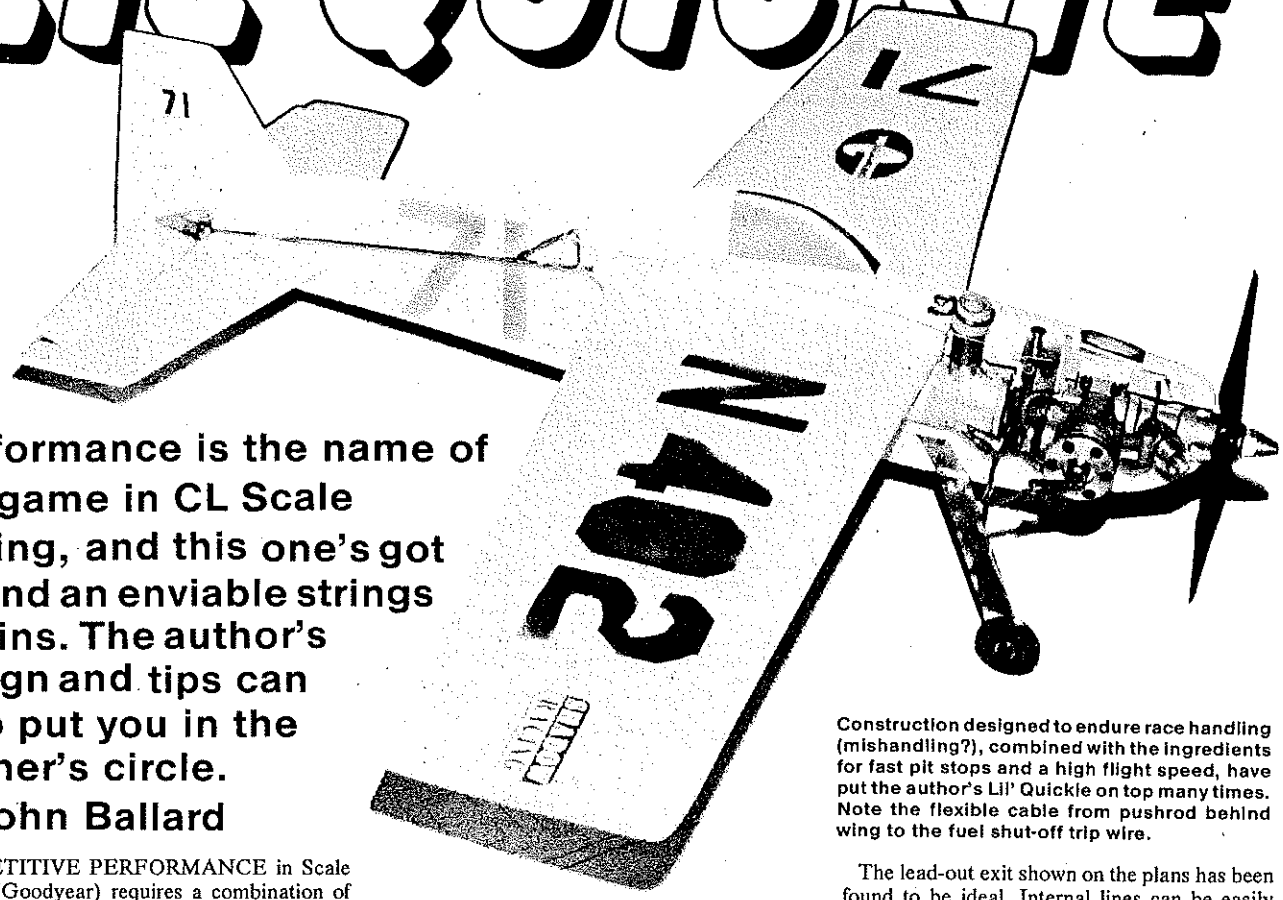
LIL' QUICKIE



Performance is the name of the game in CL Scale Racing, and this one's got it—and an enviable strings of wins. The author's design and tips can help put you in the winner's circle.

■ John Ballard

Construction designed to endure race handling (mishandling?), combined with the ingredients for fast pit stops and a high flight speed, have put the author's Lil' Quickie on top many times. Note the flexible cable from pushrod behind wing to the fuel shut-off trip wire.

COMPETITIVE PERFORMANCE in Scale Racing (Goodyear) requires a combination of engine, airplane, pilot, and pit man. The Lil' Quickie had been one of the most successful designs. It has dominated the event in the years 1977, '78, '80, '81, and '82.

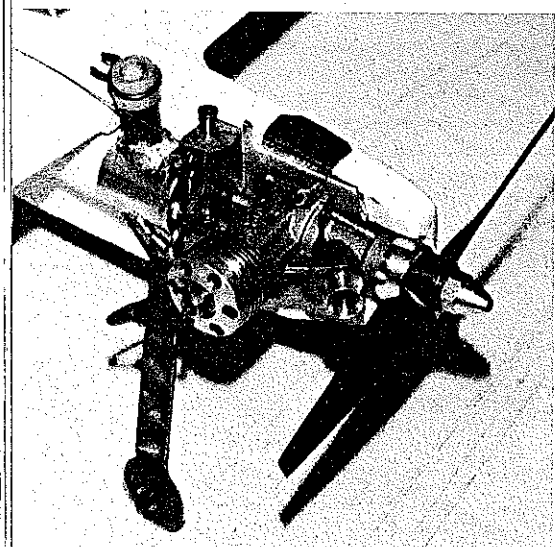
Racing requires an airplane which combines maneuverability, quickness, and impeccable landing and takeoff characteristics. The Lil' Quickie has excellent size relationship of wing, body, and elevator. In addition, ample fuselage area is available for engine, fuel shut-off, tank, and landing gear positioning. The performance of this design has enabled me to record a record Open category Nats time of 5:47 in 1978 for a 160-lap race.

This article is intended to acquaint the CL Scale Racing enthusiast with a high-performance model incorporating the latest construction techniques and a competitive total "system."

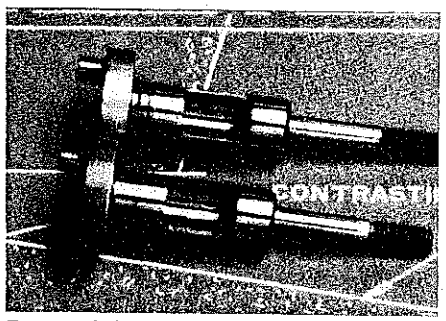
The wing construction basically is straightforward. In the past I have used a built-up wing, but several failed on "pit man catches." A ⅜ balsa wing (carved to shape) was found to be best. The 3/16 x ⅜ spar is a necessity to prevent cracking during a "fast shut-down." Damage from rocks and pitting gloves can be minimized by utilizing the ¼ x ⅜ spruce leading and trailing edges. The spruce also gives the wing additional rigidity.

The lead-out exit shown on the plans has been found to be ideal. Internal lines can be easily installed by carving a "hatch cover" on the underneath side of the wing and incorporating the slotted buttons in your line construction.

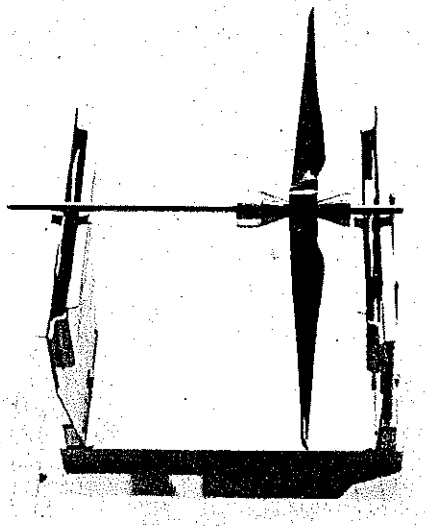
Fuselage. Proper selection of hard, straight-grained ½-in. balsa for fuselage construction is mandatory. A ⅜-in. fuselage traditionally has been used, but the ½-in. is stronger, especially utilizing the extra-long ⅜ x ½-in. maple engine mounts. The engine, fuel shut-off, and tank can be mounted securely to these long maple mounts.



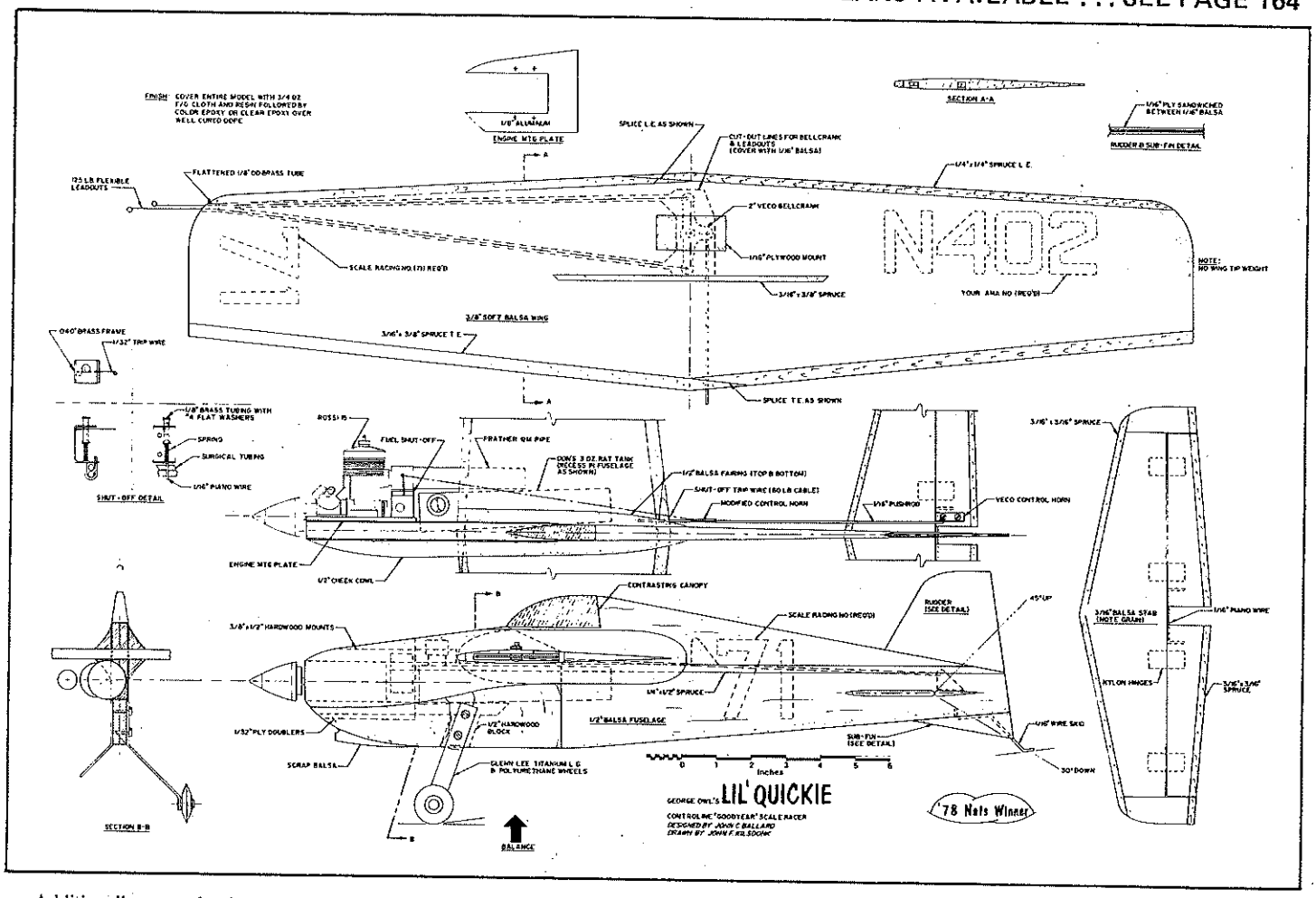
A study of this picture shows the aluminum engine mounting plate and relative positioning of the fuel shut-off valve and tank. The "quick-fill" on the tank's fill pipe has been secured by 1/16-in. wire bent to form a clamp.



Two crankshafts for the new-model Rossi. The upper one has "stock" timing of 72-75° closing. The lower one has been silver-soldered and retimed to 62-65°—gives steadier running.



Accurate prop balancing is a must in all high-performance modeling. There are a number of choices for balancing rigs. This one balances the shaft on two knife-edge wheels on each side.



Additionally, a spar has been added from behind the wing to the rudder to prevent cracking or breaking during hard landings. The incorporation of a titanium landing gear, replacing the usual ⅛-in. wire, is more durable and easier to attach. To keep engine vibration to a minimum, an ⅛-in. aluminum engine mounting plate is recommended.

Elevator and stabilizer. Straight, hard balsa should be used for the elevator. Again, use spruce leading and trailing edges for strength. The stab is constructed with a 1/16 plywood center sandwiched between two pieces of 1/16 balsa. This was done to prevent or minimize damage when the aircraft flips over while landing on rough terrain.

Fuel shut-off and tank. The "mousetrap"-type spring-loaded shut-off shown is constructed from steel shim stock and utilizes a "pull"-type trip wire. The elevator horn must be mounted on the top of the elevator. A flexible cable is attached to the pushrod for the trip wire. The shut-off is constructed to pinch off both fuel and pressure lines. In the past I have tried ball-check valves enclosed in the pressure line, but they are prone to sticking. Positive shut-downs are easily accomplished by pinching both fuel and pressure lines, retaining pressure in the tank which can be used to "prime" the engine during pit stops.

The plans show a Don's 3-oz. Rat Race tank recessed ¼-in. into the fuselage—located between the maple engine mounts. Several other tank types have been used successfully, but Don's is commercially available and well constructed. I recommend resoldering the fill pipe, lines, and seams. The fuel pick-up tube should be in a straight line with the engine venturi. For best results, relocate the pressured line in the neck of the fill pipe.

Engine. Success competitively in Scale Racing requires an engine which not only develops the required airspeed but also is dependable on pit stops. This is especially true since three pit stops and an initial start are required in the 140-lap feature race.

In the past the Rossi engine dominated the event. However, with the introduction of the Nelson .15, the enthusiast has an alternate

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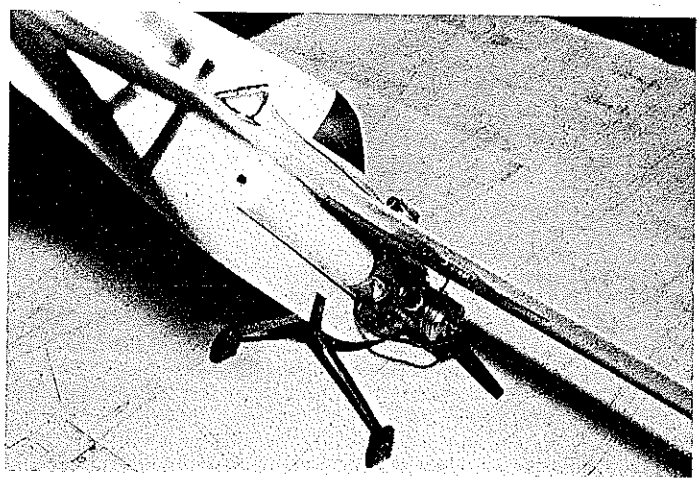
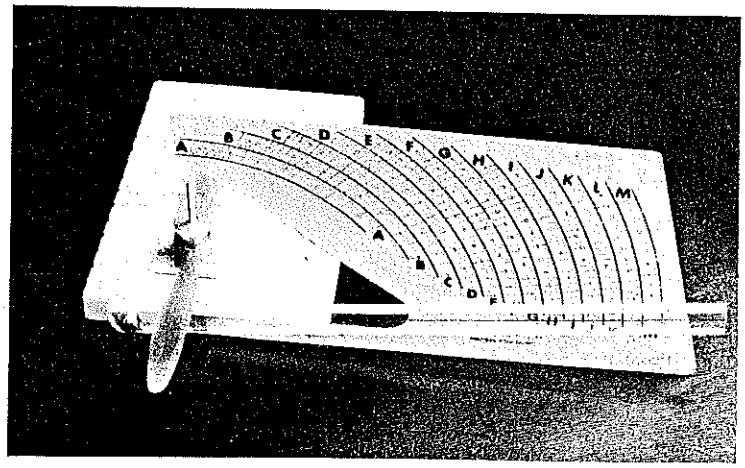


Don's 3-oz. Rat Race fuel tank is recessed in the fuselage and firmly anchored in the front and rear. Titanium landing gear from Glenn Lee, 819 Mandrake, Batavia, IL 60510; write for information.



Getting the prop just right is very important. Check what pitch your props actually are, and make sure that each side of the prop is the same at each station. You'll need a prop pitch gauge such as this one.

Aviation Road, Fallbrook, CA 92028 has available a new series of books called *Detail and Scale Series*. The books are softbound, contain 73 pages, are chock full of Scale builders' details, and are moderately priced at $6.95. The majority of subjects in this series are jet aircraft, which include F4 Phantom II, (Part I and II), F-16 A and B Fighting Falcon, F-III Aardvark, F-5E and F Tiger II, F-18 Hornet, F-14A Tomcat, F-105 Thunderchief, and two two-part books on the B-17 Flying Fortress and the B-29 Superfortress. All the books emphasize details that are generally wanted by Scale modelers, such as cockpit interiors, landing gear, armament, wheel wells, avionics, and five-view scale drawings. This is a series of books that the true Scale modeler should find extremely worthwhile.

Send items on CL Scale to Bill Boss, 77-06 269 St., New Hyde Park, NY 11040.

Lil'Quickie/Ballard

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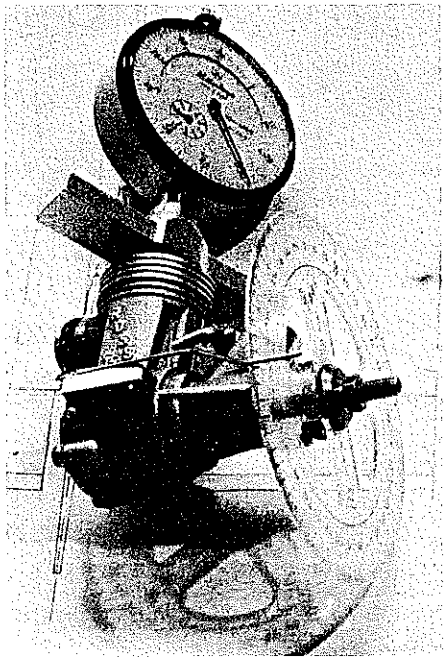
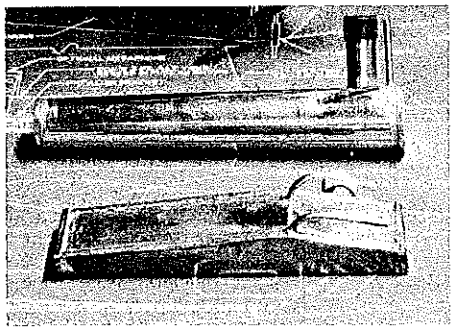
choice which has proven to be more than competitive. The standard Nelson with a .370 venturi and recently introduced racing head is capable of outstanding performance. Parts are easily obtained from Kustom Kraftsmanship, P.O. Box 2699, Laguna Hills, CA 92653. The OPS .15 is also a good possibility.



What's all this? It's the author's rig for determining the intake opening—uses a dial indicator on the head and a degree wheel on the shaft in conjunction with pointer from lug.

The summer of 1981 saw the appearance of a new Rossi .15 with larger case. Bob Oge used a "retimed" early prototype of this engine to place second in the 1981 Nats. The initial "shakedown" of this engine showed a larger diameter crankshaft and heavy rod as positive improvements. Unfortunately for CL Racing enthusiasts, the crankshaft timing was found to be 72-75 degrees ATC on the closing side, which produced erratic performance. By silver-soldering the crankshaft port and adjusting the closing side timing to 62-65 degrees, the engine gains rpm and runs extremely steady. The .250 venturi included should be replaced with a .320-.350 for best performance. Generally a Rossi #3 or #4 head drilled and tapped for a standard glow plug will produce excellent power and plug life when allowing .010-.013 head-to-piston clearance. The Rossi ABC liner/piston appears to perform



Both of these tanks work well. The upper one (a Don's) can be bought. The lower one is made from brass shim stock. The lower tank doesn't require recessing of the fuselage.

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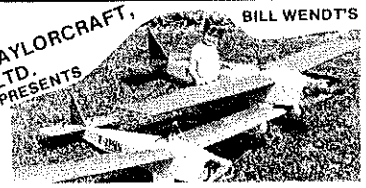

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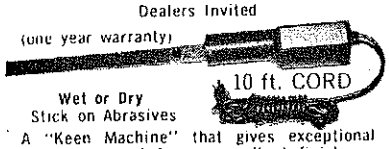

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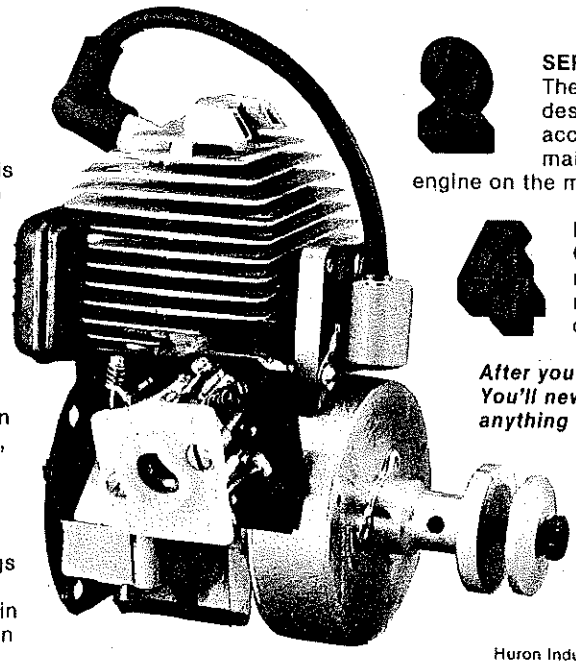

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and start well.

Propeller. With the limited power of the .15 size engine, choice and pitch of propeller can affect the performance dramatically. Initially a recarved Top Flite 7 x 6 speed prop was used to mold a fiberglass copy. After considerable testing and pitching it was molded by Walt Perkins of Shadow Racing, 1100 S.E. 28th St., Ocala, FL 32670. Walt molded the prop in carbon fiber and epoxy. After only a minimum of de-flashing and rework, excellent terminal speed was obtained and with superior acceleration on takeoff. The diameter of the Shadow copy is about 6⅜ in. with the pitch at 5½ in. on all stations from Station 2 to the tip of the blade. Different engines and/or atmospheric conditions may require a different propeller selection.

It is imperative that the prop be balanced carefully and for the hub to be trued-up. Several excellent commercial balancers are available—I use the Harry Higley Hub Balancer even prior to pitching.

Racing is a team effort—hard work through preparedness will deliver dividends. The "system" presented here can produce a consistent winner.

If you have any comments or questions, address them to me in care of *Model Aviation*.

Two Trainers/Kruse

Continued from page 67

using carbon paper and lightweight poster board underneath. After you're done tracing, you may cut out the poster board templates and transfer the shapes to 1/16 sheet balsa for the wings and tail surfaces and to 3/16 balsa for the fuselages.

Try as best you can to cut out the fuselages at a 90° angle so that the stabilizer mounting areas are not tilted when you glue the stabilizers to the main bodies. It's also important to cut the wing slots at 90° to the flat sides of each fuselage.

Sand all surfaces lightly, and round off the leading and trailing edges of the wings and tail surfaces. Round off the edges of the fuselages, except where the stabilizer is to be mounted.

All markings on the original plans were done by outlining first with a ball-point pen, and then filling in colored areas with a felt-tip pen or fine-line Magic Marker. Be as neat as you can, and don't apply too much pressure to the felt-tip pens or they will bleed beyond the boundaries of the markings through capillary action.

Assemble the planes with Jet, Hot Stuff, Zap, or some equivalent cyanoacrylate glue. Each wing tip should be blocked up 1 in. above the building board, and then the wings glued together before inserting them into the wing slot in the fuselage. When the wings are square with the fuselage (equal dihedral on both sides), glue the stabilizers in place; then add the rudders.

Flying. Balance both planes as shown on the plans by adding clay to the nose area, or if you prefer, a small hole can be drilled in the bottom of the nose and lead shot pressed into the hole and then glued in place when the proper balance point is reached.

Test-glide the planes outdoors in a grass field. Add or subtract lead or clay until they show no tendency to dive or stall when tossed from about shoulder height. Test glides can best be accomplished by holding the nose of the ship level or slightly down and aiming it at a spot on the ground about 25 or 30 feet away. A moderately smooth toss from shoulder height should cause

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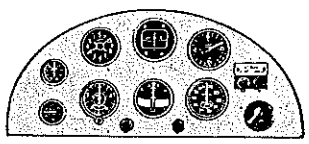

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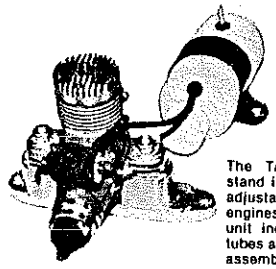

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