat, Senior
Gerald Wagner
West Cheshire, Conn.
560 points
Engine: Fox 35
PROP: 10/6 POWER PROP
Plane: Rack (Original)
Fuel: O & R XL-4

Judson Stone's dad, who passed away recently, would have been especially proud of his son for winning first place honors in the Class A Free Flight, Jr. event. The Topeka, Kansas lad used a Zeek, with a **9/4 TOP FLITE** on an Arden 19 engine. Judson's winning time was 14:06.2, fuel–O & R #2.

Combat, Open
William Andrews
Easton, Pa.
520 points
Engine: Fox 35
PROP: 9/6 POWER PROP
Plane: Ringmaster
Fuel: Testors 39

Class C Free Flight, Jr.
Bill Gregory
Springfield, Ohio
4 min. 38.8 sec.
Engine: Atwood 62
PROP: 13/5½ TOP FLITE
Plane: Sailplane
Fuel: K & B 1000

Class C Free Flight, Sr.
David Espen
Bronx, N. Y.
14 min. 11.4 sec.
Engine: Fox 35
PROP: 11/6 TOP FLITE
Plane: Sandy Hogan
Fuel: Thimble Drome Racing

Class C Free Flight, Open
Al Grenoble
Yuba City, Calif.
17 min. 13 sec.
Engine: Fox 59
PROP: 12/5 TOP FLITE
Plane: Modified Sailplane
Fuel: Ohlsson Gold Seal 200

½ A Navy Carrier, Sr.
William Davies
Maplewood, N. J.
Engine: Wasp .049
PROP: 6/3 POWER PROP
Plane: F6F Hellcat
Fuel: Homebrew

Navy Carrier, Jr.
William M. White, Jr.
Sacramento, Calif.
Engine: Atwood .49
PROP: 11/8 POWER PROP
Plane: Stearman N3N
Fuel: K & B 1000

Navy Carrier, Sr.
Dave Domizi
Rocky River, Ohio
Engine: Fox 35
PROP: 9/6 TOP FLITE
Plane: AF2S—Guardian
Fuel: Power mist

Gail Eckstein flew a Bonanza all the way from San Lorenzo, Calif., and then flew away with top honors in the ½ A Navy Carrier, Open event. Gail stuck a **5 ¼ /5 POWER PROP** on a Thermal Hopper engine, enabling his SBD-3 Dauntless to pile up a winning total of 253 points. What's the "coming attraction" Gail?

Fifteen year old **Johnny Sparnicht,** Hempstead, N. Y., got the thrill of his life when his Nieuport 11 took 1st place in the Jr. ½ A Scale Free Flight event. Johnny's power plant was a Cub .049, his prop a **6/3 TOP FLITE,** and Thimble Drome Racing Fuel. Nice goin' John!

Remember.

It's the Props . . . That Pull the Planes . . . That Make the Flights . . . That Win the Prizes!

TOP FLITE MODELS INC.
2635 S. Wabash Ave., Chicago 16, Ill.

J	Mini-Hogan 34	34	.035-.075
J. K. M. RC	Super Brigadier	58	.14-.36
K, M, RC	Brigadier RC-38	38	.035-.090
J. M. K.	Bootstraps A/2	42	.035-.055
J. K. M. RC	Bootstraps A-RC	54	.09-.14
M. RC	Super Buccaneer	90	.40-1.20
M. RC	Buccaneer C Spl.	72	.35-.65
M. RC	Buccaneer B Spl.	56	.15-.36
M (ROW)	A/2 Privateer (seaplane)	36	.035-.075
M. RC	Custom Cavalier 108	108	.40-1.20
M. RC	Custom Cavalier Twin	108	(2) .32-.65
F	Senior Puddlejumper	25	.074-.23
F	Profile Puddlejumper	10	.020-.052
H	Quest	28	.19-.36
H	Key	20	.19-.36
H	Key-Det	18	.074-.15
B	Super Duper Zilch	52	.35-.65
B	Lil Duper Zilch	42	.19-.35
B	Wee Duper Zilch	34	.049-.15
B	Mini-Zilch	20+	.020-.040
D	Whirlaway A-B	13	.09-.035
C	Super Squirt	21	Dyna-Jet
A	Pitts Special	25+	.14-.33
A	North Amer. T-28	30	.19-.36
A	Minnow	28	.14-.36
A	Cessna 195	36	.19-.36
A	North Amer. P-51 Mustang	37	.19-.36
A	Republic P-47 Thunderbolt	40+	.29-.65
A	Grumman F-8F Bearcat	35+	.29-.65
A	North Amer. AJ-1 Savage	27	(2) .045-.090
A	North Amer. SNJ (AT-6)	31	.14-.36
A	Shoestring	28	.14-.36
A	Curtiss P-6E Hawk	24	.049-.14
F	Curtiss P-40 Warhawk	45	.19-.36
Z	Chris-Craft 31' Express Cruiser	23	.049-.09
Z	Seabird RC	23	.09-.36
RC (ROW)	Custom Privateer (seaplane)	108	.49-.65
RS	Bandit	18	rubber
RS	Payloader	20	rubber
RS	V-16	16	rubber
RS	Dragon	16	rubber
M, RS	Sportsman 30	30	.020-.035
P	Super Cloud	51	rubber
U	Swisher	18	Jetex 50
G	Yank	23	.035-.049
T	Sil-O-Jet	14	Jetex 50
R	Sinbad 40	40	
R	Sinbad the Sailer	50	
R	Super Sinbad	60	
A, L, N	Cessna 1-19 Bird Dog	35	.035-.099
A, L, RC	Helioplane	30	.049-.15
A, L, N	Stinson Sentinel	33+	.035-.099
A, L, N	Culver V	20	.035-.099
A, L, N	Stinson Voyager	34	.035-.099
A, L, N	Fairchild 24	30+	.035-.099
A, L, N	Piper Super Cruiser	35+	.035-.099
A, L, N	Cessna 140	33	.035-.099
A, L, N	Aeronca Sedan	34	.035-.099
A, L, N	Interstate Cadet	35	.035-.099
L, RC	Cessna 170	56	.19-.36
A	Beech Mentor	32	.14-.36
F	Grumman Guardian	42	.19-.36
COM	Zilch X		.19-.36
K, RC, SP	Sea Cat	56	.19-.36
Z	Chris-Craft Holiday	30+	.09-.36

Cavacraft, 2045 N. Trenton Ave., Philadelphia, Pa.

Y	North Amer. P-51	8	
Y	British S.E. 5	8+	
Y	Piper Cub	8+	
Y	Ercoupe	7+	
Y	Taylorcraft	9	
Y	Ryan Navion	8+	
Y	Cessna 140	8+	
Y	German Fokker Triplane	6+	
Y	French SPAD	7	
Y	German Fokker D-7	7+	
Y	North Amer. P-86	8	
Y	Russian MiG-15	8+	

Cleveland Model Products Co., 4506 Lorain Ave., Cleveland 2, Ohio

A	Boeing P-26A	28	
A	Great Lakes Sport Trainer	27	
RC	Luscombe Sedan	76	
R	Condor	72	
N	North Amer. Mustang	12	
N	North Amer. Sabre Jet	12	
N	Beech Bonanza	12	
N	McDonnell Voodoo	12	
N	Republic Thunderstreak	12	
N	Luscombe Sedan	12	
N	Aeronca	18	
N	Piper Cub	18	
N	Luscombe Silvaire	18	
N	Luscombe Sedan	18	
N	Beech Bonanza	18	
N	North Amer. Sabre	18	
N	Russian MiG	18	
N	Lockheed F-80	18	
N	Vought Cutlass	18	
N	Northrop Scorpion	18	
N	Vought Corsair	18	
N	McDonnell Banshee	18	
N	Republic Thunderjet	14+	
N	McDonnell Voodoo	14+	
N	Piper Cub	27	
N	North Amer. Tornado	25	
N	Boeing Stratojet	22+	
N	Boeing B-52	24+	
N	Grumman Panther	30	
N	Lockheed Shooting Star	30	
N	Bell Airacobra	30	
N	Curtiss Warhawk	30	
N	North Amer. Sabre	24	
N	North Amer. Mustang	24	

Comet Model Hobbycraft, Inc., 501 West 35th St. Chicago 16, Ill.

J	Pacemaker	40	.039-.049
E	Little Schmoe	17	.039-.005
N	Douglas Dauntless SBD-3	15+	
N	English Spitfire IX	17	
N	Grumman Avenger TBF-1	20	
N	Vought Corsair F4U1	16+	
N	Vultee Vengeance A35	20	
N	Taylorcraft	54	
N	Aeronca	54	
N	Piper Cub	40	
T	Lockheed Starfire F-94C	25+	Jetex 150
T	Douglas Skystreak	17	Jetex 150
P	Sparky	32	rubber
P	Pepper	32	rubber

Consolidated Model Engineering Co., 3087 3rd Ave., New York 56, N. Y.

A	German Junkers Stuka	18	.040-.075
A	Vought Corsair	17	.040-.075
A	North Amer. P-51	17	.040-.075
A	German Focke-Wulf 190	16	.040-.075
A	English Spitfire	17+	.040-.075
A	English Typhoon	18	.040-.075
A	Japanese Zero	17	.040-.075
B	Guided Star	40	.10-.35
B	Starlet	24	.049-.074
B, E	Cat's Whiskers	30	.10-.35
D	Hell Razor C-D	18	.60
D	Hell Razor B	16	.20
D	Hell Razor A	15	.10
D	Hell Razor A/2	10	.049
E, COM	MPC-7	39	.10-.35
Z	Space Kitten, 12" beam	22	.099-.14

L. M. Cox Manufacturing Co., Inc., Box 476, Santa Ana, Cal.

G	Thimble Drome TD-1	24+	.049

deBolt Model Engineering Co., Box 73, Williamsville, N. Y.

E	Infantwagon	20	.02-.09
D, H	Speedster	12	.049-.09
E	New Pipe	23	.15-.35
B	Sportwing	36	.15-.29
B	Stuntwagon	58	.49-.65
B	Stuntwagon 30	44	.10-.35
D	Speedwagon 20	12	.15-.19
D	Speedwagon 30	15	.20-.35
D	Speedwagon 50	15	.49-.65
E	A/2 Twin	26	.04-.09
E	All American Trainer	21	.04-.09
B	All American Junior	26	.06-.09
B	All American Stunt	36	.15-.29
B	All American Senior	51	.29-.49
J, K, M	Live Wire Clipper	34	.02-.08
M, RC	Live Wire Kitten	34	.02-.08
M, RC	Live Wire Trainer	48	.07-.15
RC	Live Wire Senior	65	.15-.23

Dumas Products, 2114 S. Alvernon, Rt. 8, Box 953, Tucson, Ariz.

Z	Colonial 36' Cruiser	26	
Z	Chris-Craft 46' Cruiser	26	
Z	Chris-Craft 28' Cruiser	28	

for thrills or trophies

Built for modelers who demand the finest

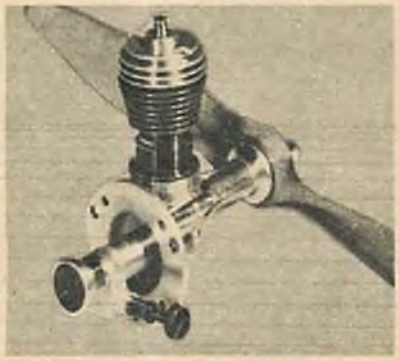
Fly Thimble Drome

PLEASURE FLYING

First completely assembled model plane . . . and ONLY plane having tough, light symmetrical airfoil all-metal wing. What a thrill when you take this high-performance plane from box to air in less than a minute! No parts to assemble—not a screw to put in—no break-in required. Including Control Lines, Reel, Batt. Wires, Connecting Clip, Filler Hose, Finguard.

TD-1 Complete 19.95
2 Min. Assembly Kit . 15.95

THE LEADER IN ANY ½A EVENT



FREE FLIGHT

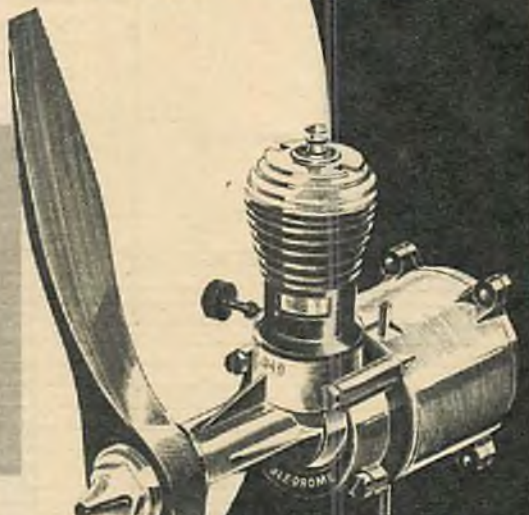
Power equal to SPACE BUG .049, but designed for use where special timer or tank arrangements are necessary. Needle valve can be pointed in any position radially regardless of engine mounting.

Thermal Hopper .049 . . . . . 6.95

JUNIOR

Easiest starting, surest performance ½A engine designed especially for beginners. Just crank it up and fly it! Weighs only 1⅓ oz. yet revs up to 15,500 RPM.

Space Bug, Jr. 3.95



SENIOR

Thimble-Drome engines made a clean sweep of the 1953 Nationals . . . winning 19 out of 27 places—First to Third! Space Bug features include generous stunt tank—easily accessible needle valve—no external fuel lines. Superior to any ½A engine for Power, Speed, Easy Starting, Efficient Operation. Flies in ANY position.

Space Bug .049 . . . . . 6.95

Bring Home More Trophies with Thimble-Drome!

L.M.COX *Manufacturing Co., Inc.*

SANTA ANA, CALIFORNIA

Z	Chris-Craft Challenger 40'	33+	
Z	Chris-Craft 34' Commander	33	
Z	Vinyard 40' Cruiser	25	
Z	Chris-Craft Semi-closed	28	
Z	Harco West Coast Cruiser	25+	

Dyna Model Products Co., 76 South St., Oyster Bay, N.Y.

Y	North Amer. F-82		
Y	Grumman Cougar		
Y	Grumman F9F Panther		
Y	North Amer. F-86		
Y	Lockheed F-80		
Y	Republic F-84		
Y	Russian MiG-15		
Y	German Focke Wulf 190		
Y	Curtiss P-40		
Y	Vought F4U Corsair		
Y	North Amer. P-51		
Y	Grumman F6F Hellcat		
Y	Grumman F8F Bearcat		
Y	German Messerschmitt 109		
Y	Republic P-47		
Y	Lockheed P-38		
Y	British Spitfire		

Enterprise Model Aircraft & Supply Co., Inc., 234 E. Second St., Mineola, L. I., N. Y.

B, E	Baby Era	18	.045-.090
B, E	Baby Era Bipe	16	.045-.090
B, E	Knockout	18	.045-.090
B, E	Sky-Leader	18	.045-.090
B, E	Zenith	18+	.045-.090
B, E	Slick Trick	17+	.045-.090
J, M	Shadow	32	.039-.074
J	Champion	36	.039-.099
E, H	Air Racer	18	.074-.15
B, E	Super Knockout	24	.099-.19
R	Towline Terror	24	
R	Tow-Liner	24	
A, E	North Amer. F-51 Mustang	17+	.045-.074
A, E	Curtiss P-40 Warhawk	17	.045-.074
B, E	Super Zenith	24	.09-.15
Y	P-40, F-51, F-86, MiG-15 with 8-11 inch average wingspan		

F-B Model Aircraft Co., 3240 Larimer, Denver 5, Colo.

B	Stinger	48	.29-.50
B	Combat Sky-Box	34	.19-.35
A, H	Curtiss P-40 Warhawk	36	.29-.35
B	Vixen	21+	.049-.09
B	Vampire	40	.29-.36
B	Viking	51	.35-.60
E	PT Trainer	20	.19-.29
B	Sharpy	47	.35-.60
J, M	Folly	32	.036-.074
A	Vagabond	34	.19-.29

Paul K. Guillow, New Salem St., Wakefield, Mass.

RC	Trixter Beam	50+	.09-.14
B	Barnstormer	47	.25-.35
B	Invert Jr.	40	.19-.35
B, E	Trixter Profile A-B	32	.19-.45
B, E	Trixter Profile B-C	38	.29-.60
B	Baby Barnstormer	23+	.035-.051
B	Trixter Babe	20	.035-.051
E	Profile Basic Trainer	30	.14-.19
D, E	Trixter Tiny	12	.035-.051
A, E	Piper Cub Special	29	.036-.051
M	Trixter Pixy	26	.035-.051
N	Cessna	12	rubber
N	Stinson Voyager	12	rubber
N	Wakefield, Jr.	12	rubber
N	Piper Cub	12	rubber
N	Monocoupe	12	rubber
N	Aeronca Champion	12	rubber
N	North Amer. F-86 Sabre	9+	rubber
N	Russian MiG-15	9	rubber
N	Northrop F-89 Scorpion	9+	rubber
N	North Amer. T-28	10	rubber
N	Douglas AD-1 Skyraider	10+	rubber
N	North Amer. P-51 Mustang	9+	rubber
N	English S.E. 5	20	rubber
N	English Hurricane	20	rubber
N	Vought Corsair	20	rubber
N	Cessna	24	rubber
N	English Spitfire	20	rubber
N	Monocoupe	20	rubber
N	Waco Custom	24	rubber
N	Aeronca Champion	20	rubber
N	Curtiss SB2C Helldiver	24	rubber
N	Bell P-39 Airacobra	24	rubber
N	Lockheed P-38 Lightning	24	rubber
N	North Amer. P-51 Mustang	24	rubber
N	Stinson Voyager	24	rubber
N	English Spitfire	24	rubber
Y	Guillow's shelf models "Series 10DC" with average wingspans of 5½ inches includes Monocoupe, Cessna 140, Piper Cub, Aeronca Champion, Stinson Voyager, S.E. 5, P-51, P-86, P-40, F-84, P-47, Fokker D-7, F-80, MiG-15, F7U, F-89, F2D1 and F9F.		
Y	Guillow's shelf models "Series 23SDC" with average wingspans of 8 inches includes F-80, P-51, P-47, P-40, F-84, F-86, AD-1, F4U1, F2H1, P-38, C-69 Connie, B-29, MiG-15, F7U, B-45, B-47, F-89, F9F, Sikorsky H-5, Semi-scale Transport Helicopter, T-28, B-36, B-57A, C-119.		
Y	Convair B-36	14+	
Y	McDonnell F2H1	10+	
Y	Boeing B-47	12	
Profile scale gliders	Guillow's flying models "Series 11J" glider construction sets with average wingspans of 6 inches includes MiG-15, F7U, F-80D, F-84F, F-89 and F2H-1.		

Helicopters for Industry, Inc., 111 Cathedral Ave., Hempstead, L. I., N. Y.

Y	Hiller Hornet—Army, Civilian, Navy versions		
Y	Sikorsky, with wheels—Army, Navy, Marine, Air Rescue and Coast Guard versions		
Y	Sikorsky, with pontoons—Navy, Marine, Air Rescue and Coast Guard versions		
Y	Piasecki—Army, Navy, Marine, Workhorse and Air Rescue versions		

Henry Engineering Co., Box 229, Burbank, Cal.

E, F	Brave	36	.19-.31
B, F	Warrior	20	.19-.31
B, F	Chief	53	.29-.35
B, F	Squaw	38+	.19-.29
B, F	Papoose	32	.15-.19
E, F	Scout	24	.049-.09
A, B	Mustang	48	.29-.35
B	Smoothie	52	.29-.35
F, H	Redskin	31	.19-.29
M	Dakota	24	.035-.074
M	Sioux	36	.035-.074
J, K	Comanche	36	.035-.074
J	Navajo	36	.035-.074
L	Taylor Cub	36	.035-.049

Joy Products Co., Menominee, Mich.

E	Pee Wee Pup	17+	.035-.051
E	Pee Wee Pursuit	20	.020-.074
B, E	Stunt Runt	16	.035-.051
J, M	Nomad	31	.020-.049
B, E	Super Stunt Runt	20	.099
B	Thunderbug	18	.049-.051

Junior Aeronautical Supply Co., 203 East 15th St., New York 3, N. Y.

J	Streak	32	.035-.051
J	Phoenix Flash	32	.035-.051
J	Super Flash	53	.015-.19
J	Jasco Rival	44	.009-.015
J	Phoenix Skipper	32	.035-.051
E	Sky Raider	17+	.035-.074
E	Speedy	17+	.035-.065
K	Lift Master	33	.049
K	PAA Master	35	.049
K	Space Master	35	.049
Q	Dart	12	
Q	Thermic B	20	
R	Nordic	73	
R	Thermic 50	50	
R	Thermic 50X	50	
R	Thermic Trooper	30	
U	Cougar	26	Jetex
U	Cutlass	24	Jetex
U	Jet 50	24	Jetex
U	Jet 100	30	Jetex
RC	Name not chosen	50	.09-.15

K&B Manufacturing Co., 224 East Palmer St., Compton, Cal.

J	Flying Kiwi A/2	35	.049

Acclaimed throughout the model world and chosen by champion radio flyers, Bonner escapements represent the utmost in quality and performance.

☆ Bonner
Radio Control Devices

THINK OF IT! No confusing "sequences" to remember . . . advanced multiple control performance on simplest single-channel receiver! Beginners, too, can benefit from the dependability and simple keying operation of the unique Compound Escapement. Designed by model champions, the Bonner devices are assembled with watch-like precision, built for long, troublefree service. Descriptive literature is available.

✓ SEE YOUR MODEL DEALER, IF NO DEALER ORDER DIRECT

$14.95

COMPOUND ESCAPEMENT

Four position, self-neutralizing speed-regulated control unit. Provides multiple controls on single channel receiver.

$9.95

MOTOR CONTROL UNIT

Special air-bleed valving arrangement for motor control and cut-off. (Bracket, valve ass'y. only - $2.95)

$6.95

STANDARD ESCAPEMENT

Precision-built, compact, weighs only ½ oz! Low battery drain; adjusted, guaranteed.

BONNER SPECIALTIES, 2900 Tilden Ave. Los Angeles 64, California

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KAP-PAK

MODEL ACCESSORIES

the Real Thing!

to make your models sure Winners

Only 10¢ and up per package

AT ALL HOBBY-CRAFT STORES

Distributed by

United HOBBY DISTRIBUTORS, Inc.

PLANES • CRAFTS • TRAINS • BOATS • MOTORS

KAP-PAK

MODEL Gas Tanks

Soldered inside and out

Guaranteed LEAKPROOF

FROM 39c to 69c EACH

Will not discolor fuel

14 sizes of wedge and rectangular tanks

Die stamped Non-Corrosive plated steel

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Distributed by

DETROIT CYCLE AND HOBBY SUPPLY CO.

2656 Grand River Avenue
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PLANES BOATS
TRAINS CRAFTS
MOTORS

Bicycles, Wheel Goods, Parts and Accessories

KAP-PAK

½A NEEDLE VALVES

KAP-PAK NEEDLE VALVES ARE DIFFERENT!

25c and up

FOR ALL TYPES OF ENGINES

"Ask for KAP-PAK for a modeling success"

AT ALL HOBBY-CRAFT STORES

Distributed by

Walthour & Hood Co., Inc.

MODEL AIRPLANES
TRAINS BOATS
CRAFTS
WHEEL GOODS
ACCESSORIES
SPORTING GOODS

J	Flying Kiwi A	49	.09-.15
J	Flying Kiwi ABC	61	.19-.32

Kenhi Model Products, 2715 N. California St., Burbank, Cal.

A	Mustang P-51H	42	.19-.35
B	Bobcat	37	.19-.35
B	Wildcat	37	.19-.35
B	Cougar	54	.29-.35
B	Panther	48	.29-.35
J, M	Badger	72	.19-.35
K, M	Beaver	44	.049-.074
RC	Bussard	72	.19-.35

Master Modelcraft, 727 Westchester Ave., New York City 55

J	Skylark	31	.02-.049
E	Primer	18	.02-.074
E	Wing Ding	18	.02-.074
E	Wing Dingus	16	.02-.074
A	Howard Ike	20	.02-.074
B	Flip-Flap	24	.049-.09
E, H	Small Fry	17+	.02-.074
A	British SE-5	17	.02-.074
A	Ryan ST	17+	.02-.074

Midwest Products Co., 6005 E. Dunes, Gary, Ind.

J	Sniffer	20+	.035-.065

Miniature Aircraft Corp., 83 Low Terrace, Staten Island 1, N. Y.

T	North Amer. F-86D Sabre	24	Jetex
A	North Amer. B-25	33+	(2) .045
A	North Amer. B-25	67	(2) .14-.23
A	Republic P-47D	35+	.19-.23
L	Stearman PT-17	22+	.045
N	Piper Cub	26	rubber
N	Vought F4U5	40	rubber
A	Vought F2G	40	.19-.35
A	Boeing PT-17	45	.23-.60
A, L	Curtiss P-40F	48	.19-.60
L, RC	Taylorcraft	108	.60
N	Curtiss F11C4 Hawk	32+	rubber
N	Grumman F3F1	32	rubber

Monarch Model Aircraft Co., 248 Marion St., Brooklyn 33, N. Y.

E	Wee Willie	18	.045-.099
E	Sweet Chariot	18	.045-.099
A	Curtiss P-40	20	.045-.099
A	English Spitfire	20	.045-.099
A	North Amer. Mustang	20	.074-.15
E	Peter Pan	16	.02-.049
M	Scot Free	34	.02-.049
E, P, H	Good News	30+	.10-.35

Monogram Models, Inc., 3421 West 48th Pl., Chicago 32

N	Piper Cub	18	rubber
N	Aeronca Sedan	18	rubber
N	Monocoupe	18	rubber
N	Ercoupe	18	rubber
N	Boeing PT-17 Kaydet	13+	rubber
N	Long Midget	12	rubber
N	Cessna Seaplane	18	rubber
N	French SPAD	13+	rubber
N	North Amer. F-51	13+	rubber
N	Republic P-84	13	rubber
N	Ryan Navion	14	rubber
N	Grumman F6F Hellcat	14	rubber
T	North Amer. F-86 Sabre	10+	Jetex
N	Vought F4U Corsair	12+	rubber
N	Curtiss P-40 Warhawk	13+	rubber
T	Grumman F-9F Panther	11+	Jetex
N	Republic P-47	13+	rubber
Y	North Amer. B-25	17+	
Y	Douglas B-26	18+	
Y	North Amer. F-51	7+	
Y	Vought F4U Corsair	7+	
Y	Republic F-84	7+	
A	Piper Cub	35+	.14-.35
A	Aeronca Sedan	35+	.14-.35

PDQ Products Co., Municipal Airport, Millville, N. J.

B, E	Circus King	40	.29-.49
B, E	Super Clown	38	.23-.49
B, E	Flying Clown	28	.19-.29
B, E	Baby Clown	22+	.074-.19
E, F	P-51 Mustang Jr.	22	.049-.099
E, F	Me. 109 Jr.	22	.049-.099
E, F	Spitfire Jr.	22	.049-.099
E, F	Yak 9 Jr	22	.049-.099
E, F	Japanese Zero Jr.	22	.049-.099
E, F	Bearcat Jr.	22	.049-.099

Scientific Model Airplane Co., 113 Monroe St., Newark 5, N. J.

A	Aeronca Sedan	20	.020-.074
A	Cessna 170	20	.020-.074
A	Piper Cub Special	20	.020-.074
A	Stinson Voyager	20	.020-.074
A	P-80 and P-51 Combination	18	.020-.074
A	Curtiss P-8E Hawk	18	.020-.074
A	Boeing F4B4	18	.020-.074
A	North Amer. AT-6	18	.035-.074
A	Waco Cabin	12	.020-.049
A	Beechcraft Model 17	16	.045-.099
A	Little Sabre	18	.020-.074
A	Little Mustang	18	.020-.074
A	Boeing P-26A	18	.020-.074
E, H	Little Ace	18	.049-.099
E	Sport Racer	18	.049-.099
B, E	Little Devil	18	.020-.074
B, E	Little Bipe	12	.020-.074
B, E	Bel Air	18	.039-.049
B, E	Little Mercury	18	.039-.074
B, E	American Boy	18	.020-.074

Southwestern Model Manufacturers, Box 571, W. Tulsa 7, Okla.

H	Dil-Bod	14	.049-.051
B	Snapper	24	.049-.051

Sterling Models, 1530 N. Hancock St., Philadelphia 22, Pa.

A	Monocoupe	36	.19-.35
A	Howard Pete	30	.19-.45
A	Mr. Mulligan	32	.19-.35
A	Waco	33	.19-.35
A	Polish PZL Fighter	36	.19-.35
A	English S. E. 5	32	.19-.35
A	Ryan ST	36	.19-.35
A	German Fokker D-7	32+	.19-.35
B	Ringmaster	42	.19-.35
B	Mustang	38	.19-.35
B	Yak 9	40	.19-.35
B	Spacemaster Jr.	24	.045-.19
Z	Chris-Craft 32' Cruiser	28	.074-.19
Z	Chris-Craft Catalina	31+	.074-.19
Z	Century Sea Mail	27	.074-.35
Z	Harco 40'	27+	.074-.19
RC	Piper Tri-Pacer	58+	.19-.35

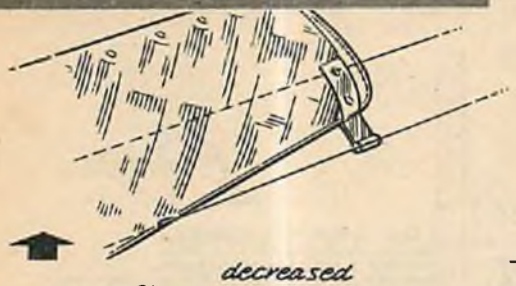
Strombeck-Becker Manufacturing Co., Moline, Ill.

Y	Lockheed F-80	6+	
Y	Boeing B-47	13	
Y	North Amer. FJ2	6+	
Y	Republic F-84	5+	
Y	North Amer. F-86	6+	
Y	Douglas DC-6	13	
Y	Lockheed F-94	6+	
Y	Douglas Skyrocket	4+	
Y	Swift 125	7+	
Y	Piper Super Sea Scout	8+	
Y	Douglas DC-3	10+	
Y	Piper Super Cruiser	8+	
Y	Northrop P-61C	11	
Y	Boeing B-29	23+	
Y	Swift 125 Seaplane	7+	
Y	Douglas DC-6B	13	

Top Flite Models, Inc., 2635 S. Wabash Ave., Chicago 16

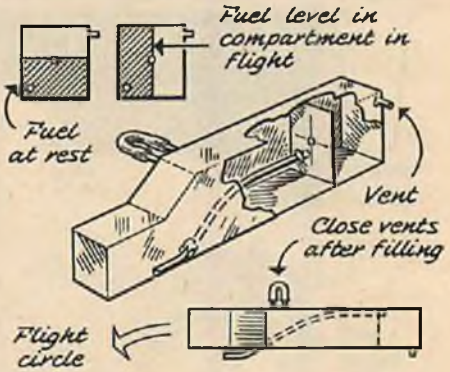
E	Zing!	24	.10-.35
E	Trainee	30	.19-.35
F	Nifty	24	.10-.35
F, M	Li'l Rascal	27	.020-.049
J	Cumulus	54	.15-.24
RS	Rascal 18	18	rubber
N	Piper Vagabond	18	rubber
N	Stinson Sentinel	18	rubber
RS	Arrowjet	15	rubber
N	Navion	16	rubber
N	Luscombe Sedan	18	rubber
S	Sabre Jet	9	catapult
S	MiG-15	9	catapult
S	Cutlass	8	catapult
Profile scale gliders	MiG-15 & Sabre Jet, 5¼ inch wingspans, profile-type, semi-scale, ready-to-fly both in single package.		

Speed Aids

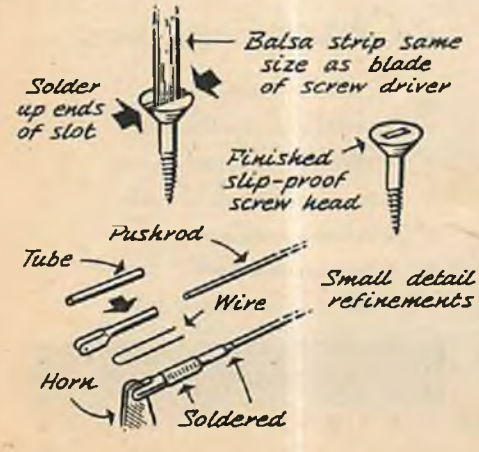


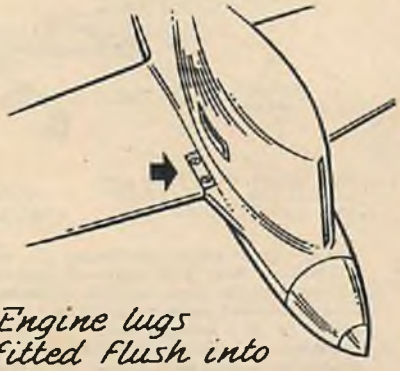
decreased yaw effect by moving line guide forward with riveted bracket

Sewn pliofilm "Prang Bags" dust-proof carriers for speed jobs... handy for carrying home debris

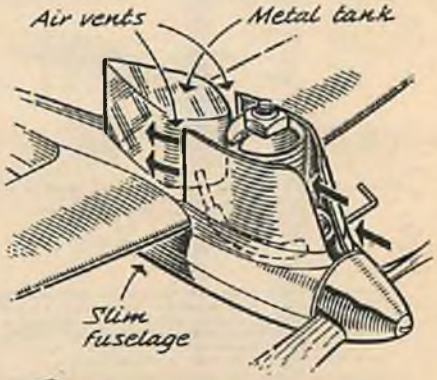


"Constant Level" speed tank has 3/32" hole in center of baffle; fuel has uniform pressure "head" during Flight





Engine lugs fitted flush into wing roots in McCoy 29 speed job.



Ultra-compact A/2 racer uses rear cowl space for fuel tank in neat design

Build it with EVERFAST

. . . eliminates distortion

- *EXTRA STRONG*
- *FUEL RESISTANT*
- *TRANSPARENT*
- *WATERPROOF*

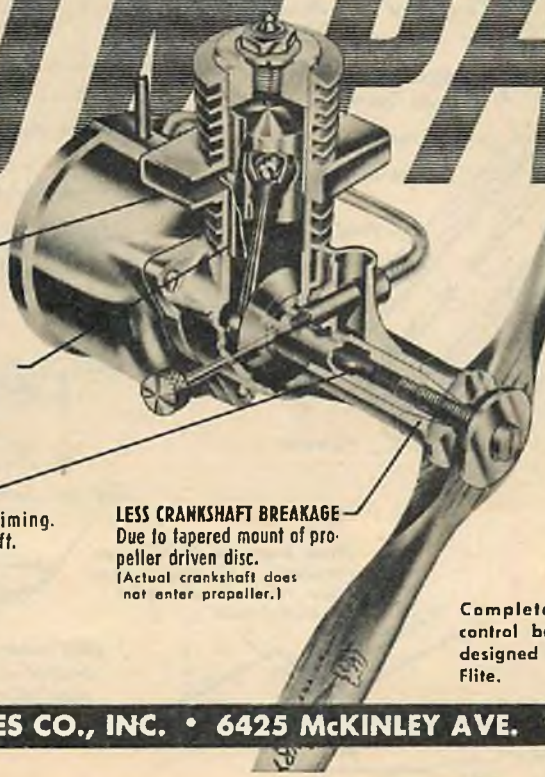
THREE Popular Sizes

¾ oz. tube 10c
1¼ oz. tube 15c
(with screweye)
2 oz. tube 20c
(with screweye)

AT YOUR HOBBY SHOP

HOWE & FRENCH, INC.,
100 Broad Street, Boston 10, Massachusetts
Established 1834

COMPARE



EXTENDED EXHAUST STACKS
Offers cleaner and quieter engine.

SEPARATE CYLINDER SLEEVE
Held in position by cylinder head, allowing minimum distortion.

ROTARY VALVE
Maximum in valve timing. *Super finished shaft.*

LESS CRANKSHAFT BREAKAGE
Due to tapered mount of propeller driven disc.
(Actual crankshaft does not enter propeller.)

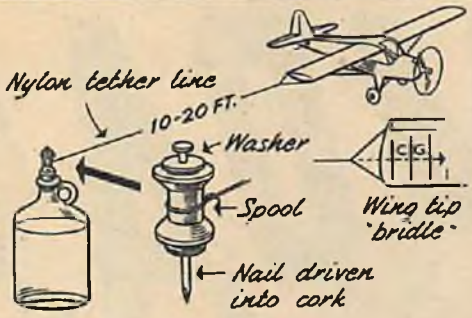
SKY *FURY* .049

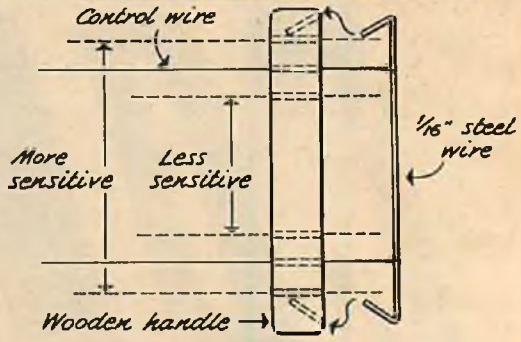
Do you want an easy starting, smooth running, top performing engine to power your favorite model? Compare these outstanding engineering features and you will know why the sensational new **Allyn SKY FURY** is the only .049 engine for you. **$4.95**

Complete with free flight tank, U control back up plate, and specially designed SKY FURY propeller by Top Flite.

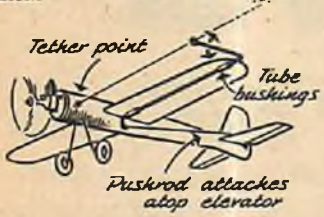
Allyn SALES CO., INC. • 6425 McKINLEY AVE. • LOS ANGELES 1, CALIFORNIA

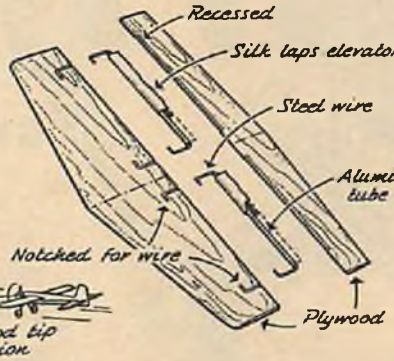
Control Techniques

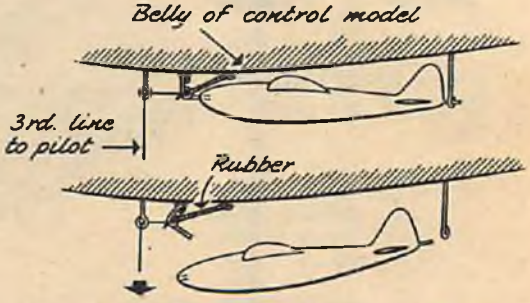


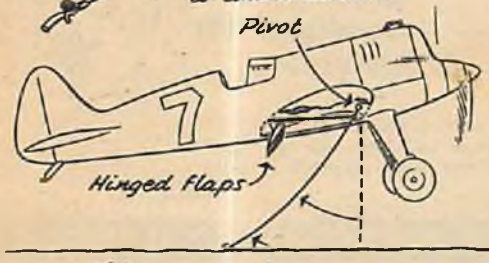


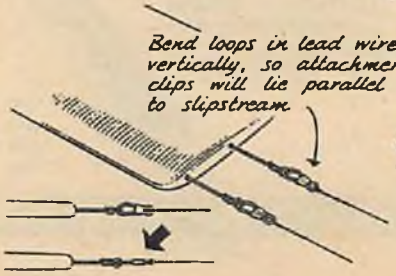
• Simple, one-line control is ideal for half-A control jobs

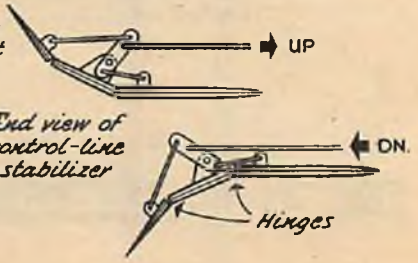












Aux. Controls for R/C

(*Continued from page 27*)

like the "battery-condenser" system used to fire flashbulbs. In the normal position shown, the relay connects a large condenser C in series with a battery, and the condenser charges up to full battery voltage. When the relay operates, the full charge is applied to the escapement, which really bangs closed; it just gets a pulse, though, and will not stay in the closed position. The values shown worked well with an E.D. Compact escapement, which has a coil of about 10.5 ohms. The escapement was set so it required 8½ V. of D.C. to work it, when loaded with a fully wound loop of ⅛" flat rubber.

Advantages of the condenser-discharge system are that it is very easy on relay contacts, closes the escapement with a real bang (so fast that it is often unnecessary to have two stops on the escapement armature —the latter closes and opens so fast that only a single stop is needed) for reliable operation against heavy spring tension, and a very light battery will do the job. R limits the charging current to the condenser; the larger it is, the slower is the charging and the longer you have to wait between operations, but the lower the battery drain.

Now, how about extra controls from a proportional rudder system? One way, which can be added to an existing setup without having to change the pulser, is to add a pair of contacts to the actuator, set so that when the arm is in either extreme position the points *do not* close. Reason for the latter is that we do not want the auxiliary circuit to be tripped, when the plane is being held in a tight turn, with rudder full over. It will be found that most proportional control actuators "overtravel" at each extreme of movement, provided the stops are set correctly to allow this.

When the control stick is moved rapidly from one extreme to the other, the arm will pass the normal full turn position each way, and the contacts are set to utilize this overtravel. They only close when the rudder is flapped from one extreme to the other. A relay circuit like that in Fig. 8 is then connected to the contacts, and the relay will close when the control lever has been given a sufficient number of full-limit movements. Since this is done quickly, the plane will not respond, but will continue on a straight course. If the actuator and linkage are very light, it may be necessary to add a little weight so that they will swing wider, when the rudder is thrown from one side to the other.

Some actuators, such as the Trammel described in the January, 1954, issue of A.T. swing practically a full 180 degrees from one limit to the other, and the contacts would necessarily close whenever a full limit turn to either side was made. This necessitates a different contact arrangement, so the auxiliary circuit will not be closed on continuous sharp turns, but only when the rudder is "flapped." In this case, the contact that the actuator arm hits should be rather heavy and stiff, and will act as the normal stop for the arm. The contacts only close—and then just for a pulse—when the arm swings fast from side to side; if these pulses come rapidly enough, the relay will operate.

Proportional control offers a fine means of getting another control function, through "rate control." This means simply that the pulses are speeded up or slowed down, but the proportion of on-to-off remains constant, so the rudder position does not shift. It is usually necessary to at least double the speed of the pulses, to be able to work the auxiliary circuit, and it is safer to triple the speed. The circuit of Fig. 13 is needed to close the second relay, and functions only on the pulses it receives as the actuator circuit is opened and closed; no current flows in Ry 2 when the actuator circuit is passive. Pulses from the actuator are stepped up through the transformer and put through the rectifier. The resultant DC is then applied to C and the relay.

This circuit requires a good relay, since there is always some current flowing, produced by the continuous pulsing of the rudder actuator (current stops only when rudder movement stops) and the higher pulse rate simply increases this current. In other words, the relay has to be set up to a close "differential"—the values of current that operate it and allow it to open are very close together. This is another reason why the pulse rate should preferably be tripled, for auxiliary control operation.

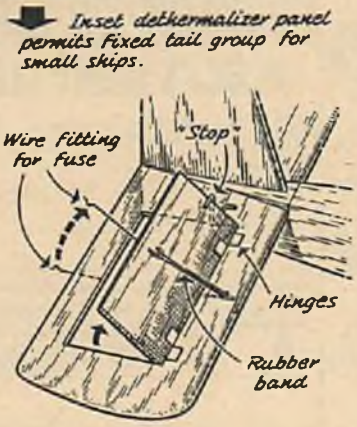
If you can't get the amount of current from Fig. 13 that you would like, to work the relay, try Fig. 14. Here a transistor is used as a current "booster," and will produce up to about ten times the current through the relay that can be had without it. Fig. 14 has been used with a midget relay of 1200 ohms, but the 4 ma. current available for the relay is ample for reliable operation, even under conditions of heavy vibration.

We won't go into means to get the pulse rate variation here, but the list of references give several ways this can be done. The list also will bring to the attention of the reader other items on this subject of auxiliary controls, in past issues of A.T. And when we speak of such control, remember that we don't mean just motor speed change; most of the systems can be adapted to elevator operation, bomb dropping, flaps, or whatever else you want to work on the plane, while sticking to single channel rudder actuation.

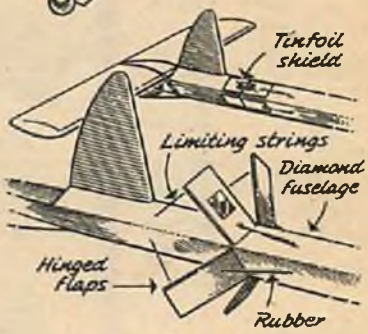
References: (all in past issues of A.T., mostly in R/C Column): Sept. 1951 p. 12—Motor and rudder from single receiver relay. Dec. 1951, p. 9—Escapement operation booster. Feb. 1952, p. 10—Delay relay and bomb dropper. July 1952, p. 38—Desc. of all sorts of escapements. Sept. 1952, p. 10—Relay pulsers, showing means for pulse rate change. Oct. 1952, p. 47—Thermal delay unit. Dec. 1952, p. 60—Getting added control from proportional control system. Feb. 1953, p. 10—Getting added control from proportional control system. May 1953, p. 10—Second control with 3-arm escapement. June 1953, p. 8—Dual control with proportional system. Nov. 1953, p. 50—3-arm escapement for rudder and motor.

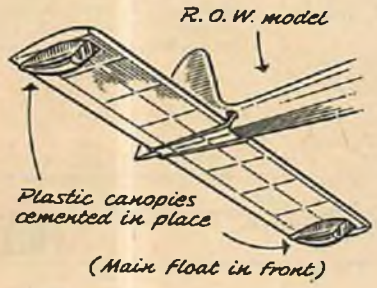
For Free Flight Fans

spot-cemented ping pong balls to stab tips for floats... Main float at front —

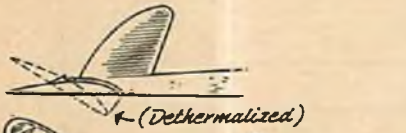


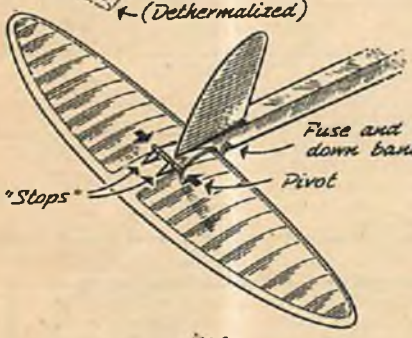
Inset dethermalizer panel permits fixed tail group for small ships.





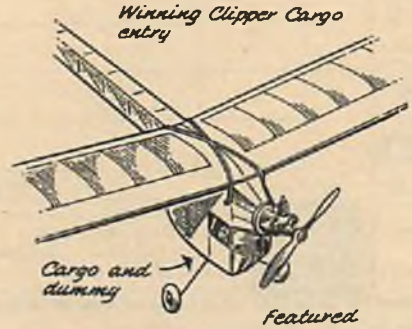
masking tape for packing trim on wing, tail, engine mounts — Stays put





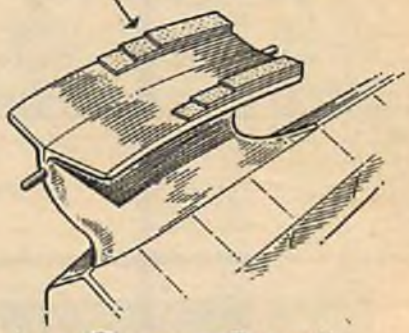
unique pivoting stab. dethermalizer —

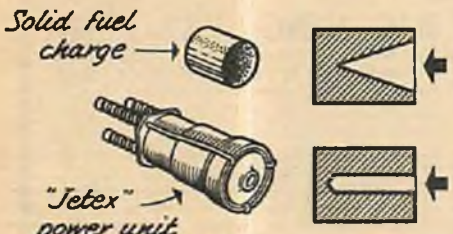
Winning Clipper Cargo entry



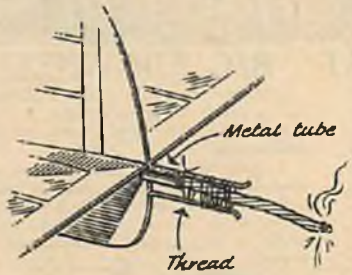
featured "pod-and-boom" type fuselage design —

Layers of masking tape

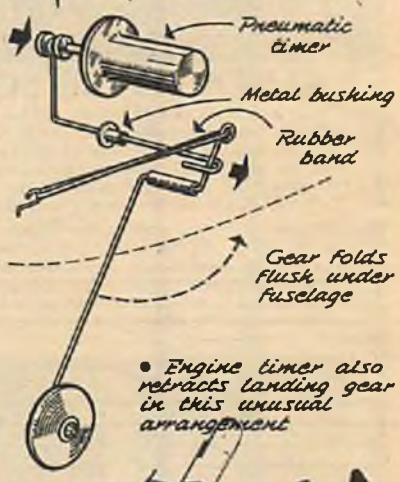




Drill charge to increase burning surface

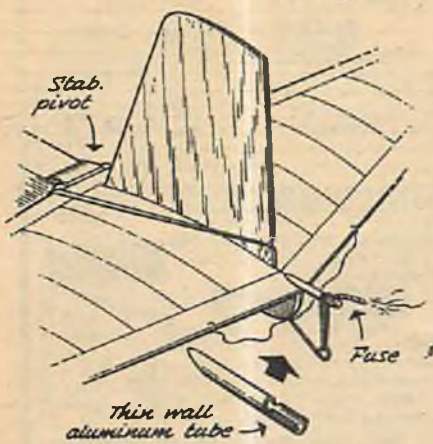


thread hanay for binding dethermalizer... holds tail firmly, burns through easily.

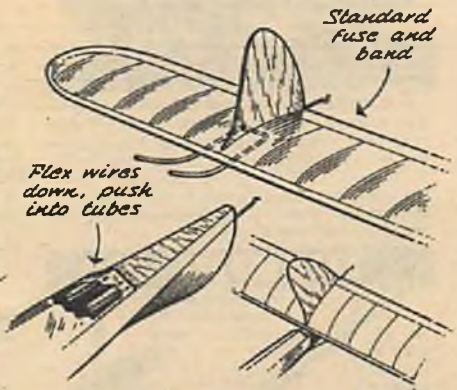


• Engine timer also retracts landing gear in this unusual arrangement

Fuel flows except when ship dives

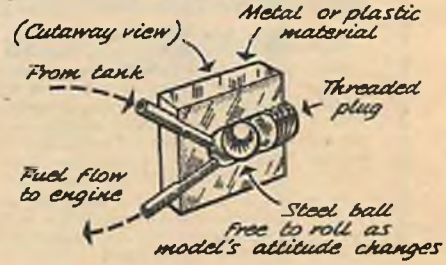


' fire dethermalizer which minimizes fire hazard. Fuse burns band then is snuffed out in tube —



• Nifty dethermalizer requires no front hold-down bands —

Friction of curved wires in tubes holds stabilizer fast in dethermalized position...



• Safety fuel valve

Mounted with axis slightly up in front. Gravity causes ball to obstruct fuel flow in dive —

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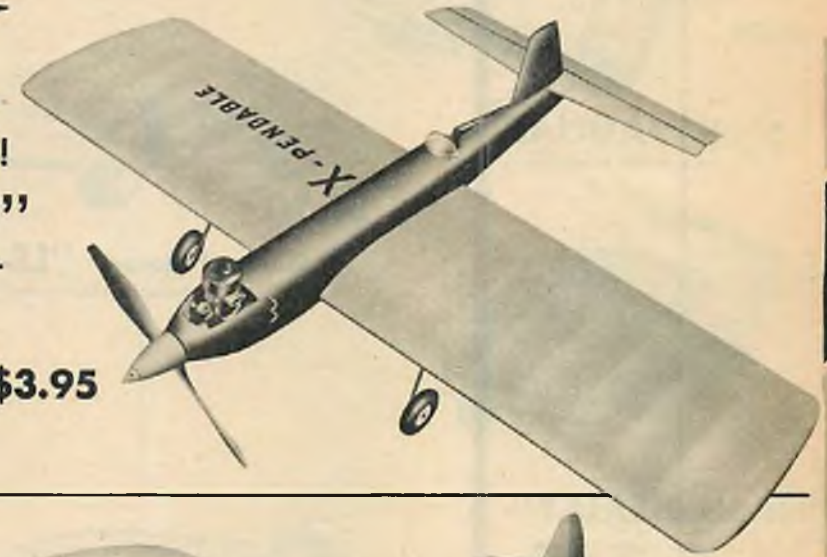

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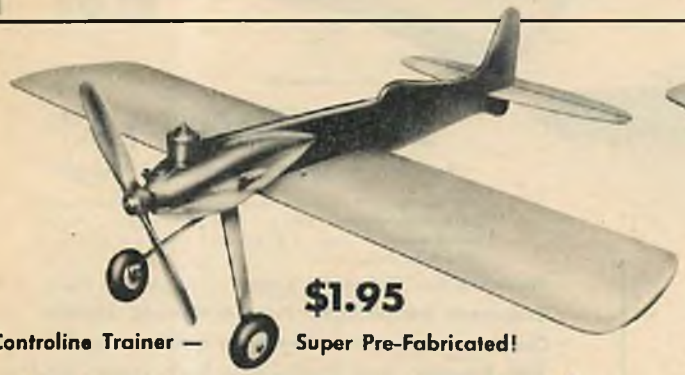

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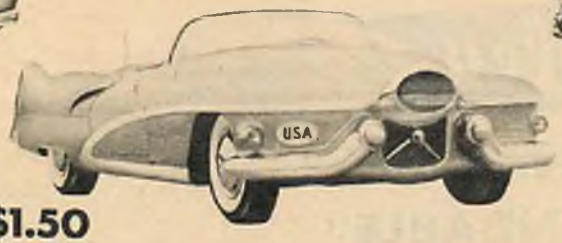

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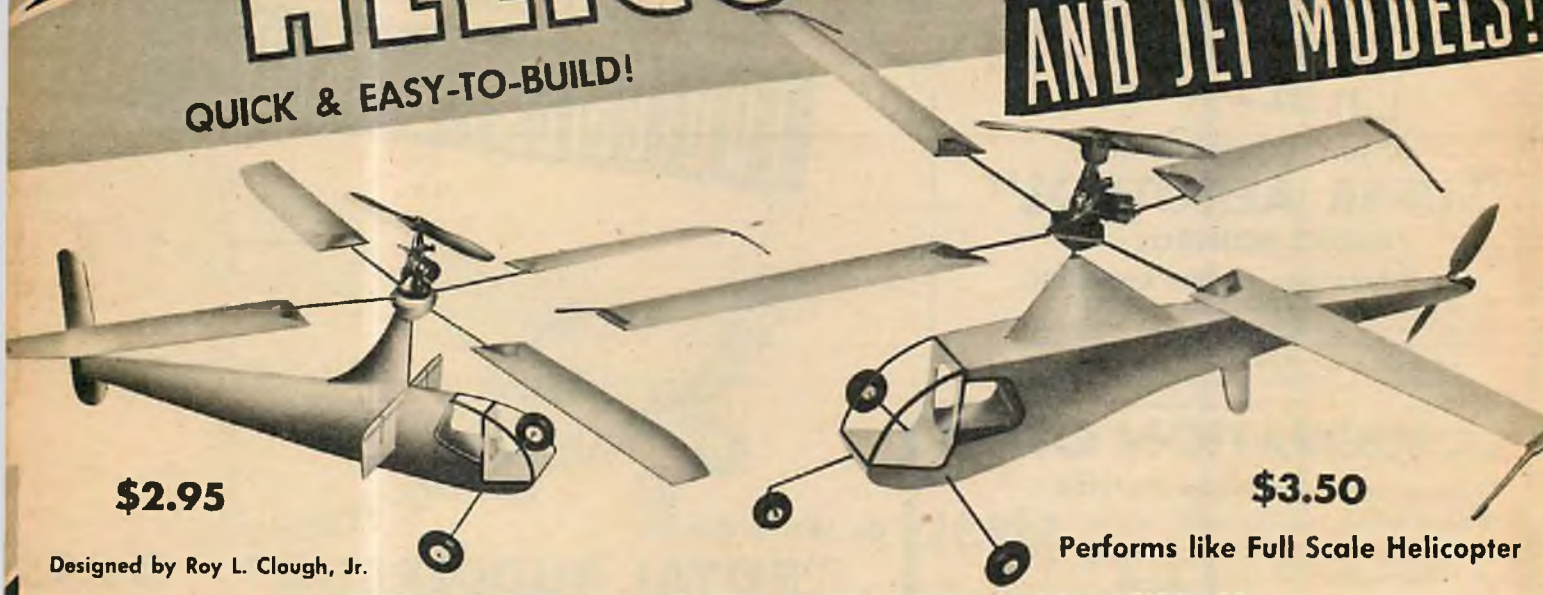

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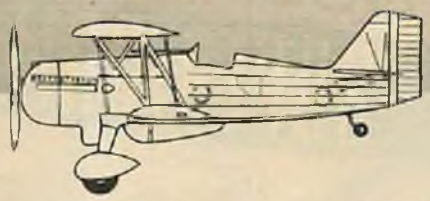

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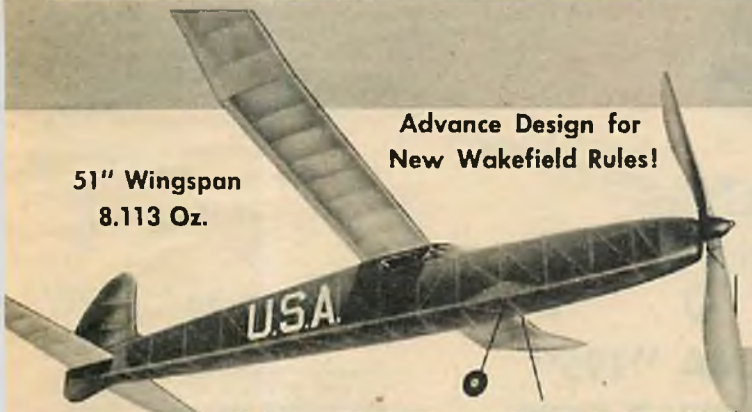
The Curtiss Hawk "P-6E" is one of the great historical models of the Air Force. It was our best pursuit ship of the early 1930's. Berkeley's model is authentic, scaled without deviation from rare service manuals supplied to us by the Air Force Technical Museum. The complete decals for the famous "17th Pursuit Squadron" from Selfridge Field, Mich. make it a really beautiful model to own and fly.



51" Wingspan
8.113 Oz.

Advance Design for New Wakefield Rules!

$3.95

"SUPER-CLOUD"

Specially selected Balsa throughout; special Hardware for the Folding Propeller; Milled-Shape Balsa Propeller Blank; Covering Materials; and extra-complete Plans and Instructions.

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"SHOESTRING"

For .14 to .36 Engines — 28" Wingspan

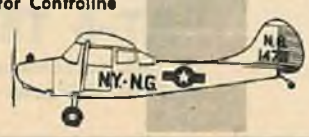
This Continental Trophy winner makes a perfect 1 1/2" scale controline model. The kit includes genuine Jim Walker "U-Control"; metal hardware; formed metal wheel pants; metal spinner; formed sheet metal landing gear; metal bushed rubber wheels; die-cut balsa; plastic bubble canopy; fuelproof decals; hardwood mounts; die-cut plywood; covering material; full size detailed plans.

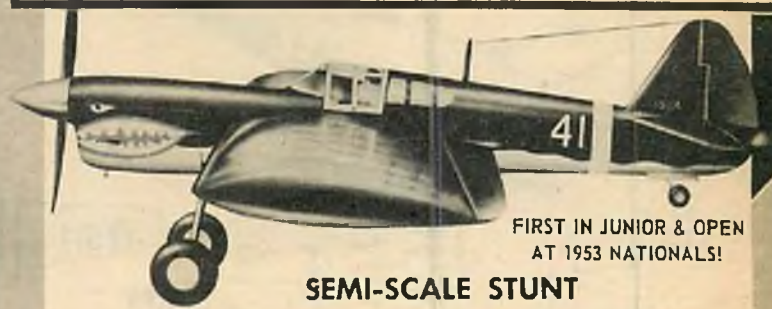
Cessna L-19 **"BIRD DOG"** $2.95

For Free-Flight Gas — Controline — Rubber Power

.035 to .049 Engines for Free-Flight .049 to .099 Engines for Controline

In active duty in Korea, this new liaison plane is perfect in proportions for model work. Plans show it as a free-flight "1/2 A" gas, with details for rubber and controline conversion. Fuelproof decals, die-cut balsa, plywood and celluloid; shaped and notched wing edges; formed gear, etc.





FIRST IN JUNIOR & OPEN AT 1953 NATIONALS!

SEMI-SCALE STUNT

"P-40 WARHAWK"

For .19 to .36 Engines — 45" Wingspan

This beautiful semi-scale stunt controline won first in Open and first in Senior at the Tangerine Internationals. Die-cut balsa; silk-screened celluloid canopy; complete metal hardware including Jim Walker "U-Control"; metal cowl; fuelproof Flying Tiger decals; stunt flaps.

$4.95

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Berkeley's INCOMPARABLE SUPERIORITY!

Embodying the finest in design, with completeness found only in a Berkeley Kit, these models will satisfy the exacting modeller.

Pre-Fabricated *Controliners*

HERE IS WHAT YOU FIND WHEN YOU OPEN A BERKELEY KIT—

The hardware and metal parts such as deep-drawn cowls, wheel pants, spinners, stampings and fittings are included as required by each design. Controline Kits include all the necessary bell-cranks, elevator horns, pushrods, hinges, etc. In addition you will find such small items as wheels, bolts, nuts, washers, reinforcing tape, die-cut or formed celluloid, and other hard-to-get parts.

Your Berkeley Plan will be Full Size, with three or four times the minimum detail required to actually build the model. The full size layouts and extra details clarify construction, speed assembly, and aid in repair work and modifications.

The Balsa and Mahogany in each kit is selected from the finest grades available, pre-shaped or precision die-cut as required.

Yes you get a lot when you buy a Berkeley Kit. You get more in material value, more in design engineering, and more in potential performance.

$6.95

North American
"AJ-1 SAVAGE"

For two .045 to .099 Engines plus Jetex 100, 200 or Jetmaster 150 unit, for exact scale power. 27" Wingspan — ⅜" Scale from factory plans.

$5.95

North American "T-28"

For .23 to .36 Engines — 30" Wingspan

This new Air Force Trainer aligns itself on the Step-Keel, included in kit. Tri-cycle landing gear, metal cowl, bubble canopy, U-Control.

"PITT'S SPECIAL"

For .19 to .33 Engines — 25½" Wingspan **$4.95**

This colorful stunting biplane stands apart on any field. Decals include red flare design. Metal cowl, wheel pants, celluloid, etc.

CESSNA "195"

For .19 to .49 Engines — 36" Wingspan

This beautiful lightplane features Step-Keel construction. Formers are positioned by a removable jig. Metal cowl, die-cut parts.

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"MINNOW" Cosmic Wind

For .09 to .36 Engines — 28" Wingspan

Probably the most famous Goodyear Racer of all. Step-Keel Fuselage, wheel pants, metal spinner, cowl, complete decals, canopy, U-Control.

North American
"AT-6 TEXAN"

(U.S. Navy Designation SNJ-5)
For .19 to .33 Engines — 31" Wingspan

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Authentic and complete down to both Army and Navy decals, the AT-6 is one of the most popular kits of all time. Performance is excellent.

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World's First SHOCK-PROOF DIESELS!

OK CUB .049 DIESEL

Disp: .049 cu. in. or .83 cc.
Height: 2 7/16"
Weight: 1½ oz., including fuel tank

$5.95 *as illustrated*

"OK" CUB .075 DIESEL

Disp: .075 cu. in. or 1.25 cc.
Height: 2⅝"
Weight: 2 oz., including fuel tank

$7.50

Now . . . after 38 years of research and development by Charles Brebeck, designer of "OK" engines, Herkimer has come up with a series of tried and proven advanced-design diesels that can really take it.

Both the .049 and .075 Cub Diesels include radically new and improved features which enable these rugged little power plants to "roll with the punch". Your dealer now has the new "OK" Diesels, Diesel Fuel and all the exciting details. Check with him, or write direct.

"OK" Diesels require no ignition accessories — no batteries . . . no plugs . . . no harness . . . no connecting clips. All you need is "OK" *Cub Diesel Fuel* specially developed for "OK" Cub Diesels.

Pint . . . **85c**

Exclusive shock absorber pad and pulsating contra piston (patents pending) make "OK's" the first practical long-life diesels . . .

(a) *Adjusting screw*

(b) *Cylinder head*

(c) *Shock absorber pad*

(d) *Contra piston*

(e) *Sealing ring*

(f) *Piston and connecting rod*

Compression ratio is adjusted by screw (a). Explosive force within the combustion chamber acting against the "floating" steel contra piston (d) is absorbed by springy metal shock pad (c). Thus, impact stresses are minimized and crankshaft, connecting rod, wrist pin, crankcase, cylinder and cylinder head are protected and last longer.

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COMET

Any experienced model builder will tell you that Comet Powered models—gas or jet—have always been tops! Each model is perfected by years of research and designing, then tested in hundreds of actual flights to make sure you will get complete satisfaction.

New!

The LOCKHEED *Starfire* F94-C for JETEX engine!

A Terrific Flyer!

KIT No. SP-1

Look to Comet—the leader—to bring you the latest and the best—and here it is! This flying jet scale model of the newest fighter ordered into production for our Air Force is startlingly realistic! The fuselage is designed to take a Jetex 150 engine, and Jetex augmenter tube for even greater power. A big 23¾" wingspan (with wing tanks); 25" long.

Here are more thrilling details: 10 formed plastic parts; finished bubble canopy; lightweight Silkspan covering, retractable nose and main landing gears; E-Z-open jet motor access hatch—and many other welcome features. Plan provides complete flying instructions. Kit No. SP-1.....

$2.49

The *FREE-FLIGHT* "PACEMAKER"

- Designed for ½A engines
- Easy to build and fly—completely PREFABRICATED!
- Fuel-proof plastic cowling!
- All parts neatly cut out—ready to use!
- Decal emblem and numerals!
- All necessary finished metal parts!
- Dethermalizer equipped!

Kit No. T-4 .....

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—*and the* U-CONTROL LITTLE SCHMOE

Designed for ½A engines

A prefabricated die-cut job with completely finished parts that fit together with amazing ease. New wide landing gear and nose gear mean safer landings. Simple enough for the beginner, yet extremely interesting to the experienced model builder. Kit No. T-17.....

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for "B" or "C" engine—ROOKIE TRAINER

U-control Model

A control model so simple, so accurate in design that it can be built and flown by any beginner! Yet it's so sensational in performance that it satisfies even the experts! Fuselage parts, wing, stabilizer and rudder are SHAPED, motor mount shaped and drilled; kit includes landing gear, wheels, etc.—amazingly complete! Suitable for Class "B" or "C" engines; class III, IV and V. Wingspan 35½". Kit No. T16.....

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