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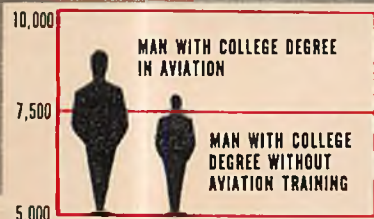


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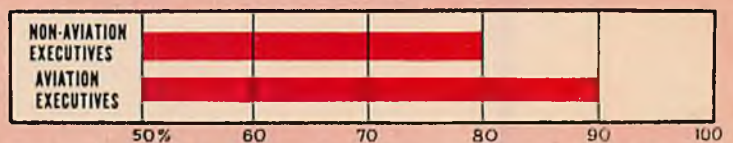
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# Air Trails

## model annual

for 1953



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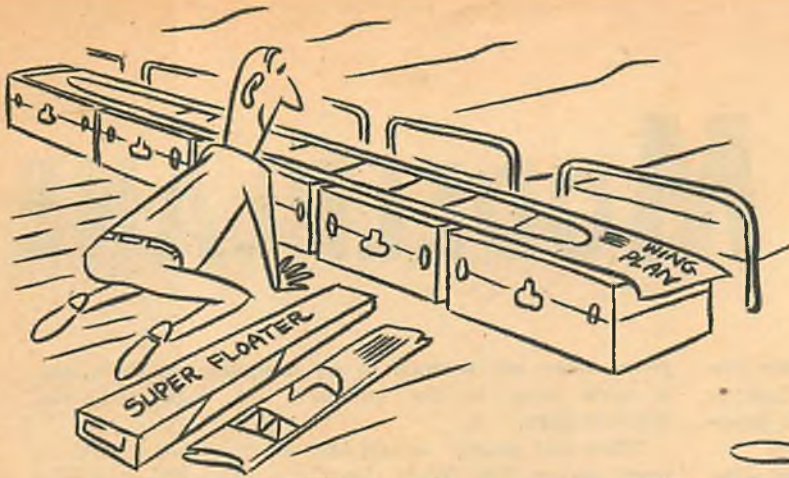
Cover photo: courtesy Plymouth Motor Corporation. Photo this page by H. A. Thomas of Alex Schneider and his 1st place Radio Control model at the 1952 National Championship Contest.

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# Modeler!

CARTOONS By  
BILL HUTCHISON



compete for places on the Air Force's model airplane teams.

The U. S. Air Force World-Wide Model Airplane Championships held during the past two years were one of the most remarkable accomplishments in the history of service modeling. AF modelers all over the world competed on a regional basis for the honor of returning Stateside and participating in the Air Force finals. The best of the AFWWMAC flyers were then sent

on to the National Meet and the best of that select group competed in the Plymouth competition.

The U. S. Navy, too, is to be commended for its splendid efforts. For the past five years a Naval Air Station has played host to the National Championships. Without the Navy there is considerable doubt that we would be having a "Nationals"—so vast an area and so extensive are the facilities required. And the sailors can be thanked for introducing a novel type of competition, the carrier event. But even better than military sponsorship of our activity and military awareness of the importance of modelplane building and flying is the fact that there are many hundreds of thousands of model builders staying active while in uniform. As long as we can have modelers-in-uniform continuing their hobby in their off-time hours we think the big brass will continue to support aeromodeling.

Is it necessary at this late date to point out that model building is not sissy, not juvenile, nor imbecilic? It's good, clean fun—well, not 100% clean when the glue is on the foot locker or the balsa chips are under the bunk, perhaps, but still fun. And certainly no one can complain or begrudge the G.I. his G-C fun; Lord knows, we're asking him to assume some pretty tremendous responsibilities around the world.

Between the shots, the lectures, the hardening-up hikes he continues to build "over here," in spite of almost everything he still flies models "over there"—a magnificent competitor who will never lay down his glue gun until the last scrap of balsa is exhausted . . . gentlemen, we give you, and we salute, the G.I. Modeler.



Hats off to the Navy! Model carrier launched at Naval Air Station, Corpus Christi, Texas. The AD's from AT.



Sgt. Bryant A. Thompson (rt.) with B-36. In center is Lt. Harry Vogler, USAF, who CD'ed AF Internats.



Events of past season fore-  
shadow this year's trends; read  
special reports on the Nationals

# MODELPLANE

■ With the 1952 contest season behind us, let's see how the flying picture looked generally and then analyze results and speculate on what can be done in the progress department for 1953.

The year saw few startling developments, flying-wise, since the rules remained the same as 1951. Many accessory, kit and engine manufacturers deserve well-earned bouquets for the fine quality of materials produced. More kits appeared in the flying circles than ever before.

Stunt models showed considerable improvement over their ancestors in a good many ways. The great majority of builders really took appearance to heart. It was very evident that good finishes and lots of elbow grease went into making many stunt models close rivals of their flying scale cousins. Much attention was paid the little



details: pilots' heads, bubble canopies, spinners and wheel pants showed up in abundance, proving that a high degree of craftsmanship can be combined with top-notch flying performance.

Stunt design saw few radical departures from previous designs. The flying barn door is dead (rest in "piece") with the emphasis more on the medium-sized engines and ships. The .29 to .35 cu. in. engines proved very popular, and they can do the job just as well as a big .60 in the nose of the right airplane. And there are plenty of the right airplanes around; stunt design is no longer a problem. The designers "have the word" and the more popular kits leave little to be desired performance-wise.

One notable attempt to wring the last drop out of the point score is the use of tricycle landing gear. One distinct failing of the lightweight stunter is the tendency to bounce during landing. To overcome this tendency (and loss of points), the tricycle gear would seem to be a good solution. It enables the flyer to fly the ship onto the ground and then hold the nose down to prevent bouncing.

The fuel feed problem during high speed flight is pretty well licked, with flyers about evenly divided between the wedge tank and the Walker pressure tank and regulator. Improved carburetion is evident in today's engines.

Stunt flying is still a contest of flying technique, but the margin between expert and beginner is narrowing constantly. At the big contests, judging really becomes a problem, since the caliber of flying is top-notch. The real problem in stunt this year is one that was evident last year: Judges must be super-sharp to catch what little differences show up between various flyers' patterns. Judging stunt fairly is a hard job and will require either more expert judges or more difficult patterns.

Thoughtful flyers feel that some changes in the rules are in order so that newcomers will not lose interest in the event. Of the many ideas put forth in the past two



years, none has seemed to be adequate, so the event is wide open to the modelers for suggestion and improvement.

"Slow but steady" would best describe the growth of team racing. The West Coast has produced a goodly number of participants; however, team racing has not caught on to such a great extent in other parts of the country. Model design has become pretty stabilized with most of the problems arising from the engine rather than the model. Starting delays are evident wherever the event is flown. The modeler must know his engine well to compete in this event. Since there are not too many kits available for team racers, this event has brought out the original designers' best efforts. The majority of the models seen at the big contests were of fine workmanship and finish.

The various bellcrank operated fuel cut-off systems are working out well in practice and the bugs have mostly been eliminated.

No other event places so much emphasis on a group of modelers working smoothly together. Sportsmanship must be of high order in team racing, and it gives a fine feeling to see a group knocking themselves out to do the right thing by their fellow flyers.



Credit must be given to the hardest working part of the team, the pit crews. A good crew can make or break a racer's chances, and there is only one way to make the breaks fall the right way. The pit crew must be well drilled and alert.

Many modelers shrug off team racing with the "too complicated" attitude. For this group we can only say: they don't know what they're missing. There isn't a better event in the whole contest schedule.

This situation might be helped by some simplification of the rules so the event can collect more newcomers. Perhaps we could borrow a leaf from the automobile racing book and have two classes of team racers. One like "stock cars," permitting uncowed engines and larger fuel tanks, while the other class would have requirements as they are now, the Indianapolis 500 type of high performance. Permitting uncowed engines would reduce overheating problems during prolonged starts, while larger tanks would reduce pit stops and refueling, restart problems. This is intended merely as a suggestion toward a solution. More modelers must voice their opinion as to how the event can be run and appeal to more modelers.

Combat gained rapidly in popularity. The slam-bang appeal is widespread, and it is the one event guaranteed to stop the show wherever it is held. We are convinced that the more people there are flying in the same circle, the more fun for everyone concerned. But don't spend too much time building that model for this event. The mortality is pretty high.

Flying scale events showed a steady increase in popularity during the past year. Thanks to the fine efforts of





# PROGRESS



the kit manufacturers, the modeler has a wide choice of ships to build for this event, and as a result more and more newcomers are turning out for flying scale.

Craftsmanship in flying scale is better than ever, and many models of museum caliber were seen along the way during 1952's contest season. Unfortunately not all of these showpieces flew as well as they looked, and it is one of the greatest mysteries in the hobby why the builders of such fine models leave the flying performance so much to chance. All too frequently a year's work is wiped out in a few seconds. It seems like a pretty needless waste of effort, since just a fraction of the energy spent on scale detail could be applied to achieving proper trim and good flying performance. So many scale builders make their first test flight their first official contest flight, the average contest loses about one third of the entries in crackups.

A few enclosed Dyna-Jet powered ships showed up at various contests. Insulation and heat dissipation bugaboos are being licked, and we can expect to see more interest in this type model this year.



Multi-engine types are almost as popular as single-engine ones and under the present rules the big transports and bombers are giving the fighters and racers a good run for their money. However, many scale builders feel that an unfair situation exists here, because the bombers cannot compete on a stunt basis with many single engine types. One solution would be simply to reduce the number of points possible in stunt flying so the scale operation and workmanship points would far outweigh the stunt points.

Another solution might be the establishment of flying scale stunt class and regular flying scale not requiring stunt maneuvers.

Navy carrier event, a three-year-old baby, is still having growing pains, but 1952 saw a larger turnout than ever before, and flying at the Nats was really good. It must be remembered that the event has only been run at the major contests, and the largest number of entrants at any one contest has only been about three dozen.

Fast and slow flight control has turned up many workable solutions, and throttle or choke control of glow engines is gaining favor over the two-speed ignition setup. The two-needle valve arrangement has been borrowed from the R/C boys, and both intake and exhaust chokes working from third lines are being used. Some twin engine entries used both engines for high speed, then cut off one engine for slow speed flight. Less evident were flaps, dive brakes, and tail chutes for slowing down. With good engine control these extra gadgets seem to be more trouble than they are worth.

It is interesting to note how the speed spread is opening up. The first contest saw a 13 mph difference,

while the 1952 contest winner had 30 mph difference in speed.

*The Director's Comments on the 1952 Nationals (by Dick Everett):* The indoor hand-launched gliders at this Nationals flew longer than any other gliders have ever flown. The very high ceiling undoubtedly played a big part in this but it must be remembered that some of these experts flew in this building before, so possibly there are stronger arms and better gliders. Joe Foster's

ships were joys to behold—super finishes, light strong wood.

In Joe's opinion, age plays an important part in the gliders; he builds them just prior to the contest, says precious seconds are lost in old gliders.



The experts weight the tip on the inside wing. By varying this small clay weight, they vary the size of the circle. This does not seem to affect the pull-out or launch, and drops the inside wing, if in a stall, for faster recovery.

Bill Atwood's winning stick model was developed in Santa Ana years ago. He knew exactly what to do; the ship was simple, light, very cleanly constructed, it was not built to break records, but to win contests. He's won the last two he entered.

The free flight gas models seem to be very much in the rut, Hogans, Fubars and Zeeks comprising nearly 90% of the models. Don't know what happened to all these designers; most everyone seems content to modify a kit. But we can't remember seeing many ships built according to the plans; to quote the old master Carl Goldberg, "Does anyone ever follow plans?" Seems like they don't. Larger rudders, longer fuses, larger stabs and wings. In many cases the fellows just added sections to the original planform.

The Mexican contingent had excellent construction, the only real originals and honestly superior finishes. This can possibly be attributed to the fact that they get to attend only one or two contests in the States each year, which enables them to keep thinking on original lines.

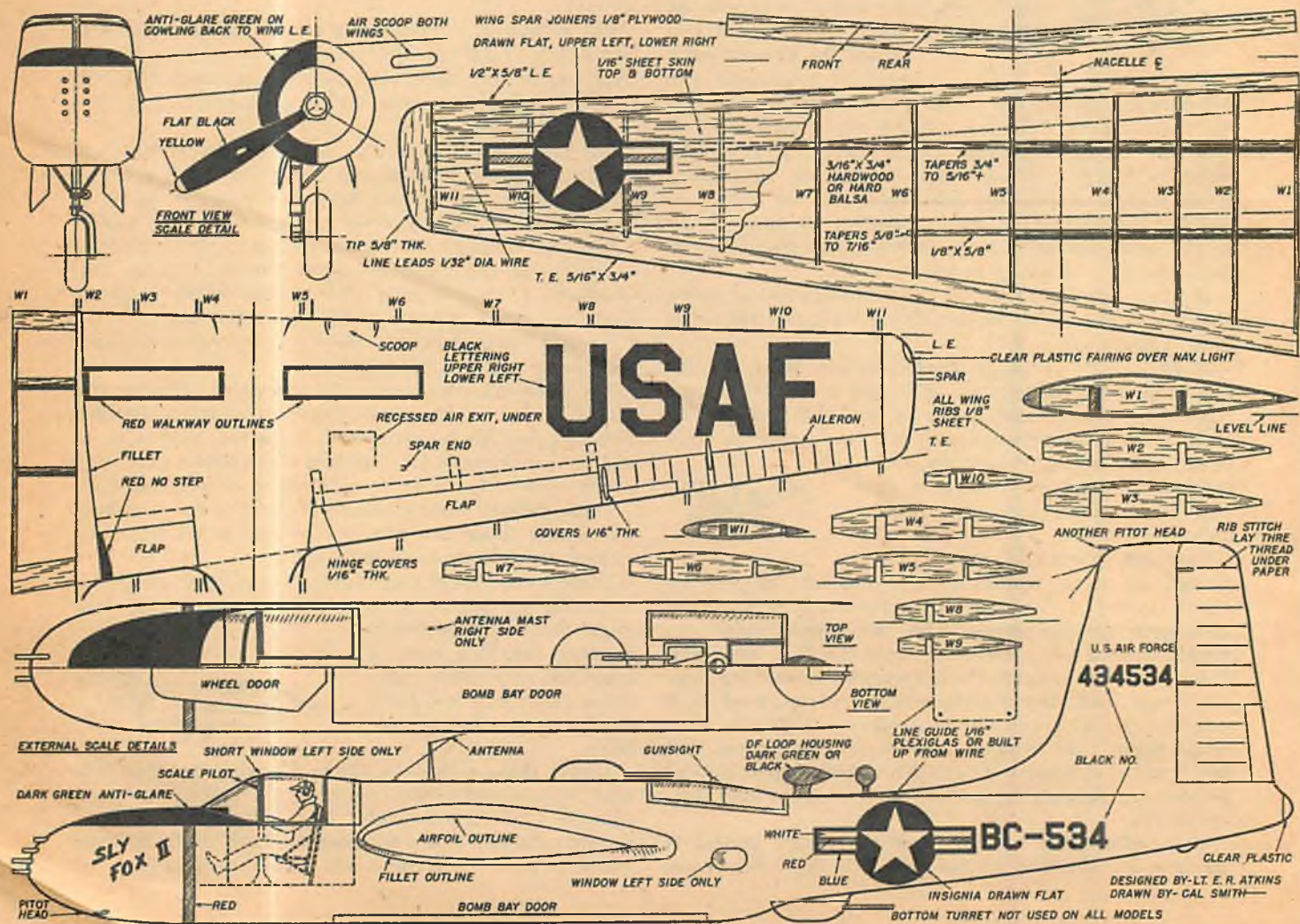
These fellows used Johnson's Car-Nu for a rubbed wax finish. Since the wax is also fuel proof, the ships stayed slick all through their flying.

There were a lot of crack-ups, most of them attributed to borderline adjusting some fellows employ in order to get that ship upstairs in a hurry, resulting in most cases in very little incidence difference and little or no nose-down stability.

Larger ships with a .19, .29 or .32 being flown on 800-plus square inches did not seem to suffer too much because of their relatively light wing loading. These ships on the whole are adjusted to climb on their wings and seem perfectly content with (Continued on page 74)











# Douglas B-26 Invader

By LT. E. R. "DICK" ATKINS, JR., USAF



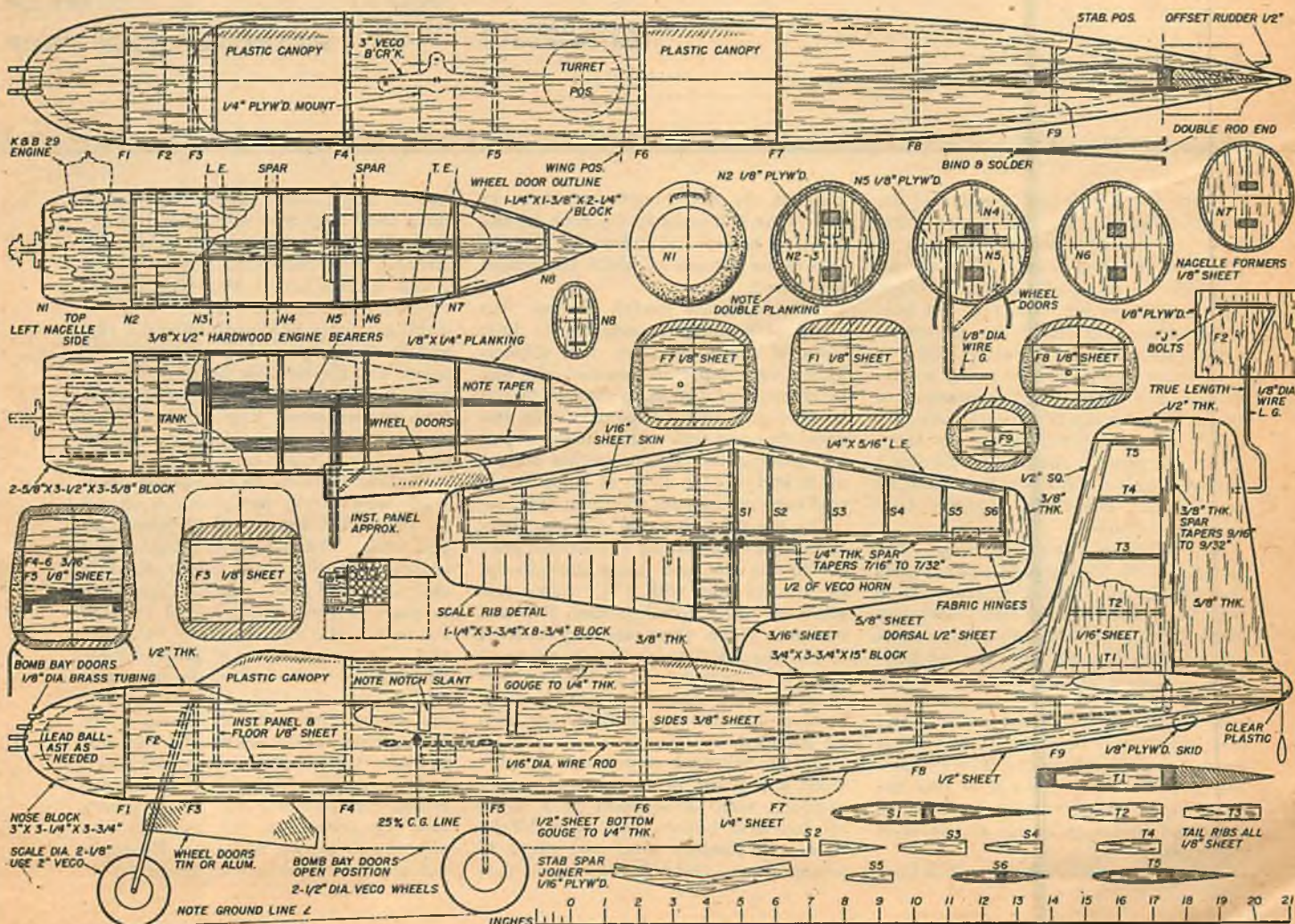
■ Have you ever considered building a multi-engine scale model but for some reason the project seemed too complicated or not worth the trouble required? Well, sweep off the old workbench and dig out the glue pot, because it's as simple as any single-engine job you ever made.

This was my first multi-engine and was so successful (in the money three times in three contests) and handled so beautifully that I plan to build multi-engine scales from now on.

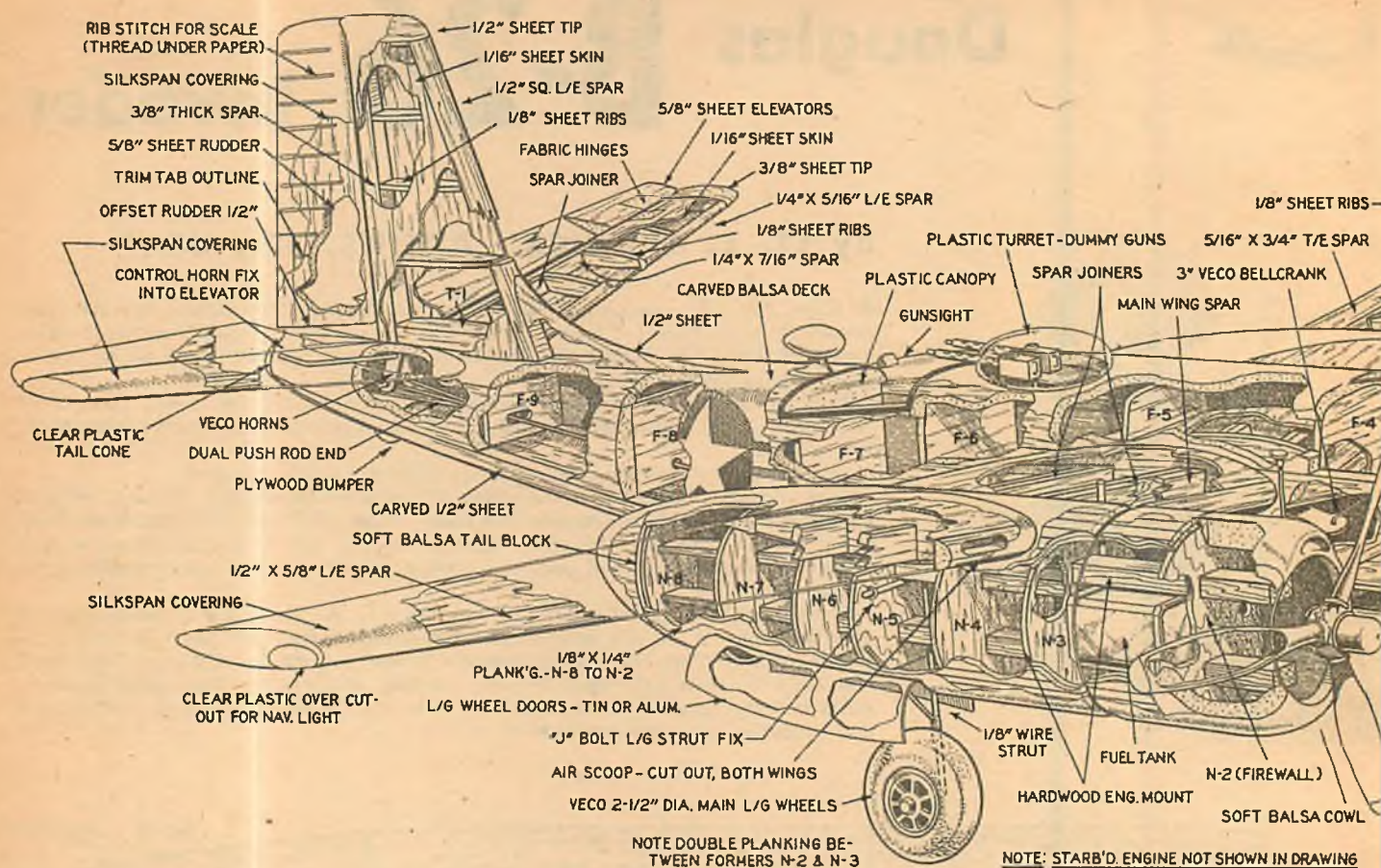
There are a few tips you should have to make your ship a success.

First and most important is the choice of two good dependable engines. Without these you'd better not even start on this ship. I chose K&B .29 Glo-Torps for the B-26, but if you have two "pet" 29's of the same power they will do the job. However, you must have engines that will start on a couple of flips and will run steadily at all times.

Secondly: Some type of cut-off device similar to the type used on team racers is very desirable. If cut-offs are not used the outboard fuel tank must be smaller so it will cut first. Then the inboard engine will tend to turn the ship out of the circle and keep the lines tight until it quits running. Incidentally, this model performs safely on either engine. For safety's sake, however, the ship is trimmed with ailerons and rudder to turn ship outwards on circle.







Third: Don't wait until the day of the contest to fly your ship for the first time (this goes for any model). As soon as you have the ship assembled throw on a couple of coats of fuel-proof dope, dash out to the field and find out how she handles and make the necessary adjustments then for a perfect flight at the contest later. I've seen many potential prize-winning models smashed to small piles of scrap because the builders didn't have the heart to test fly them before the contest, and as a result didn't have the slightest idea how they handled or whether they were properly balanced or adjusted.

Now a little about the ship. The Douglas B-26 (designation prior to 1949 was A-26; the Martin wartime B-26 Maurader was dropped from service in 1945) is an all-metal, two-engine mid-wing fighter-bomber and ground support airplane carrying a crew of three or four depending on its mission. With a bomber nose it is used for low and medium altitude bombing. This version mounts two .50 caliber m.g.'s in the nose and four .50 caliber m.g.'s in two remote-controlled turrets in the rear of the ship. It flies at speeds in excess of 350 mph.

The fighter version mounts .50 caliber

m.g.'s in the R/C turrets and three in each wing and eight in the nose, in addition to bombs and numerous rockets. This is the version on which this model was based.

Let's build the model! Choose two pieces of  $\frac{3}{8}$ "x3"x36" medium soft sheet balsa of the same grain and quality. This is very important—so the sides will bend equally. The balsa may be tested by placing it on the edge of a table and weighting one end with a heavy object and placing two equal weights on the other end of each sheet of balsa to see that each piece bends the same distance.

Cut the sides to shape and join them at the tail end, placing a V shaped gusset in the slot and using glue freely. Secure the sides with a "C" clamp and allow to dry. Install former F-7 and cement. When these are dry cement F-1 in place. Mount landing gear formed from  $\frac{1}{8}$ " wire to former F-2 and cement in place. The balance of the fuselage formers and the cockpit floor may then be installed.

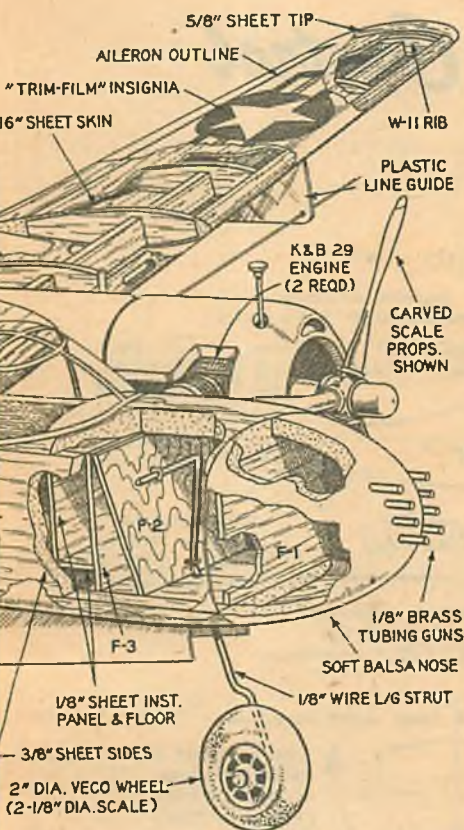
Cut the bellcrank mount from  $\frac{1}{4}$ " plywood and mount in proper position and reinforce with  $\frac{1}{4}$ " sq. hard balsa. Glue all top and bottom and nose blocks *lightly* to fuselage sides and carve to proper shape. Sand fuselage until it is

smooth and remove blocks and hollow them until they have approximately  $\frac{1}{4}$ " wall. Dope them thoroughly inside for strength with fuel-proof dope.

The bottom blocks may then be cemented in place permanently. Cut the stabilizer spars to shape. Affix the ribs and leading edge and cover with  $\frac{1}{16}$ " sheet. Cut the elevator from sheet balsa and sand to shape. Cut one end off of each of two small Veco control horns and cement to each elevator. Attach elevator with cloth hinges.

Pushrod is made in two pieces from  $\frac{1}{16}$ " wire. Form two pieces as shown on plans and wrap with copper wire and solder. Attach rod to elevator and secure with a drop of solder on each end. Cement the top rear fuselage block in place and slip the pushrod through the hole in the formers to the bellcrank and glue the stabilizer in place. Attach the pushrod to the bellcrank and secure with a drop of solder. Construct the fin and cover with  $\frac{1}{16}$ " sheet and attach to fuselage. Make dorsal fin and glue in place. Cut rudder to shape and attach to fin with shim brass hinge. Simulated raised rib lines and rib stitching may now be added on tail surfaces and ailerons as shown on plans. Reinforce tail section at seams with gauze.





Lt. Atkins' B-26 model was his pioneer attempt at multi-engine control line flying.



This is bomber version of the big Douglas. This view should help builders with l.g.

To begin the wing, cut the spars from very hard balsa or hardwood—an ordinary 36" yardstick can be used. Lay the spars over the plans and cement ribs in place. Add leading and trailing edges and allow to dry. Note level lines on the wing rib outlines on the plans. These can be used as a guide for blocking up the leading and trailing edges. The right wing panel on the drawing does not have the construction filled in. The short lines outside the outline mark the positions of the ribs. These marks can be connected with a pencil line to aid construction. Then the pencil lines will not interfere with the printed scale details. When both wing halves are dry join them with the plywood joiners using cement freely.

Cut the nacelle formers to shape. Note the offset in the top engine bearer. This is necessary so that the spar junction can be made strong enough. The overlapped section of the bearers should be glued with a hard glue such as Weldwood. A couple of wood screws or heavy thread wrap will also add strength. Be sure to make one right and one left hand nacelle since the holes in the formers are not on center.

Additional construction details are on full-size plans available from Air Trails.



Three-quarter rear view of same ship. Model can be fitted as bomber or fighter.



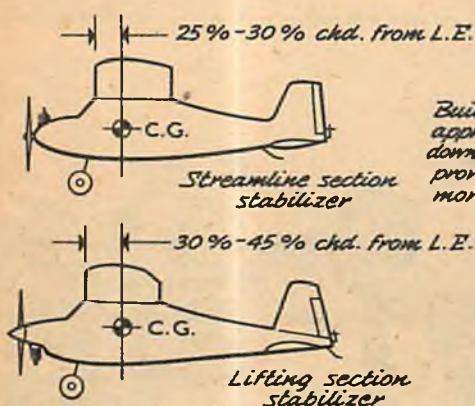
Model is now in Texas while author-designer is in France on duty with USAF.



# AIR-MODEL MANUAL

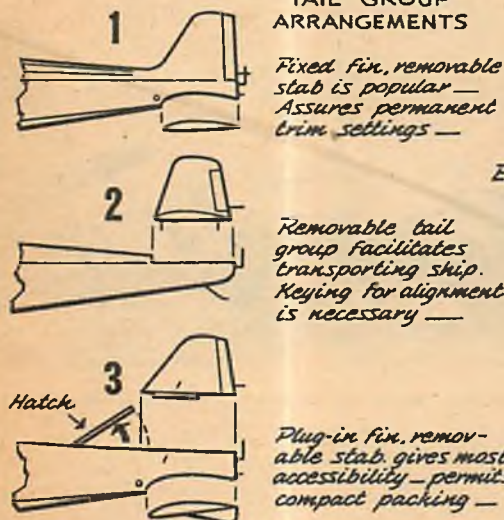
## Elements of Radio Control

C.G., TRIM SHOULD PROVIDE  
STEADY, SHALLOW CLIMB

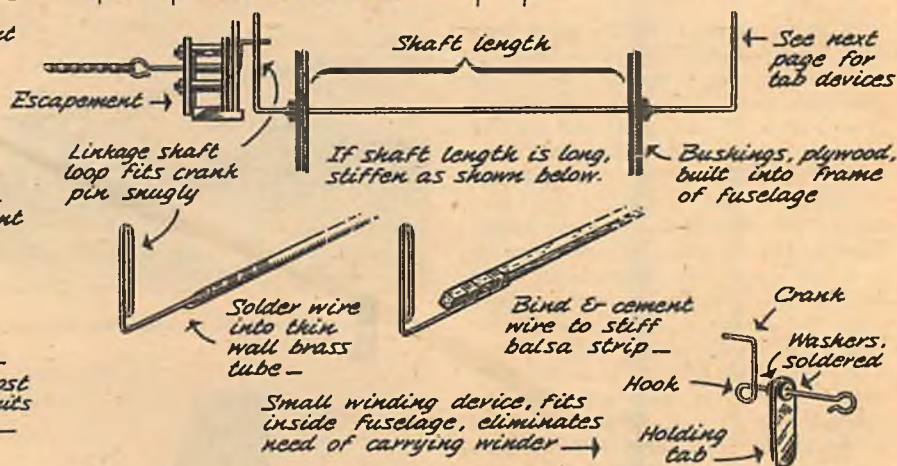
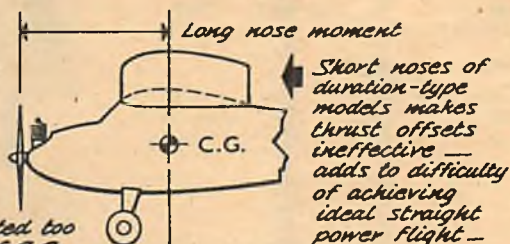
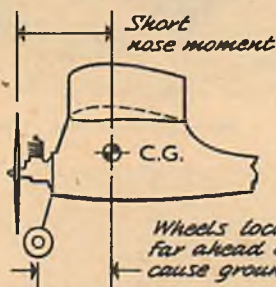
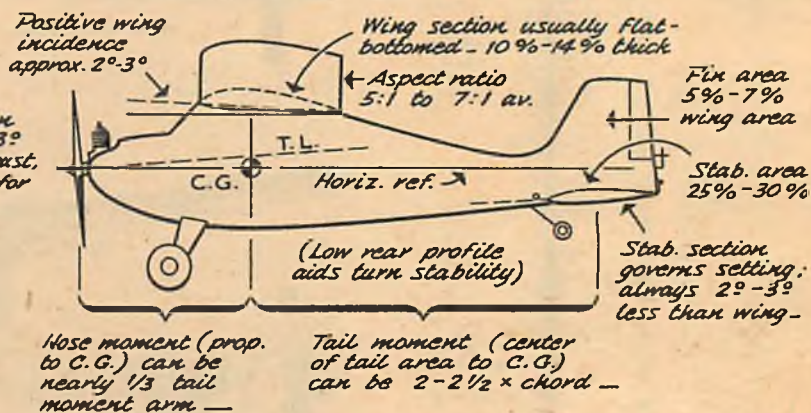


Center of gravity location can be fixed by location of weighty items (battery boxes, etc.). Balance more nose-heavy than other model types. Final longitudinal trimming by skimming wing, stab., follows balancing.

### TAIL GROUP ARRANGEMENTS



### CONVENTIONAL DESIGN LAYOUT



■ It is the wise modeler who resists the urge to launch into the field of radio control with a scale model equipped with an array of complex, experimental radio paraphernalia. Since the payoff comes with the first controlled flight, he is far wiser to start with standard ready-made or assembly kit transmitter, receiver and escapement or actuator and conventional model with simple rudder control only. Later, additions such as motor control can be added.

Dependable, enjoyable flights depend on a basically stable model—radio being used more for supplemental steering than for over-all control. Radio-controlled rudder tab can control ship directionally, to some lesser extent longitudinally (by spiral dives and zooms) and laterally. Contest-type duration model is poor starter since best bet for radio flying has longer

nose, flies much more under-elevated than contest jobs. Perfect trim for straight, or near straight, power flying calls for sharp adjusting, particularly to thrust line. Just enough downthrust and right-thrust are employed to offset power nose-up torque turn to left. Since these vary as engine speed (thrust and torque) varies, the latter should be held constant to yield uniform results.

Five-foot span ship with class a (.19 displ.) engine is ideal size for beginner since it will carry any battery weight needed for reliable service, is large and heavy enough for steady flying. Wing loading can range from 12 oz. per sq. ft. (slow model) to 18-20 oz. (fast model). One-inch dihedral beneath each tip per foot span is adequate for shoulder and hi-wing cabin type models. The usual .19 engine with 10/4



If you're R/C minded, or already "underway" with your first job, the words of wisdom here will save you time and trouble. No. 1 lesson: start with a stable ship!

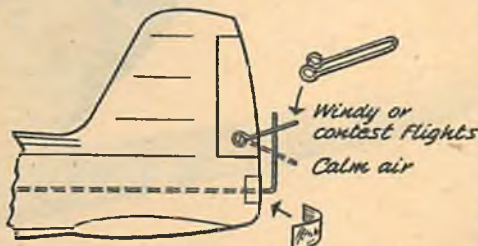
## RUDDER TAB CONTROL LINKAGES



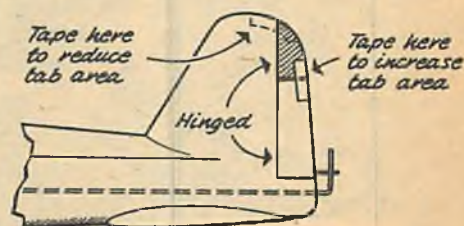
TWIN FIN HOOK-UP



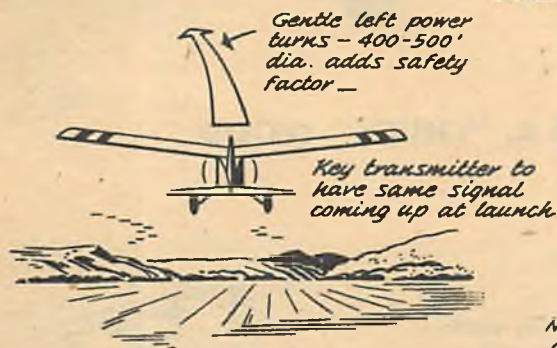
Vibration from poorly tracking, unbalanced prop can impair radio relay operation. Always balance props on sharp edge —



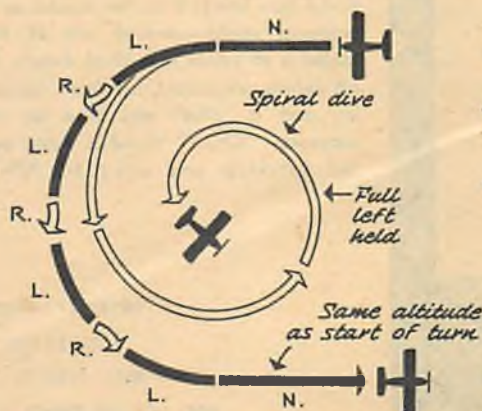
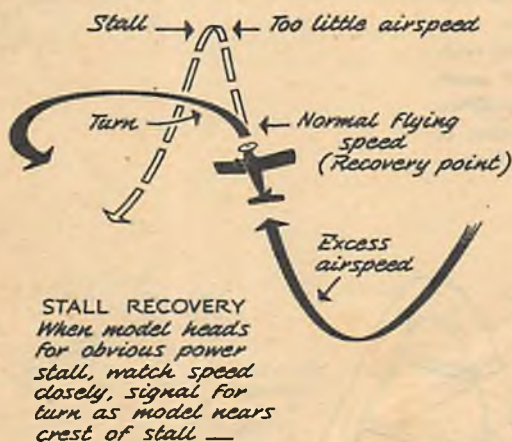
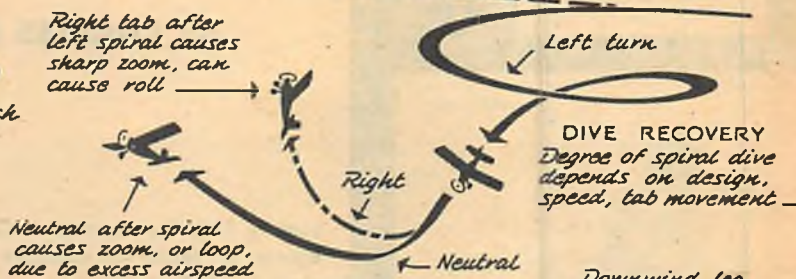
VARIABLE TAB MOVEMENT  
Allows quick, external change in control response —



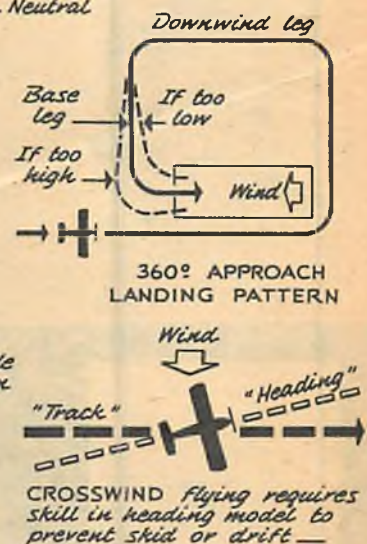
VARIABLE TAB AREA  
Quickly fits control response to weather, type of flying —



Straight or near-straight, gentle climb (Neutral tab)



"BLIPPING" with 2-position tab makes gentle turns, patterns possible, comes as habit after practice —



CROSSWIND Flying requires skill in heading model to prevent skid or drift —

prop, or thereabout, can handle a four to five lb. gross weight handily.

Center of gravity position can range from 25% to 45% chord from leading edge. Lifting tail generally calls for more rearward C. G. Model should be glide-trimmed for slightly fast descent with no evidence of landing flare-out. This assures headway when gliding into a wind and adequate control response. Glide duration is no factor. Prop pitch partly determines speed under power: more pitch, more speed. But higher pitch often makes launching of heavy models difficult.

Structurally, ship should be ultra sound, since flights are long as is service life of good R/C model. Engine mounting must be firm, vibrationless, with provision for altering thrust-

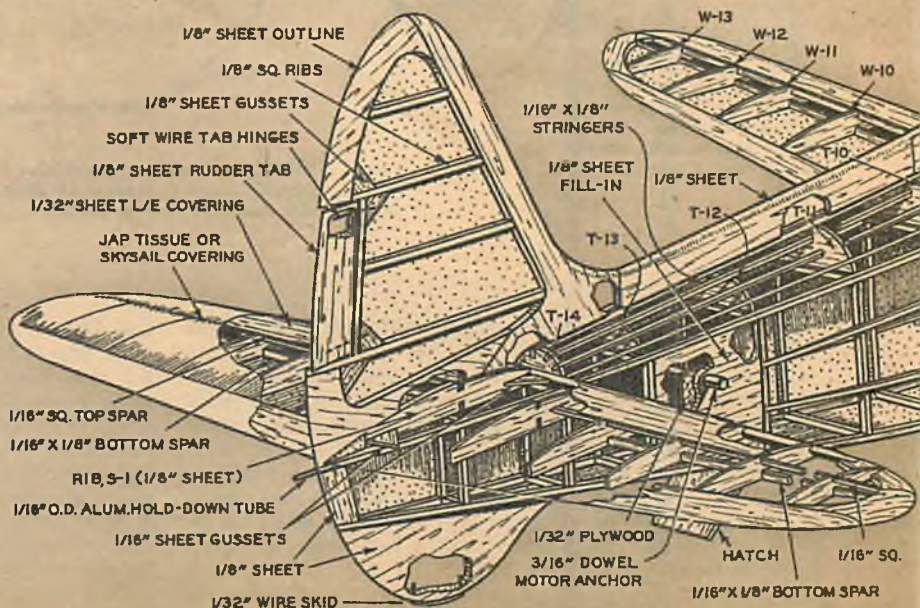
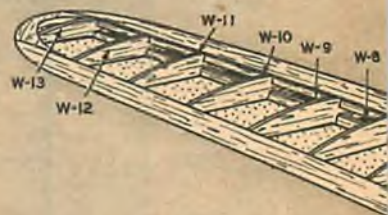
line. Gear should be flexible for absorption of sharp landing jolts, impact being far greater than contest jobs. Wing and tail mountings, preferably by rubber bands, should have suitable marks or keys for correct alignment every time. Receiver itself can be slung on rubber bands from its corners to adjacent cabin sides or mounted in foam rubber. Firm contact with cell terminals is chief consideration of battery boxes which should also be accessible for easy changing of cells. A suitable hatch for access to escapement and both ends of its rubber motor is handy item. Test points, wired from various battery circuits, suitably marked on fuselage side permit testing by meter for voltage without disassembling model. This is handy between flights when battery condition becomes questionable. Never trust questionable battery cells.





By CHARLES R. "CHUCK" WOOD

Looks a little like the 1939 Arado cantilever biplane, no? Model first appeared as "skeleton" photo in Air Trails. Interest on part of rubber model fans brings it to the Annual as the most gorgeous rubber-powered job of the year. Model is all yellow with black details, full cockpit details, windshield, headrest, cockpit coaming and a "pilot" who flies for exhibition purposes. "Chuck" Wood is flying partner of Ted Enticknap and noted for F/F designs.





# Beautiful Bess

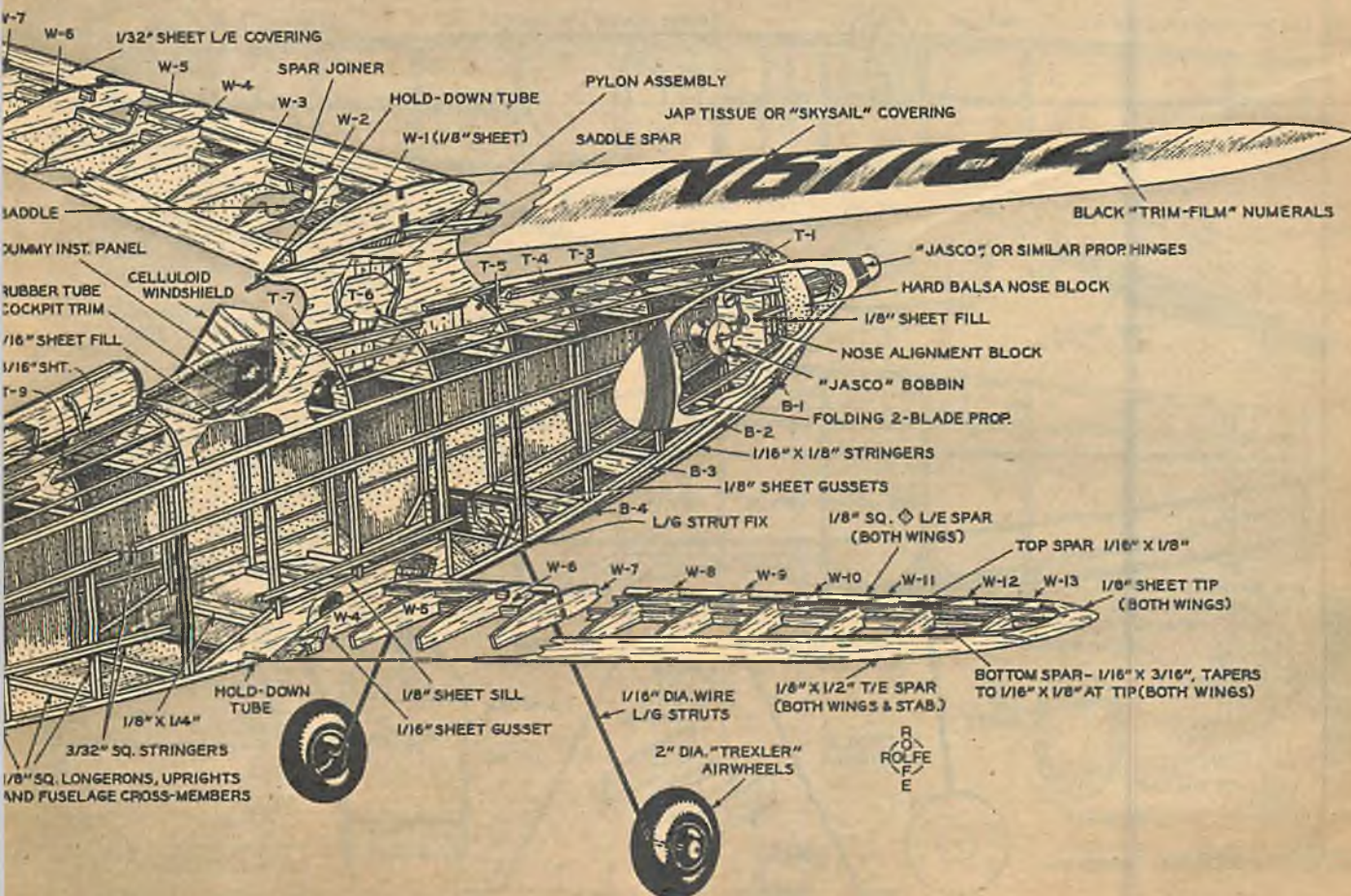
Sweet, high-flyin' gal who can vie in any beauty contest; full-size plans available

■ *Beautiful Bess* is a compromise between a scale model in appearance and a contest model in performance. The result is a snappy and rugged biplane that will attract attention wherever it is flown. The model is nearly two years old, and although it has logged over two hundred flights it has yet to suffer major damage.

The biplane is not intended as a contest ship, but under full power it will thermal easily. The best feature is its consistent flying characteristics and ability to hold adjustments flight after flight.

Much of the credit for success of the model is due to C. H. Grant's excellent notes on biplanes. The force arrangements and proportions are those recommended by C. H. G. With minor adjustments, *Bess* "flew off the board."

The fuselage main structure is built of  $\frac{1}{8}$ " sq. balsa—hard for longerons and medium for uprights and crossbraces. Much of the beauty





## BEAUTIFUL BESS

of the fuselage lies in correctly aligned stringers. Use hard  $\frac{1}{8}$ " x  $\frac{1}{16}$ " strips for the top and bottom stringers and hard  $\frac{3}{32}$ " sq. for the side stringers. Cut out all formers and glue them in their proper positions. All formers except T-1, B-1, T-5, 6, 7, 8, and 14 are made so that stringers lie on top of the formers, which eliminates scalloping effect between stringers. In this way covering will lie smooth, and stringers are easier to align.

Pylon is mounted in the slots on T-5, 6 and 7. Note that the center top stringer butts against front edge of pylon. Two  $\frac{1}{8}$ " x  $\frac{1}{16}$ " stringers run along the core of pylon, under the  $\frac{1}{16}$ " sheet side pieces. These stringers are blended into center stringer. Next add the  $\frac{1}{16}$ " sq. stringers (tissue supports) in proper notches and blend these also into center stringer. Now add rest of the stringers between T-1 and T-7. Stringers from T-8 to T-14 run in straight lines. After these are in, glue the headrest in position. Glue in landing gear before adding bottom stringers.

The cockpit is made of  $\frac{1}{16}$ " soft sheet balsa warped and butted against T-7 and T-8. An instrument board in cockpit, a headrest pad, and a cockpit coaming of split  $\frac{1}{8}$ " rubber tubing add much realism to model. Windshield is made of stiff celluloid in three pieces and outlined with  $\frac{1}{32}$ " strips of black Trim-Film or dope.

Wings are standard in construction and should

cause no difficulty. Put a seam of glue along each rib where the  $\frac{1}{32}$ " sheet planking touches them. Wing and stabilizer tips are all of the same outline. Notch front piece of all tips so that they fit leading edge smoothly.

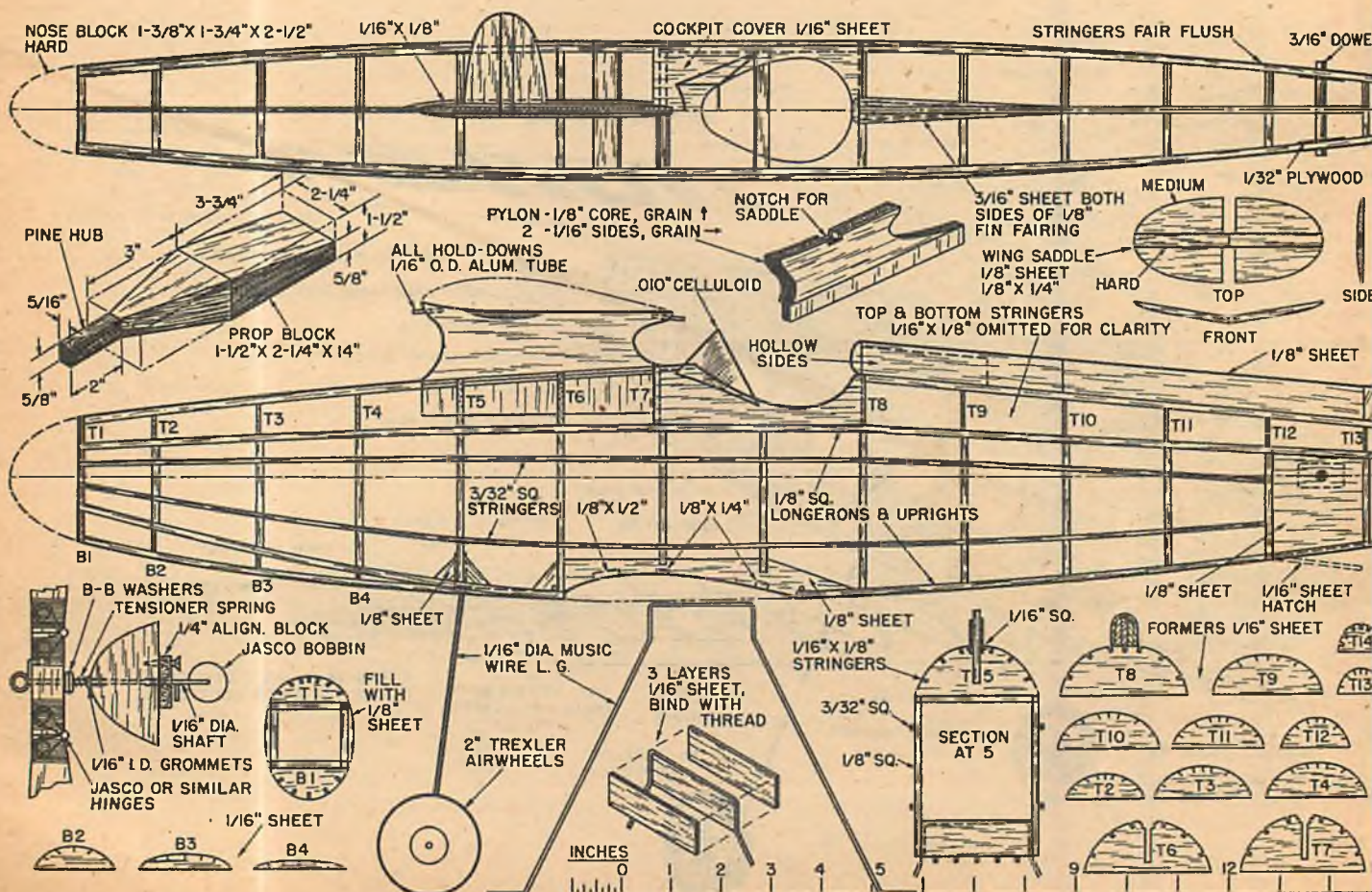
Stabilizer is same construction as wing. Fit ribs carefully. Add spars and then plank with  $\frac{1}{32}$ " sheet balsa.

Rudder is built flat of  $\frac{1}{8}$ " medium balsa stock. Note that its lower edge glues to stabilizer only. Fit rudder carefully so that it blends with rear edge of headrest. The rudder and stabilizer unit is held onto fuselage with rubber bands around the  $\frac{1}{16}$ " aluminum dowels. This unit should not be glued to fuselage.

Wing mount is now glued to the pylon. The center brace is made of  $\frac{1}{4}$ " rock-hard sheet balsa and the "ears" of  $\frac{1}{8}$ " sheet balsa. Glue solidly to center brace and pylon sides. Cover top of the wing mount with a piece of silk or nylon for added strength.

Propeller is carved from a  $14"$  x  $2\frac{1}{4}"$  x  $1\frac{1}{2}"$  block. After prop is carved, cut out the short balsa hub and replace it with a hardwood hub (see plans). Any type hinges may be used, but be sure that they work easily with no tendency to bind. Cover prop with white Skysail paper and apply six coats of clear dope, sanding until it is glassy smooth.

Bess is covered with yellow Jap tissue or Skysail. Six coats of thin clear dope will give a beautiful





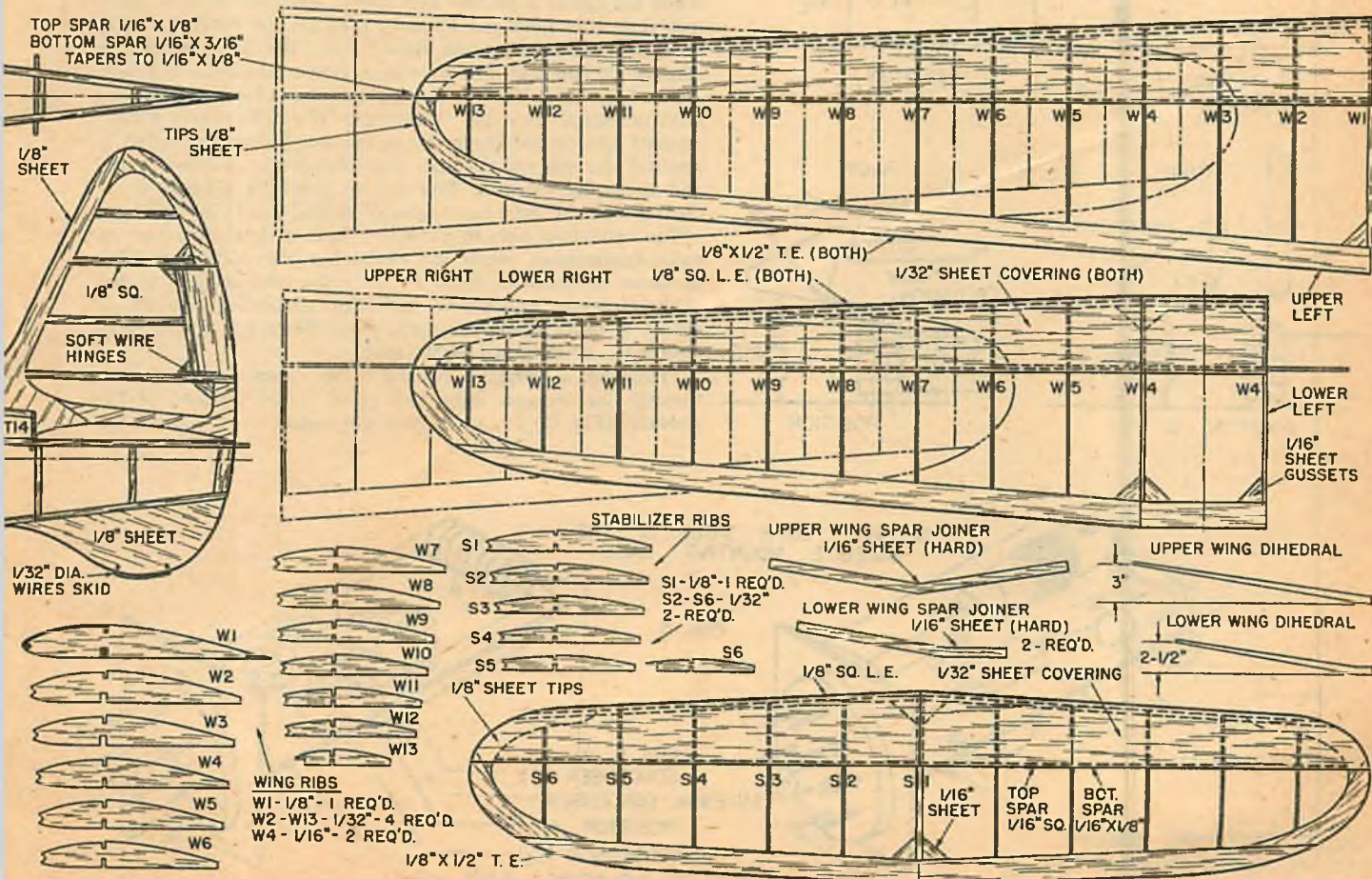
The rubber motor when lubricated and broken in



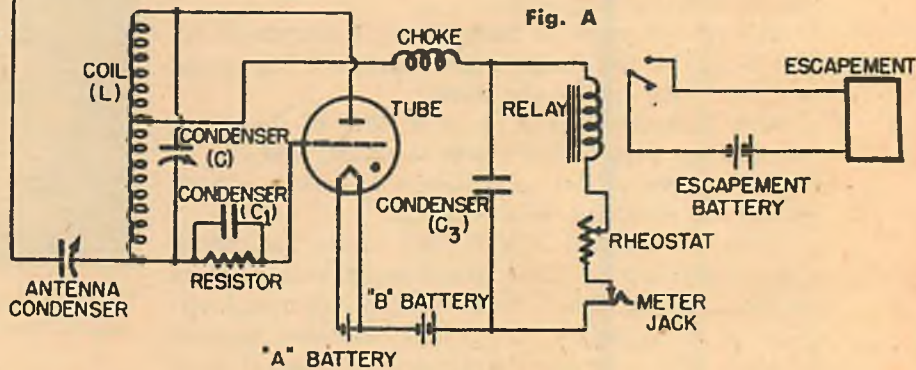
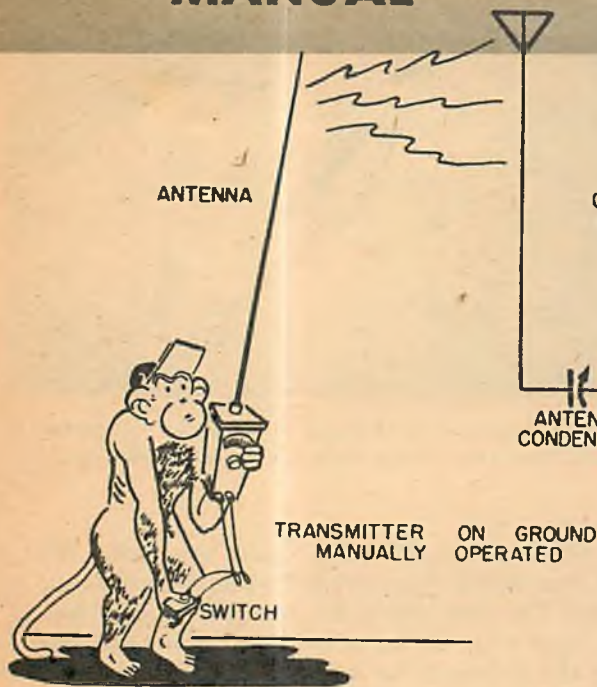
This beauty is powered by 18 strands of 1/4-inch flat T-56 rubber; to make building easy, full-size plans are available from Air Trails.

will handle about 600 turns. Under this power *Beautiful Bess* will average around a minute and a half in the air. The take-offs under high power are impressive. *Bess* will roll for a few feet before the wheels clear the ground. Then it will gain speed and pull up into a steep climb, gradually leveling off as the power is expended. The landings too are realistic.

If you want realism and performance, why not try this model? The full-size plans available from Air Trails make it simple.







■ The average radio equipment used to guide model planes is not complex, even though it may appear so to the model builder with no electrical or radio experience.

We take the basic schematic (Fig. A) and break it into smaller segments and show how each contributes to the overall operation of the radio equipment.

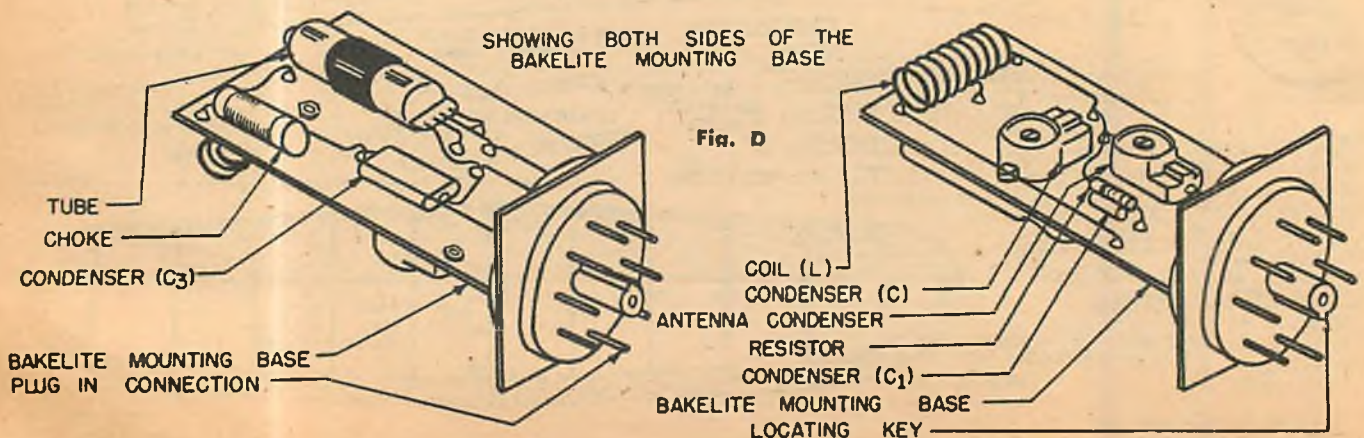
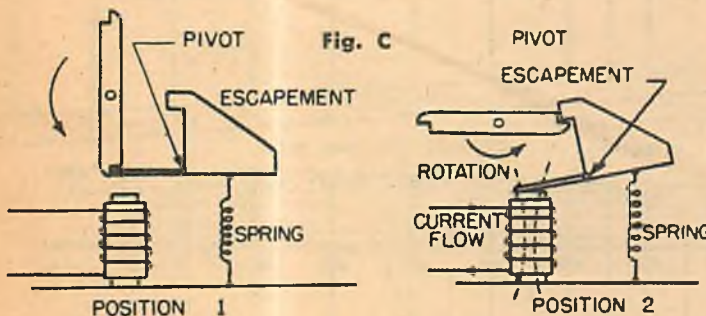
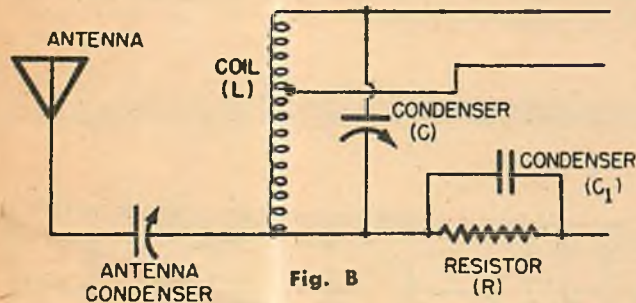
Inductance (L) and capacitance (C) must be tuned to frequency being used (Fig. B) . . . certain combinations of L and C will work at 27 megacycles and a different set of combinations will work at 50 megacycles. The antenna condenser controls the amount of signal that is fed into the receiver from the antenna. This is made adjustable to take care of such factors as variations in tube characteristics. R and C<sub>1</sub> combine to control tube action. They cause the tube to go in and out of oscillation at a frequency considerably lower than radio frequency being used, to produce what is known as super-regeneration.

Diagrammatic operation (Fig. H) of the vacuum tube . . . when the signal is off, the grid allows electrons to pass; electron flow goes from the filament through the control grid to the plate. However, when signal is on, the electron flow is stopped by the grid. The battery acts as a pump for the flow.

The tube (Fig. K) acts as a control valve for the relay . . . with no signal from the transmitter, the tube passes a high current and causes the relay to operate. When the signal is applied, the current through the tube drops to a low value and the relay releases. The dot on the tube schematic indicates that the tube has traces of special gas in its bulb.

The condenser acts to provide a path of low opposition to radio frequencies, while the choke provides high opposition to these frequencies (Fig. F) . . . the combination of the choke's strong opposition, and the condenser's shunt or diverting path, keeps the radio frequencies out of the relay circuit where they are objectionable.

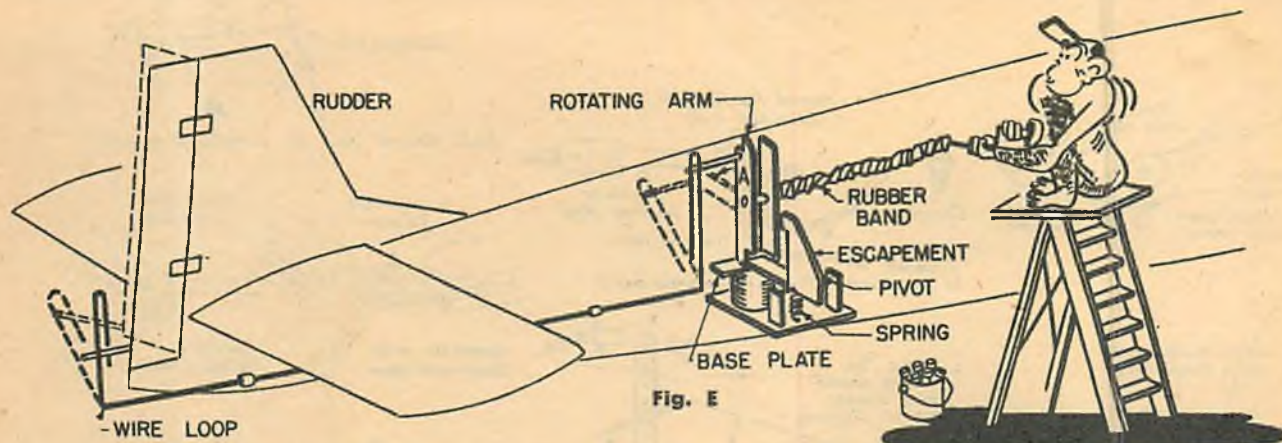
Providing a variable resistance to control current flow through the vacuum tube and relay is the purpose of the rheostat (Fig. G) . . . the higher the resistance, the lower the





# Control

This gives you a good idea of how the model receiver works



current. It is necessary to have this variable to take care of such factors as aging of the tube and batteries and type of relay used. The meter jack is used in the testing and adjusting of radio equipment. A meter placed in the circuit at this point will measure the DC current through the tube and relay circuit.

A relay (Fig. J) is used to enable a small change in current through the tube to control a larger flow of current through the escapement. Mechanical operation of relay: when a current flow is set up in the coil, the magnetic field pulls the pivoted bar downward and electrical contact is made between the bar and the upper contact. On receipt of signal, the current flow decreases and the spring pulls the bar to establish connection between the bar and the lower contact. The dotted lines indicate a magnetic field is set up when current flows.

The purpose of the escapement (Fig. C) is to move the control surfaces, thereby guiding the plane in flight. The actual mechanical power to move the control surface is furnished by a wound-up rubber band. The escapement merely controls the application of power to the control surfaces at the will of the operator. The escapement is basically a heavy duty relay. The current flow through the escapement is much higher than that of a relay and therefore the escapement can do more mechanical work. The simplest escapement is (illustrated) the two-arm, self neutralizing type. In the absence of a signal from the controlling transmitter the control surface is neutralized. Mechanical operation of escapement: on current flow, magnetic field pulls down arm, which releases catch point and allows plate to catch it in position 2 and hold it there as long as the current flows. When the signal is no longer received, the magnetic field ceases and the spring releases the bar, which returns to neutral position (1). Thus the rudder must go through a sequence of movements rather than offer a selection due to the fact that movement of the rotating arm is only in one direction.

Mechanical application of escapement to move control surface (Fig. E) ... when the signal is applied, the rotating arm A moves bar into position shown by dotted lines, which moves the wire loop and rudder to the left. When the signal is not applied, arm A returns to neutral. As the signal is again applied, the wire-loop, and rudder will move to the right, establishing the sequence of operations. Rubber band must be wound beforehand to provide mechanical power to turn escapement.

Component layout (Fig. D) shows both sides of the bakelite mounting base. The components of the basic schematic circuit may be laid out on a mounting base in many different positions. One such "plug-in" mounting is illustrated.

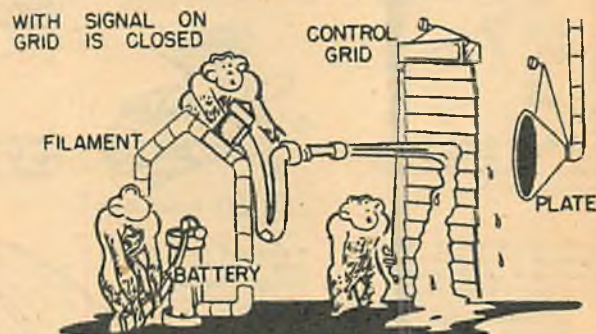
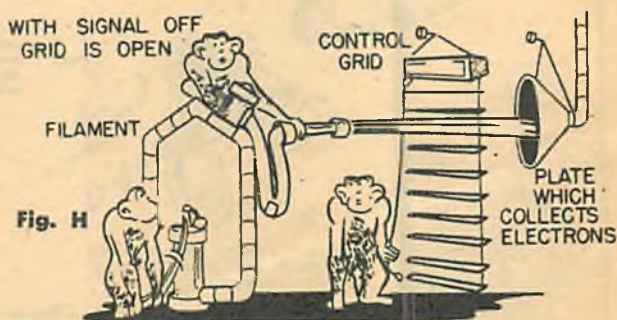
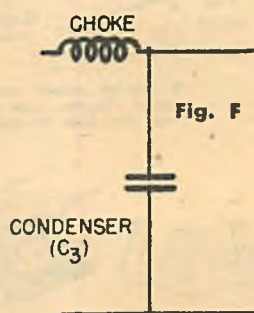
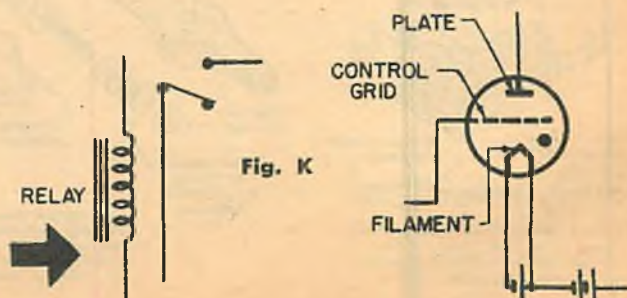
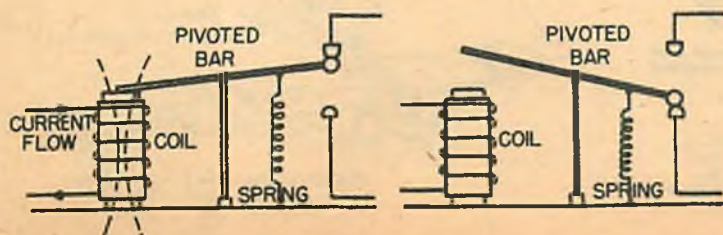
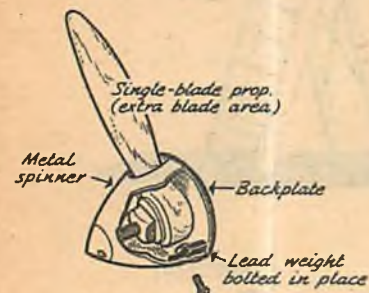


Fig. J

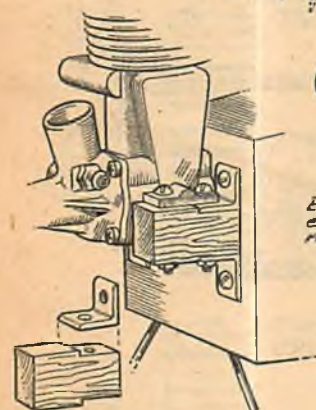
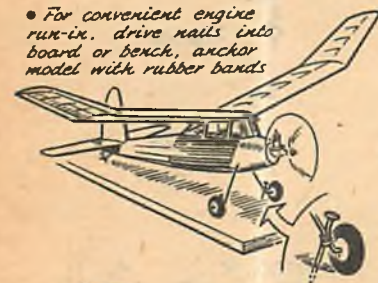




# Props 'n' Powerplants

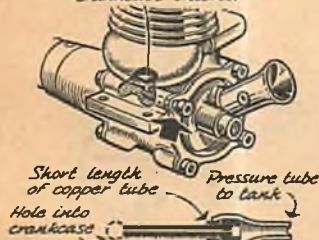


- For convenient engine run-in, drive nails into board or bench, anchor model with rubber bands

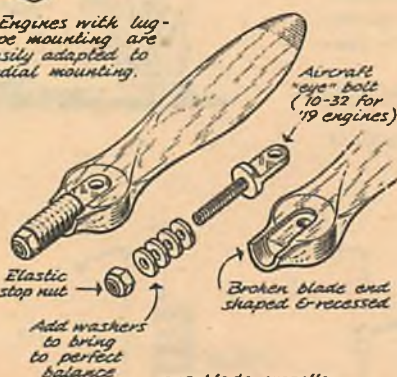
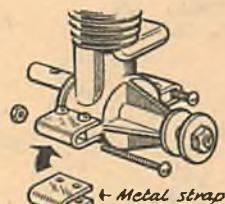
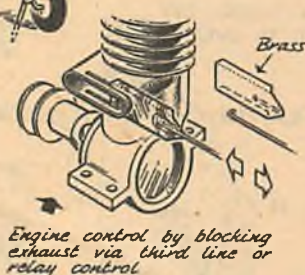
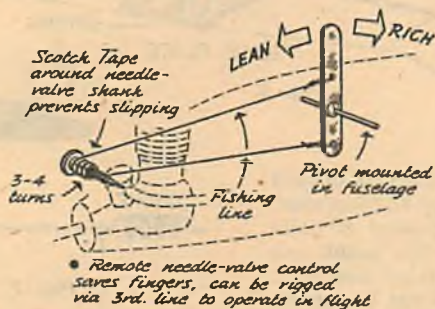
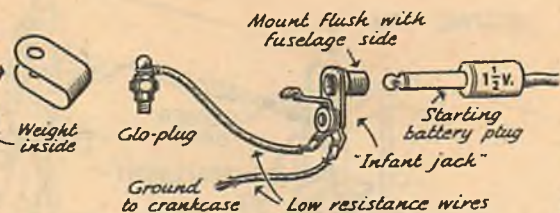


- idea to pressurize racing engines via hollow rear crankcase cover screw (Does not affect rotor)

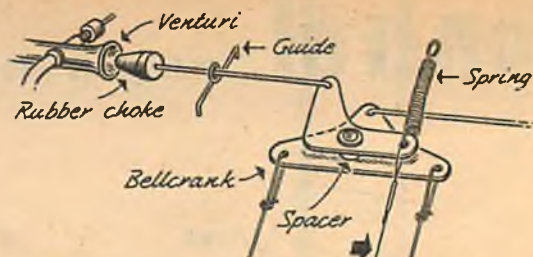
Connecting hole drilled into crankcase interior



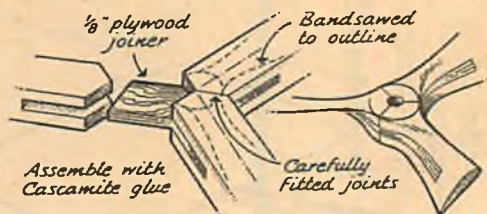
Drill oversize hole thru bolt, pass O/S wire thru, solder, withdraw wire before solder cools and hardens...



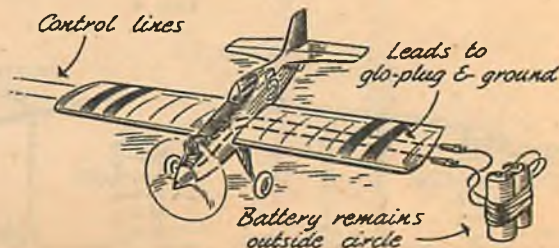
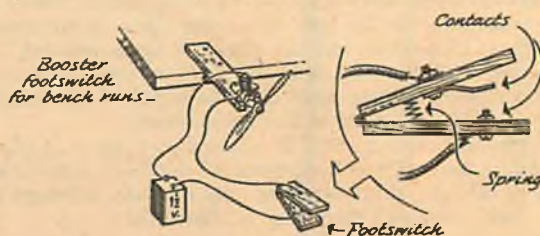
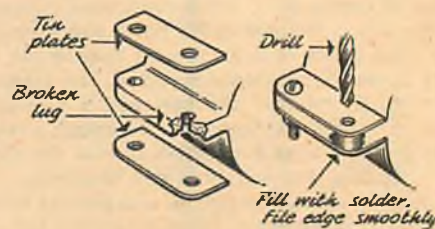
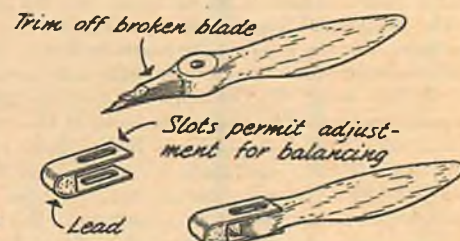
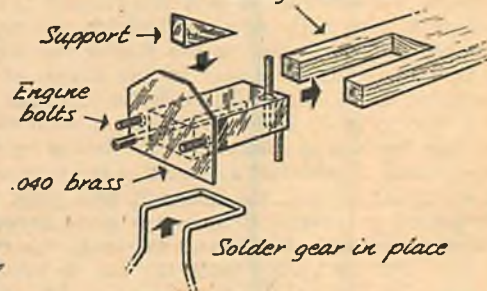
one-blade propeller - Simply adjusted for balance; ideal for freeflight models with one leg folding gear...



Pull third line to speed up engine



Bind mount-tank unit to fuselage crutch





# Start Your Own Model Club



Flying Fools, Woonsocket, R. I.

**The best part of modeling is when you and your air-minded friends band together in an air-model society with contests, classes and lively meetings**

**By JAMES E. GRAY**

■ Do you belong to a model club? Chances are that you don't. Why? Probably because there isn't a club in your town. This is especially true if you live in a town of 5,000 people or less.

But have you ever thought of organizing your own model airplane club? Of course there's work involved in getting a club on its feet; work is involved in every worthwhile thing. But your town needs a club, every town does, and every modeler needs to belong to a club. Why? Think of its advantages—regular meetings with serious modelers like yourself, contests, competition, a club workshop, a place to take your modeling troubles and have them ironed out, the development of leadership, and the accompanying sense of fair play.

The first question that you'll think of is going to be: "But where would I get enough members for a club in my town?" Take a look around you. You have friends who have shown an interest in modeling; they have friends who would be interested. Then, there's the boy next door, the kid across the street, and that Jones fellow across town. Even Sue Smith. Girls? Sure! Why not? Once you let it be known that you're starting a model airplane club, you'll have more prospective members than you know what to do with.

There is but one word of warning. Unless you are willing to share your hobby with others, unless you are willing to teach others to enjoy it as you do, then don't attempt to start a model club in a small town where the majority of the members will be eager and willing but inexperienced beginners.

So you've taken that look around and have decided to try it and see what happens. O.K., first you'll need a sponsor, someone to back your club. If you live in a small town, your best bet is the

manager of the five and dime store, especially if he sells a line of models and supplies. Approach him with the idea that a model club would mean more modelers and consequently more sales for him.

Before he commits himself, he'll want to know what he will be expected to do as sponsor of your club. You need a sponsor for advice on important club matters, for help in procuring a club house and a flying field, and as a go-between for the club and city officials when you want to post contest notices, etc., in the city. You'll need a sponsor to help you get your initial publicity. And while you're telling him what he will have to do, keep pointing out the fact that he'll be building business for himself by helping the club get started.

## **Try Your Hobby Dealer**

Of course, if you live in a good-sized city and you can find a model dealer who isn't already sponsoring a club, you'll have no trouble selling him on the idea. Ten to one he's just waiting for such an opportunity. Another good sponsor is your Junior Chamber of Commerce. But if you go there, be sure and stress the civic duties that your club will perform. Show them how it will divert its members' spare time into useful channels. Show them how it will give the young people somewhere to go and something to do, and how it will keep the kids off the streets.

Often a large factory will be willing to sponsor you. Or, if your town boasts a large company that employs many townspeople, such a company would also make a good sponsor. Take the phone directory and go down the pages; you'll be amazed at the list of prospective sponsors you can gather.

Once a person says, "Yes, I'll sponsor your club," sit down and ask him to

help you pick a name for it. Most people will be flattered, all will at least be willing to help.

There are but a few simple points to heed when you are selecting a club name. Get one that will be attractive, one that will in some way draw the attention of beginning modelers. One that incorporates the name of your town is always good. Like "Rushville Aero-modelers," or "Johnstown Flyers." Once in a great while, you'll run across a sponsor who will want his own, or his company, name put into the club name. Don't, even if it means that you must look for a new sponsor, unless it happens to be a name that has more local appeal than the name of your town.

And don't pick a name that denotes a special phase or category of modeling, like "Gasoleers," or "U-Liners." At least, not unless the entire club is to be devoted to that one particular part of modeling only. Bear in mind the fact that the name will have to please a lot of modelers, some who go in for every phase of the hobby. Hence, use a name like "Hillsboro Aeronuts," "Balsa Bugs," "Tower City Stardusters," or just plain "Jonesboro Model Airplane Club."

When you and your sponsor have definitely decided on a name, take some water colors and make five or six attractive, eye-catching posters on smooth white cardboard announcing the forming of the club. Remember that the primary purpose behind the making of these posters is the recruiting of new members, so make them especially enticing to beginners. Let them read something like this:

*New members are being solicited for the JOHNSTOWN FLYERS. This Model Airplane Club, being organized with special attention given to beginners, will offer expert instruction in the art of modeling free of charge to all members. Frequent contests, with valuable prizes to be awarded, are scheduled. For more detailed information, call (your phone number), or write (your address).*

If your sponsor owns a place of business or manages a store, he will allow you to place one of these posters in his window, so post one there first thing. Then contact other store owners and ask them to let you put one in their windows also. Go to your local newspaper office. Tell them about your new



club and ask them if they won't run a short item covering its organization. Ask them to mention the fact that you are looking for new members. They'll be glad to oblige you. An editor is always on the lookout for something with local news value.

The city managers will probably grant you permission to put a few of your posters on street corners. Here is where your sponsor comes in. Ask him to query these officials for you, since, presumably, he is better acquainted with them than you are.

After all your posters are placed in strategic spots throughout the town, go home to your phone and call your friends, especially the ones who used to hang around watching you fly your planes. Tell them about the club. Get them to tell their friends. Use word of mouth publicity. It's the best yet.

### How to Handle Phone Calls

It won't be long until your phone will start ringing. And there is one thing that you can be sure of when you pick the receiver up: everyone who calls about the club will be interested in joining, at least to some degree; otherwise, he wouldn't have bothered calling. All you have to do is build that

each person to bring along an interested friend. Once you get everyone to agree to come with a friend, your battle is half won. The other half will be won at the first club meeting.

Just before time for your guests to begin arriving for this first discussion, clean up your room and hang up your best-looking models, especially your favorite gassie. But be sure and put up a few simple all-balsa gliders, too. Bring in cookies and drinks. Have plenty of seats available. Have several copies of *Air Trails* about where they'll be seen. And, if possible, have your sponsor come over.

Have a speech planned and, as soon as everyone is present, ask the fellows to give you their attention. Paint a lurid picture of a model club in action; the contests and the prizes, the spirit of competition, the feeling of accomplishment that comes with the finishing of each new model and the completion of every club project. Explain the step by step procedure of learning to build models. But don't let yourself be goaded into making any promises that you cannot keep.

Now, by the way, is a good time to point out the model planes that you have carefully placed about the room. Pass the balsa gliders around. Tell the fellows that those gliders are the type of model that they will build during their first week of instruction. Then, announce that you are ready to answer all questions about the club.

### Somebody Will Mention "Cost"

One of the first questions that you will be asked is, "Is modeling expensive?" This is a very important question, one upon which a lot of the fellows' decisions about the club will depend. So be careful what you say. Of course you'll tell them that it isn't. But explain why it isn't. Use facts and figures. A good glider kit of the type that will be used for the first week's instruction will sell for 15 or 20 cents. The advanced kits, the towline glider and the duration rubber models that will be used later on in the training of the beginners, can be bought for 50 cents. Total cost of these models, including rubber and dope, won't be more than 75 cents. Certainly a cheap enough hobby for the amount of fun and enjoyment involved.

And, of course, someone will look enviously at one of your gas models and ask, "That's all very well, but how much did that job set you back?" Well, a good gas motor can be bought for seven or eight dollars and a gas model kit for two and a half or three dollars. And be sure and add that you've been flying your gassie for a year or more. Show them that instead of spending their money on sodas and movies, they'll be buying models and spending their time building and flying them, so really, they'll only be diverting their money from one outlet to another.

After all questions have been an-

swered and everyone has voiced a willingness and desire to join the proposed club, bring out a pencil and a couple of sheets of paper and prepare to draw up a club constitution. By doing this now, you will give everyone a feeling that he, or she, is already participating in club activities, a feeling of already belonging. It'll make them come back for that first actual club meeting. Try it and see!

Below, you will find an example of a typical club constitution. Try reading it aloud to your assembled listeners and then asking for suggestions. Of course, you cannot expect the example below to fit all situations and solve all problems. But, basically, it will serve as a groundwork upon which you can build your own constitution.

The assembled members of this Model Airplane Club do ordain and establish the following constitution.

1. This Model Airplane Club, located in Tower City, Texas, shall be named the TOWER CITY FLYERS, and shall be devoted to all categories of the model airplane hobby.
2. Membership in the TOWER CITY FLYERS shall be open to all who demonstrate a genuine interest in model airplanes and who are of good moral character.
3. No active member of the TOWER CITY FLYERS shall be asked to resign from the club until at least three-fourths of the remaining members have indicated their desire for said resignation by secret ballot.
4. Once asked to resign, no person shall be entitled to re-enter the club for a period of at least six months.
5. Three officers, a President, a Vice-President, and a Secretary-Treasurer, shall be elected from active members, by currently active members of the TOWER CITY FLYERS every six months. Each active member of the club shall be required to vote, excluding all candidates for office. Votes shall be cast by secret ballot, a three-fourths majority vote being required for election.



Model Mashers, Chanute, Kan.

initial interest up. Have an overpowering sales talk prepared. Tell them about the contests that you plan. Stress the club workshop angle. Tell them that the club program will be built around beginners. Assure them that primary instruction will be given them in all phases of modeling and that contests will be planned especially for beginners. After all, that's why you're organizing the club, for beginners. Tell them so!

And before you let anyone hang up, set a date for a get-together at your home. Don't set it so far ahead that interest will have had time to die down, but still allow plenty of time for anyone who is interested to call or write you. For example, if your calls begin coming in on Saturday, ask everyone to come over the following Tuesday night. Ask



Thermaleers, Kirkwood, Mo.



## model building work and all the members will benefit

6. Duties of these officers shall be as follows:

a. The President shall be required to:

- (1) Preside at all meetings.
- (2) Appoint members of any and all committees.
- (3) Enforce any and all bylaws set forth in this constitution.
- (4) Hold no club office other than President at any one time.

b. The Vice-President shall be required to:

- (1) Preside at all meetings not attended by the President.
- (2) Serve as chairman of the Contest and Rules Committee and personally take charge of all contest preparations.

c. The Secretary-Treasurer shall be required to:

- (1) Keep minutes of any and all meetings.
- (2) Collect all club dues.
- (3) Maintain the club treasury.
- (4) Keep a record of all club expenditures.
- (5) Keep, and sell to members, any special club supplies.
- (6) Maintain all correspondence relating to the club.

**\*\*7.** Club dues of 85c per month per member shall become due at the first club meeting held each month. Said dues shall be paid to the club Treasurer. When so warranted, all possible leniency shall be granted to deserving members, but to delay payment for more than one month will automatically bring a motion for dismissal of the defaulting member before the house. Said motion shall be promptly voted upon as provided in Article 3 of this constitution.

8. Club meetings shall be held every Tuesday night at six o'clock. No prescribed length of time shall be allotted any one meeting; rather, the meeting shall last as long as the subject being discussed and the discretion of the members shall warrant. For a member to absent himself from two consecutive meetings without adequate excuse shall automatically bring a motion for his dismissal from the TOWER CITY FLYERS before the house. Said motion shall be promptly voted upon as provided in Article 3 of this constitution.

9. Special dues may be assessed, upon passage of proper motion as set forth in Article 12 of this constitution, for the purchase of certain tools, club house rent, contest prizes, etc.

10. Adequate leadership and a proper course of training shall be provided for each beginner.

11. Contests shall be scheduled with sufficient frequency to sustain interest. These contests shall be of such nature as to interest the majority of the club members.

a. A Contest and Rules Committee shall be appointed by the President and headed by the Vice-President of the TOWER CITY FLYERS.

b. Their duties shall consist of:

- (1) The drawing up of a set of rules to govern each contest.
- (2) The selection of timer and judges.
- (3) The procurement of a flying field.
- (4) The procurement of prizes.
- (5) Giving the contests advance publicity.

12. All members of the TOWER CITY FLYERS shall uphold and abide by the above bylaws as long as said bylaws remain in effect. However, new rules and regulations may be adopted, or any of the above may be suspended or amended, at any time, provided that a proper motion is made before the entire club. Such motion shall require a three-fourths majority vote for passage. Said voting need not be by secret ballot.

*(\*\*NOTE: The actual amount of your club dues cannot be determined until after a discussion has been held on your club expenses, so leave a blank space in your constitution in order that this figure may be later inserted.)*

After you have finished reading the sample constitution above, ask for suggestions. As each idea is voiced, have someone make a note of it. When all suggestions have been made, re-read Article 12 of the constitution, explaining that a three-fourths vote will be required in order to amend one of the given bylaws or to add a bylaw to the constitution.

Then, as you read each proposed amendment from the notes, ask the club members to vote on it by holding up their right hands. If a sufficient number of votes are cast in favor of the suggestion, immediately incorporate it into your document. When you have finished, make a neat, complete copy of your club constitution and, until club officers can be elected, appoint someone Keeper of the Constitution.

Now is a good time to discuss the first club meeting. Presumably, the dates and the hour of the club meetings were decided when the constitution was drawn up. Consequently, the first meeting shall fall on the next scheduled night. For example, if the club meetings are to be held on Tuesday nights at six o'clock, then your first actual club meeting will be held on the following Tuesday night at six o'clock.

There is one more thing that should be discussed at this first general get-together. That is the question of a club house. There will be someone who will suggest that, since meetings can be held in the members' homes, a club house is not a necessity. And, fundamentally, he is right. It isn't necessary that you have a club house.

But, somehow, a club isn't actually a club until there is a club house. There's something that's always lacking when meetings are held in homes. Perhaps it's the informality that's present in a club house. And, of course, if you have a club house, you can fix up a work shop where the fellows can meet and plan and work, where they can try out those new designs, test-run their motors without bringing wrathful parents down upon them, and where they can hold those bull sessions and hash over each other's problems. Just put the question up to the fellows. They'll decide on a club house, ten to one.

### The Quest for a Club House

Now, the big problem is, "Where can



Union, N. J., Model Airplane Club

we get a club house?" There's a simple answer to this. Perhaps one of the club members has a garage or a basement that isn't being used. Either of these can be made into an excellent combination club house-work shop. Or perhaps that indispensable sponsor of yours knows of an old building or shed that could be rented for a few dollars a month. Or maybe someone's parents could help with a suggestion or two. There are plenty of available buildings in any community. You'll find something.

But even after you've found it, it isn't going to be ready for you to move in. It will have to be fixed up, and fixing it up involves two things: work and money. As for work, set a date for the gang to meet with hammers, saws, and nails. And as for the money, perhaps the best solution is for each member to contribute a small sum, say two dollars or so.

Then, on the scheduled date when everyone is present with tools and money, march down to your club house and go to work. Take inventory and dispatch someone to purchase the needed materials. Patch all the cracks. Check the roof. If it leaks, repair it. If the windows won't fasten from the inside, fix them so that they will. If you're using a garage or a basement, it will probably already be fitted with a door. But if it isn't, then you've got to fix one. Each individual problem will dictate its own special needs here. Remember, though, that one of the principal reasons you're doing all this work is to make the place theft proof, so that tools and model equipment may safely be left in the club house.

After you have finished with the outside repairs, equip the door with a lock—a good lock—and have duplicate keys made for the club members. In order to cover the cost of these duplicates, collect a quarter deposit for each key, the deposit to be refunded when the key is turned in.

Once you have a lock on the door and the building repaired to the best of your ability, you can start work on the inside. First, you need seats enough to accommodate all the members, plus a few for occasional visitors. Canvass



## Start a model club . . . . . when your program is underway make

the members. Perhaps their families have chairs that aren't being used. Or maybe they have some that have been broken and discarded, yet that could easily be repaired. If you can find enough chairs of this kind, you're lucky. If not, well, you have your hammers and saws; you can make some benches. A good bench can be made from a 2" by 12" by 6' plank and an orange crate sawed in half.

Once the seating accommodations are taken care of, the work tables rank next in importance. These tables can either cost you a lot of money and a lot of work, or they can be fixed in a minimum amount of time with a minimum amount of money. If you, like most, desire something that's cheap and easy to make, yet serviceable, try these:

Start by making two frameworks of 1" square pine strips. These two frameworks should be the length of the two walls that form ninety degree angles with the wall that contains the door, and should be approximately three feet wide. One more frame should be made to fit tightly between these two at the rear wall, leaving only one wall, the one containing the door, bare. Make all three of these frames as sturdy as possible, bracing them where necessary.

After completing the frameworks, obtain some "wall-board" from a local lumber dealer. This "wall-board," a pressed paper composition that is considerably cheaper than lumber, will readily hold thumb tacks and pins and is strong enough to make an excellent work table top. Cut this "wall-board" to fit the surfaces of your frameworks and nail it on. Attach hinges along one side of each of the frames and hinge the frames to the wall, about three and a half feet from the floor so that, when unsupported, they will fall down against the wall and be out of the way.

Now, hinge braces along the outer edge of these frames so that, when extended, they will fit into notches in the wall and hold the work tables erect, ready for use, yet, when folded to one side underneath the tables, will allow the frames to fall down against the walls, thus making more room inside the club house for meetings and discussions.

After the work tables are finished, you can add shelves for your model supplies and unfinished models wherever you can find spare room. A good

place to put these is in the corners above the work benches. Or you can build them just above the windows. Build as few, or as many, as you think you'll need. There is one point, however, that must be kept in mind. That point is compactness. There must be a minimum waste of space, since you are going to be crowded at times, no matter what you do to try to prevent it. So keep things as simple and as compact as possible.

### Facilities for Reference Library

Either procure from one of the members, or make, a magazine rack. This is for reference copies of model magazines, plans, handbooks, and other such matter that any club will gather. Make a dope rack to hold bottles of dope and a place to keep your brushes. You'll need a small chest or a box for storing your modeling tools.

Don't attempt to install gas motor test blocks or other specialized equipment at first. Remember that it will be quite a while before the majority of the members gain enough experience to use such tools. Don't install anything, at least for a while, that won't be used by beginning modelers.

Once your club house-work shop is completed, you're all set for that first club meeting. Send your sponsor an invitation to attend, then go home and patiently wait for the great day to arrive.

Never allow yourself to forget that this first meeting, automatically scheduled when the club constitution was drawn up, is the most important meeting that the club will ever hold. It is then that the fate of the club, so to speak, hangs in the balance. It will be then that members will get their first impression of the club as an operating organization. Officers will be elected, club expenditures will be discussed, the amount of the club dues will be determined, the question of the club paper will be decided, and the first contest will be scheduled.

You have some club members now. You also have a sponsor, a club constitution, and a club house and work shop. Things are looking very rosy indeed. But that first meeting is yet to come. And don't brush it off so lightly by sitting back and saying, "Oh, that's nothing to worry about. Every member has already promised to attend." Sure, they'll attend the first meeting. They'll go just to see whether or not they're going to like the club. And don't think that, just because a person has contributed a couple of dollars toward the building of a club house, he'll stay in the club even if he doesn't like it. He won't. You've got to get him interested and keep him interested.

### Stage Set the First Meeting

There's one sure-fire way of getting that first meeting off to a bang-up start. Elect the club officers. Everyone participates in that, and what better way

of capturing the interest of the members than by giving them an active part in club proceedings?

Just before time for the meeting, go down to the club house and get everything in order. Have the benches and chairs conveniently placed. Put aside a special chair for your sponsor. When the fellows start coming in, have them take their seats, and immediately after the last person has arrived, call the meeting to order. Suggest that proceedings start with the election of the club officers. Take your club constitution and read aloud the article that provides for the election of these officers. Read, also, the articles that specify the duties of each of these officers. Then, when you have finished reading, ask everyone to keep these articles in mind as they decide upon their candidates.

Give them several minutes in which to make their decisions before you ask for nominations for President. As you receive these nominations, write the name of each candidate on a slip of paper.

Don't feel that, just because the idea of the club was yours, you're entitled to hold an office. If you are nominated, of course you should feel greatly honored and do your best to win the election. But if you're not, don't feel too badly about it. Maybe the fellows feel that you've done enough work already and now they want to shoulder some of the responsibilities.

When all the Presidential nominations have been made, ask each member to write his choice of the candidates on a small slip of paper. Then have someone, preferably your sponsor, collect the votes and count them. If no one candidate receives the three-fourths vote required by the club constitution, continue the voting, always eliminating the candidate with the least number of votes, thereby allowing his supporters to cast their votes for their choice of the remaining candidates, until a three-fourths majority is reached.

After the President has been elected, concede your position as temporary chairman of the club to him, and let him conduct the election of the Vice-President and the Secretary-Treasurer in the same manner that you held the election of the President.

After all the officers have been elected and installed in office, the next event on the agenda is a discussion of possible club expenditures and the determining of the amount of the club dues. Both of these closely related problems will be of interest to every member, since they will affect each individual more than any other problem that will arise. Announce that this will be a general discussion and ask that every member make at least one suggestion. Begin with the various expenses of the club and have the secretary make a list of them as they are suggested.

You might start the discussion by asking that old copies of model mag-

Long Island Sky Kings, Mineola, N. Y.





## certain you encourage the younger, less experienced fans

azines be brought into the club. You'll be surprised at how many times these magazines will be read and re-read by the fellows. They will be used as references over and over again.

### Be Safety-Minded at All Times

There's another initial expense of about 65 cents that you should suggest. This is to purchase a small first-aid kit of the type readily obtainable at any drug store. Since you are to be working with knives, razor blades, saws, and other such tools, one of these kits is practically indispensable. Once purchased, it should be placed somewhere in the club house where it will be plainly visible and easily and quickly reached.

And, of course, if you're having to pay rent for your club house, that has to be added in with the other expenses.

Most of your expenses, like the rent, will vary with each individual club, so keep urging the members to make suggestions as long as they can think of any suggestions to make.



Illini Liners, University of Illinois

When they have finished, take the list that the Secretary has compiled and, reading each item from the list, ask the members to vote on that item to determine whether or not it shall be incorporated in the club budget. Have the Secretary make a new list of all the items which receive enough votes in their favor to warrant including them in the budget. The ones voted to be dropped should be forgotten, at least for the time being. Perhaps, later, they can be discussed again, after the club has been in operation for a few months.

The first-aid kit and other initial expenses must be taken into consideration, too. These will actually be an expense for the first month only, since, once purchased, they will last for a period of time. Perhaps the best method of coping with this problem is to make the club dues proportionately higher the first month in order to cover all such items. Then, during the second

month, the dues can be lowered to their normal amount.

Bearing all this in mind, the Secretary should figure out the average *monthly* expenses. This amount must then be divided by the number of members in the club. That will give the monthly dues per person. If you are having to pay club house rent, this may total as much as \$2 per member per month. If you don't, it may not be more than 50 cents per member per month. In any case, though, it would be well to add a few cents to each person's dues so that an emergency fund may be set aside for such things as contest prizes, flying field rental, etc.

You will find it necessary to use your own judgment on the amount of the club expenditures and the amount of the dues. When you have worked them out as best you can, put them to a vote. If the club votes for acceptance, all's well and good. If they don't, just keep working, revising, and cutting down expenses, until finally you gain the approval of the majority.

### Special Tools Speed Model Work

Another good question to bring before the club at this time is that of special tools for the work shop. If they desire these tools, perhaps a jigsaw, a drill, or others, special dues, as much as 50 cents per month, could be assessed each member, and the money thus received set aside in the club treasury for use when the members became advanced enough in modeling, two or three months later, to use such equipment.

There are three more items that should be brought up at the first club meeting. They are: (1) a club paper, (2) your training program for beginners, and (3) the first club contest.

If a duplicator or mimeograph machine can either be borrowed from a friend or rented from a local office supply store or printing shop, then by all means try to publish a club paper. The cost won't be prohibitive, since you can charge five or ten cents per copy and thereby cover your investment. All that's necessary, once you have your duplicator, is a ream of mimeograph paper, a stapling machine, and a few stencils. And an editor. Perhaps you have a member of your club who is on the school paper staff. Or maybe someone works for the local newspaper. Or, if lacking either of these, perhaps there's someone who's good at writing things. At any rate, an editor won't be hard to find.

Naturally, the primary function of the club paper will be to report club news and club plans, but it should also publish contest rules and the training program that is planned up until time for the next issue to appear. For the most part, the contents of the paper should be left up to the editor; it is then his job to see that the paper is interesting to all its readers.

The ideal frequency with which the club paper should be issued is at every

second meeting of the club. Thus, the beginners' training program can be covered thoroughly, contests can be discussed and reported upon, and special news can be quickly brought to the attention of the club members, and still the editor will have enough time between issues to keep up with his modeling. Your club, however, may decide that a weekly paper would be best. Or they may feel that a monthly paper would be adequate. That, of course, must be left up to each individual club.

### Beginners' Training Program is a "Must"

You should explain your modeling course for beginners at this first meeting so that each person will fully understand what is going to be expected of him.

The training should begin with the building of a simple, all-wood, hand-launched glider. Have each member procure a kit of the same type, either by ordering them from a hobby supply house, or by buying them locally. Of course, if your sponsor sells models, he can get these kits for you, if you'll let him know of your needs in plenty of time for him to order them.

The best method of instruction that you can use is for you to build one of the gliders along with your pupils, constructing it, step by step, as they build theirs. While they stand by and watch, for example, cut out the rudder and sand it down, explaining the "how and why" as you do so. Then, after answering any questions that they may have, let them try making the rudders for their own planes while you supervise and point out any mistakes that may be made. By building their models thus, your students are learning both by seeing and by doing; a combination that can't be beat!

One week of actual work, beginning with the next club meeting, should allow sufficient time for all members to finish their all-balsa gliders. You can announce, at this first club meeting, that a contest for these hand-launched gliders which they are going to build as part of their modeling course, will be held on the Saturday (or Sunday) following the next club meeting. If anyone objects, thinking that you're rushing things, explain that one of the gliders can be completely built and finished, even though it is a "first model," in less than two hours.



Flying Aces, Lancaster, Pa.



After this first week of building the all-balsa gliders, you can advance your class to hand-launched rubber-powered stick models. Again, select a model that is simple and easy to build and have each member of the class procure a kit of the same type. Build one of the planes along with the class, just as you did with the gliders, letting them watch as you construct the model, one step at a time. After each step is completed, have them repeat the work on their own planes while you watch for mistakes. When they have finished building these models, hold a contest for the rubber-powered planes. (Proof of pudding!)



Martin Model Club, Baltimore, Md.

Continue this training process, following the hand-launched rubber model with a ROG (rise-off-ground) rubber-powered stick model, then a built-up towline glider, a built-up ROG rubber model, a contest-type duration rubber model, and winding up your training, if you wish, with a simple gas model.

## Contests Stimulate Advancement

Always, you should build a model yourself, step by step, as your students build their own, so that they may learn by watching you. After each type of model has been completed, hold a contest for that type model. Thus, the contests will automatically correspond with the advancement of the class. And, since no one phase of training will require more than two weeks to complete, the contests will be scheduled with sufficient regularity to maintain interest.

These contests serve many important purposes; you would be entirely safe in supposing that they are the most important part of your training program. Competition will keep interest at a high level among the beginners who might otherwise find the course a trifle dull. Ambition will be turned toward building better models rather than advancing too rapidly. Club members will have an opportunity to gain experience in holding contests, so that later they will be prepared to hold the larger, more elaborate contests—ones in which you, yourself, will compete.

Of course, you will want to award prizes to the winners of these first small contests, just as you will later want to have prizes for the winners of your

larger competitions. One of the best prizes that you'll find, especially for these initial contests, is a small model plane kit that can be constructed by the winner during the next period of training. Such prizes are economical, yet they are extremely useful to the recipient.

For example, the prize awarded the winner of the first contest you hold might be a hand-launched rubber-powered stick model kit of the type that will be built during the second week's training. It would be advisable, at first, to award only one prize, that prize to go to the first-place winner. Later, when more public interest has been gained and you're holding larger contests, you will want to award more prizes, of course. However, this is a question that your club must decide for itself.

You will find several different places where prizes may readily be obtained. (1) Your ever-reliable sponsor, especially if he is connected with a store that sells model supplies, will have begun to see the actual worth, evaluated in trade and profit, of your club to him, and he will be more than willing to co-operate with you. (2) Various civic organizations will be glad to offer a prize every so often, especially if the cost is kept down to a 25-cent model kit, or something else along that same line. (3) The mayor, the chief of police, and other responsible city officials will consent to donate prizes occasionally. (4) Many store owners will also be willing to give small model kits, dope, rubber, small modeling tools, etc.

You'll find hundreds of people who will help you with your prize problem, if you'll only give the matter a little thought. Don't go to any one person too often. The novelty wears off. Take turns. Never ask for more than a low-priced model kit, or something else of the same genre, until you've given the public a chance to see a few of your contests. Post notices throughout the town inviting everyone out to your flying field on contest days.

Pay special attention to the interests of your spectators, and you'll notice, as time goes by, that you're drawing larger and larger crowds and more and more public interest. Then, when you're holding your large gas meets, you can ask the Chamber of Commerce, or two or three organizations or individuals to pool their funds and present a gas motor, a gas kit, or a trophy to each of the various winners.

## Finding a Flying Field

And now the problem of a flying field. How and where do you get one? Do you know a farmer who lives just outside the city limits? Some member of the club will. Have him approach the farmer and ask permission to use his pasture to fly models in. Or perhaps the city park can be used. Or the school playground. Or the local golf course. The local high school football field will

be ideal for the first couple of contests. There, seats will even be provided for the spectators. Or perhaps the manager of the local airport will consent to let you fly your models in a section of his field.

And if all else fails, you can ask your sponsor to aid you in finding a suitable field. He'll be able to uncover something.

Now that you have contestants, prizes, and a flying field, most of your contest troubles are over. The next big step to be taken is that of drafting a set of rules.

At this first club meeting, then, the President should select a Contest and Rules Committee from the more experienced modelers. The first duty of this committee will be to draw up a set of rules for the various club contests. Bear in mind the fact that as long as the students are building gliders and rubber-powered models, as specified in the training program, all models will be identical, since all members are constructing models from kits of the same type. Therefore, only a very simple set of rules is needed to govern the first few contests; a simple set that can easily be understood by everyone.

Below, you will find listed a sample set of rules, which, while not designed as a cure-all, will serve as a basis upon which your committee can pattern its own set.

1. One flight timer shall be provided.
  - a. This timer shall be equipped with a stop watch with which he shall time each flight as prescribed in Rule 4.
  - b. The time of each flight shall then be entered immediately in the timer's notebook.
2. Two judges shall be provided for each contest.
  - a. Their duties shall be as follows:
    - (1) They shall see that all contest rules are observed and obeyed.
    - (2) They shall invoke proper punishment for infringement of said rules.
    - (3) They shall judge such competitions as: Most Realistic Model, Best Looking Model, etc.



Modellers Association, Galveston, Texas



## will benefit you in the business and social world

3. The type of contest to be held shall be decided by the members of the TOWER CITY FLYERS and publicly announced at least two weeks before the date of the contest.

4. The following specific rules shall be applied to their respective type of contest:

a. Hand-Launched Contests.

(1) All models in this category shall be launched from the contestant's hand.

(2) Timing shall start the instant

7. Presentation of the prize(s) shall be made immediately after the scores have been computed, by either the judges, the timer, or any person so selected by the Contest and Rules Committee.

8. The judges' decision shall be accepted as final.

The rules listed above are suggested because of their simplicity, yet complete coverage of the type contest for which they are intended. You won't need an elaborate batch of rules for your first few contests. As a matter of fact, the simpler they are, the better you, and everyone concerned, will like them.

Once your students have graduated to gas models, you and your Rules Committee will really have to strut your stuff. There is bound to be some dissension over which type motor to buy, so each modeler will have to please himself. Some will prefer the Class Half-A motors, some Class A, some Class B, and still others will want Class C. All this will call for new contest rules and a change in your training policy.

In instructing the building of your pupils' first gas models, you will have to give more or less personal attention to each modeler until he has learned the ropes. However, gas models should not present much of a problem if your students have faithfully followed the training program outlined herein. If possible, use club funds to buy a handbook or two on the building and flying of gassies, turn the books over to your students, and you'll be all right.

Your Contests and Rules Committee will probably be wondering what to do, also, since they've never coped with gas model meets before. There is a simple solution. The official contest rules for U-control and free flight gas events can be obtained from the Academy of Model Aeronautics, 1025 Connecticut Avenue, Washington 6, D. C. Your Committee can easily doctor up these rules to fit your own contests.

If your club has voted to publish a club paper, a copy of the complete rules governing a contest should be printed at least a week in advance of that particular contest. Along with the rules, the first prize should be announced. An invitation to the public to attend the contest should be included. And the names of the timer and the judges selected to officiate at the meet should also be printed.

### Corralling Contest Officials

The timer and judges! Where do you get them? The timer, preferably, should be a member of your club who is not actively competing in the contest. He must be equipped with a stop watch, either borrowed or purchased with club funds. It is advisable that you buy a watch, however, since you will need one at every contest you ever hold. By scouting around a bit, you can pick up a good stop watch for \$15 or so.



Aero-nuts, Austin, Minn.



Tri-State College MC, Angola, Ind.

the model leaves the launcher's hand and shall stop the instant the model touches the ground.

b. Rise-Off-Ground Contests.

(1) All models in ROG contests shall be allowed to rise off the ground under their own power. The contestant shall not push or shove the model. To do so will automatically disqualify that flight.

(2) Timing shall start the instant that the model leaves the ground and shall stop the instant that the model again touches ground.

c. Towline Glider Contests.

(1) All gliders shall be towed with a prescribed length of towline.

(2) Towing shall personally be done by the contestant, although an assistant may be allowed to hold the plane for launching.

(3) Timing shall begin the instant the plane releases itself from the towline and shall stop the instant the plane touches the ground.

5. Each contestant shall be allowed three flights in every contest.

6. At the end of the contest, the judges shall take the timer's notebook and determine the winner(s) by a predetermined method.

a. Any of the following methods for scoring may be used:

(1) Each contestant's three flights may be totaled, highest total winning.

(2) Each contestant's three flights may be averaged, highest average flight winning.

(3) Longest single flight may be selected from the three flights of each contestant, longest flight winning.

As for judges, well, your sponsor is one possibility. Any prominent townsman would do. Or members' parents. Or friends. The supply is unlimited. All you have to do is ask.

Now, after you have reminded everyone to bring a glider kit and a razor blade to the meeting next week, it is time to adjourn your first club meeting. You have a right to feel proud of yourself. Your first meeting is over and it has been a phenomenal success. But your problems aren't over yet. Nor will they ever be. That's what makes it fun.

There is one final point that must be brought up many meetings later, when your club members have become a little more familiar with modeling, when they've found out what's what in the modeling world. And that final point has to do with the AMA, the Academy of Model Aeronautics.

After your club has been operating smoothly for a while, perhaps you would like to affiliate yourselves with the AMA. This, of course, would have to be left up to your members. However, you might explain its advantages to them. You would receive benefit of all AMA publications and rules. You will find many contests that are held only for AMA members, and your soon-to-be-proficient beginners may someday be challenging the top modelers of today for official AMA records. You will receive benefit of all the experience behind the AMA, the leadership of the men who formed it and backed it and guided it for many years. All in all, it is the most worthwhile thing that any club can do—to join forces with this king of the model world.

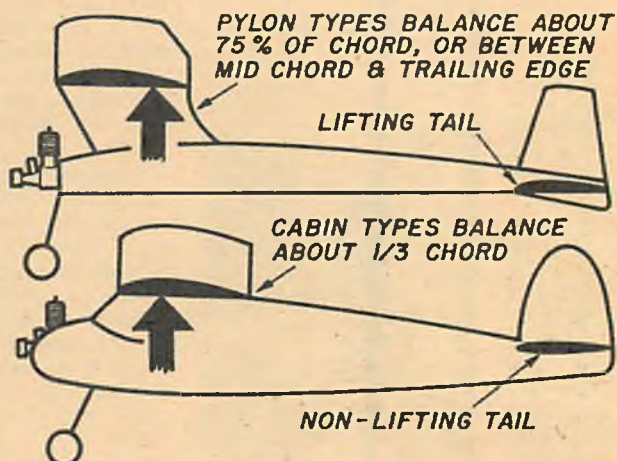
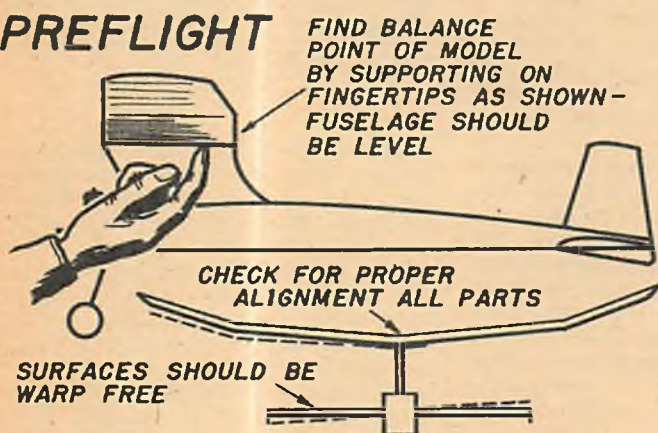
And now, in parting, one final word of caution. Don't try to follow this word for word. Don't be afraid to work out your own solutions to your problems. There are many things you won't find covered here, or anywhere else, things that will apply only to you and your club. And don't be afraid of work: you've got plenty ahead of you. But, in the end, when you can look at your club and see an active, smooth-working organization, one that boasts a membership of eager, serious modelers, one that holds regular meetings and schedules frequent contests, you'll be proud to stand up and say, "I started this club!"



# AIR-MODEL MANUAL

## ADJUSTMENT OF FREE FLIGHT GAS MODELS

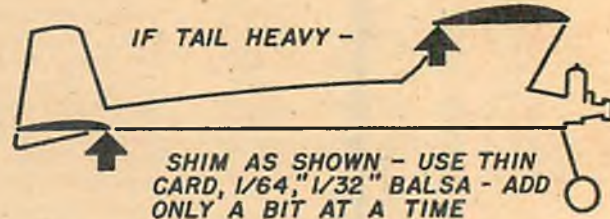
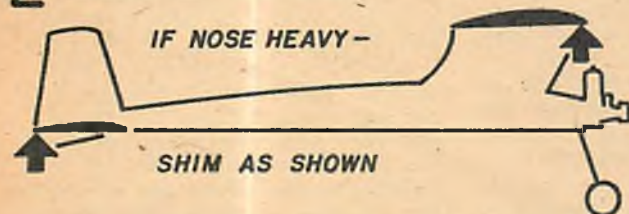
### PREFLIGHT



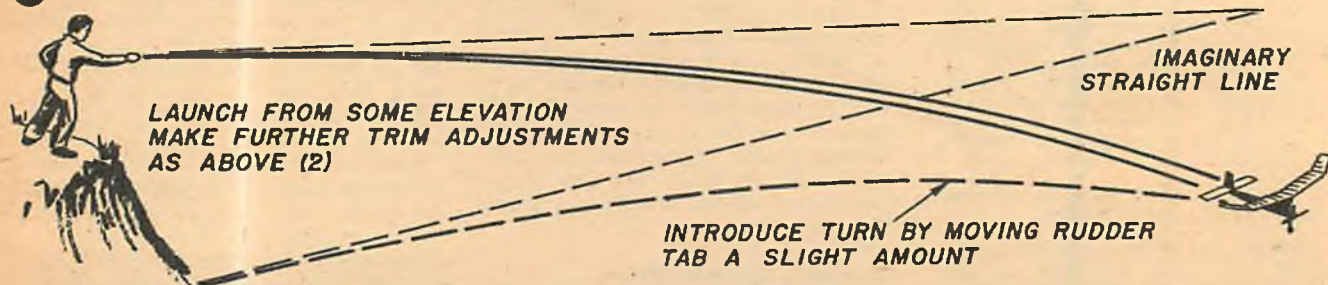
### 1 TEST GLIDE



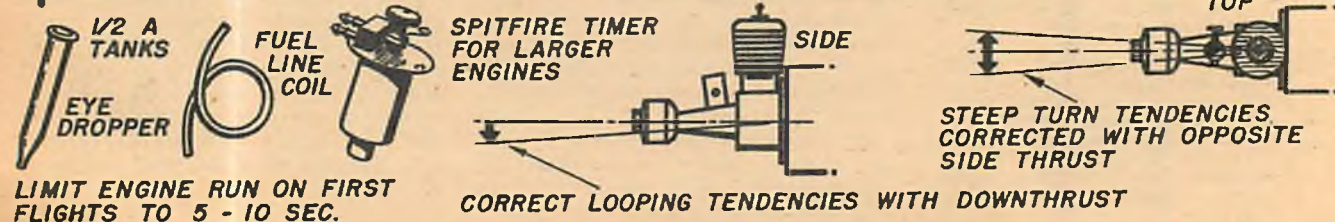
### 2 GLIDE TRIM



### 3 LONGER GLIDE - TURN



### 4 LIMIT ENGINE RUN - POWER CONTROL





"Be sure before you fly" is a good rule for the modeler; a few extra moments spent in the adjustment of a gas model can prevent a crash

## 5 FIRST POWER FLIGHTS

GET FAIR CLIMB FIRST—WORK OUT GLIDE TURN TRIM—THEN MAKE FINAL CLIMB TRIM

FAIR GLIDE—FLAT AND TIGHT

PYLON TYPES GENERALLY ADJUSTED TO CLIMB RIGHT AND GLIDE LEFT (SOME GLIDE RIGHT)

IF GLIDE IS STALLY OR SLOW—INCREASE TURN WITH RUDDER, TRIM MORE NOSE HEAVY

STRAIGHT & FAST—TRIM MORE TAIL HEAVY, THEN ADD TURN

POWER CUTS

FAIR CLIMB

LOOP OR BAD STALL—ADD RIGHT THRUST OR DOWNTHRUST

RIGHT SPIRAL DIVE—CORRECT WITH LEFT THRUST AND/OR LEFT RUDDER

LAUNCH INTO WIND

WIND

## 6 TRIM TIPS

CLIMB TRIM MAINLY ADJUSTED WITH ENGINE THRUST LINE OFFSET

GLIDE TRIM ADJUSTED WITH RUDDER TAB—SOMETIMES WING WARP

SIDE

DOWN

SOME MODELERS TILT STAB FOR FLAT TURN ADJUSTMENT—MODEL TURNS TOWARD HIGH SIDE

## 7 BEST CLIMB

FLAT SPIRAL—OPEN UP WITH LESS SIDE, DOWNTHRUST

STRAIGHT—STALLY—TWISTING—ADD MORE DOWNTHRUST, VARY SIDE THRUST

DESIRED CLIMB IS LARGE OPEN SPIRAL

## 8 DESIGN TIPS

USE ENOUGH DOPE TO CLOSE PORES OF COVERING—"LEAKY" WINGS REDUCE LIFT—SAGGING COVERING IS NO HELP EITHER

THIN METAL OR WASHERS

RADIAL MOUNT

MAKE PROVISION FOR ALTERING ENGINE THRUST LINE

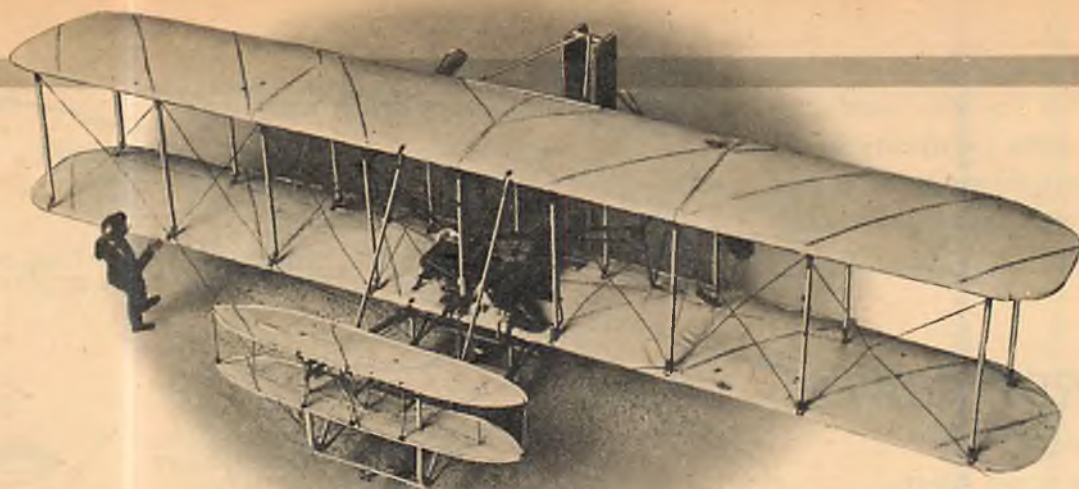
ELONGATE HOLES IN BEAM MOUNTS

USE PROP RECOMMENDED FOR ENGINE—FLY WITH SAME TYPE ALWAYS—CHANGING PROPS ALTERS THRUST—SO CLIMB TRIM WILL HAVE TO BE CHANGED

## 9 CABIN TYPE FLIGHT

CABIN TYPES GENERALLY ADJUSTED TO CLIMB LEFT AND GLIDE RIGHT





## GOLDEN ANNIVERSARY OF FLIGHT

# The Wright Biplane

As world celebrates the 50th year of flight you'll find a model in much demand

By H. A. THOMAS

■ The original Wright biplane, as a replica model, represents an interesting change of pace in "solid" models. For with its open structure of struts and wires, there is little of a solid nature to be shaped, but the assembly job is guaranteed to sharpen your handiwork with tweezers and cement.

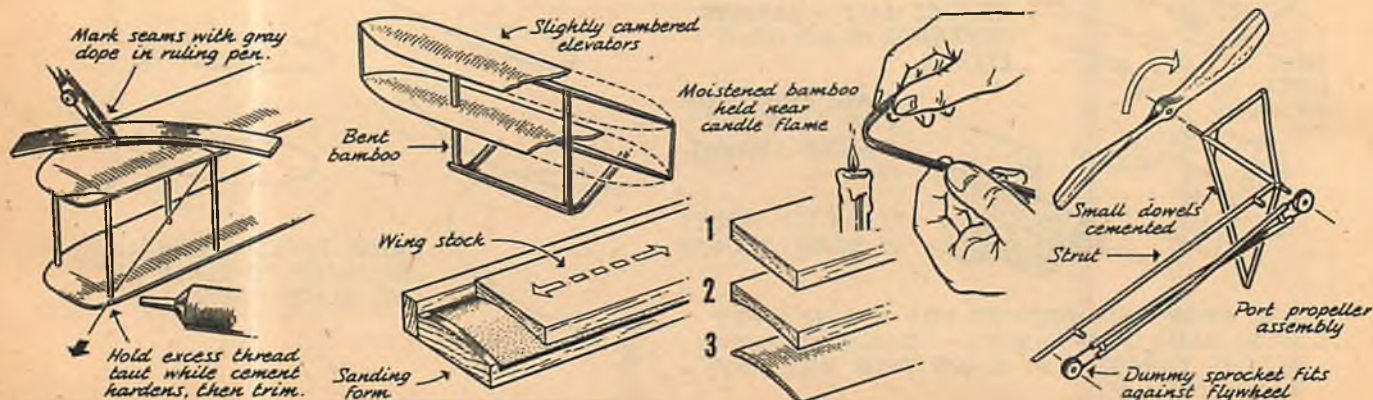
Begin with the wings—likely the most difficult part of the model. The section used is not of constant thickness; it thins progressively toward the trailing edge and is better made by shaping a solid balsa sheet than by attempting to warp a thinner one. A sanding form is shaped to the lower concave curvature and medium grade sandpaper is spot-cemented to it. The wing sheet is worked back and forth until the lower surface matches the sanding form. Carry both wings to this stage, then replace the medium paper with very fine sandpaper and smooth the lower surfaces uniformly. Carve the upper surfaces by hand, using a flat sanding block as you near final contours. Finally the outline may be transferred to the balsa, the wings trimmed to outline, edges tapered slightly and strut locations pricked through with a

pin to lower surface of the upper wing and upper surface of the lower wing.

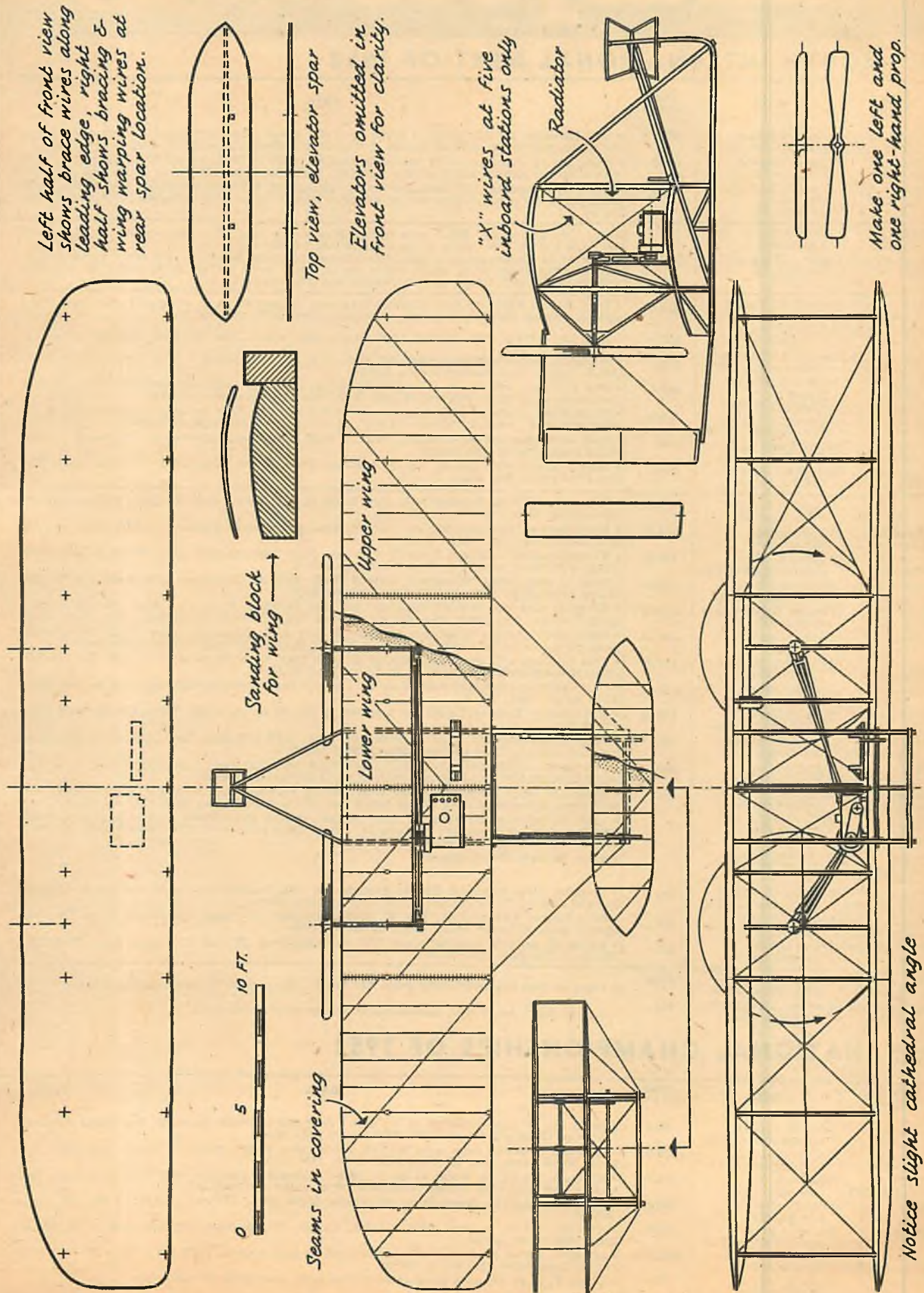
Elevators have only the slightest camber and are of uniform thickness, so they can be made by thinning a sheet of 1/32" balsa with a sanding block. The flat rudders are made similarly. Elevator spars are cemented to the lower surfaces and the lower one may have the openings cut for the two vertical members to pass through to the upper spar.

Bamboo is the best material for the lower skid members which curve at the front beneath the elevators. It is bent by moistening and holding it near a candle flame. Other structural members, including wing struts, can be made of bass or white pine. Use a circular saw to cut several thin sheets from which you can slice off the necessary strips. Wing struts are somewhat rounded in section as are the other exposed structural members.

Propellers, one left and one right-hand, are carved of pine or bass and may be smoothed and finished in clear lacquer or dope. The engine is a balsa block (Continued on page 80)









# analyses of high

## PLYMOUTH INTERNATIONAL MEET OF 1952

	EVENT PLACE	FLYER	TIME OR PTS.	DATA
Outdoor Rubber	Unlimited Fresh—1st	Billy McCracken Round Lake, Ill.	397.9	• Box fuselage; 14" dia. prop.; 7 loops 1/4" T-56; Jasco lube; Jap tissue with 6 coats clear; 142 sq. in. poly wing. RAF 32 airfoil; 6 min. fuse detherm; two O.O.S. flights; 6 oz.
	Unlimited Jr—1st	Chris A. Hanson Midland, Mich.	349.0	• Standard 72" fuselage; 18/24 one-blade folding prop; 14 70" loops 1/4" T-56; 225 sq. in. wing with original airfoil; LDC2 airfoil on stab; fuse detherm; 1200 plus winds; 13 oz.
	Unlimited Sr—1st	Hermann R. Andresen Chicago, Ill.	505.4	• Truss style fuselage, 36" between hooks; 16 strands 1/4" T-56 60" long; 1280 turns; 20/26 prop; 180 sq. in. wing, deep undercambered airfoil; 90 sq. in. stab., Issacson turbulent airfoil; 7 1/4 oz.
Scale	Scale C/L Jr—2nd	C. Hill Hutchins, Jr. Spartanburg, S.C.	178	• Fox .35; Champion VG-2 glow plug; Powermist fuel; 10/6 four-blade Power Prop; Berkeley P-51 kit; 37" span; 25-28 coats of Aero Gloss dope.
	Scale C/L Sr—1st	Roger J. Harney Berwyn, Ill.	289	• Atwood .51; Champion glow plug; Supersonic 1000 fuel; Top Flite 11/6 prop; 4 min. engine run; original Spad; 39 1/2" span, 536 1/2 sq. in. area; scale airfoil, wing and stab; Silkspar with 30 coats Aero Gloss; underpowered, but good glide.
Free Flight Gas	Class Half-A Fresh—2nd	Dennis W. Alford San Diego, Cal.	393.0	• Torp. .049 on K&B 1000 fuel; plastic 5.5/4 prop; 165 and 72 sq. in. wing and stab; both 9 to 1 airfoils; Hogan type 24" fuselage; parachute fuse detherm; 5 1/2 oz.
	Class Half-A Jr—1st	Ronald M. Brich Cleveland, Ohio	585.0	• Zeek kit; .049 OK Cub; Kaysun 5.5/4 plastic prop; 6 min. fuse detherm; Silkspar cover.
	Class Half-A Sr—1st	George A. Albright Jefferson City, Mo.	824.8	• Fubar 36" kit; Wasp with K&B 1000 fuel; Top Flite 6/3 prop; 7 min. fuse detherm.; two O.O.S. flights; best flight, 415 sec.; R.O.G.
	Class A Jr—1st	Walter W. Arensmeyer Chateau, Mont.	495.5	• Box fuselage; 540 sq. in. diagonal-rib wing; 60" span; original airfoils; Torp .19 with Duromatic glow plug; Powermist fuel; Top Flite 10/6 prop; no detherm.; 26 oz. weight.
	Class A Sr—2nd	Duane A. Anderson Minneapolis, Minn.	804.5	• Sheet-sided fuselage; K&B engine with own fuel; Top Flite 9/4 prop.; 522 and 218 sq. in. wing and stab.; named "Thermal-Liza"; 21 oz.; pop-up detherm with fuse.
	Class BC Jr—1st	Victor Peres Erie, Pa.	1076.1	• Zeek with enlarged sub-rudders; O&R .23 with K&B plug; Supersonic 1000 fuel; Top Flite 10/3.5 prop; pop-up stab therm.
	Class BC Sr—1st	Bernard J. Stock Omaha, Neb.	989.5	• Sandy Hogan with tail on top of fuselage; Torp .29 on Powermist Hi-Thrust fuel; 11/6 Top Flite prop; best flight, 10 min.
Control Line	Speed A Fresh—1st	Joseph V. Scuro Pittsburgh, Pa.	103.65	• Original with mag. fuselage pan; glow Torp .19 with Spitzzy fuel; Tornado 6.5/9 prop; hard balsa wing; 16 oz.; best time, 110 mph.
	Speed A Jr—1st	Alfred Davis Birmingham, Ala.	114.75	• Metal-bottom fuselage; McCoy .19 with enlarged intake; Supersonic 1000 fuel; Tornado 6/10 prop; 21 sq. in. wing; 10 oz.
	Speed A Sr—1st	Eugene B. Stiles Sheppard AFB, Tex.	122.57	• Turned mahog. fuselage; Torp .19 with own fuel; Tornado 6/10 prop; 26 sq. in. semi-sym. wing; with alum. covering; 11 oz.; hand launched.
	Speed B Jr—1st	Alfred Davis Birmingham, Ala.	123.41	• 28 sq. in. ship called "Boulder"; weighs 15 oz.; Dooling .29 engine with Dooling fuel; O&R racing glow plug; Tornado 9/7 prop; locking dolly.
	Speed B Sr—1st	Thomas K. Mattingly Hialeah, Fla.	126.53	• Original with maple-sided fuselage, ply top; Dooling .29 on own fuel; Champion glow plug; Tornado 7/10 prop; 24 1/2 sq. in. tapered wing; Testors dope; hand launched; 15 oz.
	Speed CD Jr—1st	Thomas Davis Atlanta, Ga.	136.10	• Metal pan fuselage, balsa top; McCoy .60, own fuel; Champion glow plug; Rev-Up 9/11 prop; 52 sq. in. balsa wing; no rudder; 29 oz.; 12 coats sanding sealer; dolly launch.
	Speed CD Sr—1st	Richard A. Modler Dayton, Ohio	146.40	• Pine fuselage with mag. pan; McCoy .60 with O&R Economy plug; own fuel; Rev-Up 9/11 prop; 10 coats Testors dope; 45 sq. in. Clark Y wing; 32 oz.
	Speed Jet Jr—1st	Russell Cornell Spokane, Wash.	138.41	• Cast aluminum fuselage with 45 sq. in. Clark Y sheet metal wing; Dyna-Jet on gas; Clark Y, 20 sq. in. stab.; 30 oz.
	Speed Jet Sr—1st	Herbert Davis Birmingham, Ala.	145.93	• Hot Canary; Dyna-Jet with No. 5 metering jet; 40 sq. in. wing; Testors dope; skid take-off; 20 oz.
	Stunt Fresh—2nd	Dennis W. Alford San Diego, Cal.	253	• Zilch X, Berkeley kit; Torp .32 with K&B plug; K&B 1000 fuel; Y&O 10/6 prop.; silk covering with 10 coats Coast-to-Coast dope; 600 sq. in.; 30 oz.
	Stunt Jr—1st	Lloyd W. Curtis St. James, Minn.	307	• Fox .35 with Champion glow plug; Powermist fuel; Top Flite 10/6 prop; 460 sq. in. D-spar wing; sheeted box fuselage; silk with 19 coats Aero Gloss; 41 oz.
	Stunt Sr—1st	James G. Ebejer Detroit, Mich.	306	• Sheet and block fuselage; D-tube wing; 560 sq. in. area; Fox .35 with OK glow plug; Y&O 10/5 prop; Powermist with added castor oil; 20 coats Berryloid over Skysail; 50 oz.
	Team Main Event—1st	Sy G. Vos Gerau Miami, Fla.		• 134 3/4 sq. in. original; Torp .29 with plugged intake and altered port timing; Supersonic 1000 fuel with added castor; Tornado 9/7 prop.; Deco relay with uninsulated lines; butterfly choke; silk with 13 coats Aero Gloss; 26 oz.
	Team Beauty 1st	Sy G. Vos Gerau Miami, Fla.		• Same as Main Event winner
	Carrier Jr—Sr—1st	Valgene W. Hayworth, Sedalia, Mo.	285	• Douglas AD-2 from Air Trails; Atwood .60 with homemade points and spark ignition; gas and oil fuel; Top Flite 12/8 prop; Deco 2-speed wires.
	Combat ABC Jr—1st	Gerald Bryant St. Louis, Mo.	573	• Ring Master without L.G.; Fox .35 with Champion glow plug; 9/8 Power Prop; Thimble-Drome fuel; Silkspar with 6 coats of nitrate dope.
	Combat ABC Sr—1st	Frank Gross Compton, Cal.	535	• 400 sq. in. original with 40" span; box fuselage; Torp .29 with Champion glow plug; K&B 1000 fuel; Top Flite 10/6; 21 oz.
H. L. Glider	H/L Glider Jr—2nd	Joseph F. Ziomek Allen Park, Mich.	205.8	• Copy of Bob Brawner's ship from Air Trails; three coats Testors sanding sealer.
	H/L Glider Sr—1st	Charles A. Patranek Madison, Wis.	213	• Design from Air Trails; second-place Senior ship is the same.

## U.S. NATIONAL CHAMPIONSHIPS OF 1952

	EVENT PLACE	FLYER	TIME OR PTS.	DATA
Indoor	Cabin Jr—1st	John W. Tapert Grosse Point, Mich.	68.0	• 42 sq. in., 14" span wing; 14 sq. in. stab.; diamond geodetic fuselage; Jap tissue covering; 7/6 prop; 11" loop 1/16" sq. T-56; 2000 winds; poly wing.
	Cabin Sr—2nd	Jim Sawyer Los Angeles, Cal.	20.0	• Modified Andrews stick with Warren Truss cabin added, from Air Trails; microfilm covered; 16/30 prop.; one 16" loop 3/32" T-56; 1400 turns.
	Cabin Open—2nd	Bill Atwood Glendale, Cal.	704.8	• 32" span, 140 sq. in. wing; 45 sq. in. stab.; triangular fuselage with bump for area; own airfoil; one loop 3/32" rubber with 1400 turns; mike covered; .071 oz.
	Stick Jr—3rd	John Sawyer Los Angeles, Cal.	886.8	• Modified Andrews design from Air Trails; 16/30 prop.; 17" loop of 3/32" T-56; 1600 turns; .038 oz.
	Stick Sr—1st	Darrell Larks San Francisco, Cal.	1090.4	• 33" span, 150 sq. in. area wing; original airfoil; 17 1/4/28 prop; 18" loop 3/32" T-56; Testors lube; 1800 turns; .038 oz.
	Stick Open—1st	Bill Atwood Glendale, Cal.	1672.0	• 34" span, 150 sq. in. area wing; tapered hollow motor stick; 17/30 prop. with 20" loop 1/16" rubber Jasco lube; 2150 turns; .058 oz.
	Glider Jr—1st	Jerry Robertson Phoenix, Ariz.	56.4	• Clark Y, 62 sq. in. area wing symmetrical stab; two coats nitrate dope; 1/2 oz.
	Glider Sr—1st	Don Alberts Albuquerque, N.M.	64.1	• Flat 40% airfoil on 50 sq. in. area wing; 25 sq. in. stab; clear dope and talc finish; 1 oz.
	Glider Open—1st	Joseph Foster, Jr. San Jose, Cal.	73.6	• Original airfoil on 57 sq. in. area wing; and 16 sq. in. stab; 17" span; three coats Testors sealer on wing, one coat on other parts; 7/10 oz.



# point winners

	EVENT PLACE	FLYER	TIME OR PTS.	DATA
Outdoor Glider	H/L Jr—1st	Jimmie Jackman Oklahoma City, Okla.	674.0	• Fugan design; two coats Jasco glider polish; ½ oz. This is new Jr. record.
	H/L Sr—1st	Gene Jackman Oklahoma City, Okla.	797.0	• Matthew's Fugan; one 10 min. flight; two coats Jasco glider polish; ¾ oz.
	H/L Open—1st	William Lopez Los Angeles, Cal.	1269.2	• 64 sq. in., 18" span wing; three coats sanding sealer; ½ oz.; one 10 min. flight.
	Towline Jr—1st	John Watson Des Moines, Iowa	516.2	• Jasco Floater kit; Skysail covering; 4 coats of nitrate dope; 200' line.
	Towline Sr—2nd	Donald Kambestard Roswell, N. Mex.	576.6	• 460 sq. in. area original with V-tail; box fuselage; Silkspan with 10 coats dope; 10 min. fuse detherm; 21 oz.
	Towline Open—1st	Marvin Forman Los Angeles, Cal.	898.0	• 11¾" wing has 1850 sq. in. area, Goldberg Sailplane airfoil; silk covered, with five coats nitrate; crutch fuselage; 11 min. fuse detherm; R.O.G. take-off used; weighs 7 lbs.
Outdoor Rubber	Unlim. Jr—1st	Eddie Ryan Tempe, Ariz.	503.4	• Called The Mole; never been beaten in comp.; 189 sq. in. wing with NACA 6409; 72 sq. in. pop-up tail; Warren truss fuselage; Silkspan covering—wing is sheeted; 8/24 single-blade folding prop; 12 braided 30" loops 3/16" T-56.
	Unlim. Sr—2nd	Jim Sawyer Los Angeles, Cal.	708.4	• Twin rudder original with 216 sq. in. wing; 6409 airfoil; 80 sq. in. stab with Clark Y; Warren truss fuselage; 17½" prop; 8 46" loops ¼" T-56, lubed; 775 turns; 6 min. fuse detherm; Jap tissue; 8½ oz.
	Unlim. Open—1st	Francis K. Heeb Connersville, Ind.	1026.8	• Diamond fuselage, sheeted nose; 211 sq. in. 43" span wing; 6409 airfoil; Clark Y on 97 sq. in. stab.; single blade 19.25/28 prop; nine 37" loops ¼" T-56; 650 turns; 8½ oz.
	Wakefield Jr—1st	John Sawyer Los Angeles, Cal.	320.6	• Wing 219 sq. in., stab 68 sq. in.; 6409 and Clark Y airfoils; Warren truss fuselage; Jap tissue covered; 6 min. fuse detherm; 16" prop; eight 46" loops ¼" T-56; 600 turns; 8½ oz.
	Wakefield Sr—1st	Don Tune Los Angeles, Cal.	724.2	• Sheeted sides on fuselage, papered top and bottom; retracting L.G.; pop-up tail; 210 sq. in. thinned NACA 6412 wing; twin rudders; 18/25 prop; 11 loops 3/16" Firelli rubber; castor oil lube; 6525 turns; 8¼ oz.
	Wakefield Open—1st	T. R. Quermann Bayside, N. Y.	900.0	• Box fuselage, truss-style in rear; 225 sq. in. wing, original foil and thread turbulator; pop-up detherm (not effective at Nats); 20/27 prop; 18 strands ¼" T-56; 1200 turns; 8¼ oz.
Scale	Half-A, F/F Jr—Sr—1st	Tommy Hill Whittier, Cal.	136	• Berkeley Interstate Cadet; Silkspan covered; Spitzy .049 with Kaysun 5/4 plastic prop.; Testors 39 fuel.
	Half-A F/F Open—1st	Louis R. Culler Torrance, Cal.	309	• Berkeley Piper kit modified; wings held by tongues and rubber bands; Silkspan with 10 coats Aero Gloss; Wasp engine and plug; Tornado 6/2 prop; O&R AA fuel.
	C/L Scale Jr—1st	Ted Trammell Lake Charles, La.	177.80	• Stits Jr. from Air Trails; silk covered wings; 35 coats of Aero Gloss (!); Forster .29 with Champion glow plug; Top Flite 9/8 prop; O&R No. 4 fuel; 1½ lbs.
	C/L Scale Sr—2nd	Ed Wong Olds, Alberta, Can.	203.32	• Twin-engine ship planked throughout; 12 coats Aero Gloss; McCoy .49's with Champion plugs; Y&O 10/7 props; Powermist fuel; 464 sq. in. and 54 in. span; 10¾ lbs.
	C/L Scale Open—1st	Thomas Dean Corpus Christi, Tex.	280.90	• Dooling .29 engine, O&R plug; 10/6 Power Prop; Supersonic 1000 fuel; silk covered with 8 coats butyrate dope.
PAA-Load	PAA—AB Jr—Sr—1st	Clinton Merrill Oildale, Cal.	1014.2	• Crowbar; 10 min. fuse detherm; 5 coats Fuller's Airspar dope; Arden .199, Spitfire glow plug; Top Flite 10/5.5; Supersonic 1000 fuel; 22 oz. weight.
	PAA—AB Open—1st	Fran Uyematsu Montebello, Cal.	1433.4	• Sheeted box fuselage; Cumulus ribs in wing; geodetic stab; areas, 512 and 153 sq. in.; 10 min. fuse detherm; Torp. .19 with Supersonic 1000; 9/6 Power Prop; weighs 32 oz.
	PAA—Clip. 1st	R. E. Latham Dallas, Tex.	17¼ oz. Load	• Crutch fuselage; 410 sq. in. wing with own airfoil; 150 sq. in. Clark Y stab.; Wasp with Supersonic fuel; Kaysun 5.5/4 plastic prop; two coats nitrate, one of Tuff proofer; 9½ oz.
	PAA—Rub. 1st	Mal Alberts Los Angeles, Cal.	194.1	• Triple-spar wing, 133 sq. in., Simmers airfoil; Clark Y stab.; fully sheeted fuselage; 10 min. dry ice detherm; Jap tissue covered with Aero Gloss; 10/16.4" prop; 8 loops 3/16" T-56, 140 turns; own lube; 6 ½ oz.
	PAA—Half-A Jr—Sr—1st	Paul Crowley Detroit, Mich.	555.8	• PAA—Master by Jasco; 10 min. fuse detherm; Jap tissue with Dallaire dope; Wasp .049; Top Flite 6/3 prop; Nitro-X fuel.
	PAA—Half-A Open—1st	Richard R. Sladek San Diego, Cal.	1569.0	• 230 sq. in. wing, Goettingen 602 airfoil; sheet fuselage; 10 min. fuse detherm; Wasp with 5.5/4 plastic prop; Spitzy fuel; new PAA record & highest time of any F/F ship at 1952 Nats.
R/C	Radio Control 1st	Alex Schneider San Francisco, Cal.	268.1	• Modified Cleveland Cub kit; nylon with Davies dope; 1070 sq. in.; Spitfire .60 with spark ignition; O&R 14/5 prop; Rockwood audio tone R/C system for elev., rudder and motor.
F/F Gas	Class Half-A Jr—1st	John Watson Des Moines, Iowa	1149.2	• Eiffel 400 airfoil on 168 sq. in. monospar wing; Clark Y stab.; sheeted box fuselage; no detherm; Torp. .049 with Spitfire plug; Top Flite 6/4 prop; Testors 39 fuel; 7 oz.
	Class Half-A Sr—1st	Nat Antonioli San Diego, Cal.	1320.2	• Zeek with modified fuselage, less incidence; Jap tissue with 6 coats nitrate and proofer; Wasp, enlarged ports; Supersonic fuel; Power Prop 5.5/4; 12 min. fuse detherm.
	Class Half-A Open—1st	Wallace L. Short Redlands, Cal.	1521.0	• Own AWOL design; 175 sq. in. wing; flat airfoils on wing and stab; sheet-sided box fuse; pop-up stab with Elmic timer; Wasp; O&R fuel; 6/3 Power Prop; one O.O.S. flight; 6 oz.
	Class A Jr—1st	Gene Huston San Bernardino, Cal.	1410.8	• Short's AWOL; 470 sq. in. wing; 207 sq. in. stab; chute detherm with Elmic timer; McCoy .19 with Powermist fuel; Tornado 9/5 prop; two 10 min. flights; 26 oz.
	Class A Sr—1st	Bob Gelvin Topeka, Kans.	1300.8	• Old style Zeek with extra dihedral; 10½ min. fuse detherm; nitrate dope proofed with Tuff; Arden .199 with K&B plug; Air-O 9/4 folding prop; Supersonic 1000 fuel.
	Class A Open—1st	Elmer Scaggs Tulsa, Okla.	1557.0	• Zeek with redesigned fuselage; pop-up stab and 10 min. fuse; Torp. .199, Champion plug; Xcell fuel; Air-O 9" prop; hand-launch.
	Class B Jr—2nd	John Sawyer Los Angeles, Cal.	764.6	• Diamond fuselage with keel; 515 sq. in. Davis #5 airfoil wing; 175 sq. in. Clark Y stab; O&R 23 with K&B plug; K&B Supersonic fuel; silk covered; 11 min. mech. detherm; 26 oz.
	Class B Sr—1st	Kenneth De Giorgis Sacramento, Cal.	761.8	• Berkeley Sandy Hogan; 6 min. detherm; Silkspan with 3 coats Aero Gloss; Torp. .29 with Champion plug; 11/6 Power Prop; Powermist fuel; 32 oz.; hand launched.
	Class B Open—1st	Alvin J. Smith Santa Barbara, Cal.	1012.0	• NACA 4612 wing, 400 sq. in.; Clark Y 140 sq. in. stab.; 8 min. fuse; triangular built-up fuselage; silk covered; O&R 23, Top Flite 10/6 prop; K&B 1000 fuel; hand launched; 23 oz.
	Class C Jr—1st	John Mitchell, Jr. Phoenix, Ariz.	1162.8	• Powerhouse 62 with dual wheel L.G.; 10 min. fuse detherm; Skysail with butyrate dope; Fox .35, Champion plug; Aero-Flite 11/4 prop; Thimble-Drome fuel; ROG.
Hydro F/F	Class C Sr—1st	Bill Lofland Abilene, Tex.	1166.2	• Hogan-shape wing with 714 sq. in.; box fuselage; 17 min. fuse detherm; Torp. .32; Top Flite 10/6 prop; Powermist fuel; ROG; Skysilk covering; 32 oz.
	Class C Open—2nd	Daniel C. Lutz Los Angeles, Cal.	1409.4	• Twin spar 610 sq. in. wing; 38% Clark Y stab.; 11 min. fuse detherm; Aero Gloss over Silkspan; K&B .32 Air-O 11/4 prop; K&B 1000 fuel; 32 oz.
	R.O.W. Jr—1st	Bruce Tune Los Angeles, Cal.	1118.4	• Smarty kit ship with Keiner-designed floats; 10 min. fuse; Fullers dope; K&B .049; Top Flite 6/3 prop; Wasp timer tank; Thimble Drome fuel; his first plane!
	R.O.W. Sr—1st	Bob Gelvin Topeka, Kans.	997.0	• Baby Zeek with under-cambered wing; 8 min. fuse; Skysail covering; nitrate with Tuff proofer; Wasp with precision balanced shaft and K&B plug; Kaysun 5.5/3 prop; Supersonic 1000.
	R.O.W. Open—1st	Elmer Scaggs Tulsa, Okla.	1178.6	• 6409 airfoil 700 sq. in. wing; 10 coats nitrate dope with 2 coats Aero Gloss over; box fuselage; Torp. .29 with Champion plug; Xcell fuel; Top Flite 10/6 prop; 36 oz.

(Continued on Page 76)

This compilation is made possible through the cooperation of those modelers whose names appear above; all data was supplied by the winning flyers. Where a first place winner did not respond to Air Trails' questionnaire, information on the second place model was used; in some instances data was available only on the third place man. The editors express appreciation to all who replied.









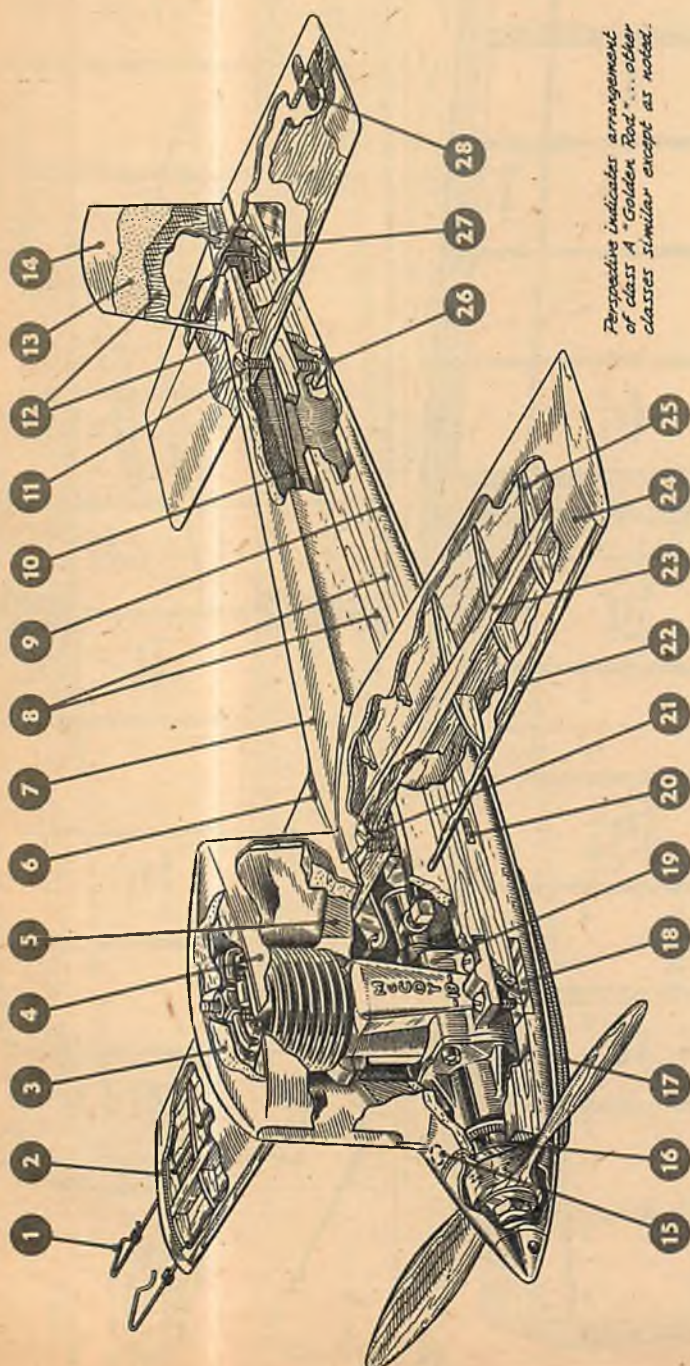


## Record-breaking Speed Quartet:

# Golden Rods

Designed and flown by PAT MASSEY and CARL HALL

This design was first used in 1948. Since then it has been developed into the latest version that you see here. The team attracted attention at a meet in Wichita Falls, Texas, in 1950 with a winning speed in Class D of 150.00 mph. Besides taking many local contests, the pair won 1st in A, 2nd in C and 5th in D at the 1950 Nationals. In 1951 the Hall-Massey team won both A and D at the National competition; last season they were high in the money. Rudders on the model are used to place center of lateral area in correct position. This helps prevent yawing which causes a speed ship to climb when it is on the upwind side of the circle and dive on the downward side. The "square" back is used to give plenty of room inside for tank, bellcrank and tools.



Perspective indicates arrangement of class A "Golden Rod" ... other classes similar except as noted.

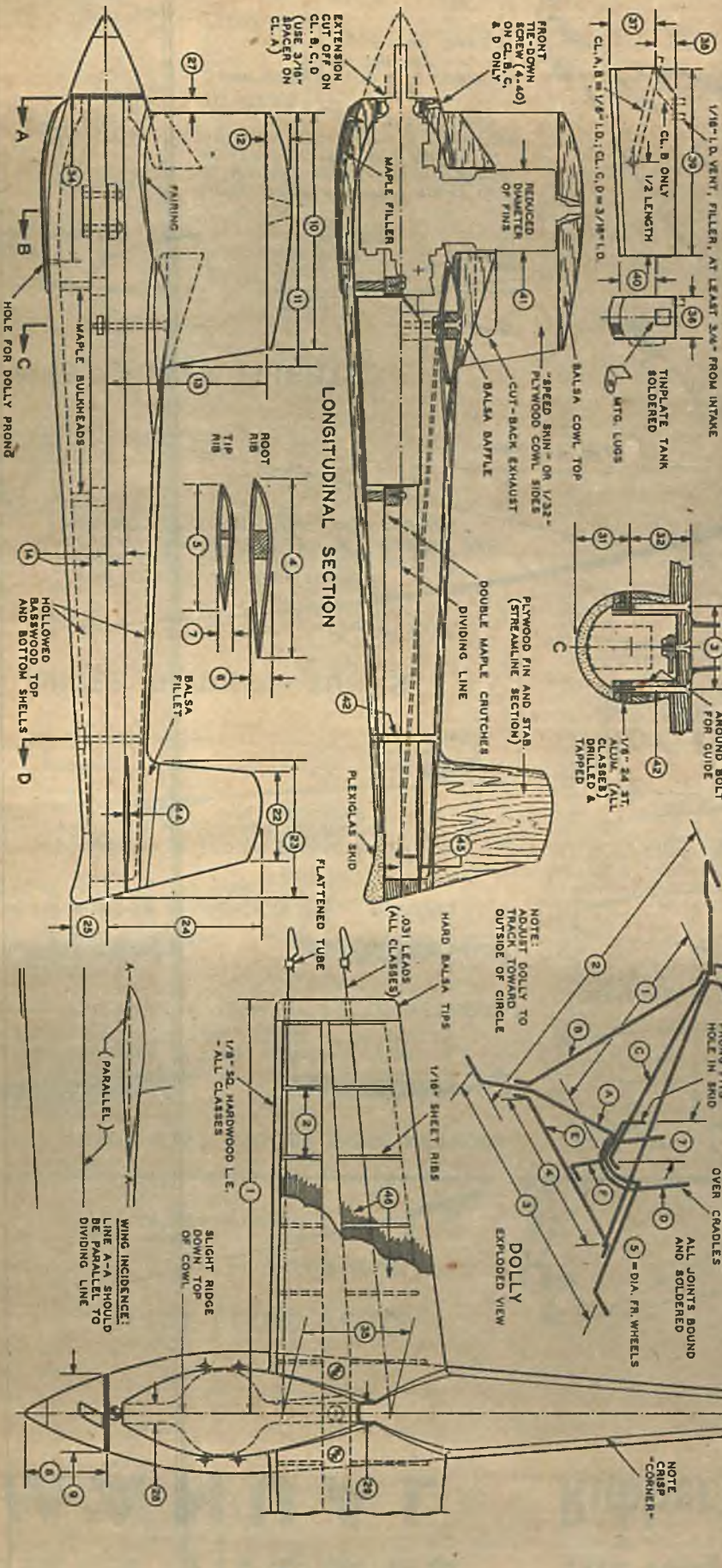
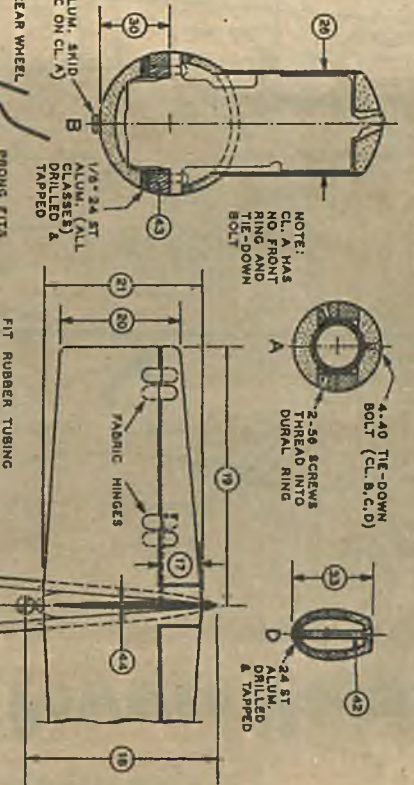
TABLE OF DIMENSIONS

NO.	CL. A	CL. B	CL. C	CL. D
DISPL.	.19	.29	.49	.60
1	6"	6 1/2"	7 1/2"	8"
2	1	1 1/8	1 1/4	1 1/4
3	1 5/32	1 5/16	1 1/2	1 3/4
4	2 5/8	2 13/16	3 1/4	3 1/2
5	1 15/16	2 1/16	2 5/16	2 1/2
6	5/16	5/16	3/8	15/32
7	7/32	1/4	9/32	5/16
8	1 3/8	1 5/16	1 1/2	1 3/4
9	1 1/16	1 3/16	1 3/8	1 1/2
10	3 5/16	3 1/16	4 3/8	4 3/8
11	3 1/2	4	4 5/8	4 3/4
12	3/8	7/16	7/16	7/16
13	2 1/8	2 7/16	2 15/16	3 1/4
14	1/4	1/4	5/16	3/8
15	2 7/8	3 1/8	3 7/16	3 7/8
16	3 1/8	3 1/2	3 13/16	4 3/8
17	9/16	5/8	5/8	3/4
18	2 1/4	2 1/2	3 1/16	3 1/8
19	3	3 1/2	4	4
20	1 5/8	1 3/4	1 7/8	2 3/16
21	2 1/8	2 1/4	2 1/2	2 7/8
22	1 3/8	1 1/2	1 5/8	1 15/16
23	1 3/4	2	2 5/16	2 1/2
24	2 1/16	2 1/2	2 15/16	3
25	9/16	9/16	1 1/16	3/4
26	1 9/32	1 3/8	1 5/8	1 25/32
27	1/4	1/4	1/4	5/16
28	7/32	1/4	5/16	5/16
29	5/32	1/4	1 1/32	1 1/32
30	1 3/16	1 5/16	1 1/8	1 3/16
31	1 3/16	2 9/32	1 1/32	1 1/8
32	2 1/32	1	1 1/8	1 1/4
33	1	1 3/16	1 5/16	1 7/16
34	2 1/2	2 5/8	3	3 1/2
35	1 1/4	1 1/2	2	2
36	5/8	5/8	3/4	3/4
37	5/8	3/4	7/8	1 5/16
38	5/16	3/8	3/8	1/2
39	2 13/16	3 1/8	3 7/16	3 15/16
40	1/2	9/16	5/8	1 1/16
41	1.160	1.250	1.500	1.650
42	4-40	4-40	6-32	6-32
43	4-40	4-40	6-32	6-32
44	1/16	1/16	3/32	3/32
45	5/16	5/16	3/8	3/8
46	1/32	1/32	1/16	1/16

DOLLY

1	8"	8 1/4"	9"	9 1/4"
2	13	14	15	15 3/4
3	9 1/2	11	12	12
4	6	6 3/4	7 1/2	7 1/2
5	2 1/2	3	3 1/2	3 1/2
6	2	2 1/2	3	3
7	1 5/8	2	2 1/4	2 3/8
A	3/32	3/32	1/8	1/8
B	1/16	3/32	3/32	3/32
C	3/32	3/32	1/8	1/8
D	3/32	3/32	1/8	1/8
E	1/16	3/32	3/32	3/32
F	1/16	3/32	3/32	3/32







# AIR-MODEL MANUAL

## The Adjustment of Rubber Powered Models

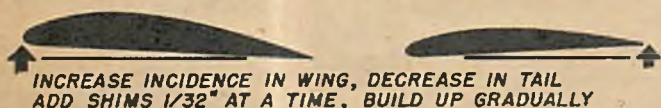
### FIRST GLIDE TESTS



PROPER GLIDE



CORRECT NOSE-HEAVY TRIM BY THESE METHODS :

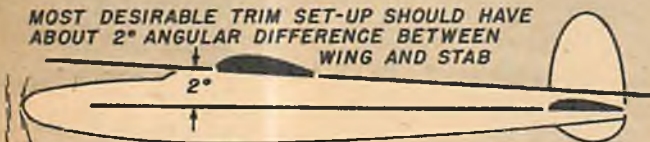


CORRECT TAIL-HEAVY TRIM BY THESE METHODS :

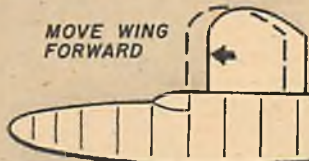


DECREASE POSITIVE INCIDENCE IN WING, DECREASE NEGATIVE INCIDENCE IN TAIL

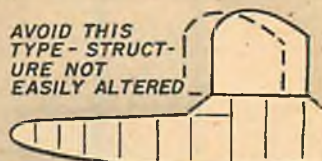
MOST DESIRABLE TRIM SET-UP SHOULD HAVE ABOUT 2° ANGULAR DIFFERENCE BETWEEN WING AND STAB



MOVE WING FORWARD



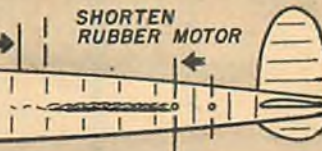
AVOID THIS TYPE - STRUCTURE NOT EASILY ALTERED



MOVE WING REARWARD



SHORTEN RUBBER MOTOR



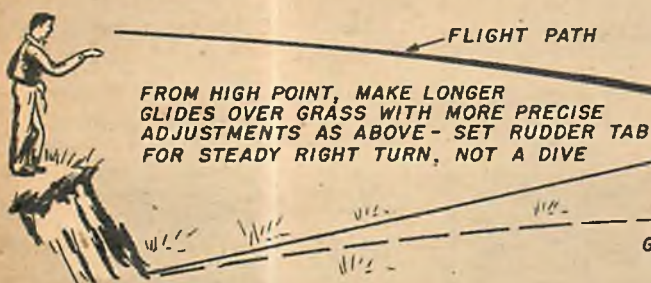
AVOID EXTREME ANGULAR DIFFERENCES LIKE THIS



NEVER THIS - UNSTABLE PITCHING MOMENT HAS BAD STALL TENDENCIES



### 2 LONGER GLIDES - TURNS



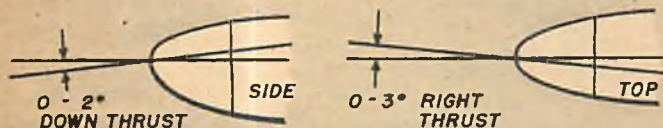
FLIGHT PATH

FROM HIGH POINT, MAKE LONGER GLIDES OVER GRASS WITH MORE PRECISE ADJUSTMENTS AS ABOVE - SET RUDDER TAB FOR STEADY RIGHT TURN, NOT A DIVE

GROUND TRACK

IMAGINARY STRAIGHT LINE

### 3 FIRST POWER FLIGHTS



0 - 2° DOWN THRUST

0 - 3° RIGHT THRUST

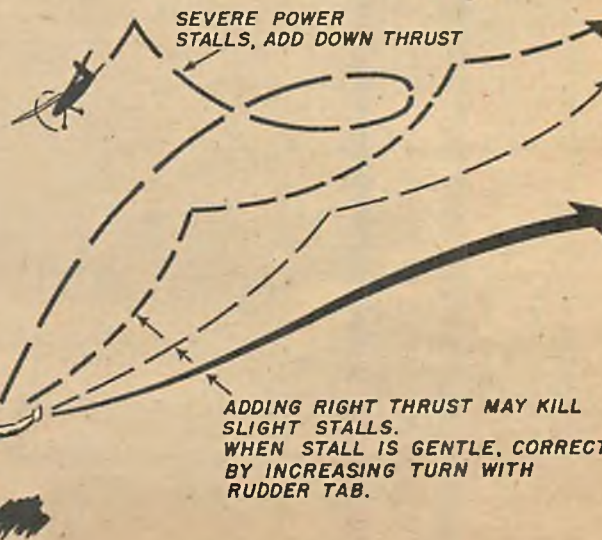
1/32" - 1/16" SHIMS



MOST MODELS FLOWN RIGHT IN CLIMB AND GLIDE - MAKE FIRST POWER FLIGHTS OVER GRASS IN AN OPEN AREA. PICK A CALM DAY. USE WINDER, ABOUT 50 TURNS TO START.

DOWN THRUST USED TO CORRECT STALLS - RIGHT THRUST CORRECTS TORQUE AND MAKES RIGHT TURN.

1/32" - 3/32" SHIMS - NORMAL NOSEBLOCK ADJUSTMENTS

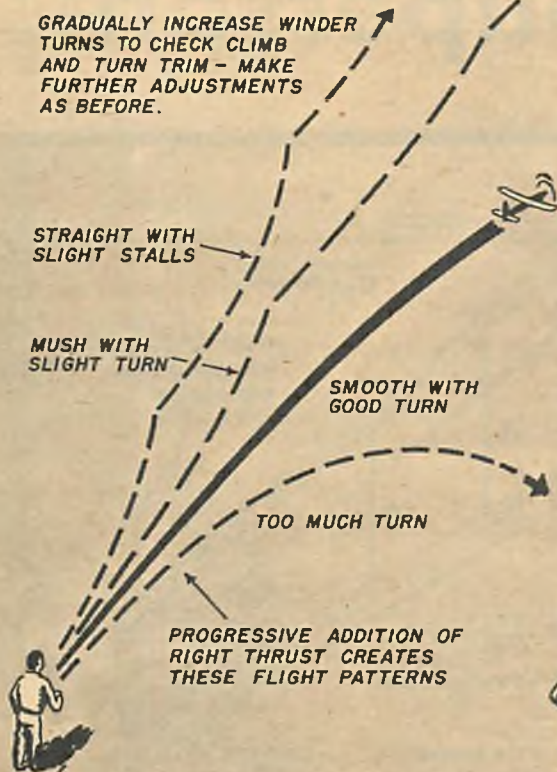


SEVERE POWER STALLS, ADD DOWN THRUST

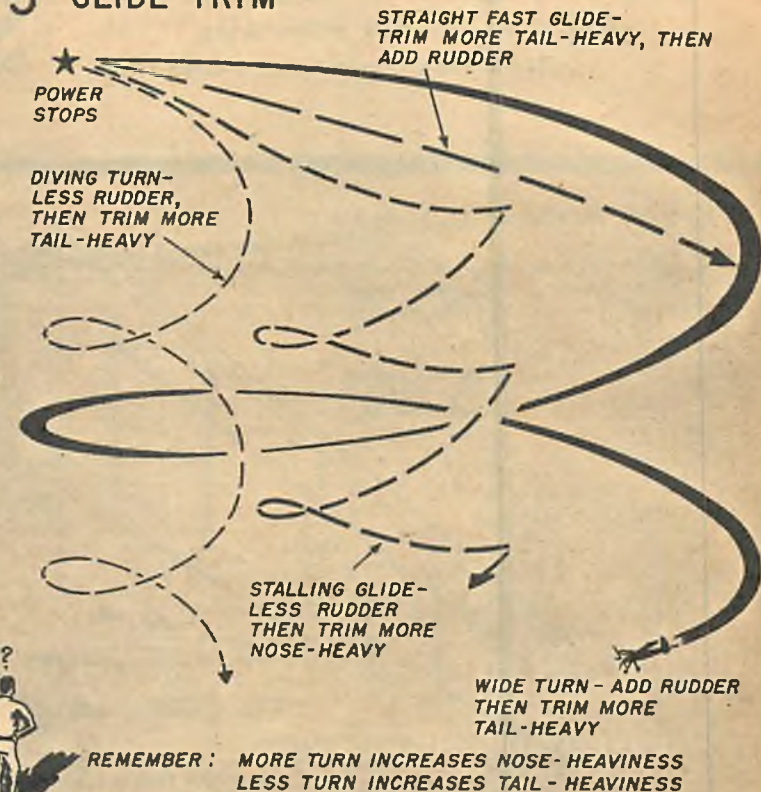
ADDING RIGHT THRUST MAY KILL SLIGHT STALLS. WHEN STALL IS GENTLE, CORRECT BY INCREASING TURN WITH RUDDER TAB.



## 4 INCREASE POWER

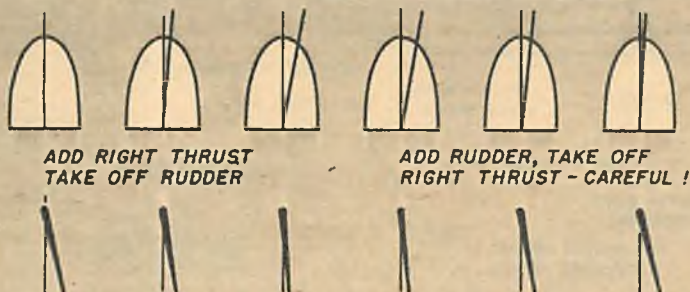


## 5 GLIDE TRIM



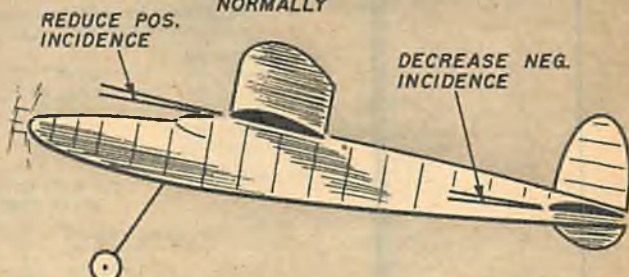
## 6 FINAL TRIM

USE SIDE THRUST AND RUDDER TRIM TOGETHER AS SHOWN:

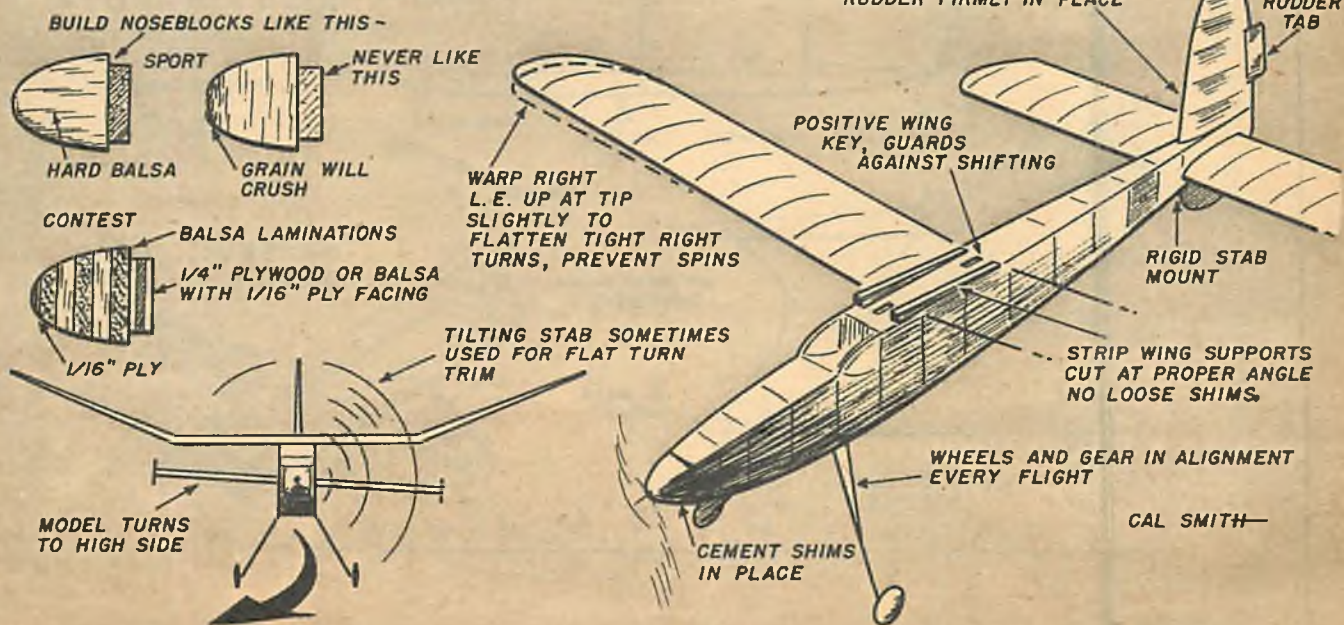


## 7 WIND

WINDY WEATHER STALL WILL REQUIRE MORE NOSE-HEAVY TRIM THAN NORMALLY



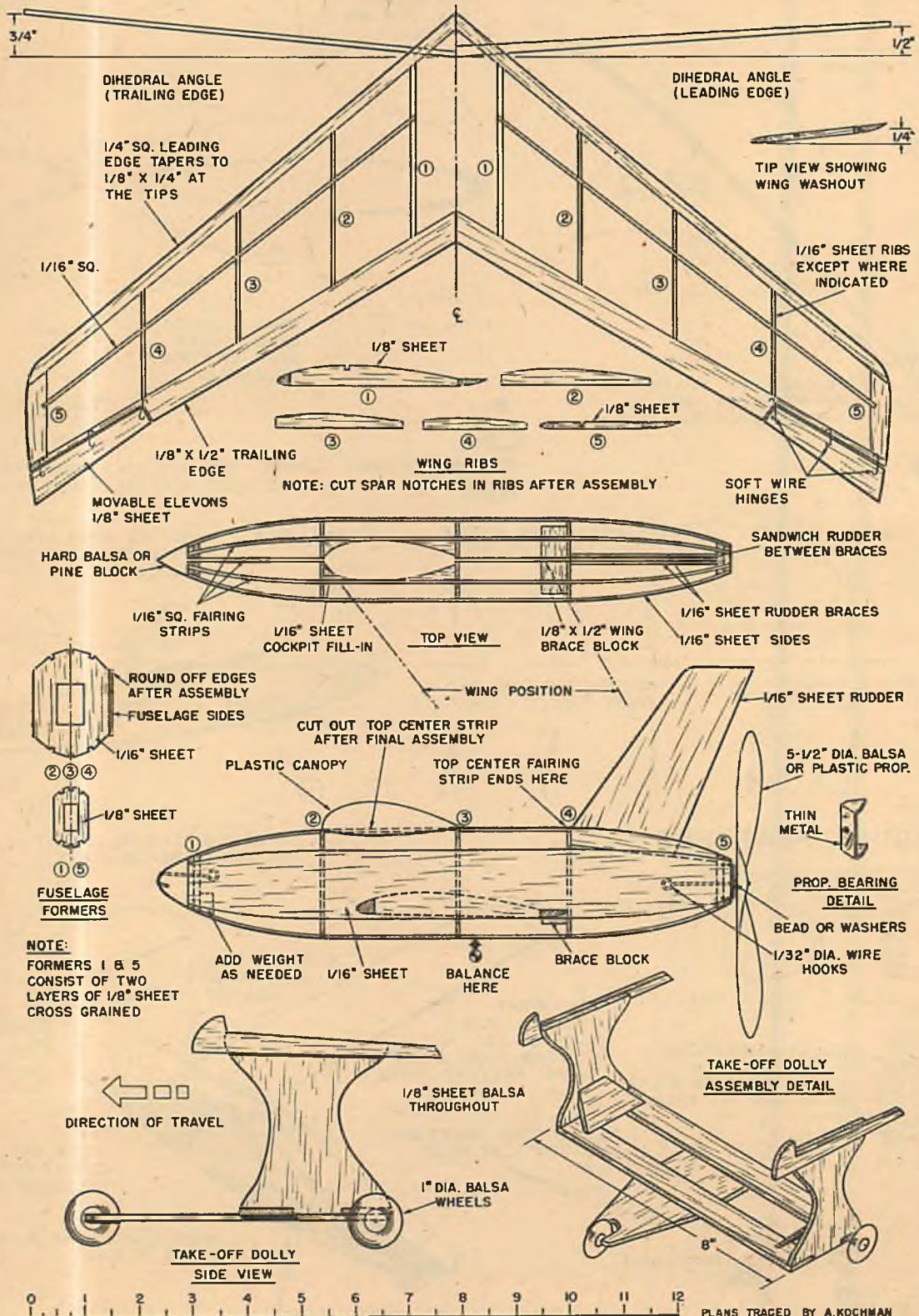
## 8 MODEL FEATURES





Build your own X-4! Substitute a prop for jet, but otherwise she's close; plans are one-third

# Supersonic





# Sue

By HOWARD G. McENTEE

■ Nowadays all the exciting new planes are supersonic, or at least jet-propelled, and in the single-seater category, flying wings are coming more and more into prominence. An effort to see what sort of a practical model "wing" of really scalelike appearance we could make ended up as you see here. This little tailless ship was patterned closely after the Northrop X-4 job, with a few concessions to insure simple construction and reasonably good flying characteristics.

Of course, the X-4 has no propeller—this is our main concession. Otherwise *Supersonic Sue* is a true tailless speedster and a very nice flyer, too. The propeller can be either at nose or tail; we chose the latter position as the rear prop seems less conspicuous and the plane looks "faster" when so equipped. Actually, the model balances better with the prop in front, and because no balancing lead is required, it is lighter and flies a little better. So take your choice. For our money the tail prop won out on looks alone.

The fuselage is built up on a basis of two balsa side sheets and three main formers. Cut these parts from soft 1/16" sheet. Before starting assembly, it is wise to pre-bend the side sheets at both ends, as this makes it lots easier to install the end formers. Just dip your finger in water and rub it on both sides of the wood, then lay the two pieces on a flat surface with weights to hold down the portions that should remain flat (from former 2 to former 4), and blocks 1/2" high to raise the ends. When dry, assembly can be started.

Pin one side piece to your assembly board, run a line of cement along both edges of formers 2 and 4, put them in place, then lay the other side on top. This assembly will not remain upright, of course; you will have to put dope bottles at each end to support it. Before the cement sets, align the four balsa pieces as accurately as you can, using a small triangle. Former 3 goes in next, followed by 1 and 5. Note that the latter two should be beveled on the edges so that they will fit snugly against the pre-bent sides.

The upper three fairing strips, the cockpit sheeting, and the rudder braces can go in now. Do not install the lower three fairing strips until after the wing is in place.

The rudder fits between the two brace

strips; be sure the rear edge is no farther back than the plans show or it will be nicked by the prop.

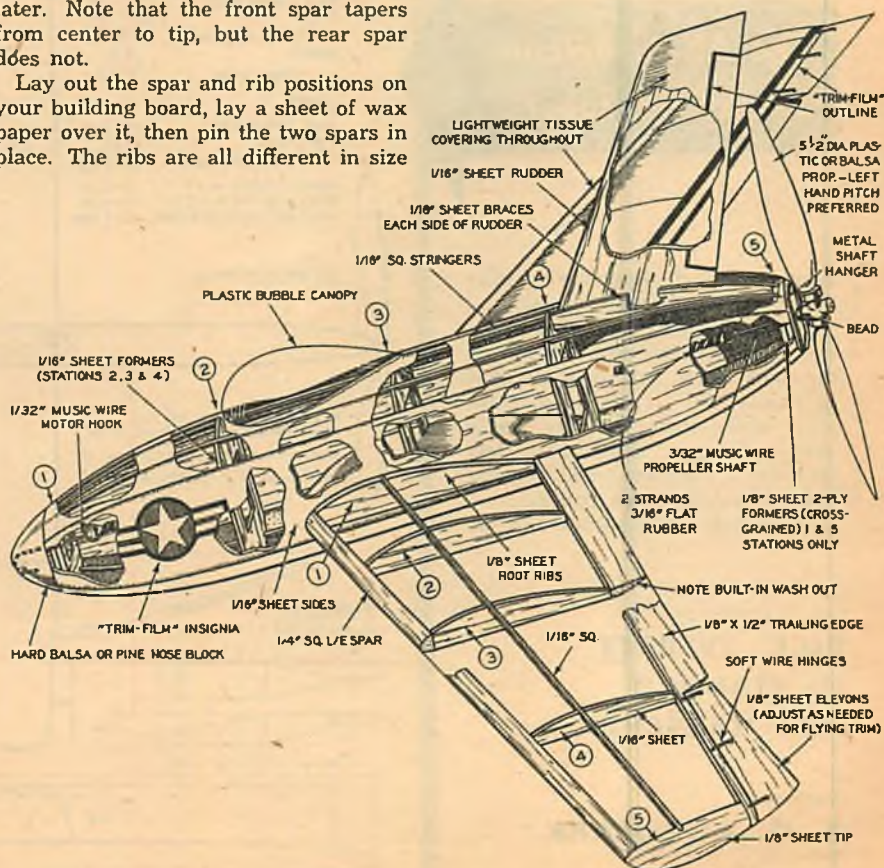
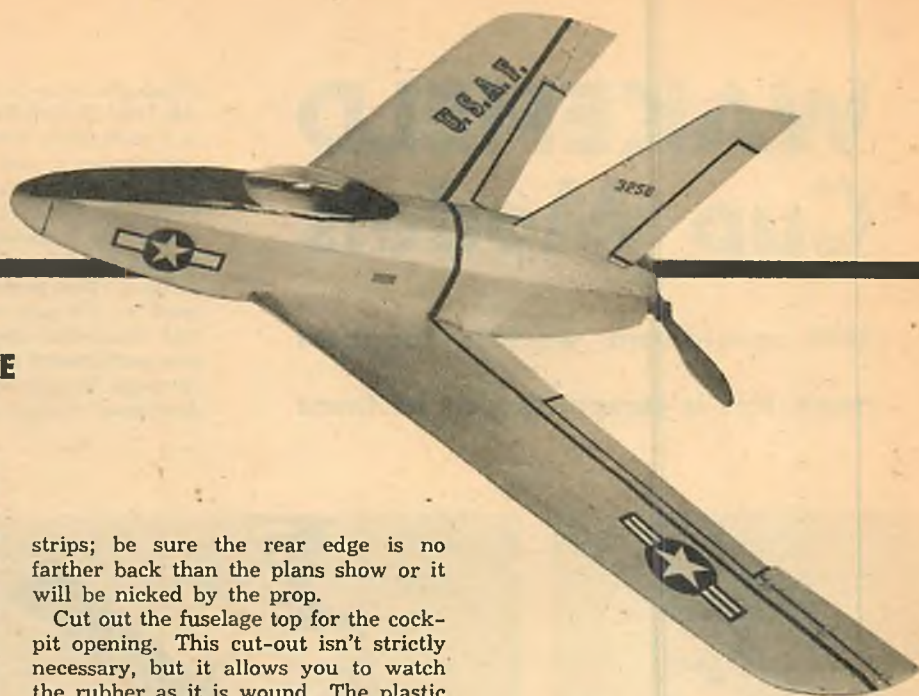
Cut out the fuselage top for the cockpit opening. This cut-out isn't strictly necessary, but it allows you to watch the rubber as it is wound. The plastic canopy we used was from an inexpensive kit. If your hobby dealer hasn't one of the proper size, or a larger one you can cut down, carve a dummy canopy from soft balsa, and cement it over the fairing strips.

The wing is assembled on a board, then transferred to the fuselage. You will note that very little dihedral is used. This is practical because sweep-back has such a stabilizing effect that little or no dihedral is required. It is wise to cut both the wing main spars roughly to cross-sectional shape before starting assembly—they can be finished later. Note that the front spar tapers from center to tip, but the rear spar does not.

Lay out the spar and rib positions on your building board, lay a sheet of wax paper over it, then pin the two spars in place. The ribs are all different in size

and shape. We suggest that you cut them roughly to shape, but leave them all a little oversize and about 1/8" longer than shown. Cut and trim each rib to fit as you cement it in. Note that ribs #1 are not put in at this stage, nor are the top spars.

The wing halves are built with all components flat against the board—the "twist" shown on the plans is put in when the halves are joined at the center. Since the (Continued on page 66)





# WAKEFIELD Cup Models

Still considered world's toughest meet, this is competition at its finest

Although many hear the call few are chosen to compete in the Lord Wakefield Cup competition. Each nation is limited to a team of six contestants. For the first time since America participated in the sport, an effort was made to photograph each semi-finalist in the U.S. qualification contests and to sketch the designs of particular merit which showed up in the finals held in Sweden. And we very nearly succeeded although the job took 8 months; missing, alas, are one or two pictures. This presentation is largely the result of much hard work on the part of Messrs. Everett, Lidgard and Hatschek and wonderful cooperation by almost all Wakefield flyers who participated in the U.S. Semi-finals. Everett sketched an "average Westerner" model which naturally led to the "All-American" design below. Hatschek did the final tabulating.



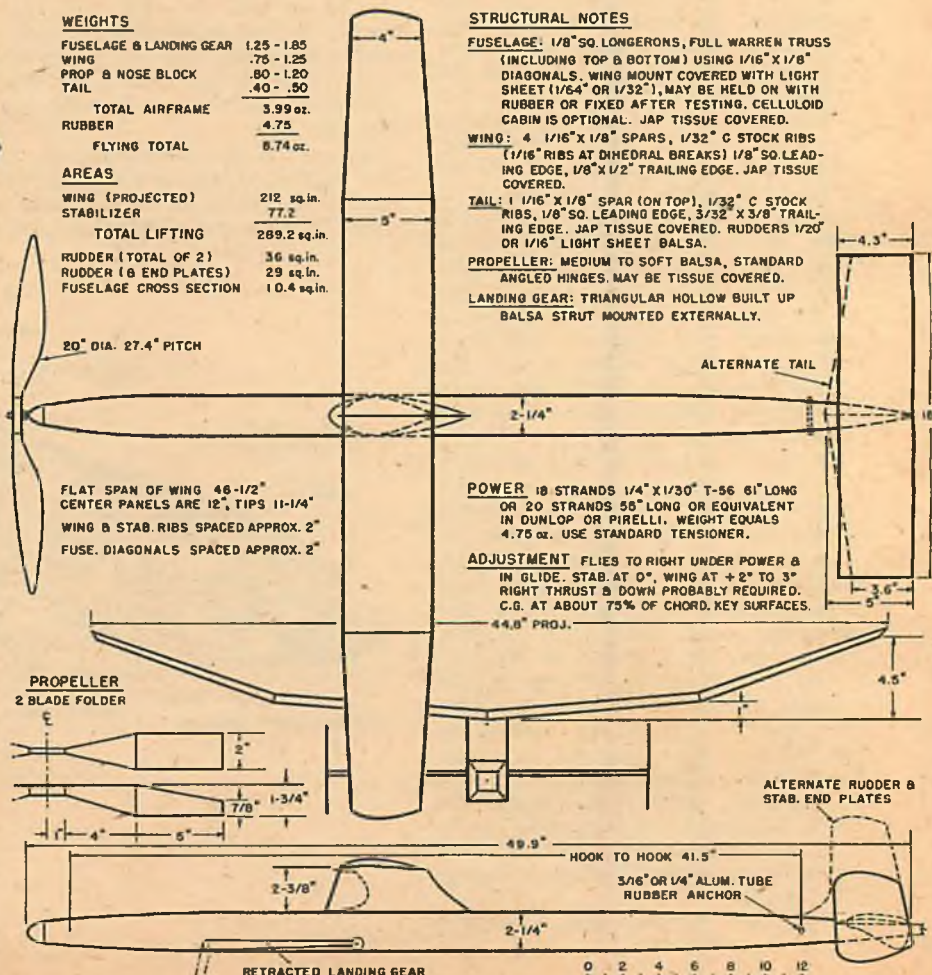
Ed Slobad, Don Donahue with 1-man winding rig, and Warren J. Williams—all West Coast semi-finalists. Everett headed West Coast committee.

## The All-American Wakefield Job . . .

Specially noted: Donahue's winding rig, takes strain off fuselage . . . blunt trailing edges on some Eastern ships for lightness (theory is that airflow is turbulent at that point anyway) . . . many magnificent home-made winders, some used rifle-type sling over left shoulder . . . definite trend towards lighter 'frames, more rubber . . . Lightest job: Quermann's 2.75 oz.

Data Assembled by  
**DICK EVERETT**  
**ED LIDGARD**  
**BOB HATSCHEK**

Drawings by  
**C. G. AHREMARK**



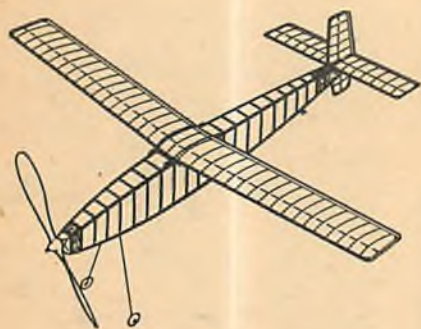




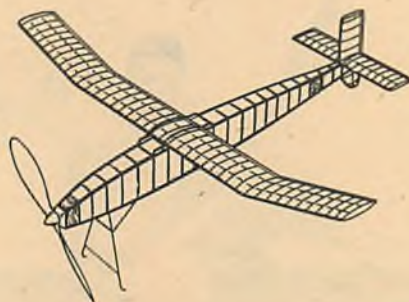




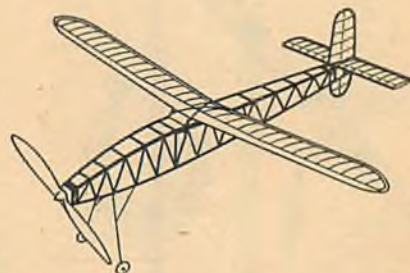
Participating in West-Coast Semi-Finals were (from left) Andy Faykun, Carl Rambo and Fudo Takagi (known as "Fud," ace model photog).



Top-place plane in the '1952 Wakefields: flown by Blomgren of Sweden, 42.5 in. span, 5.5 in. chord, fuse 42" minus .18" stab, 19.5" prop.



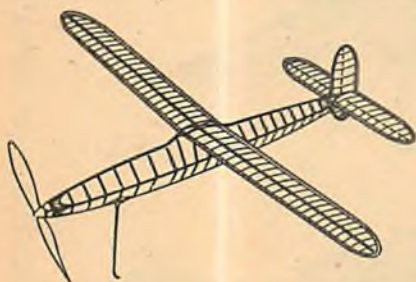
Second-place winner: flown by Nilborn of Sweden, 42 inch span, 5 1/2 inch chord, 44.5 inch fuselage, prop diam. 20", skid l. g.



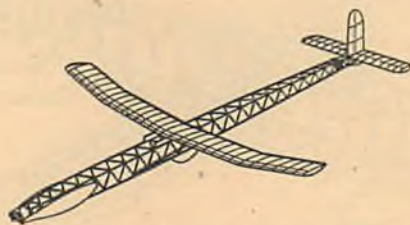
Third-place winner: Ellila of Finland, 48.5 inch span, 40.5 inch length. Ellila won cup in both '49 and '50; Sweden won in '51, too.



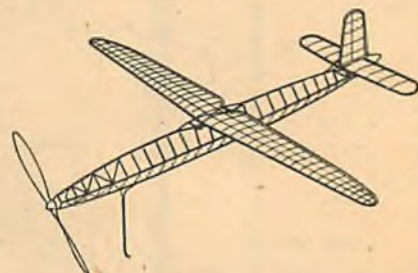
Midwest semi-finalists included George Xenakis, Conrad Lesh, Erwin Rodemsky. Contest was run off in Kansas City, sponsored by K. C. Mo-Hawks.



Fourth-place winner: Lustrati of Italy. Old-timer at Wakefield competition, ace designer.



Fifth-place winner: Bilgri of the United States. Joe lead the first round, lost best model O.O.S.



Sixth-place winner: Kanneworff of Italy, 52" span, 53" body. 16.5" stab, freewheel 19" prop.

Lawrence Conover, Bob Hanford, Carl Perkins (below, l. to r.) who flew in midwest meet. Perkins copped a trip to Sweden but failed to place.



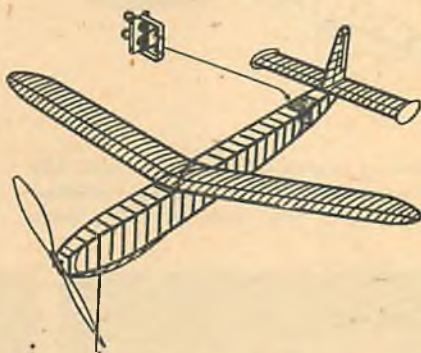




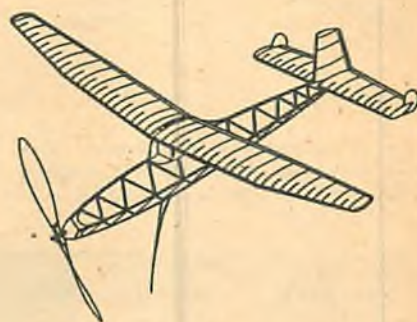
Western contenders: Henry R. Jex, the ex-M.I.T. flash, John Lenderman (of Western Roundup fame), and Ted Bieber with 63 in. fuselage job.



Morisset of France (8th): 44.5 in. span, 5.25 in. chord, 42.2 in. fuselage, 19 in. stab, one-blade folding prop of 19 in. diameter, 28.5 in. pitch.



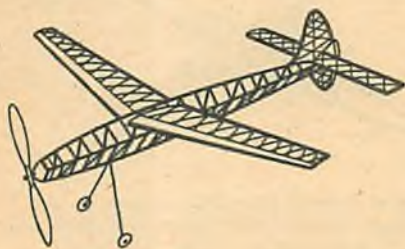
Cellini of Italy (14th): 47 inch wingspan, 5.5 in. chord, fuselage length of 41 inches, 19.5 inch stabilizer with a chord of 3.5 inches.



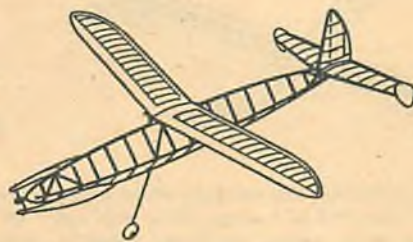
Lidgard of U.S.A. (27th): spruce wing spar, silk-covered fuselage doped inside and outside, yet wt. only 4.5 oz. Short and compact.



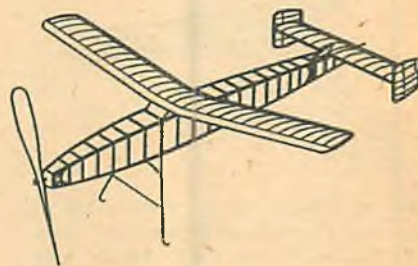
Now a trio of Easterners: Ken Grubbs, Tony D'Alessandro and Jim Tangney, U.S.N. Ken from Atlanta; Tony, Phila.; Jim at Newport, R. I.



Warring of England (12th): 44 inch span, 6 to 4" chord, 42" fuse, 18" feathering prop.



B. B. Marsh of New Zealand (18th): 43 inch span, 40 inch fuselage, 19 inch folding prop.



B. Bachli of Switzerland (47th): 44.5 inch span, 44.5 inch fuselage, skid gear, freewheel prop.

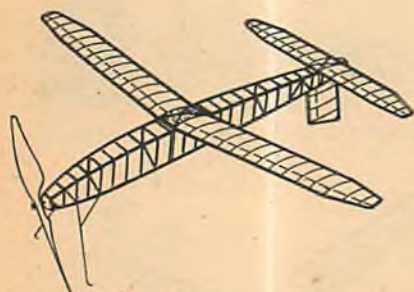
Mid-westerner Dave Kneeland (hands on hips) examines damage after first flight; W. Faunce, Jr., Boston, and Bob Nelson, New Rochelle, N.Y.







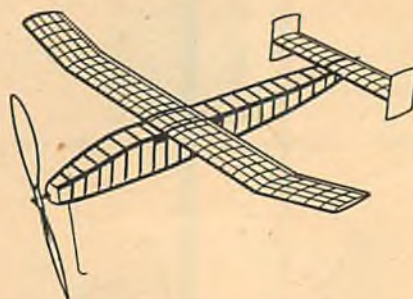
Western warrior Jack Black, Fred Pearce from the East and Owen O'Malley, another East Coast Semi-finalist. Pearce is from Winston-Salem, N. C.



Melzer of Germany (61st): 52 inch span, 5 inch chord, fixed wire skids, 46.5 inch fuselage, stabilizer span of 20", 4 1/8" chord on stab.



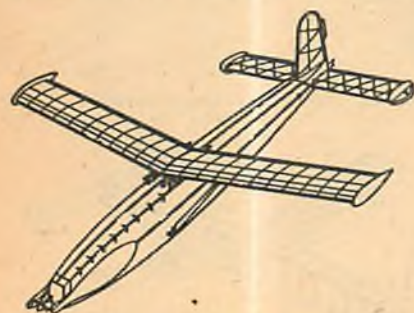
Ferber of Belgium (32nd): 44.5 in. span, 5.25 in. wing chord, 42 7/8 in. fuselage, stabilizer span 18.25"; 17 3/4" prop of 24.25" pitch.



Farrer of Switzerland (57th): Göt. 417 section, 43.5 in. wing, 5 1/2 in. chord, single leg fixed skid, 38.75" fuse, 19.75 stab, 18 1/8" fold. prop.



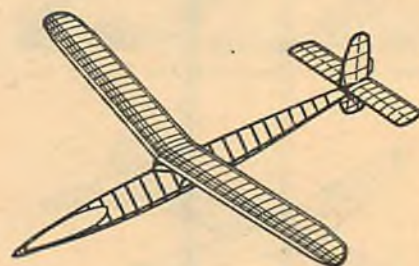
All Westerners: Dick Baxter, Manny Andrade with Joe Bilgri and Hank Cole. Andrade flew ship for injured Joe; Cole started the "long jobs."



Loates of Canada (42nd): Davis airfoil on wing, Clark Y on stab. 40.5" span, 5 5/8" chord, 40.5" fuse, 20.5" stab, 18.5" 2-blade prop.



Bland of Trinidad (did not make official flight): 47 in. span, 57.5 in. fuselage, 22 in. stab with 4.75 in chord, folding two-bladed propeller.



Evans of England (9th): 49.5 in. span. By one of Great Britain's best known Wakefielders. Model dethermalized, broke on a fence.

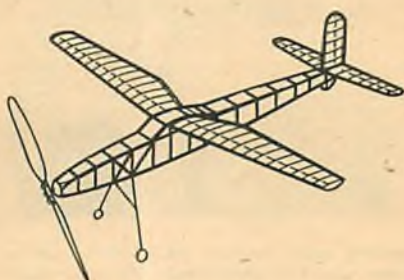
Genial Pete Vacco (that's Gerald Ritz with him, remember those Ritz props?), Joe Kubina and Rolland Dexter—all three flew in Midwest semi-finals.



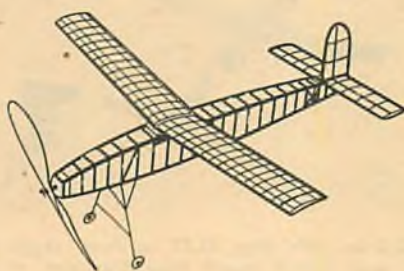




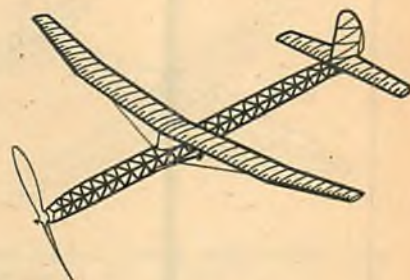
Pacific Coast contenders: Frank Newquist, Jack Lee and Frank Cummings. Frank's model was most unusual one entered in American semi-finals.



Peleg of Italy (52nd): wingspan of 44.5 in., fuselage length of 43.5 in. and a stabilizer span of 20 1/2 in. Like Gordon Light's models?



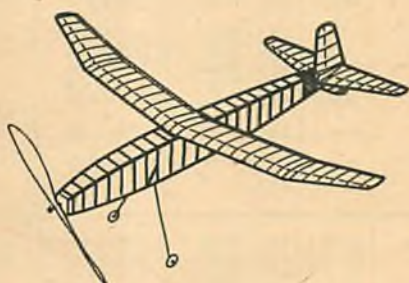
Lippens of Belgium (43rd): wingspan of 44.5 in., chord of 5 1/4 in., fuselage length is 44.5 in., stab 14.5 in., 18.25 in. prop has 24" pitch.



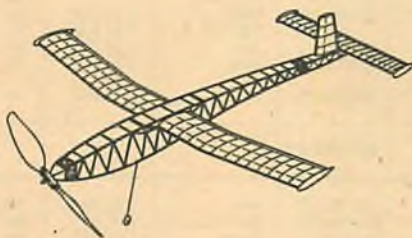
Montplaisir of U.S. (10th): 13.44 aspect ratio wing with 1/32 in. square rubber turbulator strips on tips positioned 3/8" back from L. E.



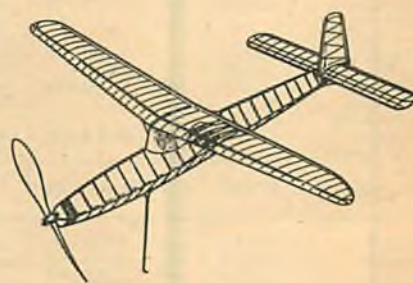
Sid Seldon who won a place on team, Hal Roth and Gerald Thomas all caught by Dick Everett's camera at Western contest which picked 2 for team.



De Vries of Holland (21st): No details but clean design. Apparently sub rudder remains fixed when stab and main rudder detherm.



Gray of Australia (42nd): 42 1/2 in. span, 5 in. chord, fuselage 55 inches, stab span of 28 1/2 in. with 3.5 in. chord, 22.5 inch propeller.



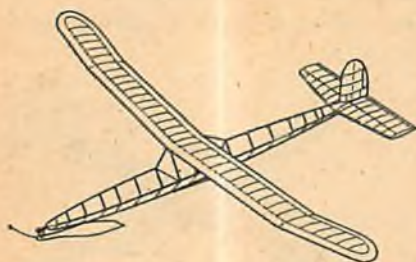
Gerlaud of France (7th): Eiffel 431 section with C.G. at 80%. 47 in. wing, 5 1/4-4.5 in. chord, 38.5" fuse, 19.25" freewheel prop.

George (The Professor) Perryman, member of '51 team, Dick Korda who held Cup during war and Ed Lidgard, an almost perennial Teamster.





Although gas modeling tops all events in American meets, the rubber-powered Wakefield model still represents the ultimate in international air modeling competition flying



(From left) Macauley of New Zealand (60th): 53.5 in. span wing, 43.25 in. chord, single leg folding gear, fuselage 44.5 inches, stab span 14.75 in., chord 5-3.5 in., 23" 1-blade folding prop; next is Joseph Elgin, Cleveland, of '51 team; and Cliff Montplaisir, '52 team member.

## TECHNICAL DATA ON THE AMERICAN SEMI-FINAL CONTENDERS

	Name	Span	Area	Dihedral	Stab Area	Stab %	Rud. Area	Rud. Type	Fuse. Lgh.	Prop Diam.	Prop Pitch	Airfoil	Type Prop	Gears	Hook Space	Empty Wt.	Rub. Wt.	Mk's Rubber	Motor	Land. Gear
EAST	Jim Tangney	46.5	210	poly	76.5	36.4		twin	40.0	16.0	24	own	1 bl fold	no	34	3.9	4.25	Pirelli	12 1/4 x 50	retract
	Cliff Montplaisir	54.0	221	poly	73.1	33.1	33	single	62.5	20.0	30	Davis	2 bl fold	no	56	4.1	4.5	Dunlop	16 1/4 x 52	retract
	Dick Korda	44.0	215	poly	77.0	35.8	39	twin	50.0	18.0	30	own	2 bl fold	no	40	3.75	4.63	Dunlop	14 1/4 x 54	break-off peg
	Austin Hofmeister	42.0	189	poly	98.0	51.9	38	single	49.0	17.0	25	RAF 32	2 bl fold	std retrn	32	3.75	4.65	Dunlop	(2) 28 1/8 x 31	retr-no wheel
	Jde Elgin	46.0	220	poly	73.5	33.4	32	twin	54.0	21.0	25	Mod. 6409	2 bl fold	no	44	3.3	5.2	T-56	20 1/4 x 58	retr-no wheel
	George Perryman	44.0	208	poly	80.0	38.5		poly-stab	70.0	24.0	20	NACA 4612	2 bl fold	no	56	3.75	5.25	T-56	26 3/16 x 56	fixed 2 wheel
	Lou Andrews	52.6	215	strt	79.1	36.8	36	single	48.0	18.8	31	own	2 bl fold	no	35	4.0	4.4	T-56	18 1/4 x 58	retract
	Joe White	46.0	217	tip	77.0	35.5		twin	55.5	20.0		Eiffel 400	2 bl fold	no	49			Dunlop	14 1/4 x 55	fixed 1 wheel
	Owen O'Malley	44.0	222	poly	71.7	32.2		twin					2 bl fold	no					retr-no wheel	
	Ken Grubbs	44.0	210	poly	78.0	37.2		twin	70.0	25.0	20	Eiffel 400	2 bl fold	no	60	6.0	4.3	T-56	18 1/4 x 56	fixed 2 wheel
	Haig Parechanian	46.0	205	tip	77.0	37.6	26	twin	43.0	18.0	28	Mod. 6410	2 bl fold	no	35	3.3	4.9	Pirelli	16 1/4 x 54	breakoff peg
	Dick Poremann	41.1	225	tip	69.0	30.6	37	twin	82.0	20.0	27	NACA 4511	2 bl fold	no	45	2.75	5.5	T-56	20 1/4 x 59	retract
	Fred Pearce	45.0	223	poly	69.0	30.9	30	single	39.0	18.0	27	NACA 4612	2 bl frwbl	std retrn	32	4.25	4.76	Pirelli	(2) 14 1/4 x 30	fixed 2 wheel
	Tony D'Alessandro	44.0	220	tip	72.0	32.3		single	52.0	22.0		NACA 6412	1 bl fold	no	44	3.75	5.0	T-56	26 3/16 x 56	retract
	Jerry Kolb	40.0	195	tip	88.0	45.0		single	55.0	20.0		own	2 bl fold	no	45	4.75	4.75	T-56	18 1/4 x 53	retract
	Lee Renaud	46.0	205	tip	77.0	37.6	26	twin	44.0	18.0	28	NACA 6410	2 bl fold	no	35	3.6	4.8	Pirelli	14 1/4 x 54	breakoff peg
	Bob Nelson	40.0	196	poly	81.0	41.3	48	twin	42.0	18.0	28	NACA 6409	2 bl fold	no	34	4.8	4.2	T-56	18 1/4 x 54	retract
	W. Faunce, Jr.	49.0	233	strt	60.0	25.8	38	single	52.0	10.0	28	Mod. 6400	1 bl fold	no	42	4.1	5.0	T-56	18 1/4 x 66	retract
	Average Eastern	45.2	213		76.8	36.2	34.8		51.7	19.6	26.5					3.98	4.75			
MIDWEST	Carl Perkins	46.8	216	poly	75.3	34.8	44	twin	48.0	20.0	27.5	NACA 4612	2 bl fold	no	40	3.5	5.5	Dunlop	24 3/16 x 56	reed peg
	Ed Lidgard	39.0	198	poly	84.0	42.8		single	36.0	20.0	26	own	2 bl fold	no	26	1.25	4.75	T-56	(1/20) 14 1/4 x 54	retract
	Larry Conover	45.0	212	tip	80.0	37.8	20	single	60.0	22.5	29	own	2 bl fold	no	4	4.6	4.15	Dunlop	12 1/4 x 52	retract
	Roland Dexter	43.0	209	poly	81.0	38.8	18	twin	56.0	22.5	36	own	2 bl fold	no	48	4.5	3.75	T-56	16 1/4 x 51	fixed skid
	Bob Hanford			poly				single					2 bl fold	no					retract	
	James Hastings	45.0					28	single	52.0	18.0	36	Gott 601	no	no		5.5	4.0	Dunlop	20 3/16 x 60	retract
	Earl Hoggard	40.0	210		76.0	36.1	38	triple	40.0	20.0	30	301G	1 bl fold	no		4.2	3.95	T-56	20 1/4 x 38	retract
	Dave Kneeland	40.0	206		88.0	42.7		triple		18.0	23	9% Ck. Y	2 bl fold	no		4.0	5.4	Dunlop	18 1/4 x 60	retract
	Joe Kubina	45.0	220	poly	72.5	33.0	34	twin	50.0	20.0		own	1 bl fold	no	42	4.0	4.2	T-56	24 3/16 x 45	retract
	Conrad Lesh	40.0		poly				single	40.0	18.0	27	own	2 bl fold	no	28	1.0	4.25	T-56	18 1/4 x 49	retract
	Erv Rodemsky			poly								own	2 bl fold	no					fixed 1 wheel	
	Pete Vacco	41.0	198	poly	95.0	48.0	25	single	44.5	24.0	32	own	2 bl fold	no	30	3.6	4.65	T-56	22 1/4 x 48	retract no wheel
	George Xenakis			poly				twin											retract	
	Average Midwest	43.1	209		81.5	39.0	28.2		47.3	20.3	29.6					4.2	4.5			
WEST COAST	Joe Bilgri	48.0	216	poly	76.0	35.1	20	single	47.5	22.0	22	own	2 bl fold	std retrn	34.5	3.4	6.0	Pirelli	(2) 20 3/16 x 30	retract
	Joe Bilgri	48.0	212	poly	80.0	38.0	26	single	63.0	24.0	27	own	2 bl fold	no	54	3.5	5.25	Dunlop	16 1/4 x 50	retract
	Sid Seldon	45.0	220	strt	73.8	33.6	30	twin	56.0	18.0	25	Grant	2 bl fold	no	48	3.5	4.9	Dunlop	14 1/4 x 60	retract
	Warren Williams	45.0	224	tip	68.3	30.5	30	twin	46.0	21.0	32	301G	1 bl fold	no	36	3.52	4.66	T-56	18 1/4 x 60	retract
	Don Donahue	46.5	213	tip	77.0	35.2	35	triple	40.5	18.5	25	own	2 bl frwbl	std retrn	33	3.43	4.75	Dunlop	(2) 12 1/4 x 36	fixed
	Gerald Thomas	47.3	213	tip	76.0	35.8	24	single	64.0	20.0	24	own	2 bl fold	no	60	4.25	5.0	Dunlop	14 1/4 x 60	retract
	Hank Cole	48.0	215	strt	78.0	35.6		single	65.0	24.0		own	2 bl fold	no	60	3.0	6.0	Pirelli	26 3/16 x 60	retract
	Dick Baxter	40.0	228	strt	64.0	28.0	25	twin	48.0	14.0	22	Goldberg	2 bl fold	4:1 in nose	34	4.0	4.5	T-56	20 1/4	fixed 2 wheel
	Hal Roth	43.0	210	poly	70.0	33.3	32	single	69.0	28.0	28	RAF 32	2 bl fold	no	64	3.5	6.0	Pirelli	22 1/4 x 66	retract
	Fudo Takagi	49.0	211	poly	79.4	37.6	26	single	40.8	20.0	30	own	2 bl fold	no	32	4.2	4.28	Pirelli	16 1/4 x 52	retract
	Frank Newquist	49.0	226	poly	68.0	29.2	33	twin	65.0	21.0		NACA 6412	2 bl fold	no	54	5.0	4.0	T-56	20 1/4 x 54	retract
	Jack Black	44.0	208	tip	77.5	37.1	30	twin	36.0	18.0	28	own	2 bl fold	no	32	4.0	5.0	Pirelli	24 3/16 x 44	fixed 1 wheel
	Andy Faykun	44.0	212	strt	75.0	35.4	45	single	37.0	18.5	25	RAF 32	2 bl frwbl	std retrn	28	4.25	4.5	Dunlop	(2) 16 1/4	retract
	John Lenderman	43.5	218	poly	76.0	34.8	20	single	44.0	18.0	30	own	2 bl fold	no	35	4.13	4.15	Dunlop	14 1/4 x 54	retract
	Henry Jex	44.0	215	tip	73.0	33.9	39	single	42.0	20.0	30	NACA 6308	2 bl fold	3 in rear	30	4.5	4.5	Pirelli	(2) 14 1/4 x 30	retract
	Jack Lee	46.8	227	poly	66.6	29.3		single	64.0	19.0	35	Joukowski	2 bl fold	no	48	4.0	5.2	Pirelli	20 3/16 x 60	retract
	Carl Rambo	46.0	216	poly	76.0	35.1	43	single	60.0	25.0	25	RAF 32	2 bl fold	no	54	3.5	5.95	Dunlop	16 1/4 x 54	retract
	Frank Cummings	45.4	212	tip	80.0	37.2	36	twin	47.8	18.0	36	14%	(2) 1 bl fold	no	39.5	3.1	5.1	T-56	(2) 16 3/16 x 50	retract 2 strut
	Ed Stobod	42.0	213	poly	68.0	32.6	24	twin	33.0	18.0	28	RAF 32	2 bl frwbl	std retrn	23	3.3	5.6	T-56	(2) 20 1/4 x 30	retract
	Ted Bleber	47.0	215	tip	68.0	31.0	32	single	63.0	20.0	22	own	2 bl fold	no	59	4.0	4.5	Pirelli	18 3/16 x 54	retract
	Average Western	45.9	218.1		73.6	34.0	29.7		60.7	20.2	28.0					3.8	5.0			
	Average U. S.	44.8	212		77.2	36.4	31.0		48.9	20.0	27.4					3.98	4.75			





# OW AN ENGINE IS MADE

**Ever been through an engine plant? Then here's your chance to visit with Cub men of Herkimer, N. Y. Hey, put back that sample!**

■ Let's look at most any model engine. Simple, yes? Turn the prop and the piston goes up and down. Connect up the gas tank, put a battery across the glow plug, give 'er a flip and away she goes. Nothing to it.

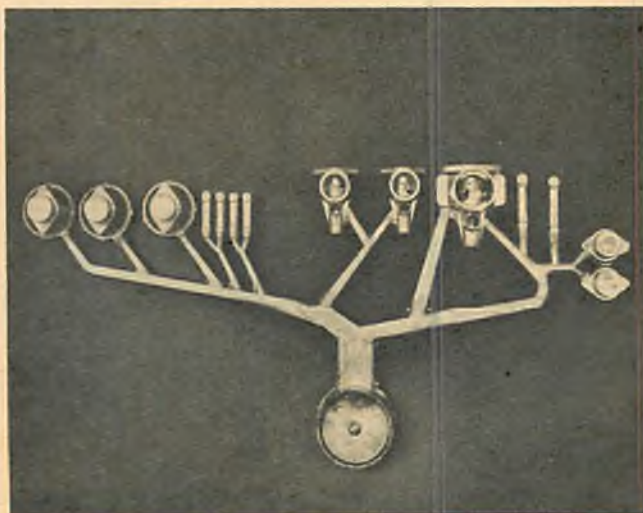
Not much, that is, unless you happen to be one of America's dozen engine manufacturers. Then you'd *know* that turning out one of those small power packages isn't quite the simple thing it appears on the surface or to the uninitiate. We asked the makers of the OK Cub engines how many operations went into the manufacture of a single tiny glow plug engine. Their answer: 221! That was a lot more than we expected, so we decided to see for ourself.

We discovered that when unsuspecting metal arrives at the engine factory it is soon subjected to many indig-

nities; it is cast, trimmed, tumbled, bored, blued, anodized, milled, faced, threaded, turned, drilled and treated to a heat bath that shakes it to its very soul—in fact, changes its molecular structure. We found also that to be an engine manufacturer you'd better be a good mathematician. Sensitive master gauges read in twelve millionths of an inch. Not only are you required to produce a powerplant that has appeal to the seven-year-old as well as to the seventy-year-old, but you've got to anticipate what the model builder will be wanting in the way of engines a year or more from now. In other words it would be just dandy if you happened to be a master machinist, an experienced modeler, a cracker-jack draftsman, an eagle-eyed inspector, a skilled materials buyer, and an expert crystal ball gazer.



Production begins at the Kux die-casting machine. Special aluminum alloy arrives in ingot form, is realloyed, then heated to 1,400 degrees and forced into mold. Dies lock together under a pressure of 250 tons. Cooling of mold chills metal to solid casting in 3 seconds. Operator is removing "tree" from machine. Excess metal is reclaimed and used again.



This is the die-cast "tree" which separates into fourteen pieces: large fuel tanks, four small connecting rods, 2 small crankcases, one large crankcase, two large connecting rods and 2 small rear covers. The large disc at the bottom and the metal runners called "gates" are formed as the raw aluminum runs into the die under extreme pressure.

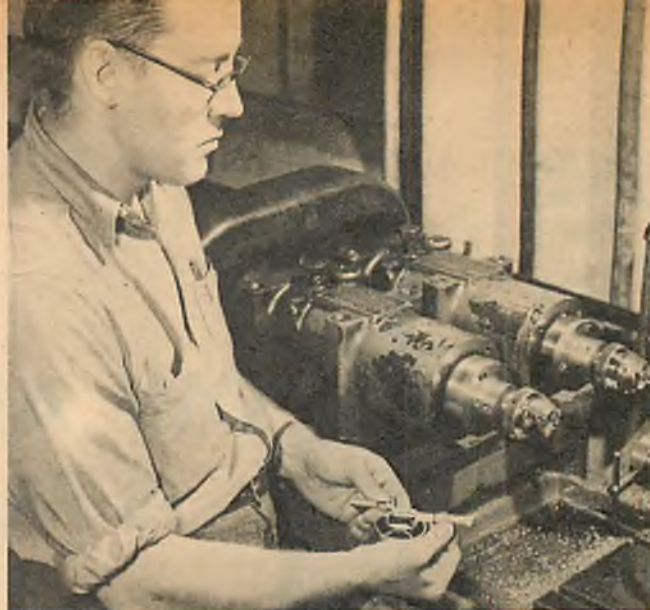




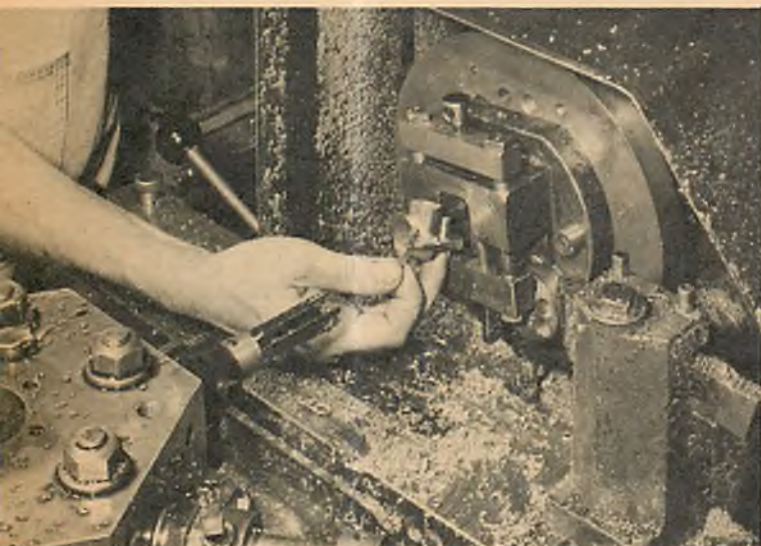
## HOW AN ENGINE IS MADE



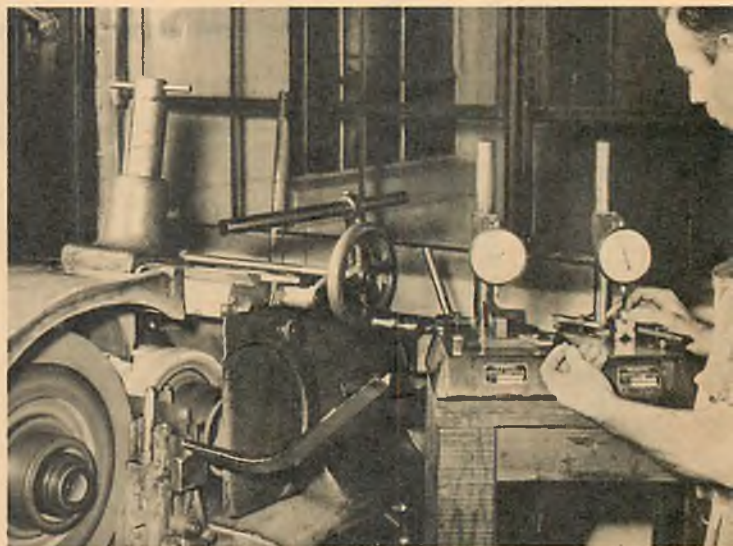
The gates and flashes (aluminum that seeps out from the die's edges under pressure) are trimmed when the separated parts go into the tumbling barrel (left, rear). A deburring compound removes all small burrs and sharp edges as the barrel is rotated. Next step below.



In this step the crankpin is being formed on the crankshaft. Seventeen operations are required to finish a crankshaft including screw machine work, heat treating to impart toughness and grinding for accurate measurements. Only the cutter heads of the high-speed spindles show here.

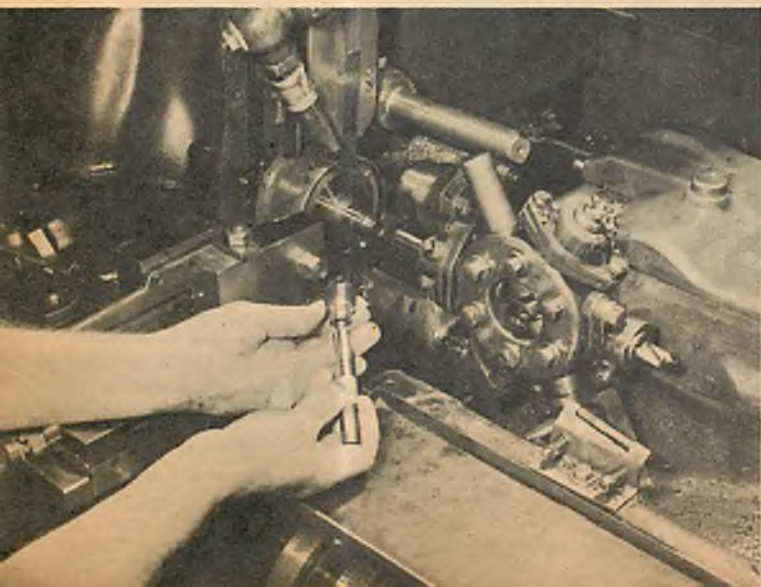


Deburred crankcase is machined by mounting in holding fixture. Six different tools work on piece from rotating turret head. While the crankcase is turning at high speed it is drilled, bored, reamed and tapped. This is a crucial step since the crankcase houses all movable parts.



Carbon steel pistons are machined, then heat treated. This consists of immersion in high-temperature bath followed by a quenching which changes the molecular structure of the steel. Final operation is centerless grinding between abrasive wheels. Operator gauges for plus-or-minus .00005.

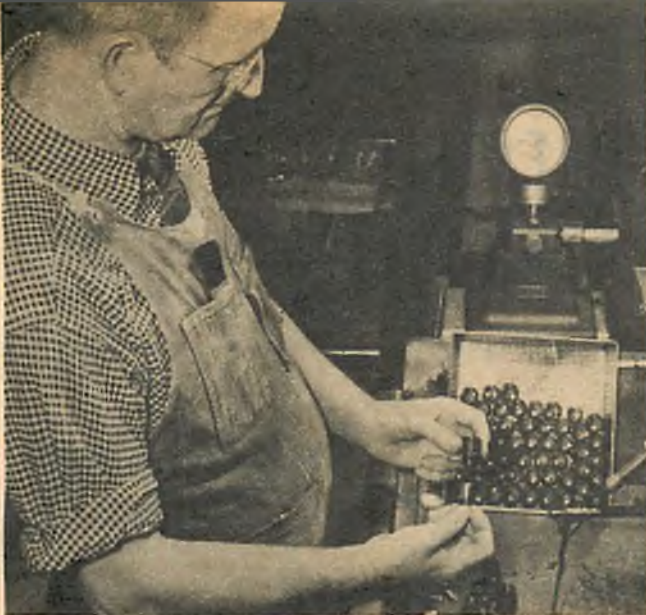
Cylinders are made on an automatic screw machine. Twelve-foot lengths of aircraft alloy steel in bar stock form are fed through rear of machine (at left) and emerge to face eight cutting tools. Final operation is cutting off cylinder, then stock advances automatically.



What good is an engine if you can't mount it in a plane? So we need some mounting holes, right? Operator makes 'em using multi-drill head spindles that can produce as many as eight holes at one clip. This is but one of the 221 separate operations necessary to turn out an engine.



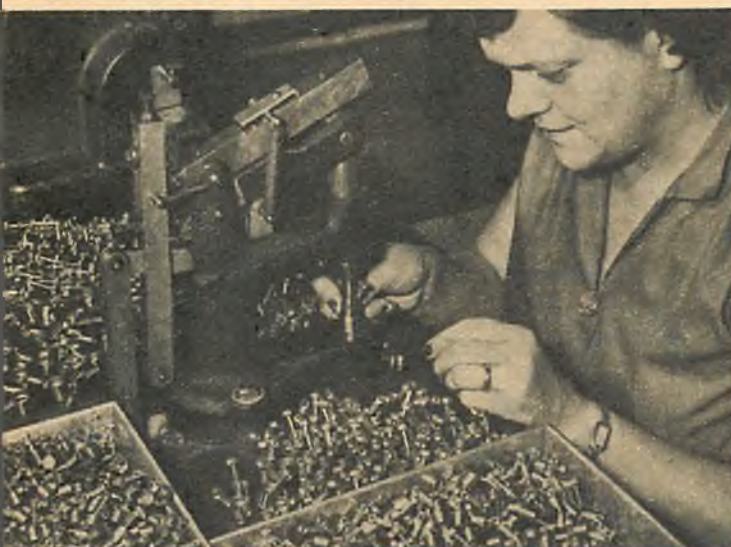




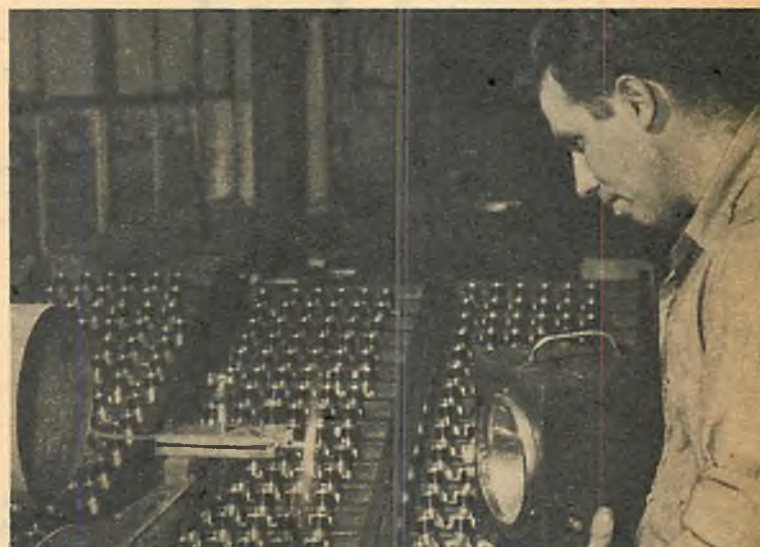
Each piston and cylinder fitting is checked with an air gauge. Cylinder's inside diameter is held to a .000025 inch finish tolerance. This is about 1/100th the thickness of a human hair. Better study your math if you want to be an engine manufacturer—also physics, chemistry, salesmanship!



Four metals—aluminum, bronze, magnesium and steel—make up the various parts of a finished engine. Hundreds of them are being completed here at "general assembly." To prevent delays at this step in production, bins of parts are kept within handy reach at the assembly tables.



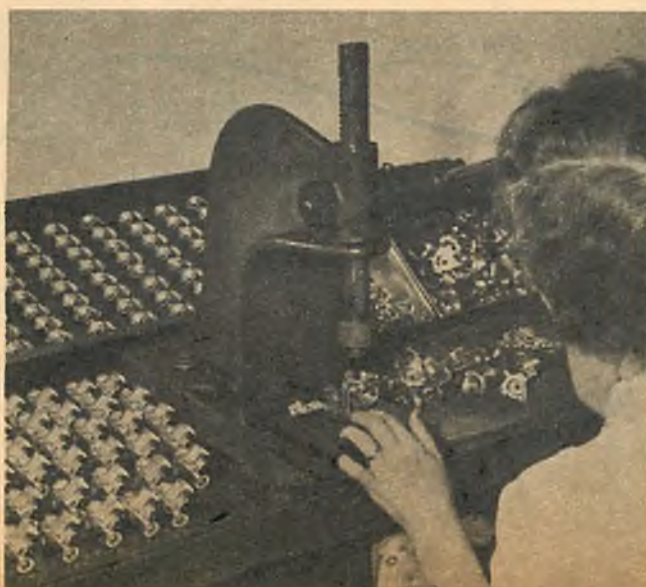
Piston, piston pin and connecting rod get together at this sub-assembly position. The pin is being locked in position by an impact press. Careful handling is essential here, hence the gals arrive on the scene. Rough treatment at this point could easily ruin a piston.



Here's a fine job for the fans who never tire revving up an engine! Each motor is given two running tests, one to determine the proper starting adjustment and the other to test compression and assembly fittings. Worker holds Strobatac to get rpm's of motor in quick-disconnect mount.

While the con rod keeps company with the piston the crankshaft is being introduced to the crankcase. Also during this sub-assembly operation the rear propeller flange is pressed into place and the needle valve assembly is installed. We're almost finished now.

After running tests each engine is rust-proofed by a dipping operation, then mounted in a colorfully printed carton. Parts list, decals, instruction sheets and guarantee must be added. The many good engines available at low prices are tribute to American precision mass production methods.



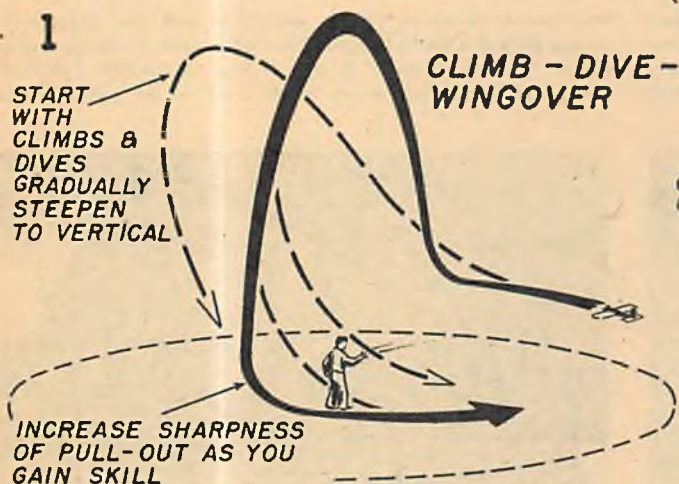


# AIR-MODEL MANUAL

# PRECISION AEROBATICS

## PREFLIGHT CHECK

HAVE SHIP, ENGINE, PROP, TANK, WIRES, IN TOP FLYING CONDITION. TUNE ENGINE THEN HOLD MODEL UPSIDE DOWN TO CHECK PROPER RUNNING FOR INVERTED FLIGHT.

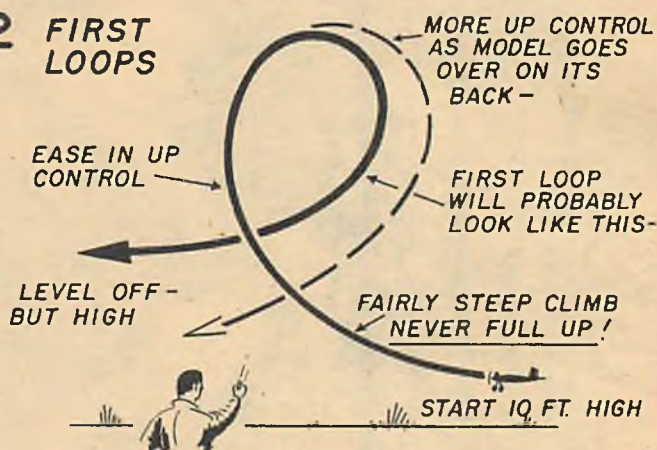


KEEP WIND AT YOUR BACK WHILE DOING MANEUVERS !

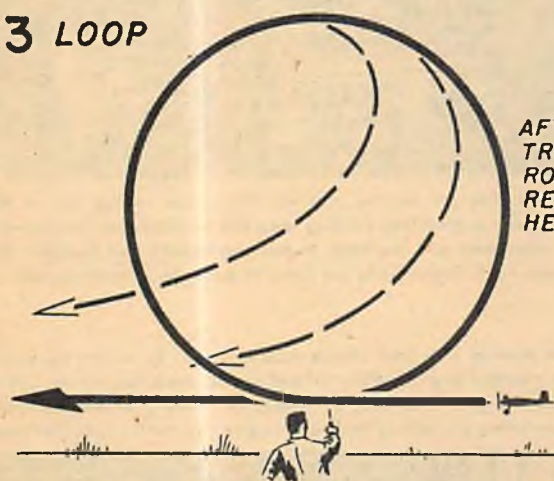
REMEMBER !



## 2 FIRST LOOPS



## 3 LOOP

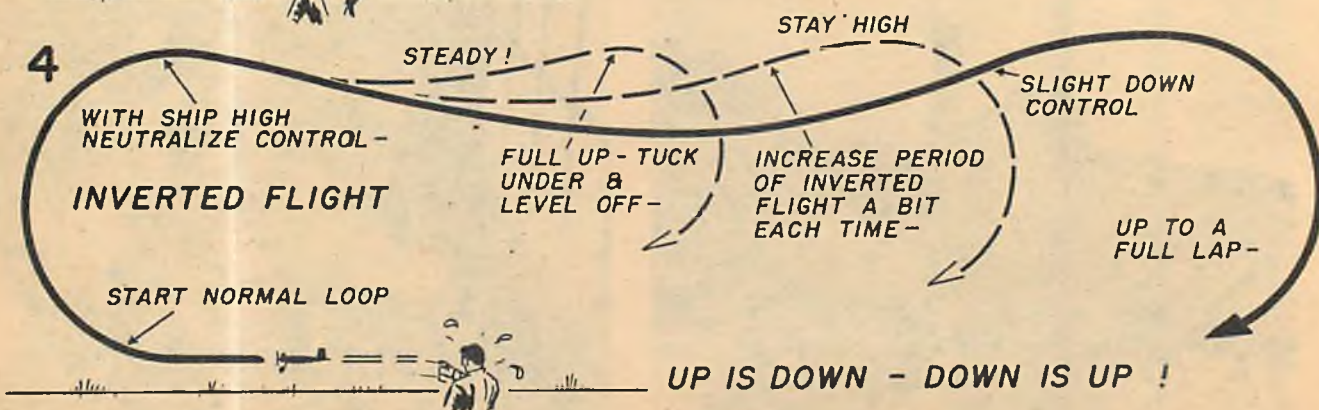


AFTER LOTS OF PRACTICE TRY MAKING LOOPS ROUND & CLEAN - RECOVER AT SAME HEIGHT AS ENTRY -

CAREFUL !

DON'T DO OVER 6 TO 10 LOOPS CONSECUTIVELY, BECAUSE LINES BECOME TWISTED MAKING CONTROLS STIFF & UNWORKABLE - UNTWIST LINES AFTER EVERY FLIGHT -

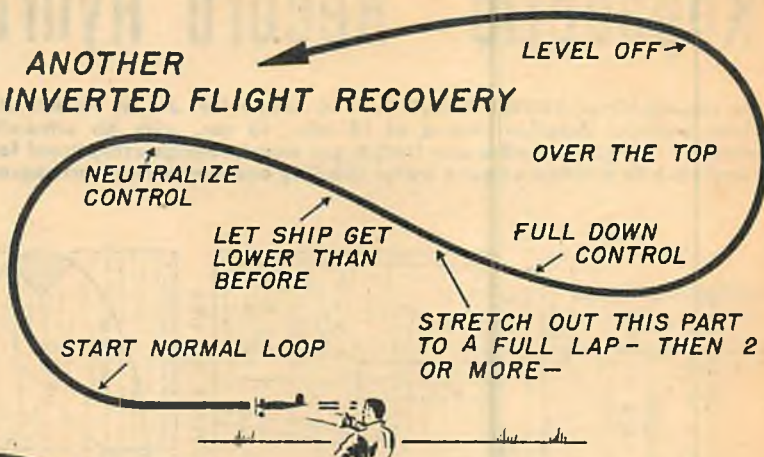
## 4





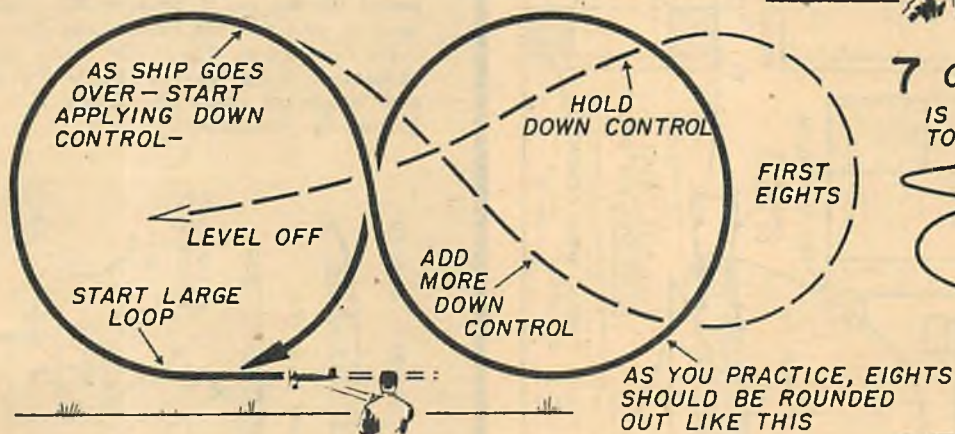
The best way to become a good stunt man is to go out and practice; these sketches will help you get a good start. Study them carefully

## 5 ANOTHER INVERTED FLIGHT RECOVERY



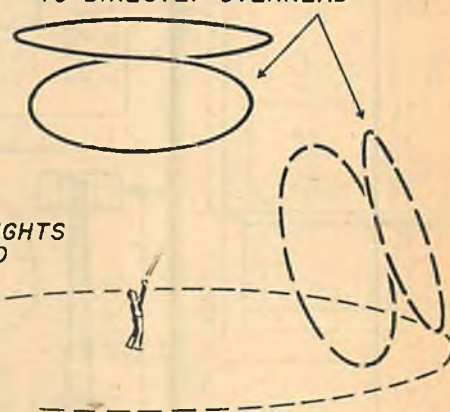
## 6 HORIZONTAL EIGHT

THE "S" SHOWN IN 5 IS GOOD TRAINING FOR EIGHTS THAT COME NEXT -

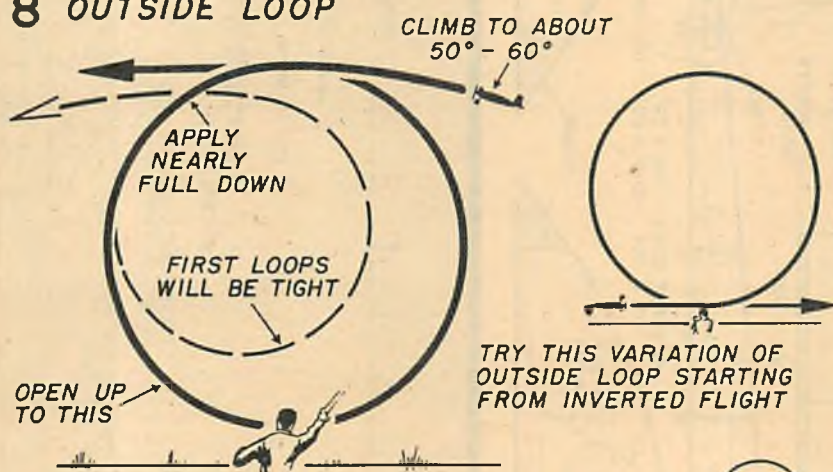


## 7 OVERHEAD EIGHT

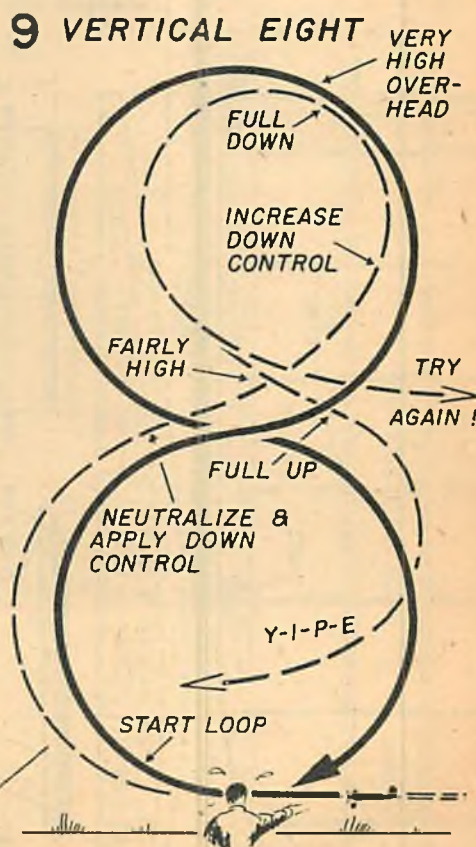
IS HORIZONTAL EIGHT MOVED UP TO DIRECTLY OVERHEAD



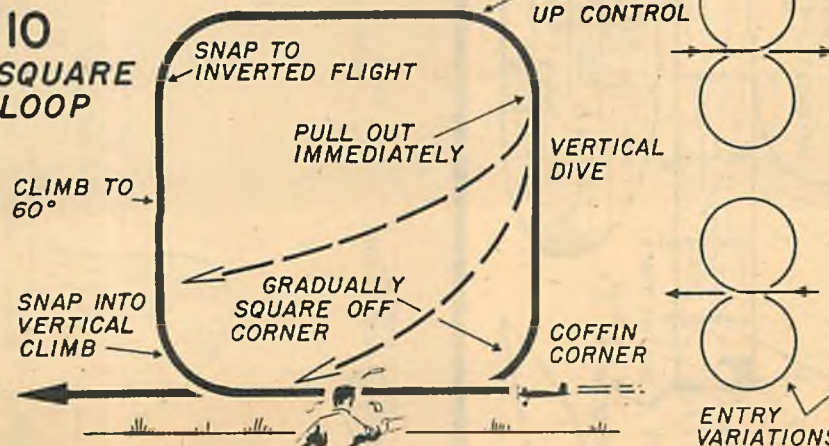
## 8 OUTSIDE LOOP



## 9 VERTICAL EIGHT



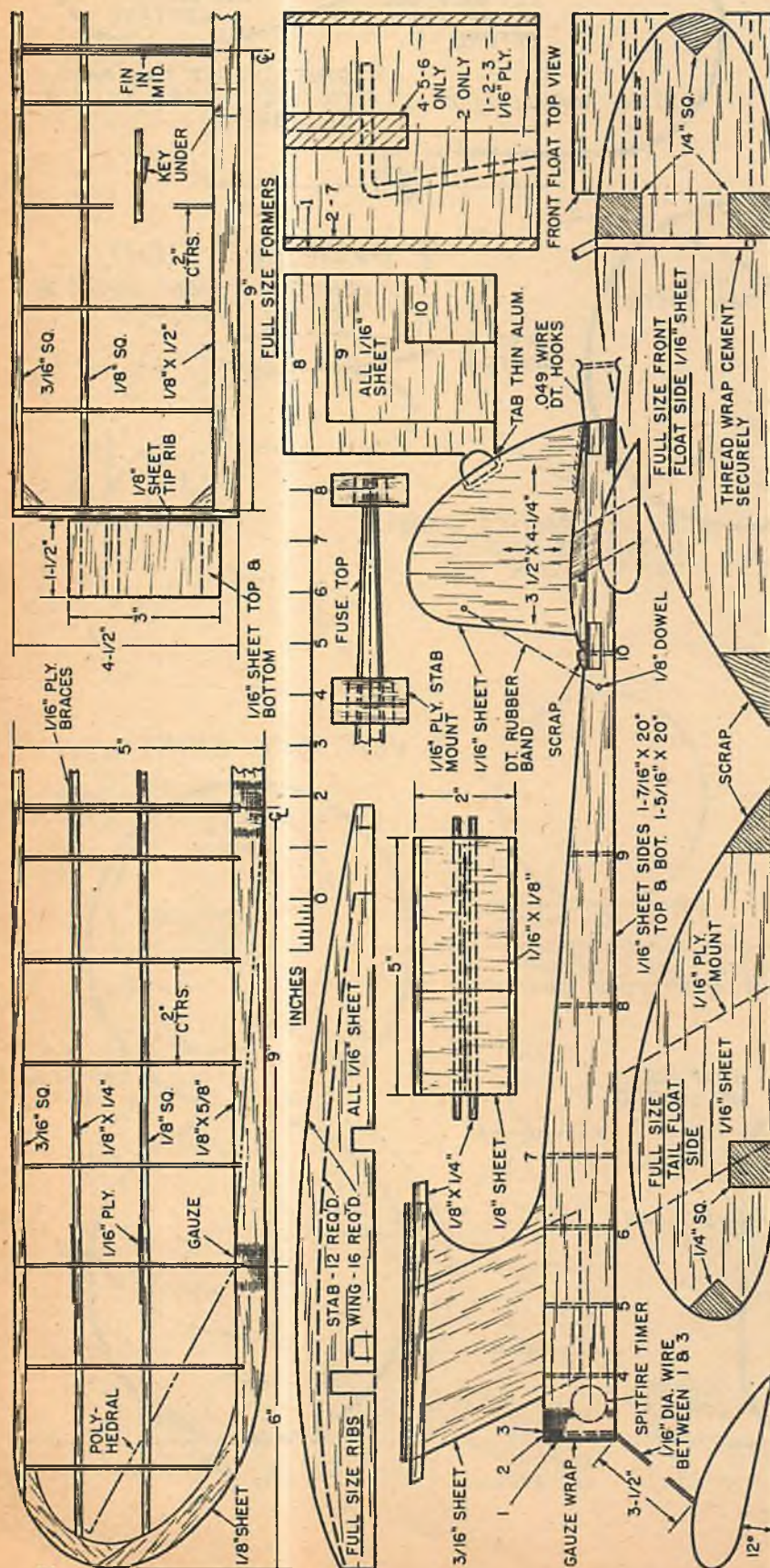
## 10 SQUARE LOOP





# "Kopacetic" Record Hydro

Ever try rise-off-water (ROW) flying? Paul de Monterice, Jr., of Fishkill, N. Y., set official national duration record of 15 min., 45 sec. with his ultra-simple "Kopacetic" free flight rise-off-water Half-A gas model. Design exceptional for its direct approach to problem of good water stability and simple force arrangement.

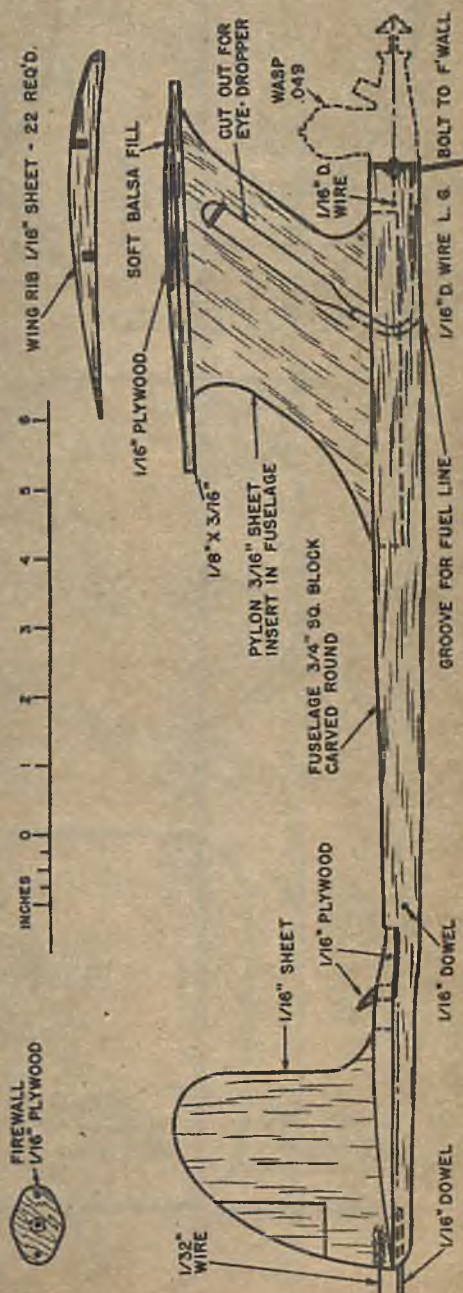


# Glutton

By FRANK L. PARMENTER

■ Here is a simple Half-A that has nice lines and is a real performer. We decided that the extra couple of hours it would take to build a good-looking model was worth it, hence did not use the customary square tips and square stabilizer so common today. The tip and stabilizer outline is simple and actually very little extra work. An eye-dropper in the pylon serves for the gas tank. There is enough gas to start a reliable engine and then hold the model till the gas is down to the proper level to give you the engine run desired.

We have flown this model in all sorts of weather; it has taken all kinds of abuse and is always ready for more. It is a glutton for punishment.

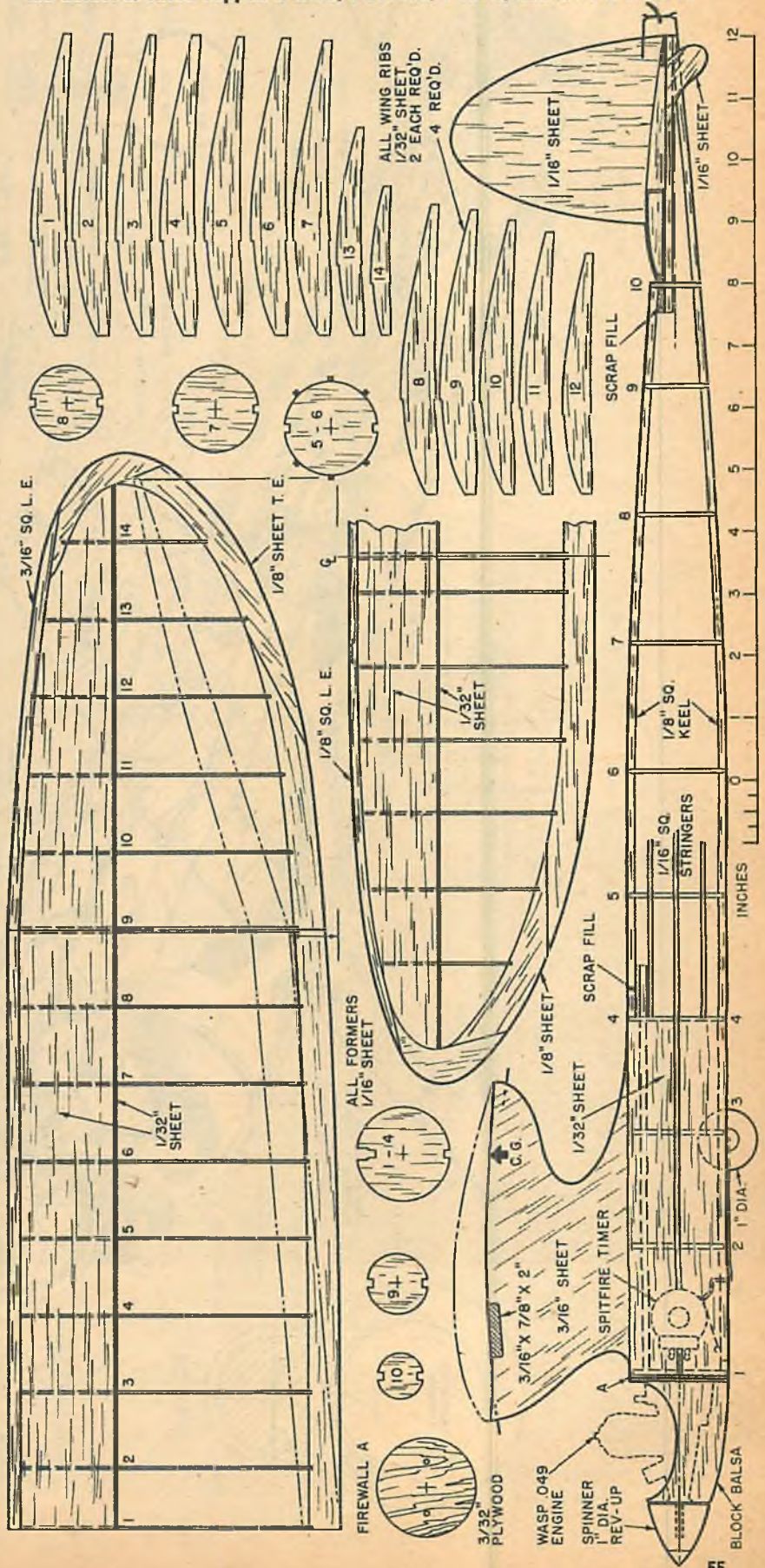
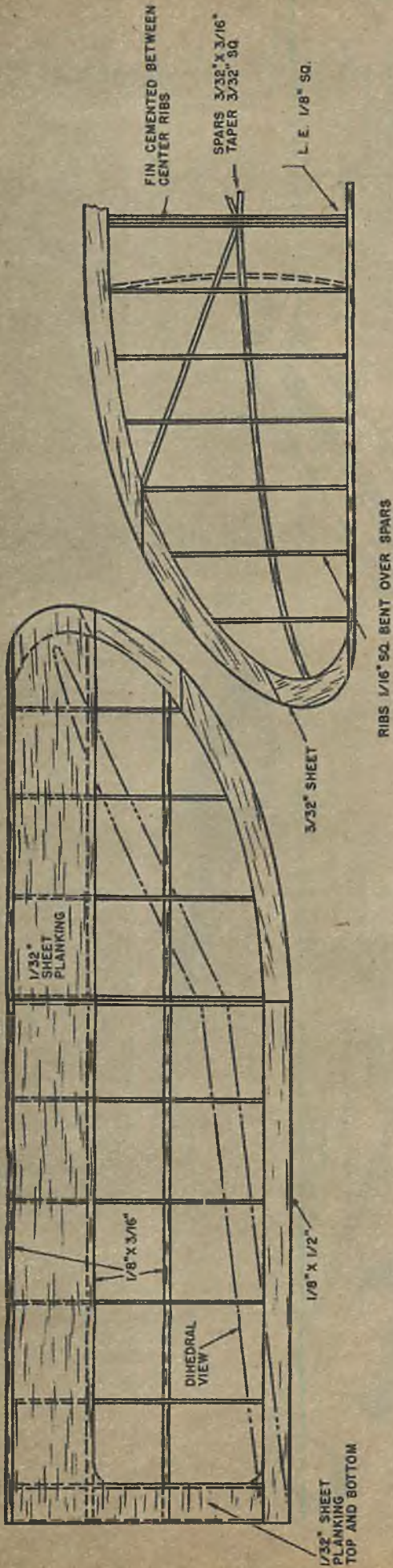




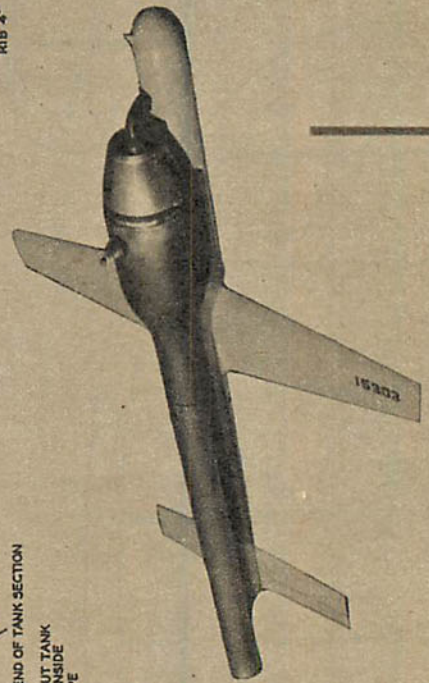
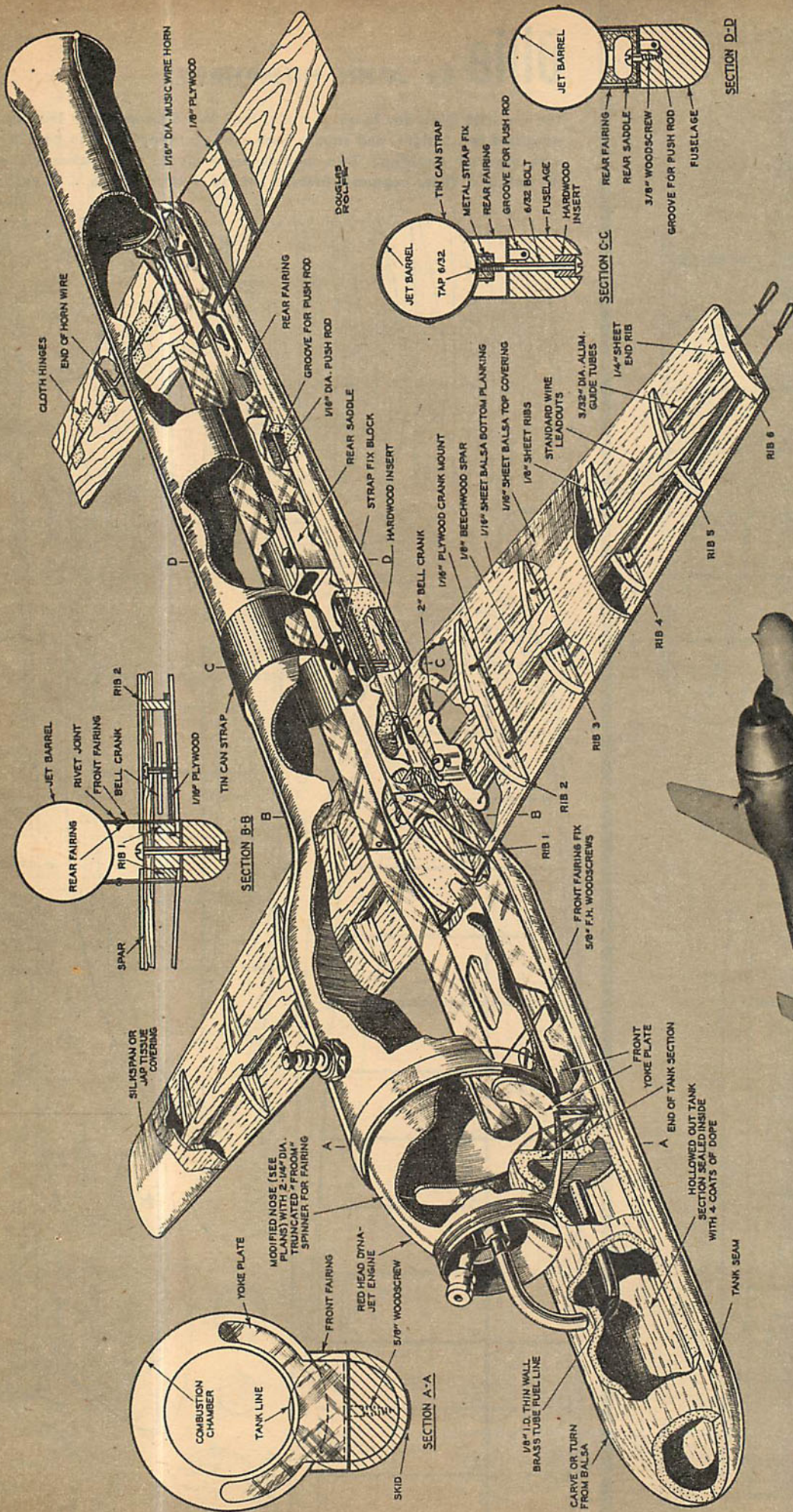
# Ollie

By JOHN HUMPHREYS

The aim with Ollie was to get a model that was different from the square wing and tail designs, and square bodies of nowadays, and to have it fly with superior qualities. Two models were made, Bill Mickelsen's and the author's. These copped 2 firsts, 1 second, 1 third, and a U. S. record!









Top honors at the Nationals . . .  
 First place at Plymouth . . .  
 National jet speed record job with  
 157.43 miles per hour! This  
 Dyna-Jet powered speedster  
 flew at 150 on its first  
 test hop! Some ship . . .

# Herb Davis' Hot Canary

■ The *Hot Canary* is a hot, fast ship. It is painted yellow, built small and light. The total weight with Dyna-Jet engine comes to a modest 20 ounces.

The fuel tank is a result of trying many types. It will get you off under most weather conditions and provide the required laps for the clocking. The tank is made by hollowing out nose to  $\frac{1}{8}$ " thickness on all sides. First the nose is split open and then hollowed out. The inside of the tank is coated with 4 coats of clear dope or until all pores are filled.

Drill holes for tubing and glue in front vent. For fuel line heat a piece of  $\frac{1}{8}$ " I.D. thin wall brass tubing red hot; let it cool and then bend it to shape and glue it in the tank. Fasten tank halves together with plenty of glue.

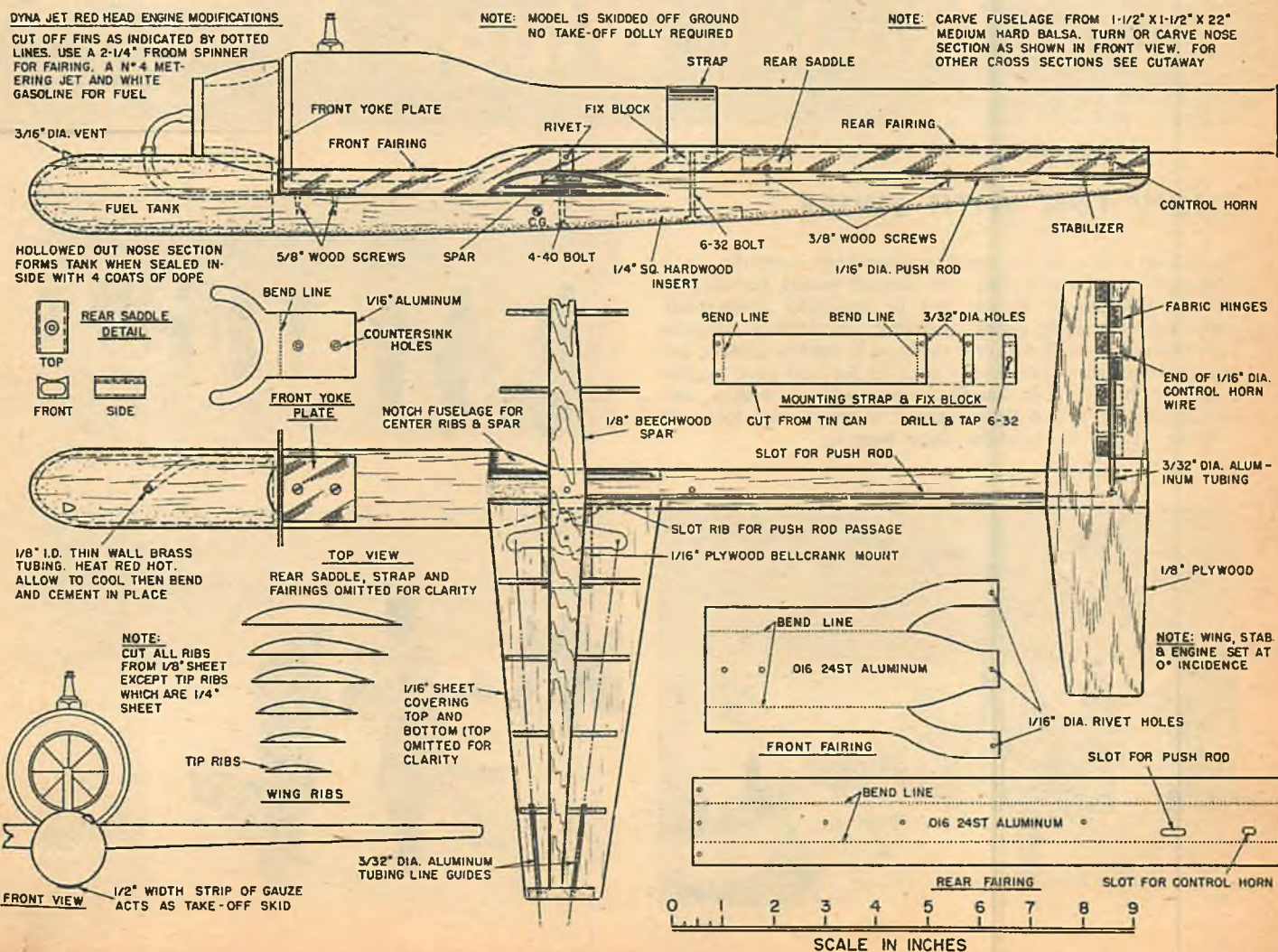
The wing is  $\frac{1}{8}$ " ribs covered with  $\frac{1}{16}$ " planking and a  $\frac{1}{8}$ " beech spar. Cut out bottom planking to outline on plans, glue ribs in place. Cut spar and lay across ribs, mark and cut slots in ribs for spar to be glued in. Bellcrank is installed with pushrod and lead-outs. Put on top covering.

Install wing. Cut  $\frac{3}{16}$ " x  $\frac{1}{2}$ " x  $3\frac{1}{2}$ " notches in the fuselage for wing and notch for spar. Bolt spar to fuselage with 4-40 bolt. Groove for pushrod. When gluing wing make sure no glue gets near top of body, because glue tends to burn from the heat of the engine, causing undesirable results.

Stab airfoil is symmetrical and should be mounted at 0 degrees incidence, with wing and engine. The rear fairing should be bent on a "brake" for a perfect fit at a sheet metal works. Front fairing can be cut from pattern and bent to shape. Rear saddle and front yoke can be put on after fairing parts are installed. Asbestos paper from back of front yoke to front of rear saddle is held with water glass.

All metal fittings are removed before painting. The wings are covered with tissue. Glue a  $\frac{1}{2}$ " strip of gauze to bottom for a skid. Top of fuselage is covered with masking tape. Apply four coats of a mixture of equal parts of talcum powder and clear dope, sanding between each coat. Apply three coats of yellow dope, rubbing last coat with rubbing compound, then wax.

The model is skidded off the ground instead of a dolly take-off. White gasoline is used for fuel with a No. 4 metering jet.







## CALIFORNIA CLEANS UP

... Its stunt designs, that is. This trio is typical of beauty trend in loopers. J. Everett Underwood (above), Martinez, Calif., Aeromodellers. Fox .35, 450 sq. in., Y&O 10/5 prop, flaps. Right, above—modified Veco Mustang with cigar-smoking pilot by Bob Upton, Torrance, Calif. K&B .32, 9/8 Top Flite prop, two-tone blue. Right—original, long-gear (for prop clearance) twin-rudder stunter by Addie Mae Naccarato, Pacoima, Calif. Fox .59, Y&O 12/6 prop, 572 sq. inches wing area.

Trio is indicative of "slick" look in contest craft.

# Model Wings Around

## SNOW FUN WITH SWISS

Switzerland, one of the most cosmopolitan countries, is a trilingual land where you can discuss model building in French, German or Italian and be generally understood. Until recently most Swiss modeling (*modellflug—modeles reduits—aeromodellismo*) was confined to towline gliders, but now the standard U.S. events such as jet and glow engine speed, stunt and team racing have combined with a tremendous surge of free flight interest to give a well-balanced program. These shots show slope soaring.







## FIRST OVERWATER FLIGHT

Crossing 5½ miles of open water, Japanese free flight models head from tiny offshore island to the mainland and Mt. Fuji in "world's first mechanical carrier pigeon contest" sponsored by Press Mainichi and Pan American World Airways. Two ounces of payload (messages) and total weight of 7 lbs. were only requirements. Winner at top, left. Under the "B" stands Dallas B. Sherman, Mr. PAA-Load himself. At right is PAA-Load winner of Tokyo contest, Arden .199 job. Gear is interchangeable with floats.



# the World

## DARN CLEVER, THOSE ENGLISH

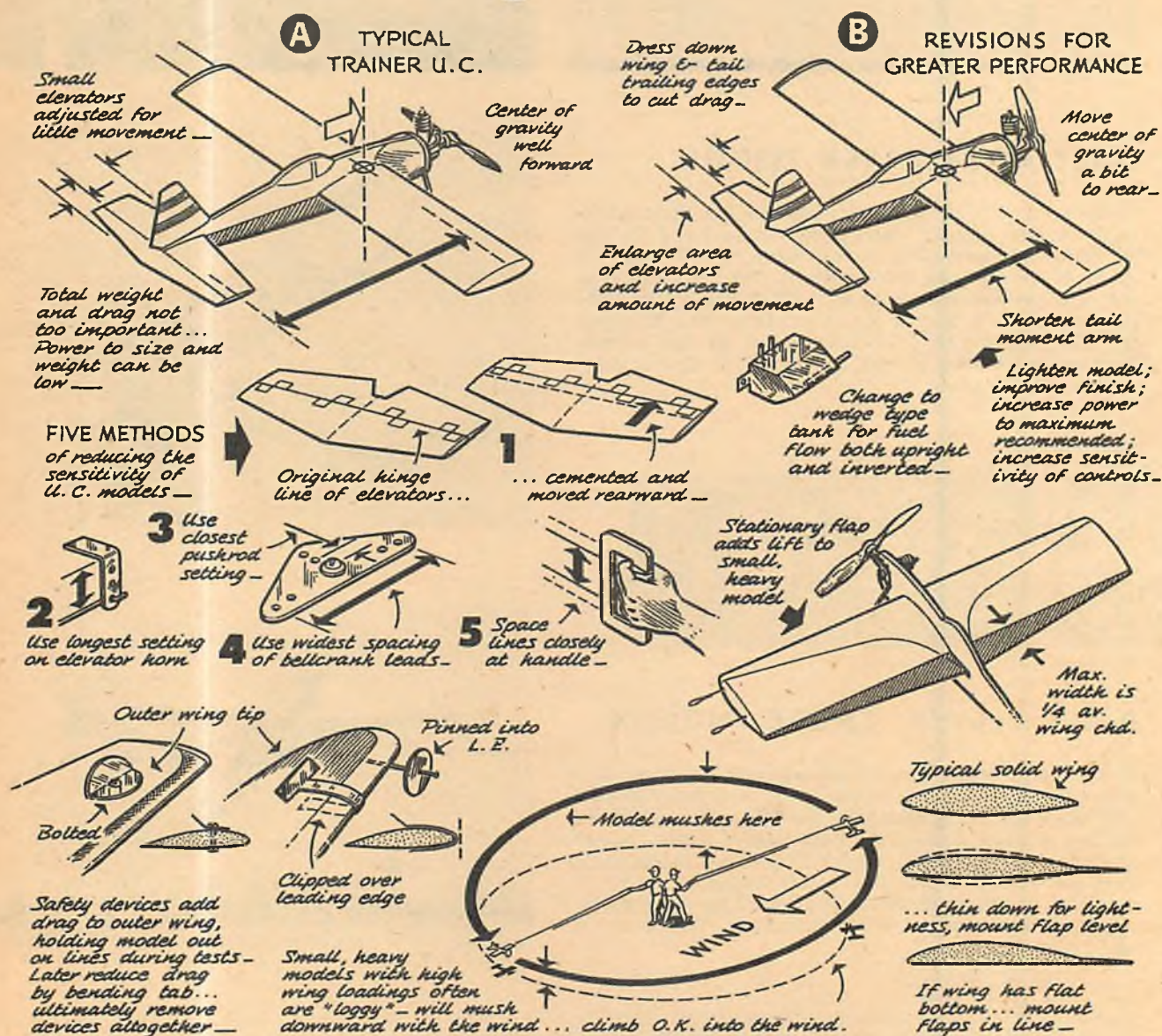
P. E. Norman (right) gets his British-built free flight scale Mew Gull off at West Essex Gala (meet, to you, sir). English enthusiasts have gone great guns for flying scale sans wires. Further evidence of this is the Tiger Moth in midair (below) flown at the same competition by F. Anderson of the North Kent Club. Power is E.D. Bee. Sgt. H. Savage of the R.A.F. brought along a 10-foot glider—you see, all the modelers-in-uniform are not confined to American units. "Skyroamer" is name of towliner.





# AIR-MODEL MANUAL

## ... kit tips for the novice



■ Present-day prefabricated kits have eliminated construction problems; the simpler control-line trainer models can be assembled by any average youngster. But best performance depends on basic knowledge of balancing, adjusting and the control system.

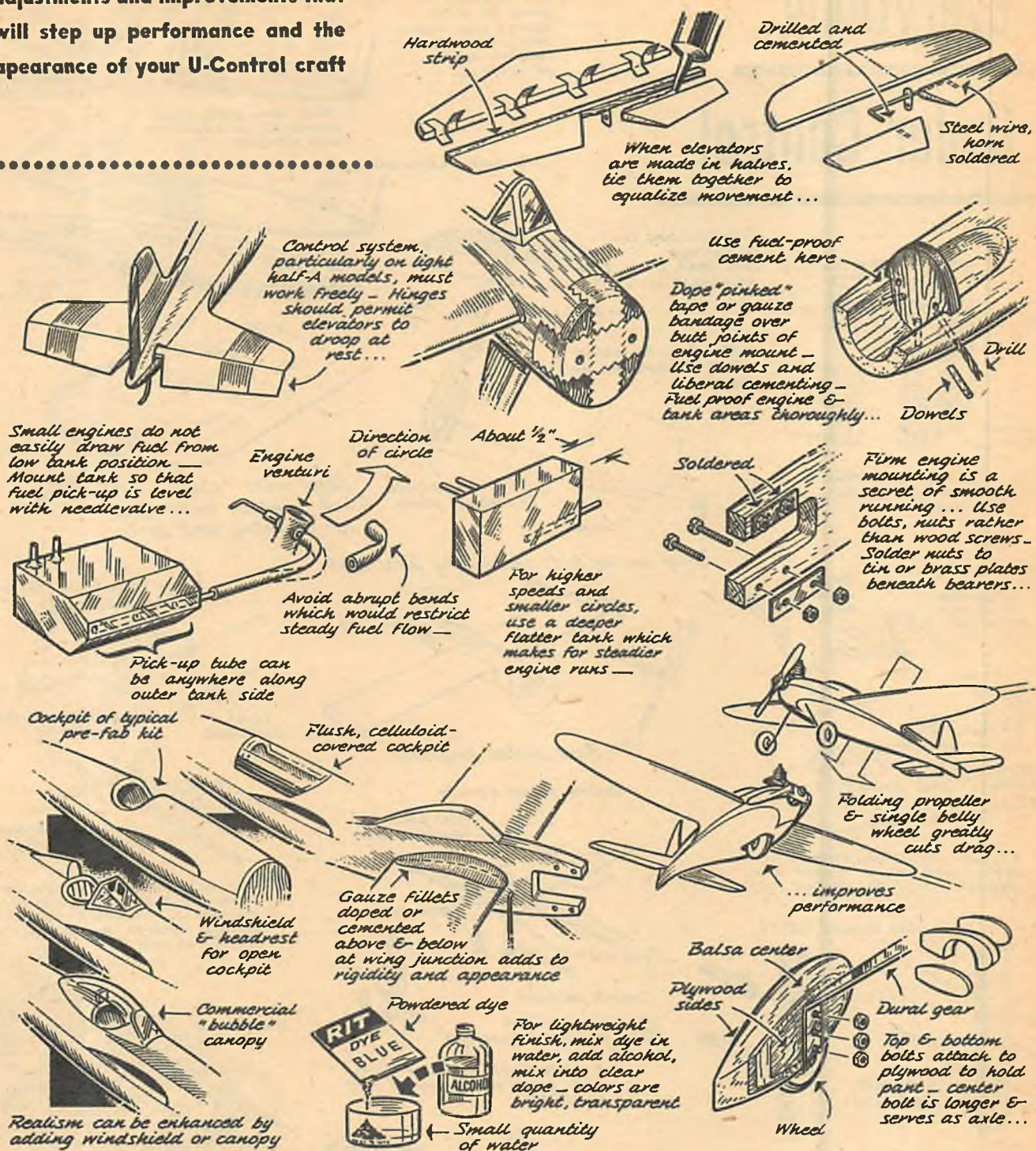
Half-A models are flown on 30-50 ft. lines, either lightest weight steel or cord. Since controls work best on heavy models where stronger forces make even poor hinges and tight linkages work well enough, it is imperative on light models that the controls work freely though without looseness or play. Friction or tightness can cause erratic and difficult handling, particularly for the novice. Pushrod can be bent to clear obstructions between bellcrank and elevator horn; should be stiff enough to resist bowing under normal

compression. Elevators should hang limply, held in down position at rest by their own weight. Too much paint on fabric hinges makes them stiff and brittle.

First flights should be made with control system adjusted for least sensitivity so that some overcontrolling can be tolerated. Balance is important; with center of gravity forward, near wing's leading edge, model is easy to fly but has somewhat limited maneuverability. As center of gravity is moved rearward, toward center of wing chord, model responds more violently to control movement. Stunt models employ this for maximum maneuverability while other control types such as speed and team racers have a more forward balance point for safety and smoother, easier flying.



Some common sense suggestions for adjustments and improvements that will step up performance and the appearance of your U-Control craft



Assumption that anything will fly on a string depends on what is held to constitute flying. Poorest model, of crude balsa slabs, with inefficient airfoil sections, faulty alignment and rough finish will likely limp through the air at best, giving little satisfaction to its pilot. Conversely, same general type of model, built lightly, smoothly finished, with neat installation of engine and control system reflects careful workmanship in its snappier performance and easier handling.

No heavily loaded model can be expected to fly as well as a lighter one. But when weight is too little, model tends to handle limply, has little inertia to smooth out flight path. The desire to pile on thick enamel coats for glossy finish ruins many small models

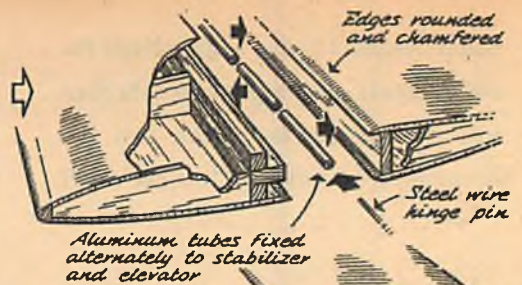
as flyers; enamel is not recommended for Half-A's. Sometimes additional wing area (see flaps above) reduces wing loading and improves handling. Weight put into model in form of solid engine bearers, sound basic structure for gear, tank and control system is worthwhile. Flying surfaces should be kept smooth, light, carefully aligned. A secret of enjoyable flying is a smooth running engine which in turn requires firm mounting, balanced propeller of correct size and pitch, solid tank mounting to avoid fuel frothing and bubbling. Besides crack-ups, hazard to long life of model is its built-in resistance to penetration and weakening by glow-fuel. Care in adequate fuel-proofing, use of fuel-proof cement around nose of model pays off in long run.



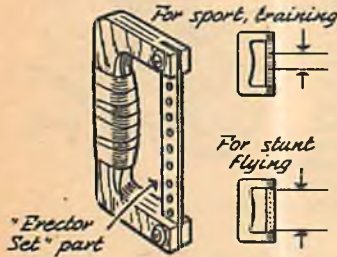
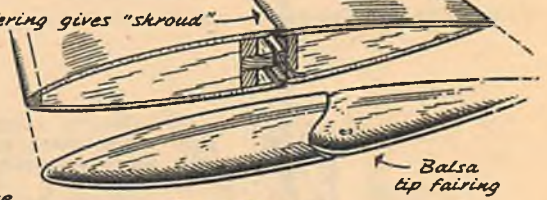
# Everything

## Under Control

- Thick control-line tail surfaces on scale or stunt models can employ this improved, realistic type of hinge —



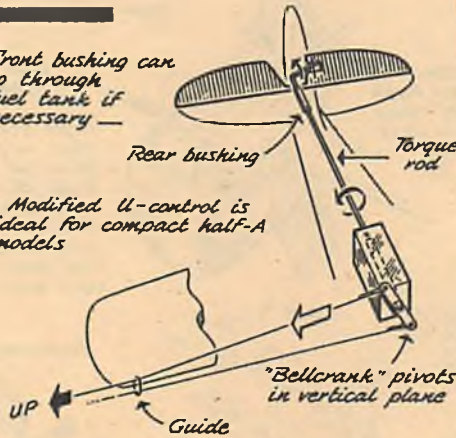
Rounding, chamfering gives "skroud"



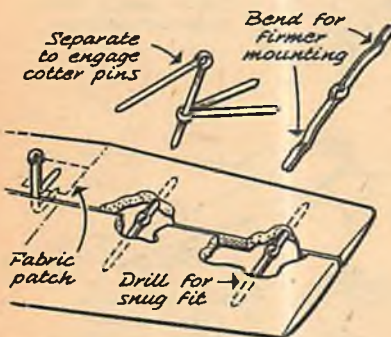
- Adjustable handle of wood & "Erector Set" part

Front bushing can go through fuel tank if necessary —

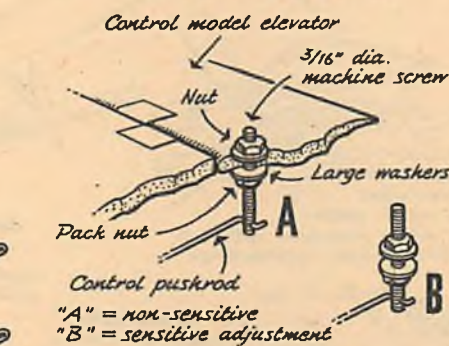
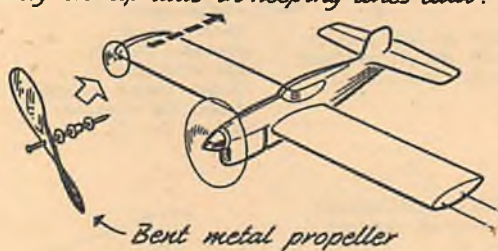
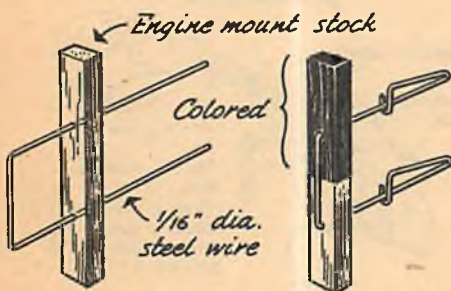
- Modified U-control is ideal for compact half-A models



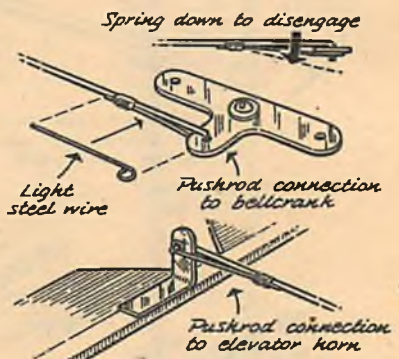
Drag on tip aids in keeping lines taut.



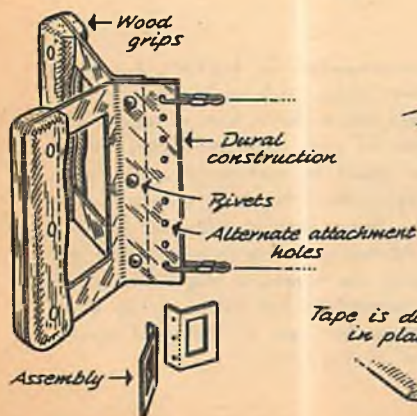
- Lowly cotter pin affords virtually ready-made hinges and elevator horns for control jobs



- Dependable elevator "horn" with quick adjustment to vary sensitivity



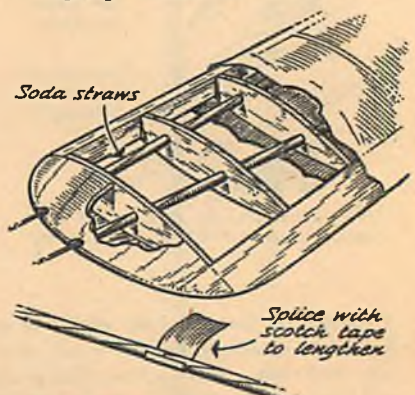
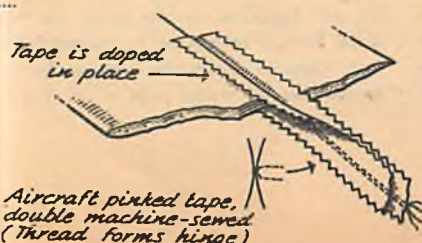
use this fool-proof fastening latch for both terminals of pushrod — Pushrod can be quickly removed but is locked tightly in use ...



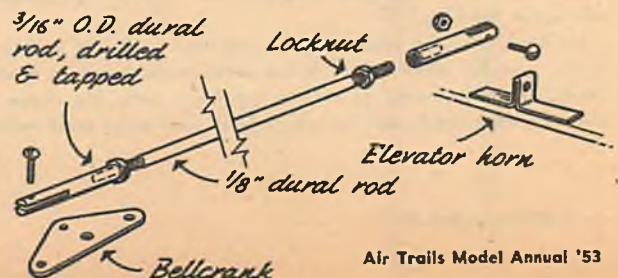
- Control-line training handle for "dual" instruction gives feel of flying without crack-ups —



tilt inside stabilizer tip of stunt job up to keep lines tight during all maneuvers.



- Internal lead-out wire guides made of soda straws facilitate installation of flexible leads





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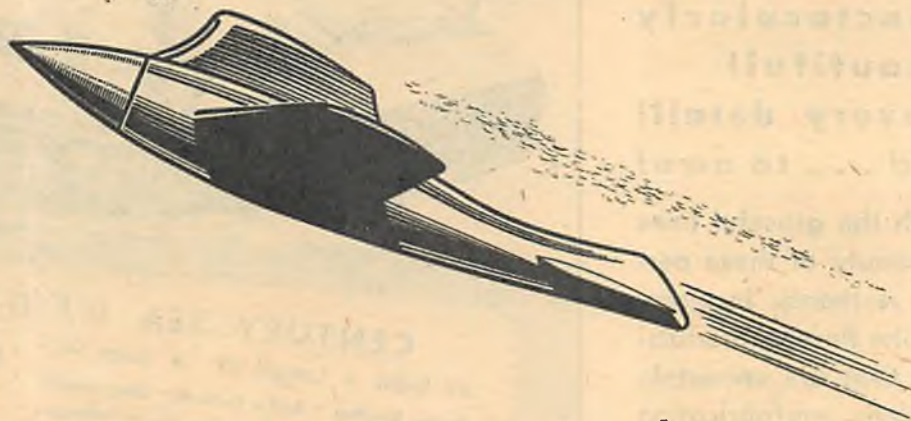
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You stand a good chance to win, because there are separate prizes for each of three age brackets: FRESHMAN — 8 years old, but not yet 12; JUNIOR — 12 years old, but not yet 16; SENIOR — 16 years old, but not yet 21. Ages are calculated as of July 1, 1953.



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Gas (Class ½A, A, BC); Control Line Speed (Class A, B, CD); Jet Control Line Speed; Control Line Flying Scale (Class ABCD); Control Line Stunt (Class ABCD); Control Line Team Racing (Class B); Navy Carrier Deck (Class ABCD); Combat (Class ABC).

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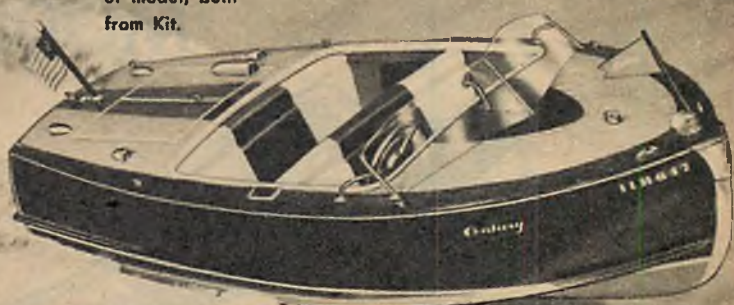
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Actual photograph  
of model, built  
from Kit.



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**POLISH FIGHTER, Kit C-5, Span**  
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## Supersonic Sue

(Continued from page 41)

twist is vital to proper flying, take real pains to make it right. Cut the inner spar ends so they fit together at the correct angle, then pin the forward spars flat to your board, but raise the rear spars 1/4" at the tips. Smear the two joints liberally with cement and allow several hours for drying.

The fuselage sides must be cut out for the spars and the latter must slip snugly between formers 2 and 4. When you have things fitted satisfactorily, cement the wing in place. It is wise to place the fuselage bottom on a flat surface and block the spar tips up, so they won't shift if the center joint cement softens during this operation.

Install the three fuselage bottom fairing

strips and the #1 ribs. Sight along the ribs from the tip of the wing to rib 1 on each side. The wing cross-section should change smoothly from the moderately cambered rib 1 to the tip rib 5, which is flat on top and bottom. The actual wing shape is not too important as long as it is about as specified at rib 1, and flat at the tips. Shape the front spar and rear spars as shown on the rib drawings.

The wing tip "elevons" act both as elevators and ailerons; they are of 1/8" thick soft balsa, hinged with soft copper wire to the wing rear spar. They should be attached before the wings are covered.

All that remains now is to make the nose block, which may be of hard balsa or pine. Fit a rubber hook to it and make a prop shaft, both of about 1/32" diameter music wire. The prop bearing plate is of thin metal—preferably aluminum to save weight—held by two tabs to former 5.

A 6" plastic prop trimmed down to 5 1/2" was fitted on the original plane. It gives fairly good results, but is relatively heavy. Better results could be had from a light balsa prop of higher pitch. One of the 6" semi-carved props carried by many hobby shops should be ideal.

Assemble the model and check for balance. If the balance point isn't as shown, cement solder to the rear former 1.

Before covering, go over the entire plane with sandpaper to remove rough edges, lumps of cement, and to round off fairing strips, etc.

Lightweight paper, held on with full-strength dope, is used for covering. We covered the entire model, including rudder, fuselage sides, nose piece and elevons. While it isn't really necessary to paper over the wood areas, the model looks much neater, when doped, if you do. When covering the wing, be sure the paper is



# NEW! MODELS Sterling models

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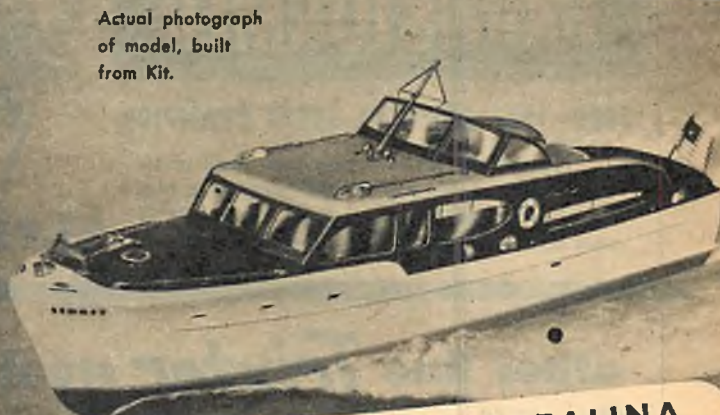


## FOKKER D-VII

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Actual photograph of model, built from Kit.

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Kit B-7M • Length 31¼" • Beam 8¾"

Power Boating • Radio Control • Shelf Model • Genuine African Mahogany used extensively • All parts die cut and inter-notched • Shaped roof structure • Power hardware • Plastic and Mak gany flying bridge windshield • Detailed, step-by-step plans and instructions, covering power-installation, interior detail and radio installation — etc.

Deluxe 66-Pc Scale Marine Fittings, **\$4.95**  
Kit B-7F.

**\$11<sup>95</sup>**

(less scale marine fittings)



CENTURY RESORTER '20'

Kit B-4.  
Length 12½".  
Powered by ½ A or electric motor.

**3.25**



CENTURY SEA MAID '20'

Kit B-5.  
Length 12½".  
Powered by ½ A or electric motor.

**2.95**



CHRIS-CRAFT 32' CRUISER  
Kit B-6M. Length 28". Powered by ½ A or electric motor. **9.95**  
(less scale marine fittings)  
(Fitting Set, Kit B-6-F, \$3.50)



SPACE MASTER JR

Kit S-4. Span 24". Class ½ A and A. **2.25**



SE S. Kit C-6. Span 32" Class B and C. **5.95**



RYAN S-T. Kit C-7. Span 36". Class B and C. **5.95**



YAK-9. Kit S-3. Span 40". Class A, B and C. **2.95**



F-51 MUSTANG. Kit S-2. Span 38". Class A, B and C. **2.95**



RING MASTER. Kit S-1. Span 42". Class B and C. **2.95**

firmly fastened to the entire upper surface of the rear spar (or wing trailing edge).

After covering is complete, spray the entire model lightly with water, using an ordinary medicinal atomizer. It is wise to block the model up on the bench again until this dries, as the wings might untwist a bit when the covering tightens.

We gave the test model three coats of aluminum dope, thinned 50%. This mixture does not add much weight and gives a bright shiny finish. All details and decorations were put on with Trim-Film and other decals.

The motor of our job is two strands of 3/16" flat T-56 rubber. Try a few glides, after again checking to make sure the balance point comes within an eighth inch either way of that indicated. Move the two elevons up or down the same amount to correct for a stall or dive; when you have the model gliding evenly, you can adjust

for turns by moving only one.

You will probably find your ship a bit awkward to launch at first, but practice will take care of this. If you prefer to make first flights R.O.G., build a launching dolly



"Here—you start it!"

similar to that shown here. It need not be very strong, since it stays on the ground and doesn't have to absorb landing shocks.

The finished test model weighs .8 oz. (less dolly), and we find that the rubber motor will safely take 200 turns. How far will your "Supersonic Sue" travel on this many turns?

### Bill of Materials—Supersonic Sue

1 pc. ½" x ⅛" x 36" med. balsa, trailing edge. 1 pc. ¼" sq. x 36" med. balsa, leading edge. 4 pcs. 1/16" sq. x 36" med. balsa, top spar, fairing strips. 1 pc. 2" x ⅛" x 18" med. balsa (includes enough for dolly). 1 pc. 2" x 1/16" x 36" light balsa. Scrap of pine or hard balsa, 1" x ¾" x ¾", nose piece. 4" of 1/32" music wire. 1 plastic canopy. One 6" propeller, plastic or balsa. 20" 3/16" flat rubber. 3 wheels for dolly. Covering paper, cement (small tube), dope (2 oz.), pins, decals, dope thinner (2 oz.).



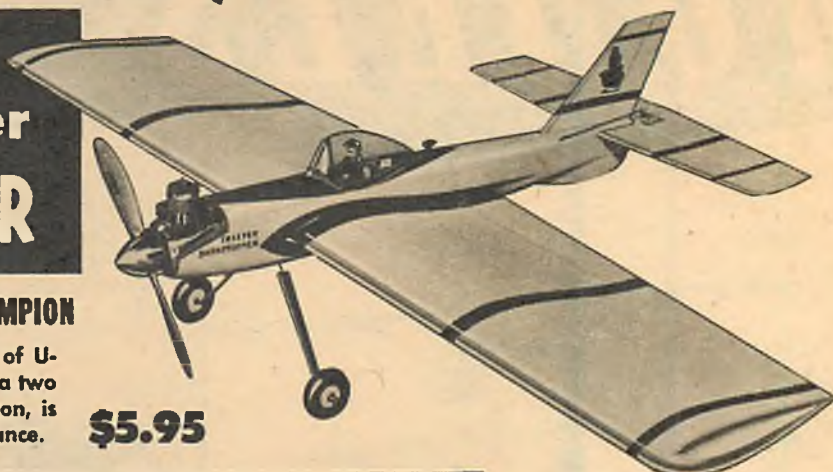
# It's America's *Champion* stunt plane!

## GUILLow's Trixter BARNSTORMER

1950-1951 NATIONAL STUNT CHAMPION

Now is the time to enjoy the thrill of U-Control stunt flying and the Barnstormer, a two out of two times National Stunt Champion, is your best bet for top in-the-air performance.

**\$5.95**



## other fine *Trixter* stunt models



**\$3.50**

### PROFILE TRAINER

A basic trainer with ready-shaped balsa wing and ready to assemble fuselage. Ideal stunt ship for beginners. 32" wing span. For engines from .19 to .29 cu. in. displacement.



**\$2.95**

### Baby BARNSTORMER

Outstanding class 1/8 A Stunt Ship. Completely prefabricated kit. A junior version of champion Barnstormer. 23 1/4" wing span. For engines from .035 to .049 cu. in. displacement.



### PROFILES A-B and B-C

Class A-B stunt model. 32" wing span; for engines from .19 to .45 cu. in. disp. \$2.50.

Class B-C model. 38" wing span; for engines from .29 to .60 disp. \$3.50.

Wing Span ..... 47 in.  
Wing area ..... 470 sq. in.  
Engine ..... .23 to .35 disp.

designed by

*Low Andrews*  
1950 NATIONAL  
STUNT CHAMPION



**PAUL K. GUILLow  
WAKEFIELD, MASS.**

## Short Cuts

Pin or tape to surfaces of covered wings



Fit against spars of uncovered wings



Stiff cardboard

Novel jig permits easier assembly of center-section struts of biplanes... fixing stagger & incidence



Paint layers with colored dope before joining



Colored edges appear as contour lines

Nifty idea for carving symmetrical parts of laminated sheets



Balsa angles cut on buzz saw



Stringers

Cross pieces lap at joints



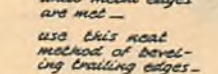
Heavy gauge sheet metal



Balsa strip



Rasp with diagonal strokes until metal edges are met - use this neat method of beveling trailing edges



Scotch tape



Bandsaw notches, insert stub spars



1/16" x 1/8" cross-pieces



Cardboard "former"



25% weight saving



Small model knife



Compass



Circular balsa cutter for making comb rings, formers, etc.



Old method



Bent pins speed assembly of multi-stringer frames



Bend as necessary



Steel control-line wire inset flush in leading edges helps minimize damage to sheet balsa and built-up wings



Strip crosspieces



Sides cut from wide sheet stock -



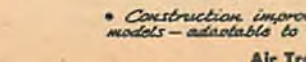
Simple, efficient construction of fuselages for rubber and small gas jobs



Ordinary splice is subject to warps



Improved joint resists warping



Inverted "T" spar is stronger, lighter than solid spar -



Construction improvements for rubber models - adaptable to other types

Air Trails Model Annual '53



# Record Racker-Uppers

**PAA Load Class AB**  
Open 23:53.4  
Fran Uyematsu  
Montebello, California

**PAA Load Class 1/2A**  
Open 26:09.0  
Richard Sladek  
San Diego, California

**PAA Model-Clipper\* Cargo**  
0:40.6 - 17 1/4 oz.  
Robert E. Latham  
Dallas, Texas

**Handsome Bulova Watches**  
go to the PAA Load Event  
winners at the "Nationals."

**PAA Load Class AB**  
Junior-Senior Combined  
16:54.2  
Clinton Merrill  
Oildale, California

**PAA Load Class 1/2A**  
Junior-Senior Combined  
9:15.8  
Paul Crowley  
Detroit, Michigan

**PAA Load Event Rubber powered**  
Open 194.1 seconds  
Mal Alberts  
Los Angeles, California

## PAA LOAD EVENTS

at the 1952 "NATIONALS"  
Los Alamitos, California



● Records are made to be broken, and these 1952 Champions *all* had the stuff to do it. By the close of the PAA Load Events at the "Nationals" a brilliant new set of records stood ready to meet the onslaught of 1953's hopefuls.

These exciting contests provide model flying that brings out the basic purpose of aviation itself—to carry a payload.

First sponsored by Pan American in 1948, payload events are free flight headliners at many local and regional meets—and a highlight of the "Nationals." Start your payload today.

For rules and specifications for 1953 PAA Load Events, write to: Educational Director, 28-19 Bridge Plaza North, Long Island City 1, New York.

\*Trade-Mark, Reg. U. S. Pat. Off.

# PAN AMERICAN

WORLD'S MOST EXPERIENCED AIRLINE





# Everybody Has Fun With Monogram Models

Monogram's out-in-front design — perfectly finished plastic, wood and metal parts—prefabricated wings, fuselage, bodies and hulls—genuine decals—detailed plans—give you more fun, more value, less work than any other kits.

If no dealer near you order from address below. Add 25 cents for packing and shipment

**Monogram Models, Inc.**

3421 WEST 48TH PLACE, CHICAGO 32

MODEL AIRPLANES • SHIPS  
JET POWER RACERS

## 15 Speedee-Bilt Flying Models Each 85c



- |                   |                      |                     |
|-------------------|----------------------|---------------------|
| G-1 Piper Cub     | G-6 Long Midget      | G-11 Navion         |
| G-2 Aeronca       | G-7 Cessna Seaplane  | G-12 Hellcat        |
| G-3 Monocoupe     | G-8 Spad Pursuit     | G-13 F-86 Sabre Jet |
| G-4 Ercoupe       | G-9 F-51 Mustang     | G-14 Corsair F4U-5  |
| G-5 Boeing Kaydet | G-10 Thunderjet F-84 | G-15 Warhawk P-40F  |

## 3 Superkit Scale Models With Plastic Parts Each 89c

- |                  |                   |                     |
|------------------|-------------------|---------------------|
| T-1 Mustang F-51 | T-2 Corsair F4U-5 | T-3 Thunderjet F-84 |
|------------------|-------------------|---------------------|

## 5 Jet Power Racers Carved Bodies 60c to \$1.00 Each



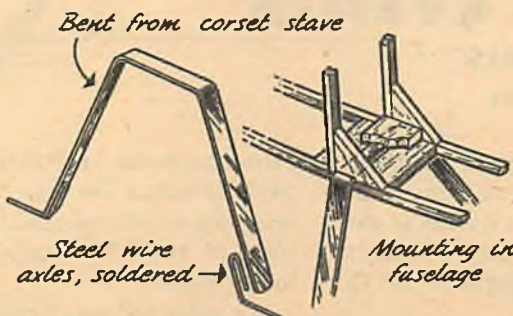
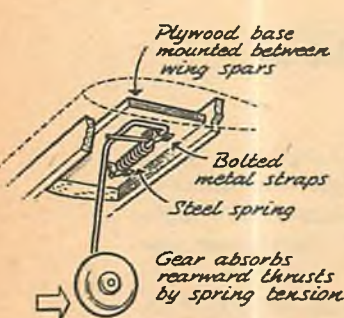
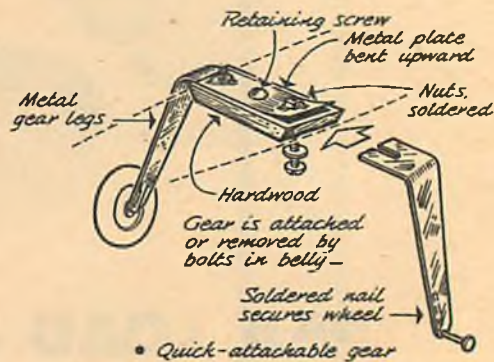
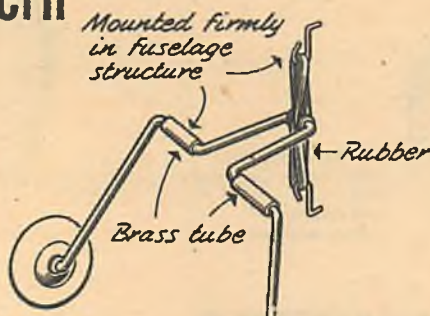
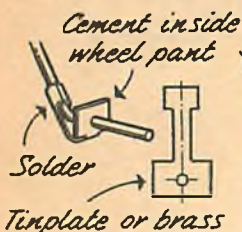
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|--------------|---------------|--------------|
| R-1 Hot Shot | R-2 Terra-Jet | R-3 Mono-Jet |
| R-4 Midjet   |               | B-6 Aqua-Jet |



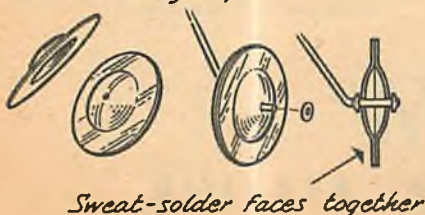
## 5 Fighting Ships Each \$1.25

- |                            |                           |                        |
|----------------------------|---------------------------|------------------------|
| B1 L.S.T. 608              | B2 Destroyer USS Hobby    | B3 Cruiser USS Chicago |
| B4 Battleship USS Missouri | B5 Carrier USS Shangri-La |                        |

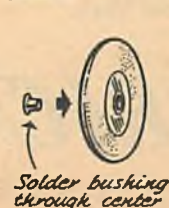
## The Landing Pattern



### Metal roofing caps

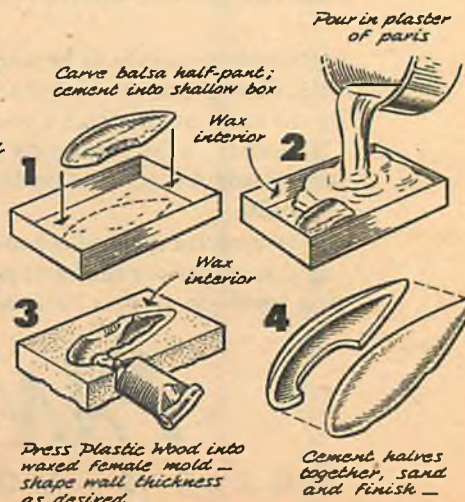


### Cheap, streamlined wheels from typist's erasers



### Mass production of uniform wheel pants

Plastic wood makes tough, light parts (Remember to make separate right and left molds!)







*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



# New for "53" by **RITE-PITCH**

## HERE IS THE "53" PRECISION **Rite-Pitch PROP LINE**

\*\*\*\*\*

### REGULAR AND STUNT

7"-8"-9"-10" Dia. — 6"-8" pitch ..... .35

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### REGULAR ONLY

12" & 14" Dia. — 6" & 8" pitch ..... .55

16" & 18" Dia. — 6" & 8" pitch ..... \$1.50

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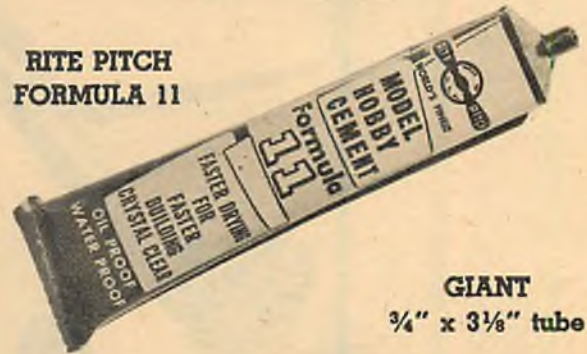
### PUSHER PROPS.

8"-9"-10" Dia. — 4"-6"-8" pitch ..... \$1.00

## The **FINEST CEMENT** MONEY CAN BUY

**NOW**  
ONLY **10¢**

RITE PITCH  
FORMULA 11



**GIANT**  
3/4" x 3 1/8" tube

## **RITE-PITCH PRODUCTS**

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— Dept. ATA. —

GARY 5, INDIANA

## Record Breaking Glider by BOB BRAWNER

### The Phoenix Flyer

■ I have flown this design in many contests and have always done well with it. As you know, a glider is a type of model plane which takes lots of work in getting it to perform right, despite its simple appearance.

This is a better than average design because I flew the same ship in both the outdoor and indoor events at one National and won first in outdoor setting a new record (of 16:44.6), and also took third in indoor with the same plane.

I won the magnificent Tulsa Glue Dobber's Perpetual Trophy for high time.

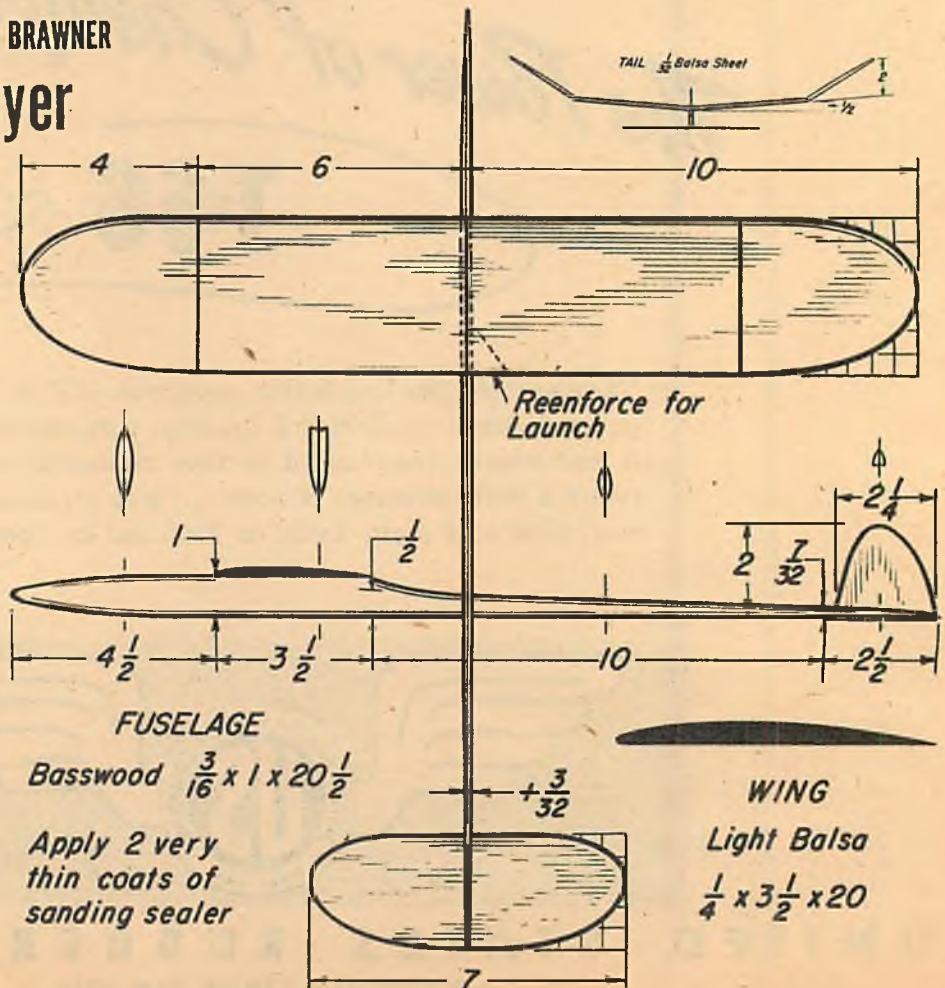
For the construction, pick out very light wood for your wing and tail and be very careful when you sand to make all parts even.

The body should be bass wood: it's strong yet light.

Use two very thin coats of sanding sealer and sand lightly after each coat.

Your glider should climb to the right, pull out to the left and glide to the left.

—Bob Brawner, Phoenix, Ariz.



Basswood  $\frac{3}{16} \times 1 \times 20 \frac{1}{2}$

Apply 2 very  
thin coats of  
sanding sealer

WING

Light Balsa  
 $\frac{1}{4} \times 3 \frac{1}{2} \times 20$





# Quality One great reason why

more people are buying ALLYN'S  
PLASTIC MODEL KITS

All Allyn  
model kits are  
built true to  
scale and color  
and are complete  
with decals of  
insignia.

DOUGLAS  
NAVY SKYSTREAK

\$1.79



There is no substitute for the fine quality materials and precision workmanship found in Allyn's beautiful scale models. All parts are moulded to fit perfectly together and give you a sleek, trim model with a professional look not found in the usual plastic kit.

Quality is one of the big factors in the popularity of Allyn's planes, which are found in boys' rooms, offices, dens, and club houses the world over.

DOUGLAS  
C-124 GLOBEMASTER

\$2.49



DOUGLAS  
NAVY SKYSHARK

\$2.49



DOUGLAS  
NAVY SKYRAIDER

\$2.49



BOEING STRATOFREIGHTER

\$2.49



BOEING  
STRATOJET

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BOEING  
STRATOCRUISER

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DOUGLAS NAVY SKYKNIGHT

\$2.49



DOUGLAS NAVY SKYROCKET

\$1.79



"THE CHOICE OF THOSE  
WHO WANT THE BEST"

There are 9 beautiful kits to choose from — see your nearest Allyn dealer today.

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# DYNA-JET

PATENTS PENDING

FAMOUS JET MINIATURE  
GASOLINE ENGINE

## THE Super Engine

4 1/4 lb. Thrust  
16 oz. Weight

21 in. Long  
2 1/2 in. Diam.

### No Wartime Shortages

For Dyna-Jet Owners

- **WILL NOT WEAR OUT!** No bearings, shafts, rods, pistons, cylinders to wear out or require replacement. Your Dyna-Jet will still run like new after many years of use.
- **NO SPECIAL FUELS REQUIRED!** Runs best on plain gasoline. Does not use war scarce nitro chemicals or methanol.
- **NO PROPELLERS TO REPLACE!**

PATENTS PENDING

# CURTIS

AUTOMOTIVE  
DEVICES, INC.

1000 R STREET

BEDFORD

INDIANA

## Model Progress

(Continued from page 7)

relatively small 30 to 35 percent tails. The reserve stability of these models seems totally adequate, since they need no borderline adjustments due perhaps to a more forward C. G. than the larger tailed ships. They do ride thermals which the smaller ships drop through.

The towline gliders seem to suffer from lack of towline stability, or lack of towing know-how. Marv Foreman's huge 14-foot 1st place ship made some of the few maximum tows at the meet. His ship, being large, was launched using the landing wheel and wing tip, the launcher following along supporting the tip until the model attained speed, just like the full-scale ships. The good number of Nordics flown were a source of surprise. Wayne Ross managed to stop a wandering flight with a clay-weighted wing tip, the same adjustment used on hand-launched gliders.

The outdoor hand-launched gliders put in long flights. The indoor ships didn't fare too well outdoors, lacking penetration ability. Sinking glides proved their downfall. Outdoor gliders were adjusted usually on the verge of a stall coupled with a fast recovery.

The rubber-powered jobs seemed for some reason limited to Wakefield models, most fellows having two or more which they entered in both events. The models flown in the unlimited class were not allowed to fly in the Wakefield class due to a quirk in the rules. Most ships were either of the long type or geared. Very few of the short-coupled ships were observed; those that were short in most cases had gears. Prop runs in general were over a minute, some as long as 90 seconds. Folding props were the rule in true U. S.

fashion, light ships with lots of rubber, a very good combination. The nylon gears by Matty Sullivan have been put through the test and are very well liked.

The R.O.W. models were from 3 to 9 feet. Bruce Tune's Half-A flew almost as long as the larger models. The three-float system with one main float was by far the most popular. Biggest cause for non-R.O.W. seemed to be a float with insufficient rigidity and angle, the combination of the two proving disastrous. These models need a little more incidence for really successful flights.

Model builders have learned a lot about the PAA-Load model; they have made them so good that if one stops and thinks, he realizes higher power loadings will not accomplish anything. Most Half-A and A-B jobs are at the present time flying on 200-plus ounces per cubic inch; .19 jobs weigh 35 ounces to 40 ounces, .049 jobs weigh 10 to 12 ounces. It is only in Clipper Cargo where the design gets critical; 30-ounce models with a .049 model work out roughly to 600 ounces per cubic inch. Quite a few of the .049 and .19 jobs climbed just as high as the average regular free flight model; their 25 and 26 minute totals are ample proof that these ships will ride thermals. Landing gear design is important.

The rubber-powered PAA-Load models did prove beyond a doubt that the rules were tough. The freewheeling props caught the fellows by surprise as did the limitations of prop diameter, rubber hook length and span. The ships, much more like sport models, were of cleaner lines than in the other rubber events.

The Half-A scale models varied more than in any other event. Generally, they did not perform as well as our regular free flight jobs. Both Walt Mooney's "Honey Bee" and Ken Aymar's F-51 had

metal-foil covering over planked construction which undoubtedly pointed out to the judges that a lot of the other models were not of scale type construction. They came out with top scale points only to be topped by the superb flying of Louis Culler's Piper Cruiser.

Some contenders built painstaking details into parts of their ship, only to lose precious points by overlooking other factors, such as wing dihedral which was very costly. The ships which won had detail all through. Whether flying should be as important to the final results is a highly debatable point, most fellows agreeing that a minimum qualifying time should be set up with bonus points for an unassisted R.O.G.

*The 1952 Nationals as Viewed by an Easterner (Frank Zaic):* It was a happy meet. Everyone looked happy throughout the contest. That is, everyone except some of the boys who tried to move the earth a bit out of its orbit.

One could see the pre-meet organization effort paying off as the various teams of timers and contest directors ran off their particular event with steady movement of lines.

A flight line may have looked long on some of the popular free flight events, but one found himself moving surprisingly fast toward the processing table. And in case of control line flying, you were honored with a team of four men, one lap counter, two timers and one commissioned officer who checked your "honest" try on the pylon. The meet was strictly to the "book."

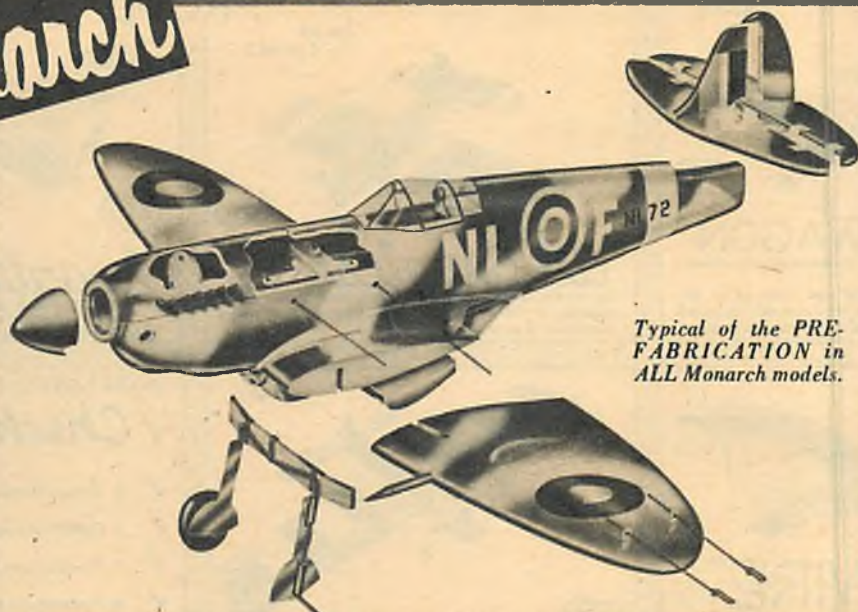
We do not know who made up the event schedule, but he deserves a medal for the way he gradually conditioned the Navy personnel to the behavior of the free flight

(Continued on page 80)



# Monarch

*the ultimate in line model design*



Typical of the PRE-FABRICATION in ALL Monarch models.



the "SPITTIN' IMAGE" SPITFIRE



the "SPITTIN' IMAGE" CURTISS P-40F

Monarch's famous "SPITTIN' IMAGE" models—the Curtiss P-40F and Spitfire have won acclaim as the greatest half "A" CONTROL LINE scale gas models ever created. And for good reason . . . for here is design at its best—PRE-FABRICATION AT ITS GREATEST! These models are remarkable both for outstanding craftsmanship, and the faithful adherence to every line and contour of the actual airplanes. Here are scale gas models that look like "the real thing". For ease and speed of assembly—for sturdiness and realistic performance in flight—these models are in a class by themselves. The contents are lavish—SPINNERS, huge illustrations, multi-colored decals, and all the luxurious extras you would expect. Priced at \$3.95 each at your Dealer now. By mail, add 30¢.



SWEET CHARIOT—2.50



WEE WILLIE—1.95



PETER PAN—1.50

A feast for any modeler! — young or old — beginner or experienced. Models that are amongst the most popular ever created, and which have achieved an enviable reputation for craftsmanship and performance. All are CONTROL LINE (except Scot-Free). All are for half "A" engines — beautifully and COMPLETELY PRE-FABRICATED in the usual Monarch manner. No sticks and sheets — no profiles; but perfectly shaped WHOLE sections. There are no finer models of their type — no greater value. At your Dealer — by mail add 20¢.



SCOT-FREE—2.95



Monarch's new plastic spinners. Fits all half "A" engines. Of durable, fuel proof material, with metal back plate. In all popular colors. A typical Monarch value at only 30¢. At your dealer now. Positively NO MAIL orders.

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# DMECO MODELS

"AMERICA'S FINEST"

1/2 A  
ENGINES



## "Infant WAGON"

The ready to assemble ALL BALSA stunt model for all 1/2 A engines. It has been accepted as one of the most efficient, rugged and maneuverable models in its class by those who should know!

08-.15 ENGINES



## "I LIVE WIRE" R/C TRAINER

This is the widely accepted basic-trainer for radio controlled flight. Having been developed for R/C flight primarily it has all of the features which can make your every flight successful, including controlled climb, exceptional stability, excellent maneuverability and extreme ruggedness. The construction is simple and straight forward while the model remains easy to fly!

An exclusive feature is the removable R/C unit that allows easy bench checks of all R/C equipment, use of the same unit in several models and alterations or changes in the equipment with the least trouble. Suitable for ALL makes of radios. Copied perhaps, but certainly never equalled!

(6.95)

# FABULOUS MODELS

THAT YOU CAN BE  
PROUD TO FLY!

.04-.09  
ENGINES



## "All American Jr."

The number 1 model in the All American Training Team. Features simplicity of construction, ease of learning and long lasting ruggedness, all essential for basic training.

.19-.29  
ENGINES



## "Sportwing"

An ideal stunt and combat model featuring lig assembly. HOLDER OF 4 WORLD RECORDS!

.29-.49  
ENGINES



## "All American Sr."

The "Star" of the All American Team is this contest winning "Senior," here is the model that even beginners can fly to first place laurels! The design is the culmination of years of effort to provide a fine high performance model that is simple to assemble, easy to maneuver and a clutch to win for you in any competition! Dmeeco's exclusive "Asymmetrical Stability" provides the means to such fine performance from a model with so little power.

NATIONAL JR. STUNT CHAMPION!

CHOOSE YOUR KIT THE WAY THE EXPERTS DO!

✓ Check THESE POINTS!

- ✓ 1. Correct design, tried and proven!
- ✓ 2. GIANT full size plans with details!
- ✓ 3. World's finest hand picked materials!
- ✓ 4. Precision pre-fabrication by experts!
- ✓ 5. Ultra modern dural gears!
- ✓ 6. Complete deluxe hardware!
- ✓ 7. Unconditionally guaranteed quality!

WITH THE EXPERTS "DMECO KITS" ARE TOPS!

PRODUCTS OF  
THE DE BOLT MODEL ENGR. CO.  
WILLIAMSVILLE, N.Y.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

## Analysis of Top Place Contest Winners (Cont.)—National Championships of 1952

Control Line

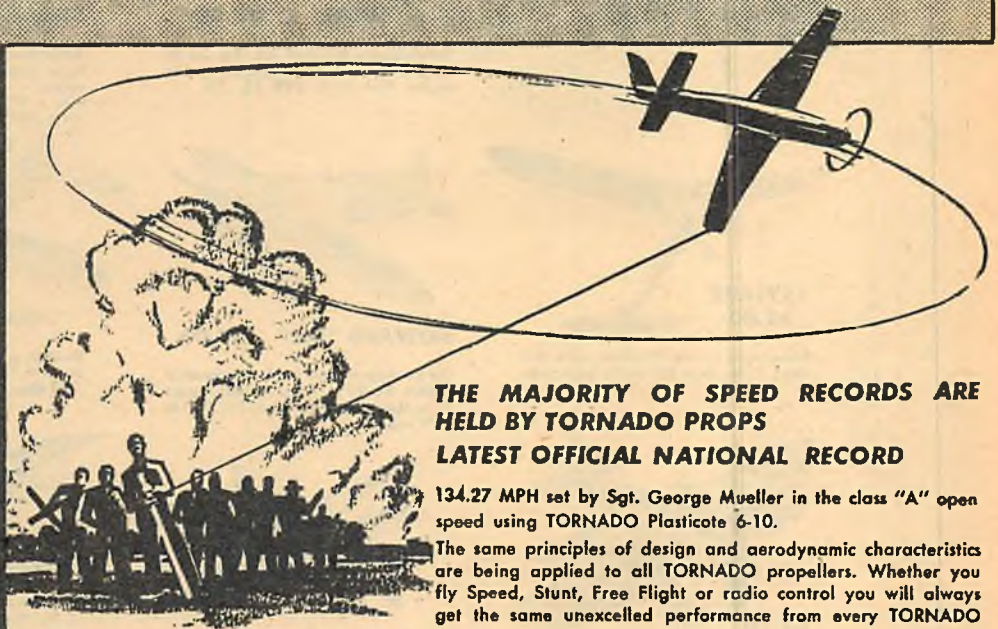
EVENT PLACE	FLYER	TIME OR PTS.	DATA
Speed-A Jr-3rd	Don Puskarich Oildale, Cal.	94.24	• Hell Razor kit; nylon covering; 2 coats Testors and 2 Aero Gloss; K&B .19 with 7/8 Power Prop; Supersonic 1000 fuel; own dolly.
Speed-A Sr-2nd	Jimmy Hannah Tuscaloosa, Ala.	114.21	• No data on plane; K&B .19 with Duromatic plug; Tornado 6/10 prop; K&B 1000 fuel; dolly.
Speed-A Open-1st	George C. Mueller Tucson, Ariz.	131.77	• 44 sq. in. built-up metal wing with own airfoil; metal pan fuselage; silk cover with 6 coats Aero Gloss; Torp .19, turned down fins; Tornado 6/10 prop; hand launched; own fuel; 10½ oz.
Speed-B Jr-1st	Don Stupar San Diego, Cal.	110.90	• 38.1 sq. in. balsa wing; spruce fuselage; 4 coats Testors Sta; McCoy .29 with O&R racing plug; K&B 7/10 prop; K&B Supersonic 1000 fuel; dolly launch; 16 oz.
Speed-B Sr-2nd	Gene Stiles Sheppard AFB, Tex.	126.40	• Alum. covered 32 sq. in. wing; turned mahogany fuselage; 5 coats Testors Sta; McCoy .29, ported and balanced; Tornado 7/10 prop; own fuel; pin-type dolly; 16 oz.
Speed-B Open-1st	Frank J. Stone Dallas, Tex.	131.77	• Hollow ply wing, 30 sq. in. area; crutch fuselage with bass top and bottom; Aero Gloss dope; McCoy .29 with turned front plate and O&R plug; Tornado 7/9 prop; 14 oz.
Speed-C Sr-2nd	Jimmy Hannah Tuscaloosa, Ala.	120.48	• No data on plane; McCoy .49; Xcell 8/10 prop; K&B 1000 fuel; locking dolly.
Speed-C Open-1st	Jim Clem & Sam Beasley Mesquite, Tex.	135.13	• 49.5 sq. in. ply-covered wing; crutch fuselage; 3 coats auto enamel; McCoy .49, B.B. back-plate, enlarged ports, chrome sleeve, balanced shaft; O&R racing plug; Rev-Up 8/11 prop; cradle dolly; own fuel; 24 oz.
Speed-D Sr-1st	Leland Ward Oakland, Cal.	142.51	• 17½" span metal wing; metal stab; turned mahogany fuselage; 5 coats of Sta; McCoy .60 with O&R racing plug; Tornado 7/12 prop; own fuel and dolly; 29 oz.
Speed-D Open-2nd	Bill Wisniewski Los Angeles, Cal.	149.25	• Screamin' Demon; Synflex enamel; Doolling .61, cut-off exhaust and venturi, turned down head; Ariel 9/10 prop; O&R plug; own fuel.
Speed-Jet Sr-1st	Gene Stiles Sheppard AFB, Tex.	143.54	• 42 sq. in. built-up wing; carved balsa fuselage; 6 coats Nason dope; Dyna-Jet on white-gas; skid take-off used; 20 oz. weight.
Speed-Jet Open-1st	Violet Hoyt San Diego, Cal.	144.23	• Own airfoil on 67½ sq. in. wing; wood construction throughout; 6 coats auto enamel; nylon covering; Dyna-Jet on white gas; no dolly used; 34 oz.
Combat Jr-1st	Bobby Jones San Gabriel, Cal.	72	• 36" span, 288 sq. in. sym. wing; box fuselage; Silkspan with Sta and Aero Gloss dopes; Torp .19 with Arden plug; Top Flite 9/6 prop; O&R #4 fuel.
Combat Sr-1st	Tommy Winton Chickasha, Okla.	160	• Ship covered with Silkspan; 5 coats Testors dope; Fox .35, Champion plug; Top Flite 9/6 prop; Powermist fuel; hand launched.
Combat Open-1st	Davis N. Mallory San Bruno, Cal.	95	• Testors Sophomore; Testors dope; Torp .32 with Top Flite 10/6 prop; Powermist fuel; first contest flyer had ever entered.
Team Racing 1st	Granger Williams Huntington Park, Cal.		• Scale Minnow; fuselage and wings all of 24ST aluminum; 1 coat of auto enamel; 28½" span; K&B .29; Xcell 9/8 prop; own fuel; 32 oz.
Carrier, ABC 1st	Don Yearout Albuquerque, N. Mex.	388.08	• Scale F4U-1D, own plans; balsa with silk covering; 8 coats Aero Gloss; Anderson Spitfire .60 with Champion plug; Rev-Up 12/6 prop; Powermist fuel.
Carrier, Half-A 1st	Mr. & Mrs. Ray Randall Colma, Cal.	266.86	• Scale Grumman Skyrocket; 20½" span; had retract. L.G., working flaps & hook; engines controlled separately; 4 lines used; 2 Wasps with butterfly valves; Top Flite 5.5/4 prop; O&R AA fuel; weighs 1 lb.
Stunt Jr-2nd	Armand Breard Monroe, La.	325.66	• Squaw with semi-cowled engine and different L.G.; 10 coats Aero Gloss; Torp .29; Top Flite 10/6 prop; Testors 39 fuel.
Stunt Sr-1st	George Aldrich Burbank, Cal.	379.66	• D-tube wing, 568 sq. in.; Aldrich 3318 airfoil on wing and stab; sheeted fuselage; Silkspan with 40 coats Aero Gloss; Fox .35; Y&O 10/5 prop; own fuel; 47 oz. weight.
Stunt Open-1st	John Lenderman Tracy, Cal.	364.33	• Stuka from Air Trails, slightly modified; Silkspan with butyrate dope; Fox .35; O&R #4 fuel; Top Flite 10/6 prop.



# Do You Know...



Unretouched Photo Showing The Air Foil Section At Every Stage Of The Prop Blade.



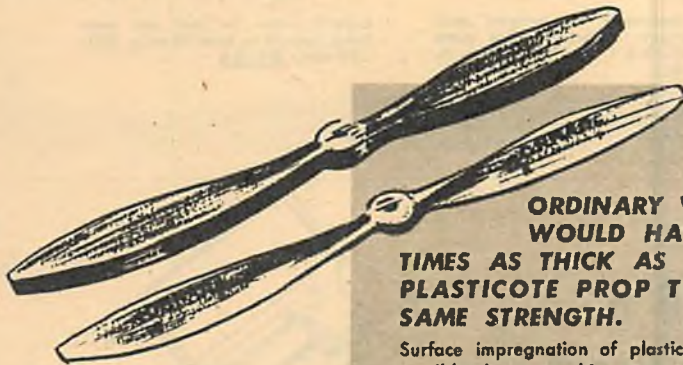
## THE MAJORITY OF SPEED RECORDS ARE HELD BY TORNADO PROPS LATEST OFFICIAL NATIONAL RECORD

134.27 MPH set by Sgt. George Mueller in the class "A" open speed using TORNADO Plasticote 6-10.

The same principles of design and aerodynamic characteristics are being applied to all TORNADO propellers. Whether you fly Speed, Stunt, Free Flight or radio control you will always get the same unexcelled performance from every TORNADO prop.

## YOU GET MORE THRUST AND LESS TORQUE PER RPM Because . . .

Every TORNADO prop has a CLARK-Y air foil section which is the most versatile of all and delivers the highest thrust to power ratio. Add to this the sleek thin blades, extra smooth finish and TRUE PITCH and you have a prop engineered to deliver the most thrust with less torque allowing the engine to develop full horse power for maximum performance from your engine and your fuel.



## ORDINARY WOOD PROP WOULD HAVE TO BE 3 TIMES AS THICK AS A TORNADO PLASTICOTE PROP TO GIVE THE SAME STRENGTH.

Surface impregnation of plastic into wood makes possible the extra thin yet very strong blades of TORNADO props. The thinner blades and smooth, glazed finish mean less impact resistance and low skin friction.



## THE SMOKE TEST

Ordinary props scramble smoke jets and leave a formless smoke cloud. A TORNADO prop revolving thru smoke slices it into segments without disturbing the jet formation . . . because Tornado props have true pitch, true air foil, thin blades, thin trailing edge and semi-pointed leading edge.



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## TORNADO PROPS ARE MORE DIRECTIONAL AND WILL TAKE A GREATER LOAD WITHOUT SLIPPING . . . SO NECESSARY IN RADIO CONTROL.

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*"Always Up-to-the-Minute"*

Ask for Prop Recommendation Chart.

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



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**FLIP-FLAP \$3.50**

Revolutionary full stunt job. Big 24 in. wing. 2 in. operating flaps. Takes any engine from .074, .099-23, .29.



**SMALL FRY \$2.50**

Authentically scaled Goodyear type racer ideally suited for 1/2 A team racing. Completely prefabricated with a 17 1/2" span. For engines of .049-.099 displ.



**SKYLARK \$2.00**

Sensational contest freeflight. .020-.049 displ. 31 in. span, 105 sq. in. wing area.



**HOWARD "IKE" \$3.00**

The ideal sport-scale job for beginner or expert. Big 20 in. True-Foil wing, Large 15 in. Micro-Metric fuselage. For .049 to .099 engines.



**PRIMER \$1.40**

Realistic profile type for stunt, training or sport. 18-in. span, 4 in. chord. .020-.099 displ.



**\$2.50**

First completely prefabricated scale control-liner for half-A's. One piece fuselage, big 17 in. span, 95 sq. in.



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Expert's choice for stunt and sport flying. Span 16 in., area 90 sq. in. .020-.099 displ. **\$2.25**



**WING DING \$2.25**

Tops for contest flying in 1/2 A. Span 18 in., chord 4 in., .020-.099 engines.

At your dealers—add 25c per kit by mail

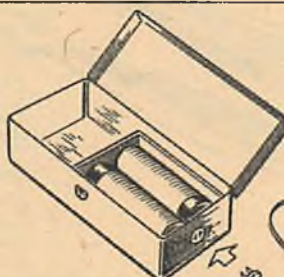
**MASTER MODELRAFT**

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## Off to a Good Start



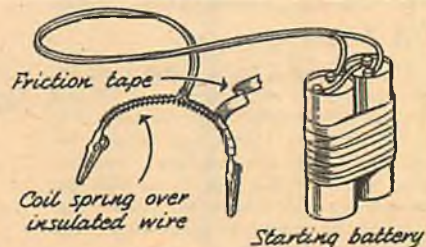
• Ordinary receptacle plug with prongs bent apart, makes quick booster battery connection—



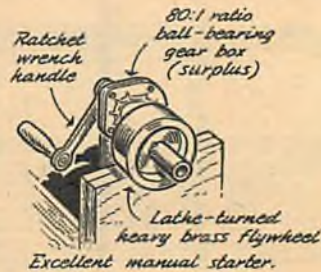
Booster battery cells wired from tool kit with receptacle and appliance cord & plug.



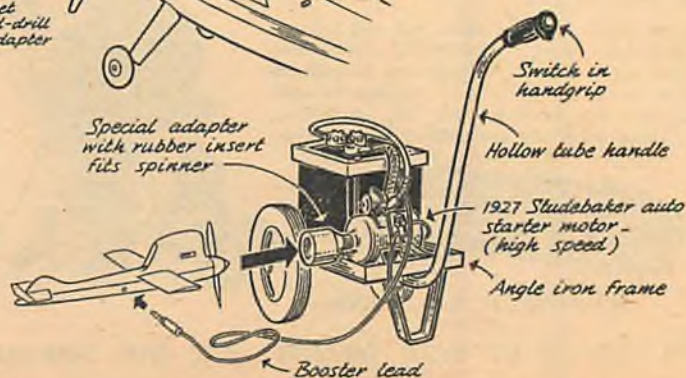
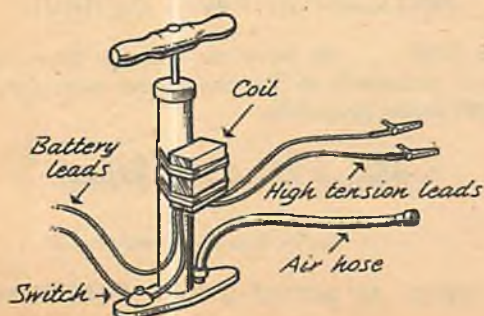
• Starter for midget engines uses speed-drill and rubber hose adapter



Starting battery



Excellent manual starter.







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FIRST WITH FINEST IN PLASTIC  
SCALE MODEL AIRPLANES

**World's Finest**  
PLASTIC ASSEMBLY KITS  
• SCALE PERFECTION  
• SPEEDY ASSEMBLY



ONLY  
**89c**

## LOCKHEED F-90

One of the latest and greatest!  $\frac{1}{4}$ " scale. Faithful detail molded in grey plastic. Seventeen parts. Canopy and pedestal in clear plastic. Pilot in olive drab. Colorful insignia

decals. Finished model  $10\frac{1}{4}$ " wing-spread. Complete with instruction sheet in handsome 3-color gift box.



### CURTISS RACER (R3C) $\frac{1}{4}$ " S

14 parts for plane in bright yellow plastic with mount. Instruction sheets and 2 color box. **50c**



### GEE BEE II $\frac{1}{4}$ " SCALE

Famous speedster! 12 parts in white for fast assembly. Complete instructions and 2 color gift box. A beauty! **50c**



### HOWARD "IKE" $\frac{1}{4}$ " S.

A proud model display piece! 13 plane parts in white plastic. Complete with instructions in 2 color box. **50c**



### LAIRD SPEEDWING SOLUTION

Another  $\frac{1}{4}$ " scale dandy! 17 un-assembled parts in yellow plastic. Complete instructions and 2 color box. **50c**



### SUPERMARINE (S6B) $\frac{1}{4}$ " Sc.

Outstanding float plane speedster! 14 parts in grey plastic. Instructions and 2 color box.  $7\frac{1}{2}$ " wing. **69c**



### LOCKHEED CONSTELLATION

Queen of the Airlines.  $10\frac{1}{2}$ " model from 14 parts in grey plastic. 2 color box and instructions. **69c**



### REPUBLIC FF-84 (Thunderjet)

$\frac{1}{4}$ " scale. 12 grey plastic parts with transparent canopy.  $10\frac{1}{2}$ " wing. 2 color box and instruction sheet. **69c**



### MUSTANG F-51H $\frac{1}{4}$ " Sc.

$9\frac{1}{2}$ " replica. 11 grey plastic parts, clear canopy, pilot in olive drab. Decals, instructions, gift box. **69c**

Speedy jet workhorse of Red Air Force.  $\frac{1}{4}$ " scale. Exact detail thruout in silver plastic. 25 parts for plane, with canopy and mounting pedestal in transparent plastic. 3 color box, instruction sheet, colorful insignia decals. Finished display model  $8\frac{1}{2}$ " wingspread



**NEW! RUSSIAN MIG**

**69c**



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# 5

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**NOMAD free flight . . . \$1.75**  
Profile fuselage, fine performance.



**PEE WEE PUP . . . 95c**  
Mighty lively. 17 $\frac{1}{4}$ " span  $\frac{1}{2}$  A



**STUNT RUNT . . . \$1.25**  
16" span profile stunter for  $\frac{1}{2}$  A.



**PEE WEE PURSUIT . . . \$1.25**  
 $\frac{1}{2}$  A trainer, 20" span.



**SUPER STUNT RUNT . . . \$2.25**  
Beautiful stunt biplane for .099 engines.

## JOY PRODUCTS COMPANY, MENOMINEE, MICHIGAN

### Model Progress

(Continued from page 74)

models. The first event was Half-A. Such models sound like bees, and look just about as dangerous. And ducking a Half-A does not produce that nervous paralyzing shock which a "C" job does. By such means the timers were gradually conditioned to higher power. Or we may say that they developed a sixth sense which told them which way to move when that "sound" was heard in the rear.

One could not help but notice the difference in the attitude of the timers. They started the first day standing straight up like men, arms swinging alongside and no sign of fear in their eyes. But toward the end, you could see that slouch developing and the instinctive swing of the arms across the face when that "sound" was heard.

The morning would come with mist covering the ground, and with no air movement. By seven the mist would thin out enough for test flying. By eight the models began to bounce in and out of the mist. By now one could sense thermals building up, and feel the heat of the sun. Gradually the mist would change from grey to white as the sun's rays fought it out with the moisture content of the air. The burning up of the mist would be a signal for mad activities in the free flight area. A fast count would give as many as twenty-five models straight overhead.

The perfect thermal conditions lasted only until about eleven. Then the wind would gradually build up from a soft and gentle breeze into a steady blow. It was still possible to get "long" flights which stayed "up" ten minutes or more, but such flights were swept out of timer's sight too soon to beat the earlier "ups"

and "downs." All this means that if you came to the field after lunch, you would think that Nationals were being held somewhere else.

In a way, this weather condition, and assignment of timers to events where entries were heavy, produced a very happy situation. The event of the day was over by lunch and one had the whole afternoon off to catch up on sleep or go swimming or do whatever had to be done without worrying that someone would come along and edge you off from the place you won in the morning.

Another event which provided "will-it-take-off" excitement was Cargo Clipper. At first the model would take off after a decent run. As more "cargo" was added, the low-slung no-pylon models would look like daschunds running along the ground and eventually getting off. And the final sight of the "saturated" models reminded us of a boa constrictor which stuffed itself too much for lunch to have any mobility left.

Perhaps the most heartening sight at the meet was the large number of "junior" contestants with "junior" helpers. Most of them behaved remarkably well under contest stress.

Although the entry list was predominantly Californian, enough contestants came from the rest of the country to give the meet a true national flavor. A spot check with the out-of-staters showed that they were glad that they came even though the distances may have been long.

We talked with some of the "new blood" and are happy to say that the kids seem to be keeping up the basic tradition and purpose of the "Nationals," which is to meet boys from other parts of the country and develop lifelong friendships through the medium of common interest in model aeronautics.

### Wright Biplane

(Continued from page 30)

with pulleys, flywheel and small parts added before being wood-filled and painted flat black. Smaller details, such as the tall radiator behind the front center strut and the cylindrical fuel tank are carved and painted flat black.

The wings should be wood-filled and painted before assembly. Apply filler coats uniformly to prevent warping but if you detect warps, add more filler on opposite surfaces to reduce it. Wings, elevators and rudders of the original plane were covered with undoped muslin. To simulate it, add a touch of black to white dope to give it an off-white cast; thin it considerably and spray it if possible. Since the covering was not taut on the original, the rib stations were not prominent. More noticeable were the diagonal seams of the muslin which can be simulated by ruling thin lines with gray dope to upper and lower surfaces. The struts may be left unpainted and can be given a coat of clear lacquer after the model is assembled.

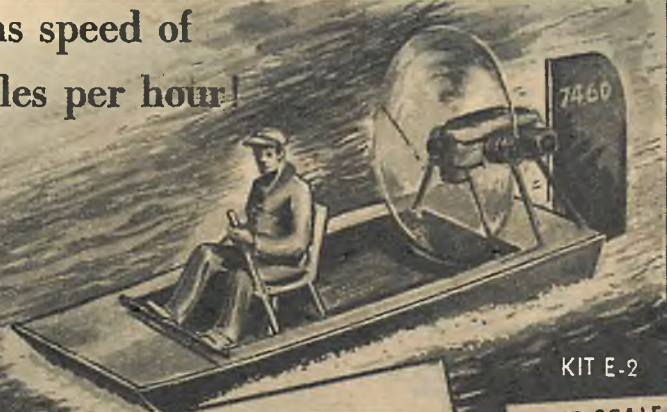
There is no specific method or sequence in assembly. Wings may be joined first, adding struts as you would cross members in a rubber model fuselage. The "fuselage" sides can be partly assembled on the work table, remaining members being added after the elevators are mounted. Tubular members supporting the propeller shafts can be painted black. Black silk thread is used for all wires, being carefully strung as tightly as possible and cemented.

The detailed Air Progress cutaway drawings by Douglas Rolfe on pages 62 and 63 of the current issue of "Air Progress" will be of great help in supplementing our drawings of the Wright biplane.



# Here's Another *FIRST* by Cavacraft★

Attains speed of  
60 miles per hour!



## EVERGLADE BUGGY

A working model of the  
FAMOUS AIR BOAT, a type  
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in the FLORIDA everglades.

Fully shaped and die cut.  
Size of craft 5" wide, 11" long.  
Recommended motors:  
1½ volt electric or ½ a gas  
engine.

**\$1.00**

KIT E-2

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World War I **SPAD**

SOLID SCALE MODEL



KIT E-1

**75¢**

Snorkel Type  
Submarine

**U.S.S. PERCH**

★ *Easy Assembly Instructions*  
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**ESSEX FRIGATE** of Salem, 1799, famed of Barbary Wars and War of 1812. Of this fine ship we have two kits—Complete kit on 1/8" scale, \$32.00. Complete kit on 5/64" scale.....\$12.00

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NOTE. All kits contain machine carved hardwood hulls, wood parts for spars and finishing of deck detail, casting, brass, blocks and cordage, and plans and instructions for the complete model.

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(3 sheets by Stevens)

**ESSEX** \$2.00  
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**DESPATCH NO. 9** \$1.25  
(2 sheets).....

**NEWSBOY** \$1.25  
(3 sheets).....

See these and 12 other interesting kits at dealers, coast to coast. Send 25¢ for the big, 32 page, 1953 catalog illustrating these kits and wealth of fittings.



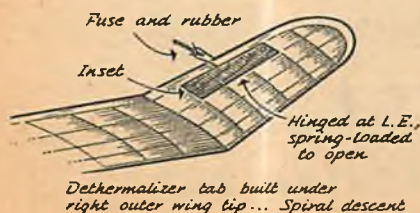
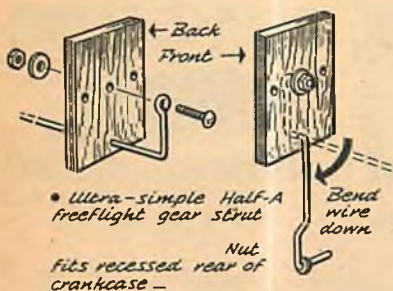
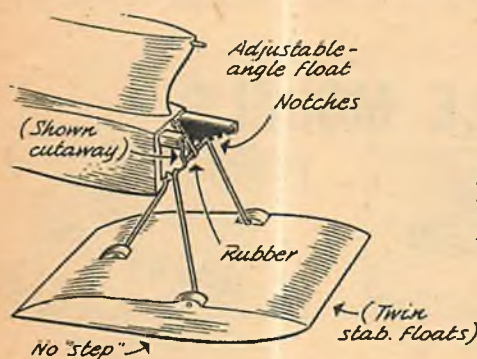
**DESPACH NO. 9 MODERN DIESEL TUG** of San Francisco. 5/32" scale. Complete kit..\$13.50



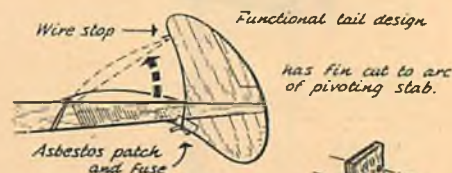
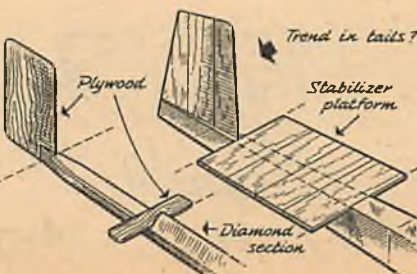
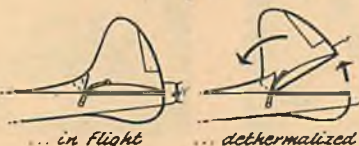
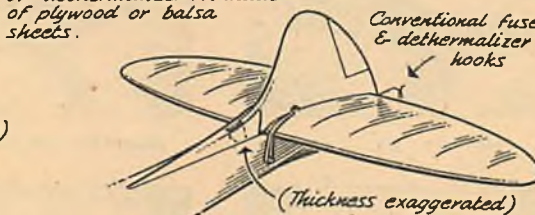
**NEWSBOY BRIGANTINE** of Boston, 1854, a beautiful model on 1/8" scale. A fast boat in the Mediterranean fruit trade. Complete kit..\$15.25

**MODEL SHIPWAYS, Folio 9, 476 Main St., Fort Lee, N. J.**

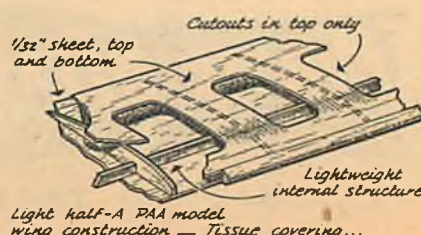
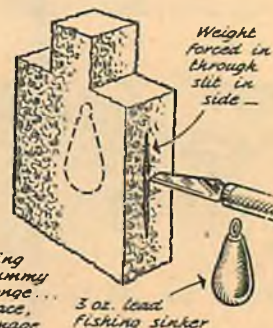
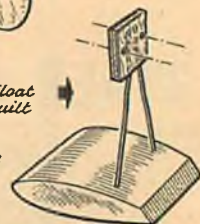
## Free Flight Ideas



slotted dorsal fin for guide and "stop" of dethermalizer... made of plywood or balsa sheets.



Quick detachable float has wire struts built into plywood "sandwich"—Bolts behind engine





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SIGMA 4F, 8000 ohms (limit of 1 per customer).....	5.95
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SIGMA 4F COILS, 10,000 ohms, fine for reworking those low ohmage units kicking around your junk box, a buy at.....	1.45

0-5 ma Meter 2 inch sq. ....	0-50 ma Meter 2 inch sq. ....
XFG-1 .....\$3.35	RK-61 .....\$3.50
IV5 .....1.65	3A4 .....1.00
3V4 .....1.15	3Q4 ......85
6C4 ......85	6J6 .....1.25
	1S4 .....\$1.35
	3A5 .....1.50
	3D6 .....1.35
	6AG7 .....1.65

## NEW FRESH BATTERIES

No. 412, 22½ volt.....	\$ .90	No. 413, 45 volt.....	\$1.50
No. 912 & 915, 2 for.....	.15	No. 935 & 950, 2 for.....	.19

6 VOLT DYNAMOTOR, delivers 250 volts at 100 ma. new.....	11.05
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ALNICO 5 DISC MAGNET, 1" dia. x ¼" thk with center hole, ideal for rudder controller.....	1.25
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ALNICO MAGNET RUDDER ACTUATOR, a light weight 3 position high efficient controller at ordinary escapement price.....	12.95
CRYSTALS, 27.255 mc at .01% tolerance, strong 3rd harmonic oscillators, newly manufactured to our specs.....	\$4.35 ★ Peterson Z-9..... 4.85
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Money Back Guarantee on All Items. Save C.O.D. fees, include postage, excess refunded. Minimum order . . . \$3.00 please  
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SENSITIVE RELAY SPECIAL, OUR OWN DESIGN, EQUAL TO SIGMA 4F .....\$2.95

## TRANSMITTERS and RECEIVERS

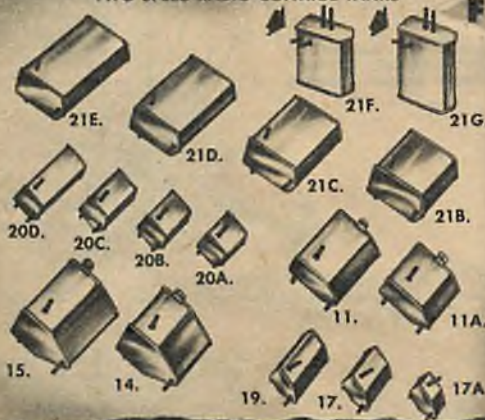
MILLER RECEIVER PARTS PACKAGE, complete with tube and SIGMA 4F RELAY.....	\$11.95
AIR TRAILS PLAN R-101 RECEIVER PARTS PACKAGE, with XFG-1 and SIGMA 4F relay.....	12.95
ESSCO SUPER, a new two tube reliable receiver, at the price of a one tuber, complete kit.....	15.95
AIR TRAILS PLAN R-101 TRANSMITTER PARTS PACKAGE, with tube, crystal, antenna and remote keying button.....	14.95

ESSCO SUPER, our own new HIPOWER SPECIAL, 2 tubes circuit, full 5 watts input. Easier to adjust than one tuber jobs. You can always bring them back with this job. Complete with tubes, antenna & cabinet.....	27.95
DUAL RANGE METER BOX, 5 ma and 50 ma ranges, a sensitive meter for receiver and transmitter adjustment. In small metal case, complete with plug and cable.....	8.95

## COMPONENTS

MINIATURE 25,000 potentiometer.....	.45
CERAMIC TRIMMER, 3-45 mmf.....	.45
RECEIVER PLATE COIL, low loss with iron core slug.....	.35
R.F. CHOKE FORMS, 3/16" dia. x ¾" long, notched ends for easy winding, with magnet wire.....	.10
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MICARTA BASE BOARD, for receivers.....	.25
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CLOSED CIRCUIT METER JACK, mounts in ⅜" hole.....	.35
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AIR TYPE VARIABLE CONDENSER, for stable and precise circuit adjustment, screw driver set, ceramic insulation.....	.45

## TWO SPEED RADIO CONTROL TANKS



**FROOM TANKS** are precision built of non-corrosive tin plate, and unlike Brass, will not discolor fuels or corrode tank. FROOM TANKS are soldered (not glued) and guaranteed against leakage. Large tanks are equipped with patented mounting brackets which may be bent to various positions for quick installation.

## ASSEMBLED TANKS

11. 1¼" wd., ¾" high, 2¼" lng.....	.80	20C. 1" wd., ¾" high, 1¼" lng.....	.75
11A. 1¼" wd., ¾" high, 2" lng.....	.80	20D. 1" wd., ¾" high, 2½" lng.....	.75
14. 2" wd., 1" high, 2" lng.....	.85		
15. 2" wd., 1" high, 2¼" lng.....	.85		
17. ¾" wd., ½" high, 1½" lng.....	.65		
(tank for ½ A Motors)			
17A. ¾" wd., ½" high, ¾" lng.....	.60		
(one minute tank for ½ A Free Flight)			
19. ¾" wd., ½" high, 2" lng.....	.65		
(tank for ½ A—No. 9 Motors)			
20A. 1" wd., ¾" high, 1¼" lng.....	.75		
20B. 1" wd., ¾" high, 1½" lng.....	.75		

## SURGE-CONTROL TANKS

21B. 2" wd., 1" high, 2½" lng.....	.95
21C. 2" wd., 1" high, 3" lng.....	.95
21D. 2" wd., 1" high, 3½" lng.....	.95
21E. 2" wd., 1" high, 4" lng.....	.95

## TWO SPEED RADIO CONTROL TANKS

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## FROOM SPINNERS

are hand spun which gives maximum strength plus light weight. Perfect balance of FROOM SPINNERS allows the utmost utilization of motor power. FROOM SPINNERS have been used on more winning models than any other spinner!

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2. 1¼" dia.....	.65	4. 2" dia.....	.95
2L. 1¼" dia., Needle Nose.....	.85	4L. 2" dia., Needle Nose.....	1.20
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3A. 1¾" dia.....	.90	8. 1" dia., ½ A Motors.....	.55
3AL. 1¾" dia., Needle Nose.....	1.15	9. 1½" dia., ½ A Motors.....	.55
		10. 1¼" dia., ½ A Motors.....	.60

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MUST HAVE  
MODERN  
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## JETEX JET ENGINES



JETEX "50"



JETEX "150"



JETEX "350"

### GIVE YOU THESE FEATURES

- TORQUE FREE THRUST OF TRUE REACTION MOTOR
- LIGHT WEIGHT, PRECISION MADE ALUMINUM PARTS
- LOW COST, SIMPLE, EFFICIENT DESIGN
- NO MOVING PARTS
- SAFE, CLEAN, SCIENTIFIC SOLID FUEL

SPECIFICATIONS	jetex jet engines		
model	50	150	350
ENGINE WEIGHT	.2 OZ.	.75 OZ.	2.5 OZ.
FUEL WEIGHT (min.)	.2 OZ.	.27 OZ.	.4 OZ.
TOTAL WEIGHT	.4 OZ.	1.00 OZ.	2.9 OZ.
① THRUST (max.)	.6 OZ.	1.75 OZ.	4.0 OZ.
DURATION—one charge	12 SEC.	18 SEC.	12 SEC.
DURATION—two charges	—	—	24 SEC.
DURATION—three charges	—	—	36 SEC.
TORQUE	NONE	NONE	NONE
EXHAUST VELOCITY	1200 PS	1400 PS	1400 PS
OVERALL LENGTH	1 5/8"	3 1/2"	3 3/4"
MAXIMUM DIAMETER	11/16"	1"	1 3/8"
EFF. WINGSPAN	12-20"	18-36"	32-54"
② ENGINE PRICE	\$ 1.95	\$ 4.95	\$ 8.95
③ FUEL PRICE	\$ .65	\$ .95	\$ 1.00

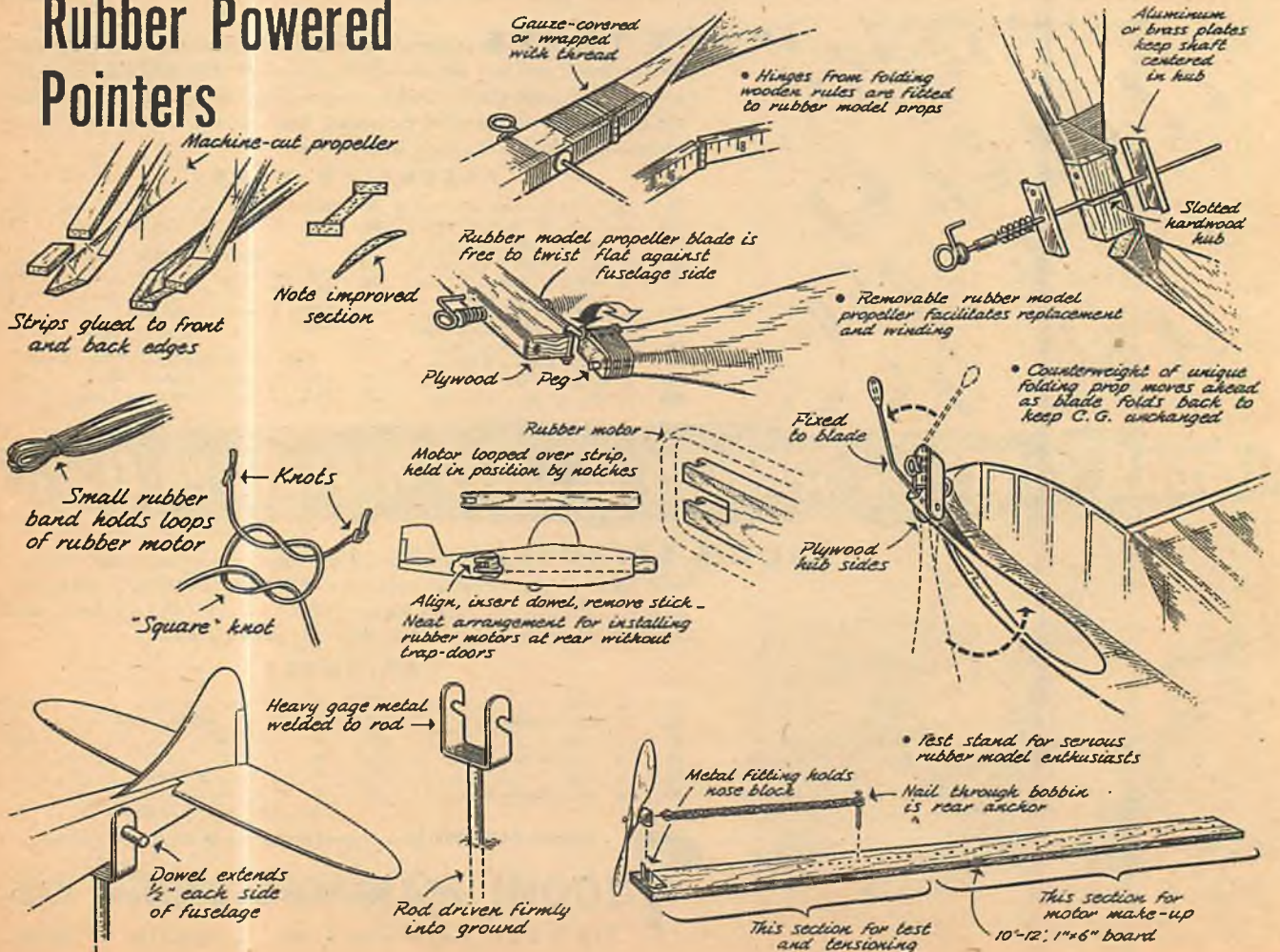
NOTE 1 THRUST OF "150" WITH AUGMENTER TUBE: 2.25 OZ.

NOTE 2 INCLUDES: ENGINE, ACCESSORIES, MOUNTING CLIP INSTRUCTIONS, FUEL

NOTE 3 INCLUDES: 10 FUEL CHARGES, IGNITERS, RETAINER SCREEN, SEALING WASHERS

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Send 15c to Dept. ATA for 28-page illustrated catalog of X-acto Hobbycraft line.

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*These famous  
products are now  
better than ever*



**Since 1947** O & R Fuels have been formulated to give modelers "the specific fuel for the specific purpose", the right fuel for each type of engine. Now Cheminized O & R Fuels are blended with a new difference you can see and smell in the can, feel and hear on the field! At your dealer's . . . . . **85c**

**Since 1948** O & R Glow Plugs have been the most widely used for all types of model work as original equipment and replacement. Have you noticed that the famous iridio-platinum element is Cheminized (with special insulation) against the destructive action of hot fuels? Even longer life, better performance! . . . . . **65c**

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### P-51, Vo. Corsair, F.W. 190 TYPHOON, ZERO, SPITFIRE

Accurate 1/2" scale reproductions . . . finest of their kind! Average wing span 18". Super-detailed 'cinch to follow' plans; cut-to-shape Wings, Stabs & Rudder plus All Hardware! Value plus!



FW-190

\$2.95  
Each

## ALIGNS ITSELF AS YOU BUILD!

### THE GUIDED STAR

40" span  
435 sq. ins.  
wing area

\$5.95



with 21 self aligning slots

The perfect easy way to build! Outstanding Stunt Model for .19 to .35 engines. Complete kit less engine includes die-cut sides, top, bottom, plywood formers, flaps; shaped rudder, stab, elevator, cockpit, turtle deck, formed landing gear.

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## NEW! SQUEEZE BOTTLE TOTE

### handy-boy

Unbreakable Plastic

NOW! A cinch to fill tank instantly—and NO waste! Fine nozzle—just squeeze! Handy attached cap! Holds 4 oz.! Includes filter.



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LIGHTNING .....\$2.50  
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See your dealer or order direct.

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New 1/2 A Hell Razor with 9" span—\$2.

159.23 m.p.h.—highest official time since 1949 in AMA contest! New and better magnesium castings.

### NEW ANTI-FOAMING



A blend of the finest chemicals with synthetic oil—for championship performance! Helps lubricate!



FUEL  
\$1.25  
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CONTEST DIRECTORS

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Now Available!  
HANDY  
SAFETY  
THONG.  
... 90  
lb. pull  
test,  
nickel  
plated.

75c ea.

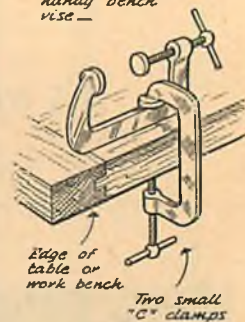
## Handy Hints

Fumes from thinner in tall bottle keeps brush soft & ready for use...

• Notch-cutting tool makes for uniformity in construction: speeds notching of ribs, leading & trailing edges, spars, etc.—Notch width is adjustable...



Two modelers' clamps to improvise a handy bench vise—



• Pipe cleaners, kept in kit box, serve as disposable dope "brushes" for quick field repairs—Patch



Brush

Hole drilled through cork

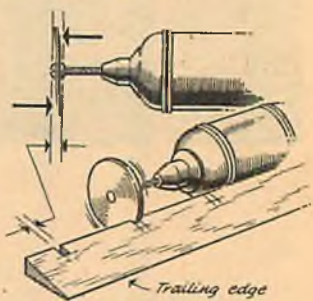
Small dope bottle

Thinner keeps bristles soft



• Plastic deodorant bottle, washed & filled with water, makes handy tissue sprayer.

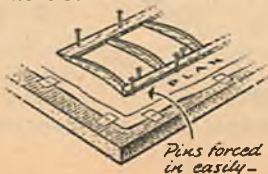
• Gear wheels from clock can be clamped into electric model hand tool for cutting notches.... bend opposite sides outward to govern width of cut—



Handy modelers' saw filed from hacksaw blade—

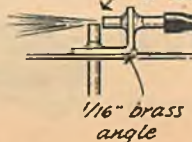


"Celotex" base as work board



Pins forced in easily—

Note relative position of tubes



1/16" brass angle

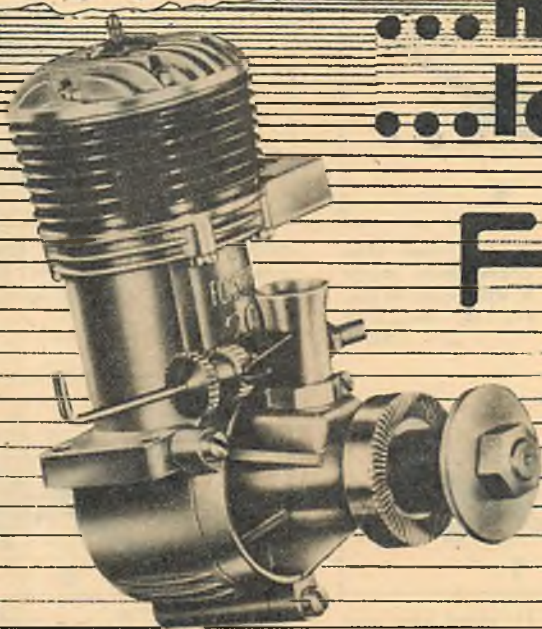


Air supply—10 lb. pressure

Vent

Air Trails Model Annual





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See and compare them at your hobby shop. It is the "built in" quality that carries you through, for which FORSTER engines are so well known! Super quality, so evident in every detail, is the basis of their high speed, power and long dependable performance.

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AIRPLANE and AUTOMOBILE

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### WEDGE and RECTANGULAR TANKS

14 Sizes priced to sell from

**39¢ to 69¢**



### NEEDLE VALVES

Combination brass and plated steel (rust proof) UNIVERSAL needle valves to fit all motors and 1/2A needle valves to fit all 1/2A motors on the market. Long tapers and fine threads are used for fine adjustments.

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ALL KITS BY MAIL, ADD 30¢

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the hottest Stunt ships



**P40F CURTISS WARHAWK**—Flying scale for team racing, pre-fab, die-cut, Class B-C .....\$5.95



**COMBAT SKY BOX**—full stunt ship, built-up fuselage, conventional motor mount. CLASS A & B, wing span 36 ins., chord 6 inches, 210 sq. ins. wing area .....\$2.95



**VIXEN**—F-B's newest stunt ship for engines from .030 to .065. Has 126 sq. ins. of wing area; 21 1/4 in. span; prefab. Class 1/2 A.....\$1.95



**VAMPIRE**—40" span, 9" chord, wing area 360 sq. ins. Ready-built fuselage, die cut ribs, shaped and formed parts. Class B-C.....\$4.50



**VIKING**—51" span, 11" chord, wing area 550 sq. ins. Prefabricated fuselage, die cut parts, easily assembled, short building time. Class C-D.....\$5.75



**SHARPY**—Stunt Plane—a trophy winner. 517 sq. inches—47" span, 11" chord. For class C-D engines. 49 cu. ins. up .....\$4.95

Baby Sky Box Stunt Class A-B.....\$2.95

Piper Vagabond Scale Stunt, Class A-B.....\$3.95

**F-B MODEL AIRCRAFT—3240 LARIMER—DENVER 5, COLO.**

## Tank Talk

Gits cap

Machined dural or magnesium tank; use "Permatex" in mounting—

Punched to fit under Arden head

Shim stock (.010), soldered

1 Empty fuel cans provide partially-completed fuel tanks

2 Assemble & solder

3 Add vents, fuel line and mounting lugs—

Football pump nozzle

Handy Filler for Half-A jobs

• Novel version of "balloon tank" uses regular tank (any shape) and pressure feed from small balloon... adaptable to speed and stunt

Air-filled balloon

Tank is filled, needle valve closed, fillers closed, inflated balloon attached, etc.

Filler and vent lines closed after filling—

Pickup midway back, toward outside of circle...

Engine venturi

Remove chemicals from Flashlight cell

Cut off upper part

Nut soldered to bottom

Dummy wing tank adds realism

Fuel tank

Dummy wing tank

• Multiple flight timer-tank

Plunger cuts fuel flow to engine—

Pneumatic timer

Vent

Filler

Wire fits tube

Tex or brass tank capacity for several flights

Fuel line to engine

Fuel inlet

Long duration

Short duration

Fuel level

Twist tube to govern duration

Tube fits rubber stopper tightly

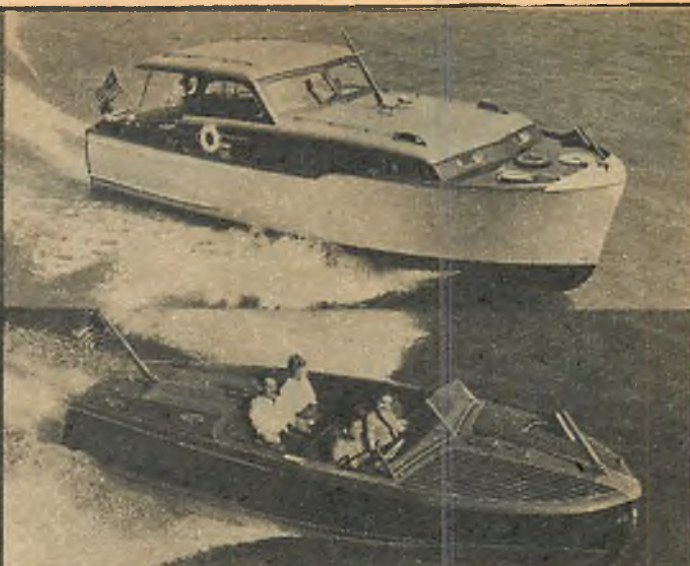
• Another neat tank idea for variable engine run—

• "Three-in-one" fuel tank eliminates use of timer for radio-control or sport flying by standardizing durations for short (A), medium (B), & long (C) runs...

Vent

Attach to appropriate fuel line





## 12 Beautiful Power Boats Available

The Dumas line, world's most authentic construction kits of the finest power boat models now offers twelve kits to choose from. Top left photo, Chris-Craft 46' Cruiser, 26" model at \$6.75. Top right, 33 inch model is offered of 34' Chris-Craft Commander at \$8.75. Lower left, Chris-Craft 25' Express, 25" model at \$5.75. Lower right, Chris-Craft 20' Runabout, 25" model at \$6.25. Owens yacht, Harbor, Vinyard, Colonial, 21" to 33 1/2" models. Prices \$2.95 to \$9.75.

Full size plans, all materials, lots of photos and packed in heavy boxes. Built the same as the large boats, frame construction-planked. Not prefabricated for children but construction kits for men. Write for free illustrated literature on all models or see them at all hobby stores. The leading boat line since 1945. U.S.A. and Armed Service only.

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*In stores from Alaska to Singapore you will find Dumas Boats*



**1951-52  
Yearbook  
reduced to  
\$1.00!!**

**WHY?**—Frankly, we want you, the casual model builder and casual technical reader to buy this YEAR BOOK. \$2.00 may have looked like you could do without this book, but for \$1.00 you cannot go wrong. If you pick up a point in the book that will save you five A/2 props, you will "break" even!

**WHY?**—In 1938 (the last book year) we printed 10,000 (\$1.00) YEAR BOOKS. Every copy was sold within four months. The 1951-52 Edition sales are far short of this mark. We are definitely worried. Not because of time or money spent, but because we seem to have less scientific model builders now than we had 14 years ago.—Since the only difference between 1938 and 1951-52 was \$1.00, we wonder—.

**WHY?**—Someday you may feel that model building and flying is becoming monotonous. You may be tempted to take up something else.—A good long session with the 1951-52 YEAR BOOK will convince you that building and flying models can be a lifetime hobby without peer. The fun really begins when you stop smashing your models, and start asking questions. This YEAR BOOK will introduce you to the "adult" viewpoint.

**P.S.**—We have reprinted 1934-37 and 1938 YEAR BOOKS. Can be had for \$1.00 each, Postpaid.

**WHY?**—We worked very hard for a very long time to find answers to stability and aerodynamic problems that did not seem to have logical solutions. Now that we have found basic facts that are accepted by aeronautical engineers, we feel that it would be a pity that only few of us should know the answers.—If we could, to satisfy our pride, we would be glad to give the books away for "free" just to spread the new knowledge we have found. Considering today's dollar, the new price is practically for "free."

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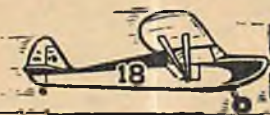


**TOP FLITE**  
MODELS INC.

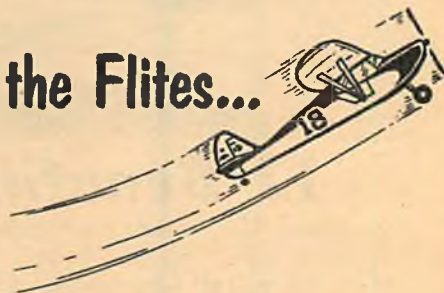
It's the PROPS...



that Pull the Planes...



that make the Flites...



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TOP FLITES and POWER PROPS were used by 19 FIRST PLACE WINNERS at the '52 NATIONALS... more than any other make!

Buy TOP FLITES and POWER PROPS—the props of champs!

LOOK FOR THIS  
PROP CABINET AT  
YOUR LOCAL DEALER

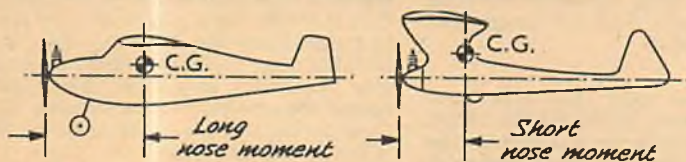
It contains FREE prop charts showing what size prop to use in the average engine-and-airplane combination.



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

## HOW TO measure thrust offset

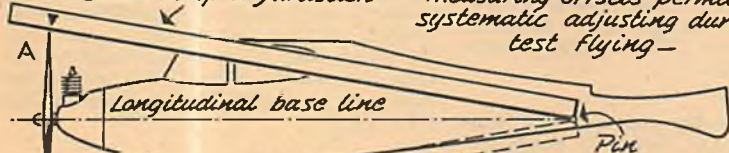
Thrustline adjustments are important for control models, doubly so for free flyers. Remember: in a 6" length, one deg. means an offset of approx. 1/16". Measuring the offsets as shown below is valuable; it permits reassembly after repair to precise adjustments used previously.



Thrust adjustments are more effective in long-nosed models... offsets have more leverage—

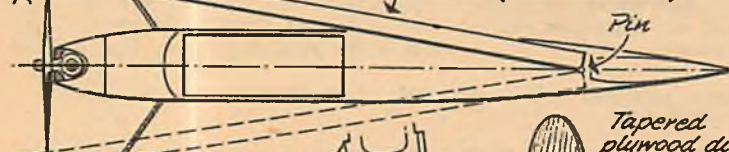
Balsa strip or yardstick

Measuring offsets permits systematic adjusting during test flying—



Measure from pin to blade A tip, revolve prop. 180° (this eliminates tracking errors) then check from opposite side (dashed lines) —

For downthrust  
For sidethrust



Ream engine lugs oversize to allow engine shift

Use washer under lug for downthrust

Tapered plywood disc can be rotated behind radial mount flange for offsets—

## Air Trails MODEL ANNUAL for 1953

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BIG 20" WINGSPAN

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**\$1.50**

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ME-109  
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RUDDER  
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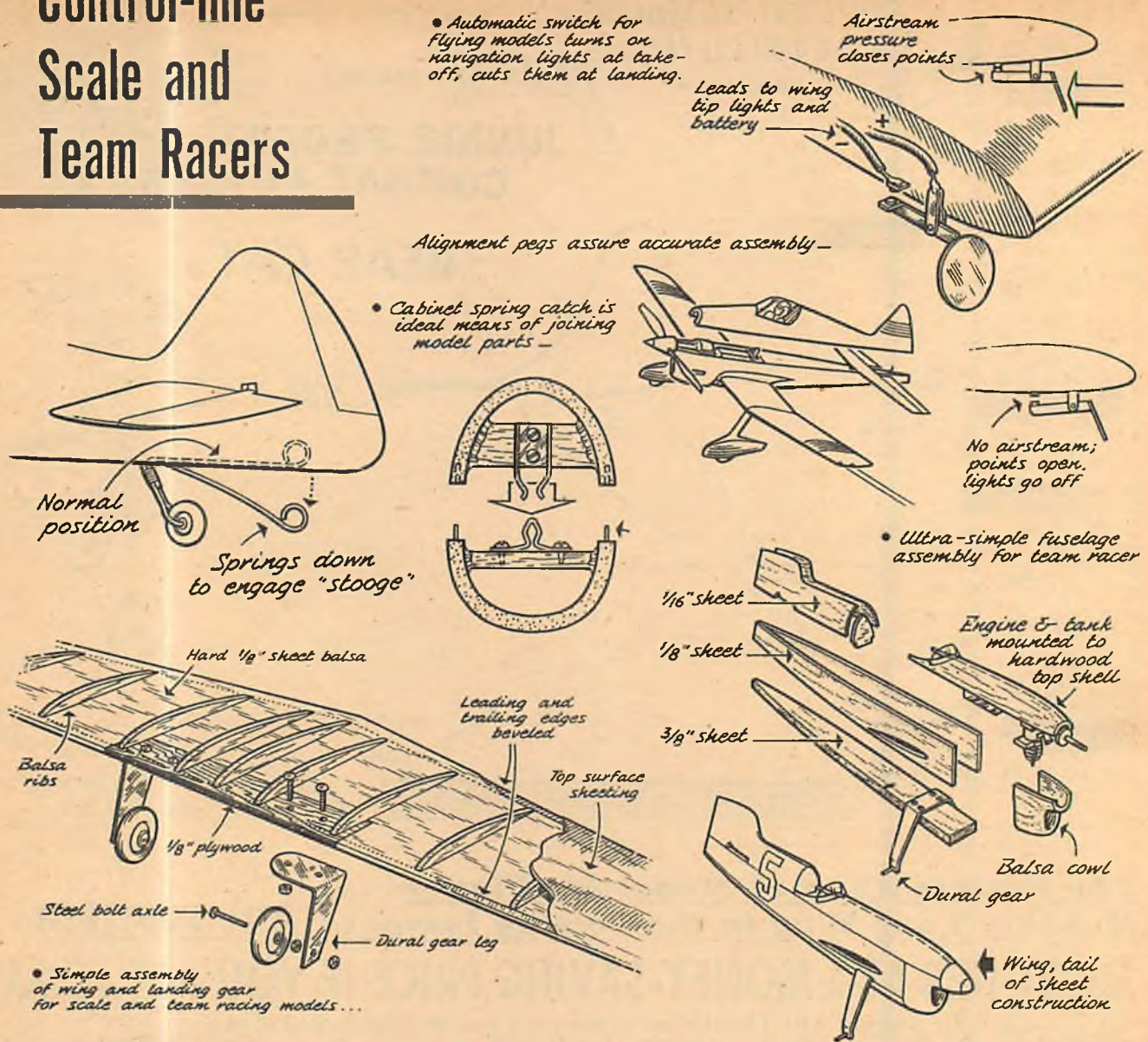
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MA-53

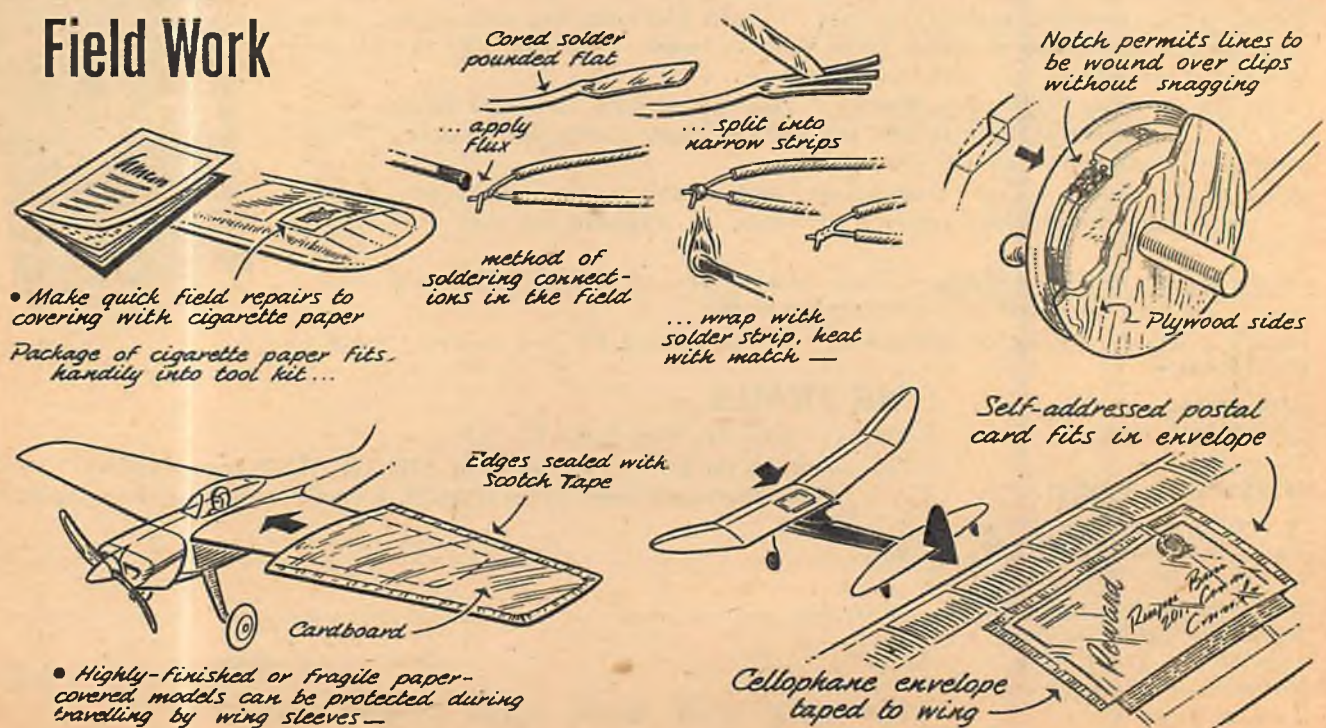
**FILL OUT AND MAIL THIS FORM TODAY!**



# Control-line Scale and Team Racers



## Field Work





# Berkeley's RADIO CONTROL

## PLANES... UNITS... ACCESSORIES...

The Radio Units and Kits presented here have each been re-designed three or more times. This permits us to offer you a time-tested, yet timely product. We prefer this to meaningless sensationalism in our advertising.

Newest in our line of Radio, PAA-Load designs, is this model by Henry Struck. Radio Chassis including batteries is removable as a unit. Split rudder tab for separate trim adjustments. Clip-in prone engine mount, tri-cycle gear.

### BOOTSTRAPS "A-RC"

For .09 to .14 Engines — 54" Wingspan  
(Empty weight 21 oz. — Radio, Equip., 14 oz. max.)

\$3.95

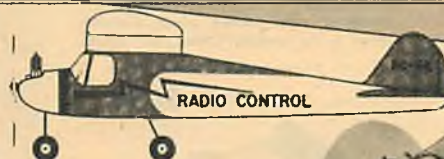
Radio Chassis

\$4.95

### "SUPER BRIGADIER"

For .19 to .36 Engines — 58" Wingspan

Contest proven in both Radio and PAA-Load events, this rugged model is easy to build, adjust, and fly. Designed by Henry Struck, pre-fabricated kit includes complete Radio Control and PAA-Load installation drawings.



### BRIGADIER "RC-38"

For .035 to .099 Engines — 38" Wingspan

\$1.95

So many model builders converted the old Brigadier "38" kits into Radio jobs, we have now re-designed the kit especially for Radio Control or PAA-Load flying. Plans include Radio installation details, Die-cut parts.

## "SUPER AEROTROL" 27mc. Crystal Control Radio Control

**Biggest R-C Value Ever!**

**COMPLETE READY-TO-OPERATE  
ASSEMBLED SUPER AEROTROL**

NOTHING TO BUILD

UNIT INCLUDES:— NOTHING EXTRA TO BUY (except batteries)

Assembled Transmitter with Antenna;  
Assembled Receiver with Meter Plugs  
and Accessories; Super Escapement;  
0-3 Milliammeter. Total Value—\$58.35

**\$49.95**

**Sold Separately:**  
Super Aerotrol **RECEIVER** \$22.95 tubes included  
Super Aerotrol **TRANSMITTER** \$27.95 tubes included



**NO OPERATORS  
LICENSE REQUIRED!**  
First Transmitter You Can Build,  
Operate, Maintain Yourself!



### MILLIAMETER

O- 3 Milliammeter ..... \$3.50  
O-50 Milliammeter ..... 2.75

Low in cost, manufactured specifically for use with Super Aerotrol. O-3 Milliammeter for use with Super Aerotrol Receiver. O-50 Milliammeter for use with Super Aerotrol Transmitter.

**Ready-to-Assemble Kits...**

### DUST-CORE TUNED Super Aerotrol RECEIVER

- NEW "locked-channel" dust-core tuning. (We have shipped the sample receivers across the country and to Europe without the frequency changing!)
- Light in Weight, 2 1/2 oz. less batteries.
- Simple super-regenerator circuit, 100% dependable.

Kit includes: Finished, tested sensitive relay; finished dust-core tuner; drilled bakelite base with condensers and sockets attached; all electrical components, condensers, resistors, coils, chokes and potentiometer; all necessary contacts, and color-coded wiring. Can be assembled in less than two hours. Complete building and operating instructions are included.

Kit (less tube) ... **\$13.95**

### Crystal-Controlled Super Aerotrol TRANSMITTER

- Completely portable — Self contained — No separate antenna — No external Batteries! — Operates on 27.235 mc. — Weighs 3.5 lbs.

Kit includes all necessary parts (except tube and batteries): Precision Ground Crystal; Painted Metal Cabinet; Finished Sectioned Antenna; stamped and formed chassis with all holes punched; all necessary components, resistors, condensers, coils and chokes; color coded wiring. Can be assembled in less than two hours. Complete building and operating instructions are included —

Kit (less tube) ... **\$19.95**

### DE-Aerotrol (for 52 mc.) Complete Kit—\$22.95

Includes Transmitter, Receiver, Escapement (less batteries and tubes).

XFG-1 Receiver Tube ..... \$3.50  
3A5 Transmitter Tube ..... \$2.25

\*Prices and specifications subject to change.



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Contains complete line of kits,  
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# MODEL BOATS...



by **Berkeley**

**Naval Architecture in Miniature at its very best**

Our Designers all have Full Scale Boat and Airplane experience. The combination of Naval Architecture and Aerodynamics has produced models that are outstanding in performance and design.

All Scale "Chris-Crafts" are designed by the Interseting Conical Lofting Method. Mahogany Veneer construction is used throughout. All wood parts are accurately Die-Cut to shape, and need only be assembled.

**NEW**

**Chris-Craft**

## "OUTBOARD EXPRESS CRUISER"

For Electric Outboard & Inboard Engines  
18" Long—1" Scale

The ideal kit for the new model electric outboard motors, or an electric inboard motor. Designed from factory plans, authentic down to the special "Chris-Craft" decals.

Kit is complete and priced at ...  
**\$2.95**



22 Foot

**Chris-Craft "EXPRESS CRUISER"**

For .045 to .099 Engines, or Small Electric Motors  
A really beautiful model on your shelf or on the water. Performance and planning characteristics are comparable to Riviera-Runabout. Both are built to the same scale. "1/2 A" Marine Hardware and Deck Hardware is included.

3/4" Scale—14" Long  
4 1/2" Beam  
**\$3.50**

## "1/2A" MARINE HARDWARE SET

For .035 to .099 Engines  
**\$1.00**

Ready-made parts include: Engine Coupling; Shaft; Shaft Tube; Strut; Propeller.

## "A-B" MARINE HARDWARE SET

For .014 to .036 Engines  
**\$2.95**

All parts are ready-made. Set includes: Cast Propeller; Cast Strut; Engine Coupling; Drive Shaft; Stuffing Box; and Hook-up Plates.

**The Newest in Flying Thrills!**

## "1/2A" "PRIVATEER" FLYING BOAT

With N.A.C.A. "Long Planing Hull"

Long Planing Hull design is revolutionary in seaplane performance. Smooth, effortless take-off in less than fifteen feet. Buoyant sponsons hold model upright in wind and waves.

.035 to .074 Engines—36" Wingspan

Extensively tested on open water, it has proven itself practically crashproof. Hydro flying hints are described in detail on the plans.

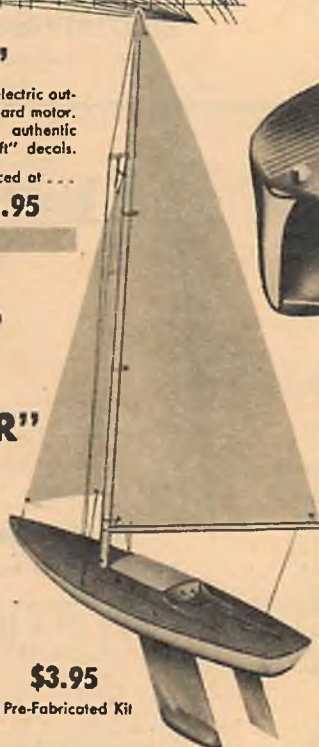
Priced at only  
**\$2.95**

Hull is built-up pre-fabricated sheet balsa construction with no complex curves to bend. Fuselage, sponsons, wing and stabilizer are of self-draining design. Die cut celluloid windshield, die cut balsa parts. METAL MOTOR MOUNT AND NACELLE.

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Berkeley Catalog—25¢



**\$3.95**

Pre-Fabricated Kit

## "SAILABLE"

The Sailable "16" is a scientifically designed sailboat with amazing speed. It has a regatta record to prove it. The rudder is timer-operated by a fuse mechanism that makes the boat "Come-about", and return over the same course.

Overall Height—25 3/4"—Length—15 1/4"

Sails are included, ready to use. The hull is balsa, completely carved and hollowed. Scored Deck and Cabin are Die-Cut Mahogany Veneer. Molded Metal Keel and Complete Hardware.



19 Foot

**Chris-Craft**

## "RIVIERA RUNABOUT"

For .035 to .099 Engines—12" Long

This test model pictured here crossed the Connecticut River at full throttle. It is hard to describe its realism in the water. You have to see it to believe it. Kit includes: "1/2-A" Marine Hardware, plus Metal Bowplate and Deck Hardware.

**\$2.95**



## "SEA-JET"

Complete with "JETEX 50" Engine

A complete high speed jet powered boat that races 400 feet in 15 seconds. May be adjusted for turn. The hull is formed from strong colored plastic. Engine is installed in model.

**\$1.95**



**"PRIVATEER"**



# FAMOUS CONTEST FLYERS-

## Berkeley KITS...

### PRE-FABRICATED

Ready for Inspection at your Local Dealer!

#### Free-Flight Contest...



FEATURING  
"HOGANAMIC"  
CONSTRUCTION:

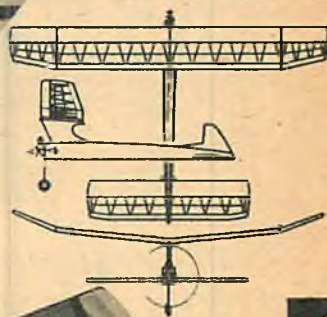
**FIRST PLACE WINNER**  
1952 NATIONALS - AND  
1952 INTERNATIONALS!

### Denny Davis's "SANDY HOGAN"

70" Wingspan — .29 to .35 Engines

Featuring warp resistant "Hoganamic" construction, this proven design has amassed an enviable contest record. Die-cut parts, complete hardware, etc.

**\$5.95**



### "MINI-HOGAN 34"

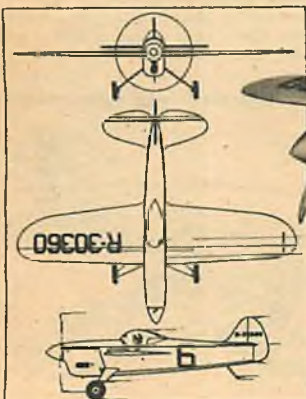
34" Span—.035 to .074 Engines

**\$1.95**

### "MINI-HOGAN 45"

45" Span—.074 to .099 Engines

**\$2.95**



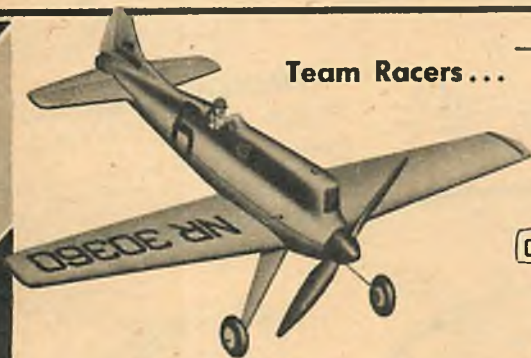
### "THE QUEST" Team Racer

**\$4.95**

.23 to .36 Engines

"The Quest" is the newest addition to our line of Team Racers. The design features a readily assembled sheet planked fuselage assembled on a basic fuselage box. A metal cowl, celluloid canopy, formed sheet metal gear, wheels, Jim Walker "U-Control" System, all necessary hardware, and die-cut parts are included.

#### Team Racers...



### THE "KEY"

For .23 to .36 Engines — 29" Wingspan

A fully carved fuselage, all metal landing gear and shaped wing surfaces simplify construction

**\$5.95**



### THE "KEY-DET"

.074 to .099 Engines — 18" Wingspan

Designed for the smaller engines, this kit is pre-fabricated in same manner as the "Key."

**\$2.95**

#### Controline Stunt...



Jim Saftig's

### "ZILCH"

This famous stunt design has been constantly improved and kept up-to-date. — Now it is available for "1/2 A, A, B, & C" engines.

### "SUPER-DUPER ZILCH"

.45 to .65 Engines  
52" Wingspan

**\$5.95**

### "MINI ZILCH"

.020 to .049 Engines  
20 1/2" Wingspan

**\$1.25**

### "LIL-DUPER ZILCH"

.19 to .29 Engines  
42" Wingspan

**\$3.95**

### "WEE-DUPER ZILCH"

.045 to .099 Engines  
34" Wingspan

**\$2.95**

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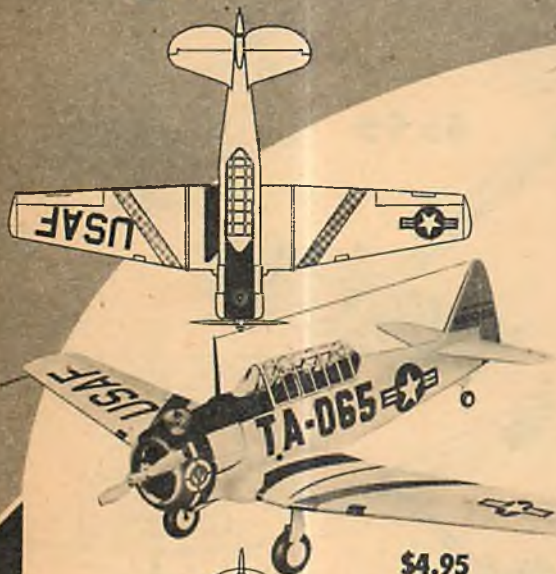
# THE PERFECT GIFT... To Give or Receive...

Embodying the finest in design, with completeness found only in a Berkeley Kit, these models will satisfy the exacting modeller, with their custom-designed parts, decals and metal Hardware!

## A Berkeley

### Pre-Fabricated SCALE Controliner

## \* KIT...



\$4.95

#### North American "AT-6 TEXAN"

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

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.



\$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 — 3/4" Scale from factory plans.



We urge you to see this kit. Few airplanes lend themselves to model work as well as this Atomic Carrier Bomber. It is designed for active flying, with none of the usual frailties. Carved fuselage and nacelles make it very easy to assemble. Climbs on one engine, uses Jetex (internally mounted) for scale effect and reserve power only. Perfect scale throughout!



\$4.95

#### Betty Skelton's "PITT'S SPECIAL"

For .19 to .33 Engines — 25 1/2" Wingspan

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

\$5.95

#### "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.



\$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.



\$5.95

#### 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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Contains complete line of kits,  
Supplies, Accessories, Information.

25¢





# Berkeley's

## Pre-Fabricated FLYING SCALE FIGHTER

*Control Lines*

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

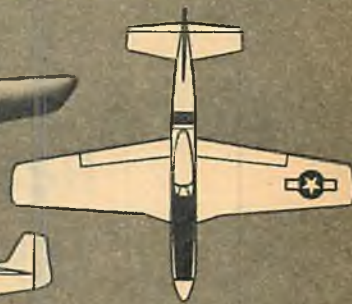
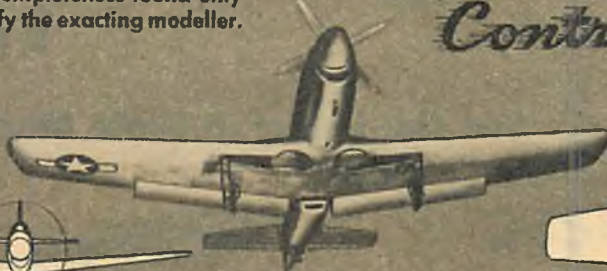


### North American "P-51 MUSTANG"

37" Wingspan — For .19 to .36 Engines

**\$5.95**

For the detail conscious model builder this kit is a must. Landing gear and tailwheel is retractable and extensible in flight. Flaps, elevator and rudder control are operated through bellcrank.



**\$4.95**

### Republic "P-47 THUNDERBOLT"

40 3/4" Wingspan — For .29 to .65 Engines

History was written with this famous fighter of World War II. Fully automatic wing flaps and engine throttle control make it possible to duplicate the full scale counterpart in flight.



**\$4.95**

### Grumman "F-8-F BEARCAT"

35 1/2" Wingspan — For .29 to .65 Engines

Known as one of the fastest climbing fighters of all time, the Bearcat is an excellent subject for Carrier Deck Flying. "Autotrol" rudder operation eliminates slackening control lines.

## "CHAMPIONSHIP"

## "1/2 A" FLYING SCALE MODELS SWEEP NATIONALS AGAIN—

These full One-Inch Scale models have been designed for free-flight flying, and have proven themselves on the contest field. .035 to .049 engines, CO<sub>2</sub> or rubber power is suitable. For control line conversion, .049 to .099 engines are advised. Die-cut balsa parts.

Interstate Cadet Wins First in Junior-Senior...  
Piper Super Cruiser Wins First in Open!



**\$1.95**

### CULVER "V"

29" Wingspan

This low-wing sport plane turns in long stable flights. The tricycle landing gear adds realism to landings.



**\$1.95**

### INTERSTATE CADET

35" Wingspan

A nine minute single flight at the 1951 Dallas Nationals is the best measure of this model — a 3 time Nationals Winner!



**\$1.95**

### PIPER SUPER CRUISER

35 1/2" Wingspan

This model won 1st place in the Open division at the 1952 Los Alamitos Nationals. Plans show pontoon details. Wheels in kit.



**\$1.95**

### STINSON SENTINEL "L-5"

33 1/2" Wingspan

This model is a constant winner at National Meets. It is a commercial version of the Army's "Flying Jeep."



**\$1.95**

### STINSON VOYAGER "150"

34" Wingspan

Equipped with wing slots, this authentically detailed model flies with the best. Designs in this series have been chosen for performance.



**\$1.95**

### FAIRCHILD 24 "RANCHER"

36 1/2" Wingspan

Largest in the series is the never to be forgotten Fairchild. Stable, strong, detailed, it is ideal for contest experimentation.



**\$1.95**

### AERONCA SEDAN

34" Wingspan

Featured as a landplane, plans show pontoon details for those desiring the added thrill of water take-offs. Finished model is really spectacular.



**\$1.95**

### CESSNA "140"

33" Wingspan

The clean lines and stable plan form of the Cessna make it ideal for 1/2 A" or rubber power. Contest potentialities are unlimited.

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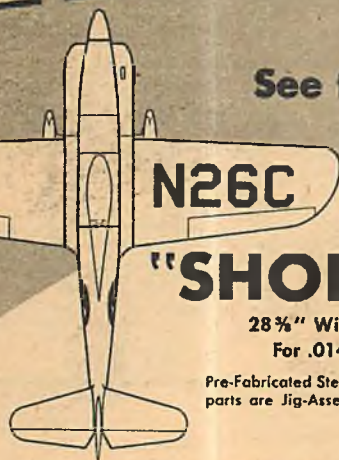
**25¢**





# 3 NEW SCALE MODELS... by Berkeley

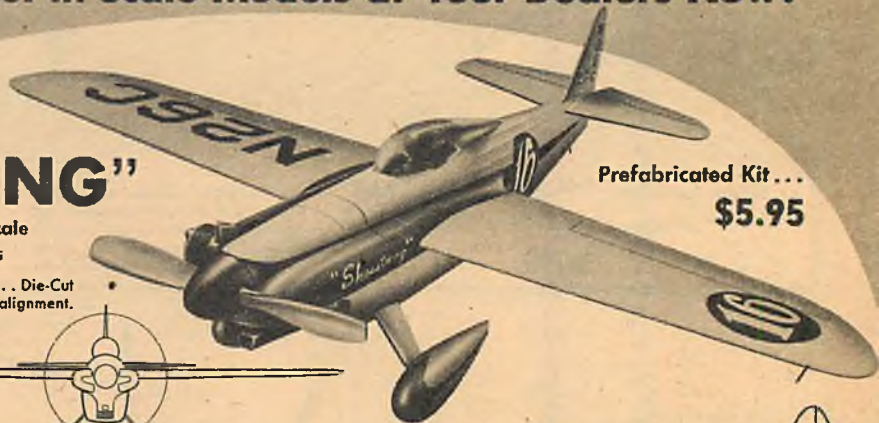
See the Latest in Scale Models at Your Dealers Now!



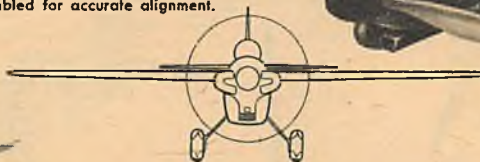
## "SHOESTRING"

28 1/2" Wingspan—1 1/4" Scale  
For .014 to .036 Engines

Pre-Fabricated Step-Keel Construction... Die-Cut parts are Jig-Assembled for accurate alignment.

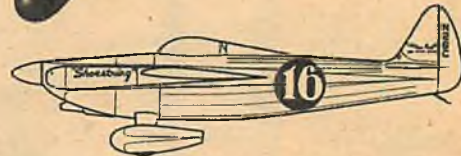


Prefabricated Kit...  
**\$5.95**



Here is the Continental Trophy Winner in beautiful miniature. A perfect kit model for Team Racing, Scale Beauty and even for Stunt Flying. Designed and produced in the wonderful tradition that was established by Berkeley's "Minnow", "Pitt's Special" and other deluxe Controliners.\*

Complete Metal Hardware including Wheel Pants; Spinner; Apple Cheek Cowls; 1-piece Spring Cantilever Landing Gear; Complete Control Mechanism.



PLUS: — Plastic Bubble Canopy; Metal Bushed Rubber Wheels; Covering Material; Plywood Firewall; Hardwood Motor Mounts; and Complete Full Size Plans with Step by Step Construction Details as only Berkeley supplies!

The Newest Scale  
*Controliner*

## TWO NEW CHAMPIONSHIP SCALE DESIGNS...



## Army Liaison YL-24 "HELIOPLANE"

Variable Camber Wing for Two-Speed Radio Control Flying!

Here is the model designed to use radio control devices that will be available in the next few years. The Helioplane is the first model that permits the use of the scale flaps giving true two-speed flight.

Slotted flaps may be depressed 10 degrees for Free-Flight, depressed 25 degrees for slow speed radio control flying; or raised 5 degrees for high speed flight.

38 3/4" Wingspan—1" Scale  
For .049 to .14 Engines

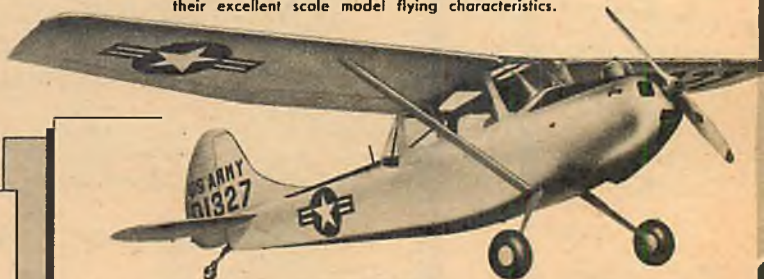


With a large prop and full span flaps, the full-scale "Helioplane" can take-off with full load in 300 feet, maintain level flight at 30 m.p.h. Top speed is 150 m.p.h. Perfect for model work, you will hear more about this amazing airplane in the days to come.

Kit **\$3.95**

### Both Kits Include:

Precision Die-Cut Balsa; Shaped & Notched Trailing Edges; Formed Wire Landing Gear; Rubber Wheels; Authentic Fuel Proof Decals; Full Size Detailed Plans.



## Cessna L-19 "BIRD DOG"

For 1 — Free-Flight "1/2 A" Gas Power 36" Wingspan—1" Scale  
2 — Free-Flight Rubber Power .035 to .049 Engines—Free-Flight  
3 — Control-Line Gas Power .049 to .099 Engines—Controline



The Army's main Liaison plane in Korea — perfect in dimensions for Free-Flight Model flying.

Accurate and up-to-date National Guard Fuel-Proof Decals included in kit. Plans also show Pre-Korean Army markings.

Kit **\$2.95**  
Prefabricated

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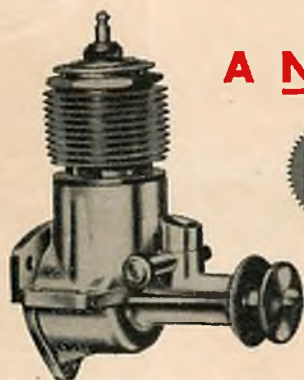
# announcing 2 NEW CUBS



**For PRICE, POWER,  
and PERFORMANCE**



A Complete Line of  
**PROVEN**  
Miniature Engines  
and Accessories



**A NEW DISPLACEMENT!**

## OK CUB .14

Produced at the request of top plane designers! Opens an entirely new field for the hobbyist. A light-weight engine with the extra power so often needed. For free flight, control line and radio controlled flying.

### CLASS A

Displ. ....	.149	RPM .....	3,000 to 15,000
Bore .....	.600	Weight .....	2 3/4 oz.
Stroke .....	.530	Price .....	only \$8.95

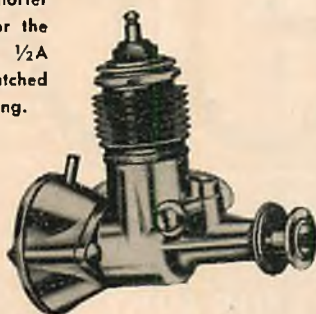
**A NEW CUB FOR THE EXPERT!**

## OK CUB .049X Combination Package

Companion to the famous .049 Cub. Provides higher output due to shorter stroke, larger bore, lighter weight. Designed for the advanced hobbyist. The top performer in the 1/2A Class. Package includes assembled engine, matched prop, extra rear cover, fuel tank, neoprene tubing.

### CLASS 1/2A

Displ. ....	.049
Bore .....	.420
Stroke .....	.360
RPM ..	3,000 to 15,000
Price .. only	\$6.25 Complete



O. K. GLOW FUEL  
Pint 85¢



O. K. PLUGS  
Short or long — 59¢



O. K. CUB .049  
POWER KIT  
"Assemble-it-Yourself"  
\$4.95



O. K. CUB .049  
\$5.25



O. K. CUB .074  
\$5.95



O. K. CUB .099  
\$6.95



O. K. MOHAWK CHIEF  
\$9.95



O. K. HOTHEAD  
\$10.95



O. K. COMBINATION PACKAGES	
CUB .039 .....	\$4.95
CUB .049 .....	\$5.75
CUB .074 .....	\$6.75
CUB .099 .....	\$7.75

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# COMET

*The Largest Selling Kits in America*



**\$1.00**

— because they're tops  
in Design, Flyability  
and Value!



## The "P" Line FLYING SCALE MODELS

Want big wingspans? Here they are—from 24 inches to 54 inches! Want versatility! Comet's "P" models can be flown rubber-powered or adapted for use with Glo Plug engines! Want value? These are really big values at \$1.00! Buy, build and fly all eleven models including the famous Mustang warplane pictured above!



## The "M" Line Struct-O-Speed "E-Z"- Built Pre-rubber FLYING MODELS

Add up all the features and you will find that you have far more than a dollar's worth in each of the six kits in this line! Pre-fabricated to the "Nth" degree! Rubber-powered but suitable for 1/2A engines; spring-type shock-absorbing landing gear, shaped Holl-o-Wing, finished plastic prop and cowling—and many more features!

**50¢**



## The "L" Line FLYING and FLYING SCALE MODELS

This Sabre Jet is typical of the "hot" numbers contained in this group of twelve popular models! Fly 'em rubber-powered or with Glo Plug engine. Designed to guarantee easy construction and excellent flyability! Truly tops in value at 50c.



## The "K" Line Struct-O-Speed "E-Z"- Built Pre-Fab FLYING MODELS

Here are the most complete 50c kits on the market—six terrific numbers, including the Thunderjet shown above, the Sabre and Mustang. Plastic cowling and prop, balsa Holl-o-Wing, completely pre-fabricated with die-cut, color-printed balsa sheets.

*See these and other Comet Kits at other prices at your Hobby Dealer's*

**COMET MODEL HOBBYCRAFT, INC.**  
501 WEST 35th STREET CHICAGO 16, ILLINOIS