HOT ROCK

TIME WAS WHEN a good sport model and a pattern model were synonymous. One does not have to go back very far to remember when the Taurus was a great Sunday flier as well as the last word in pattern. But year by year the 60-powered aircraft was bred into a highly refined competition machine, the steady stream of refinements making it rather specialized and expensive for casual aerobatics.

Does the aerobatic sport pilot need such a ship? The answer would seem to be no, especially since the recent increases in cost of big engines and fuel alone have made the 19- to 40-size airplane so attractive. Ever since more powerful high-revving engines have been on the market, the need continues for a racy looking, simplified, compact aircraft whose maneuverabiliy is appropriate to these powerplants. Hot Rock meets this challenge head on. It's name, incidentally, derives from gungho World War II fighter pilots who flew as if there was no tomorrow.

The two original Hot Rocks were flown with Taipan 21's which produced near 40-engine performance. Others have been powered by K&B 40's as well as Supertigre 21's and K&B 19's, the later producing more than adequate power for realistic scale-like flying.

With respect to the design approach, the first consideration was the wing airfoil. To provide for full aerobatic capability a full symmetrical airfoil was chosen. Next was the question of the wing area. To produce a nice flat glide the goal was to come out with a wing loading of about 16 oz. per sq. ft. With a 9.5-in. root chord and an 8-in. tip chord with a span of 50 inches, the area came in at just 3 sq. ft. At a flying weight of 52 oz. the wing loading is 17 oz. per sq. ft. which is just about perfect.

The combination of sweeping the leading edge rearward and tapering the ailerons (wider at the tip) gives the wing a swept-back look. Since the machine is designed for aerobatics, the engine thrust line and wing and stabilizer incidence are set at zero.

Although the initial design called for a tricycle landing gear, the phrase "real pilots fly tail-draggers" by RCM's Dick Kidd, influenced the change to a two-wheel gear with a tail wheel.

The Hot Rock test-flight procedure was definitely a departure from convention, perhaps a "first." It involved the simultaneous takeoff of two previously unflown identical ships. The two prototypes were identical in almost every respect, including engines, radios, props, spinners, color and trim. The only evident difference was that one ship bore the number one, and the other the number two. Brice Roberts piloted number two and I flew number one. From takeoff roll to landing the two-ship flight went off without a hitch. The characteristics of the two ships were unbelievably identical.

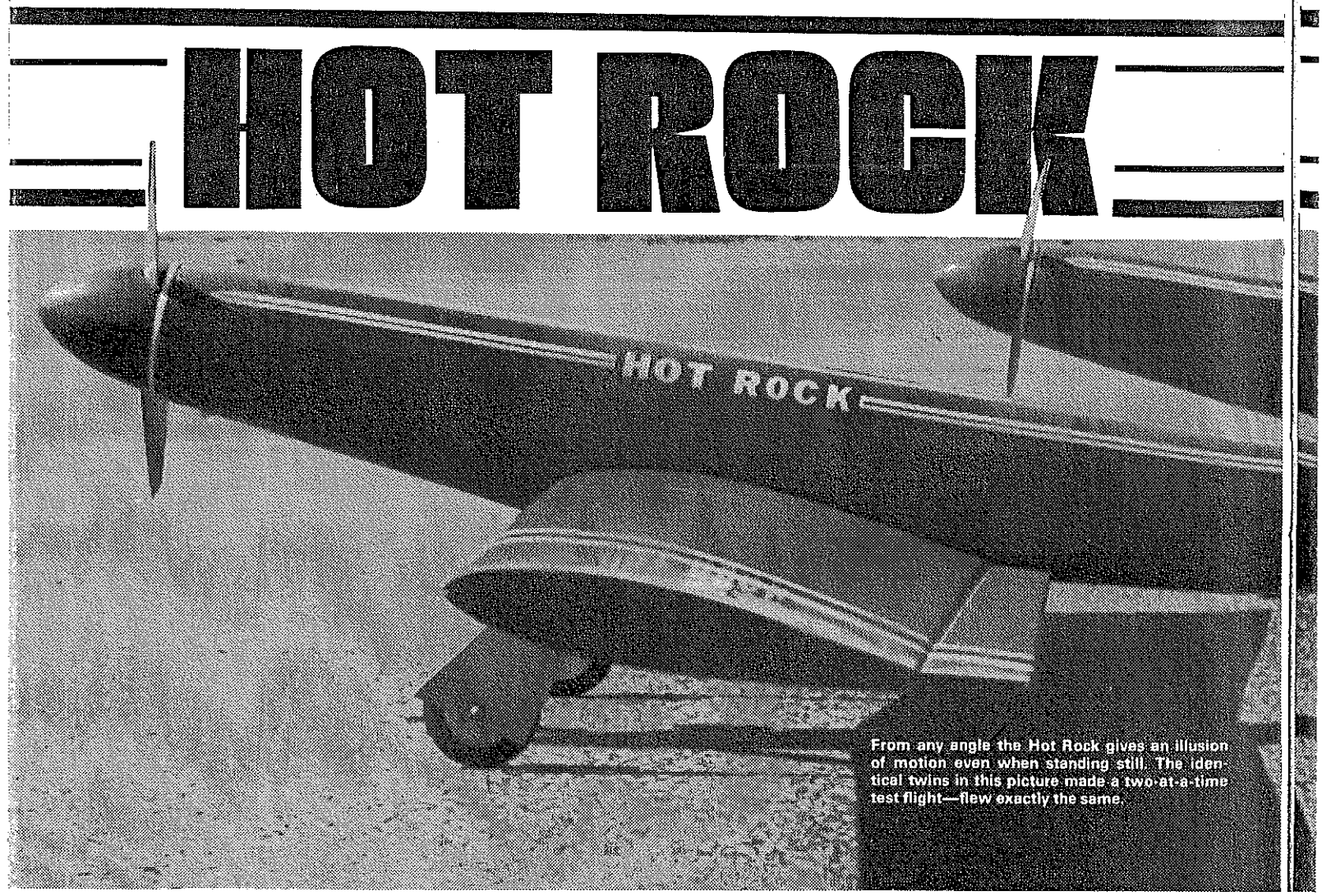
After takeoff, followed by a left 180, we made the pre-planned pass over the runway. As we made the trim pass, Brice said he had trimmed in full-down elevator and was flying while holding a bit of down elevator. I had just made the same correction and also was flying with a bit of down elevator. During refueling for the next flight I noticed that the carburetor barrel stop screw had worked loose and fallen out during the first flight. The number two ship was minus the same screw. We had both failed to lock the barrel stop screw.

After correcting for elevator trim several more ten-minute flights were made. The ships went smoothly through pattern maneuvers. The difficulty experienced with formation flight had to do with the ships being identical. To avoid either pilot flying the wrong ship, we concentrated on keeping our eyes on the ship we were flying from takeoff to landing. Even so, there were a few moments when I had some doubts as to which ship I was responsible for.

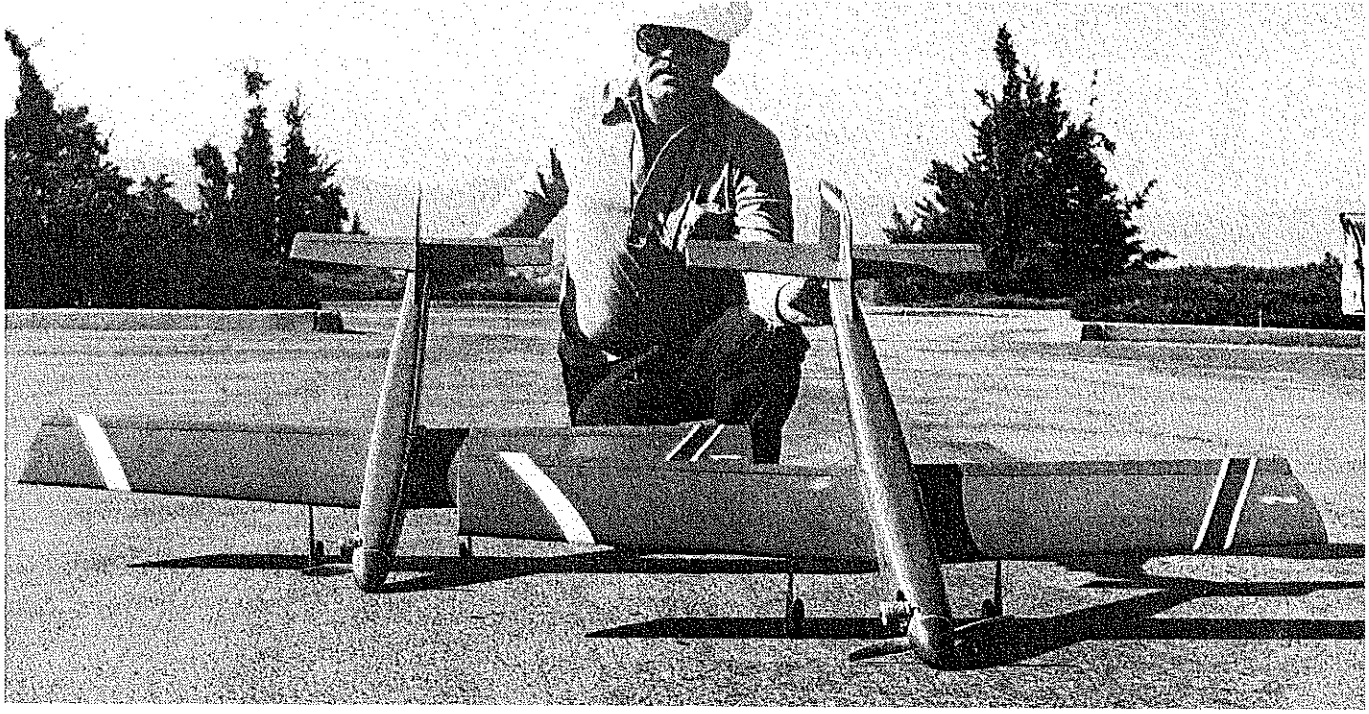
You may not elect to build a pair of Hot Rocks to duplicate the first flight, but many of you no doubt will choose to build just one.

Construction

Assembly of this model is so straightforward that, rather than bore you with "now glue this" description, we have provided a



From any angle the Hot Rock gives an illusion of motion even when standing still. The identical twins in this picture made a two-at-a-time test flight—flew exactly the same.



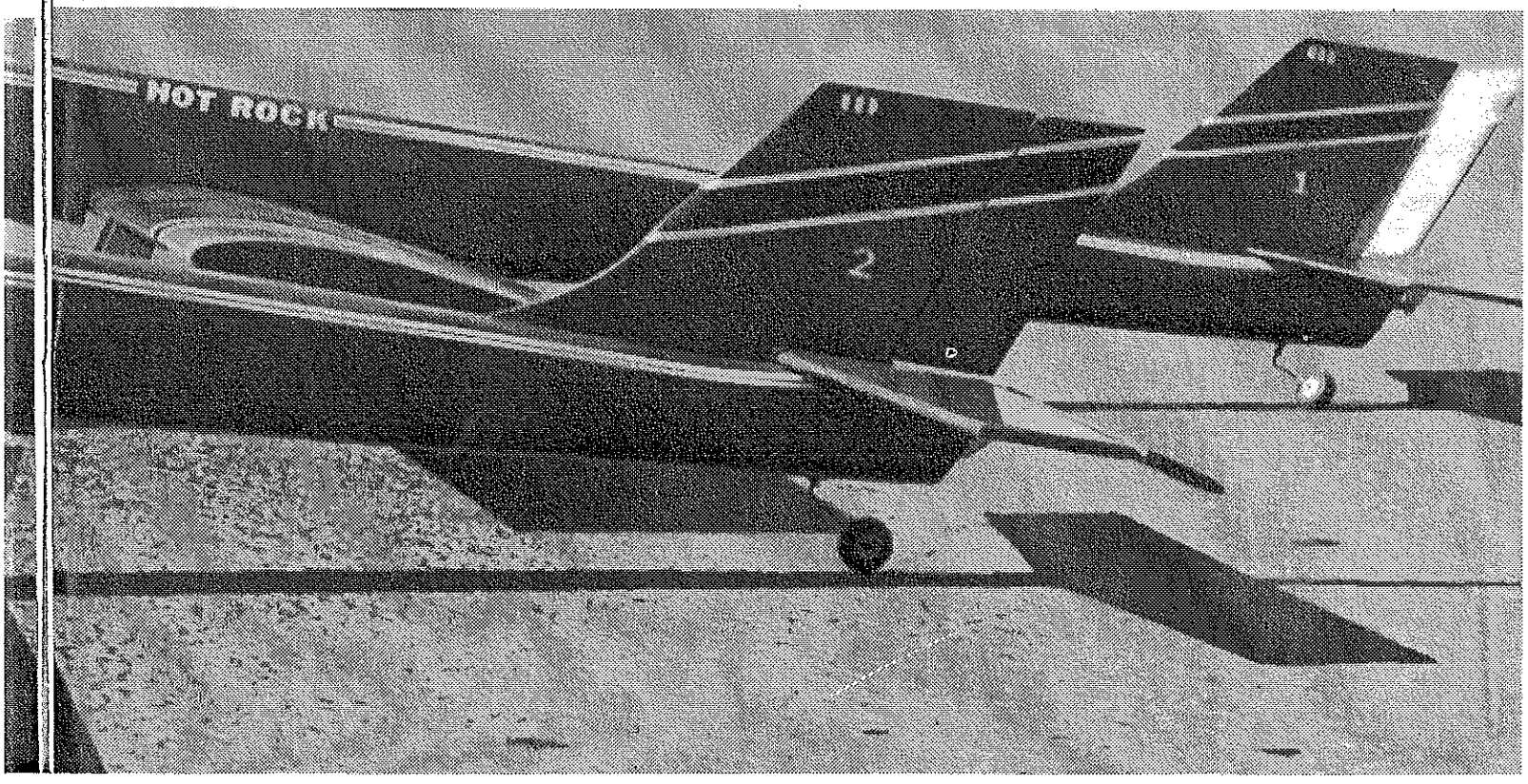
Asked why he used two-wheel gear, Bill answered that he had read a comment by RCM's Dick Kidd that real pilots fly tail-draggers. This ship takes off so easily that a trike is not needed.

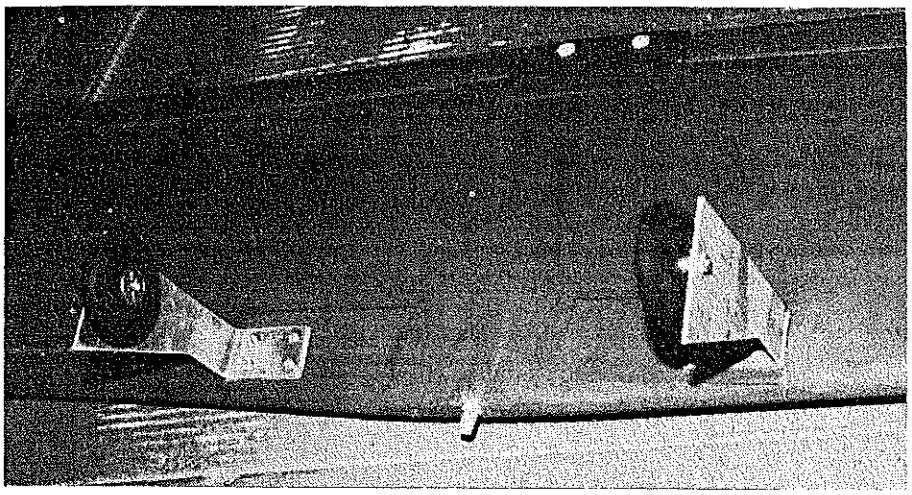
numbered sequence—which is all you really need. The standard 36-in. long sheet balsa was natural for the fuselage, providing good nose and tail moments. The 3/16″ sides and ¼″ top with ½″ triangle stock in the corners results in a box construction that can be easily shaped to a nearly round cross section for a streamlined fuselage. The use of 3/16″ sheet for the tail surfaces combines strength with the simplest construction. The main gear is dural, screwed to a ¼″ ply mount which is epoxied into the wing core.

The dural may be replaced by using conventional hardwood gear blocks and ⅛″ music wire. If so, use plywood for the gear door covers and bolt the covers to the music wire. The tail wheel hardware is set up and installed in the fuselage prior to attaching the stab and rudder.

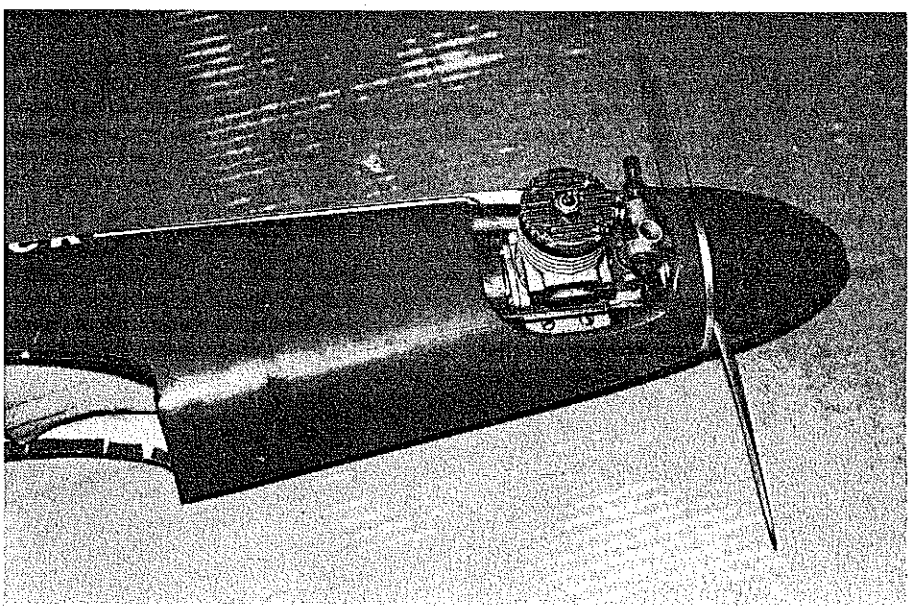
Required sheet balsa includes: 10—1/16 × 4; 3—3/16 × 3; 1—3/16 × 4; 2—¼ × 4. Foam cores are available from Soaring Research, 19216 Calvert St., Reseda, CA

For casual aerobatics this lively machine for 19's to 40's will save you a bundle in both building and operating costs. **Bill Evans**

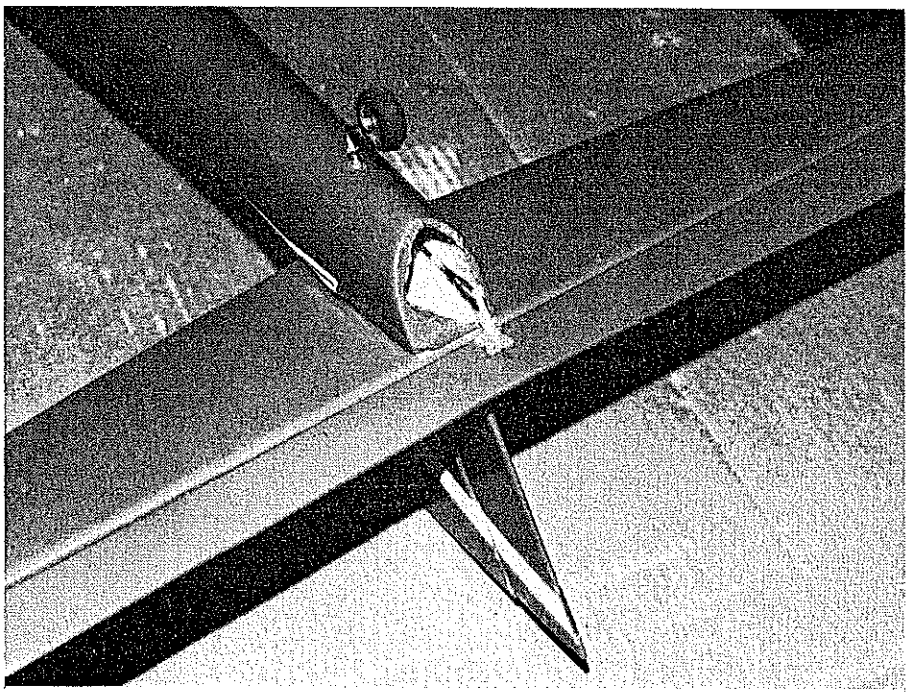




The dural gear attaches to plywood blocks with sheet metal screws, the whole epoxied into the wing. A wire gear may be substituted by attaching gear to inner sides of the plywood blocks.



The engine fits neatly into a small compartment that does not detract from the streamlined appearance, yet is readily accessible. A 19 produces adequate performance for realistic flying.



The open rear end of fuselage provides a straight line pushrod path to the elevator horn on the center line. The 50-in. ship has a flying weight of 52 oz.—wing loading of 17 oz./sq. ft.

91335. Cost is $6.00, plus $2.00 postage (California residents add 6% CA state tax). And now to the sequence....

1. Read instructions several times so that you thoroughly understand them.

2. Cut four pieces ½ × 26″ out of a sheet of ¼″ balsa.

3. Glue and pin the ½ × 26″ strips to the leading and trailing edges of the foam wing panels. Be sure to keep the foam panels from bending or warping when pinning on these strips. Set this assembly aside to dry.

4. Cut out fuselage parts; top, doublers, sides, formers, etc.

5. Lay fuselage top on flat surface and pin down.

6. Run a bead of glue on the top inside edge of the fuselage sides and pin to the fuselage top.

7. Glue and pin a length of ½″ triangle along the top inside edge of the fuselage. Push pins in on an angle from the outside of the fuselage. This will make it easy to remove pins later.

8. Glue and pin in the two plywood formers and firewall.

9. Glue and pin in from the outside of the fuselage sides the ½″ triangle bottom corners. These run between the front edge of the fuselage and former #1 and from former #2 rearward from the wing trailing edge to the tail of the fuselage.

10. Glue and pin on bottom sheeting of the fuselage. Be sure that any pins left remaining through the fuselage bottom on the inside are removed.

11. Glue filler blocks into the engine compartment as shown on plans.

12. Cut ten sheets of 1/16 × 4″ sheet to length of 25 in. Splice five of the sheets together using masking tape and either Zap or white glue. Same for five more sheets and allow to dry.

13. Trim and sand ¼″ wing leading and trailing edges so that the 1/16″ sheeting will fit over nicely.

14. Splice together 1/16″ sheets so that you have two sheets of 1/16 × 20 × 25″. Cut the four pieces for the wing sheeting on a diagonal 10″ to 9″.

15. Bond the 1/16″ sheeting to the wing cores with contact cement. I use LightDex. No matter what contact cement you use, *test it first* on a piece of scrap! (We also have used 1/16 plywood for skinning; it requires no splicing, and is stronger than balsa.)

16. Remove fuselage assembly from board.

17. Cut out ⅛″ spinner ring, sand nose of fuse square and glue on spinner ring.

18. Trim and sand wing panels to airfoil shape.

19. Cut two pieces from ¼″ sheet 25″ long tapering from 1 to 1¼″. Trim and sand these pieces to shape as shown, for ailerons (½″ dia. lightening holes on 1″ centers are optional).

20. Join wing panels with 5-minute epoxy; place ¾″ block under each wing tip for dihedral.

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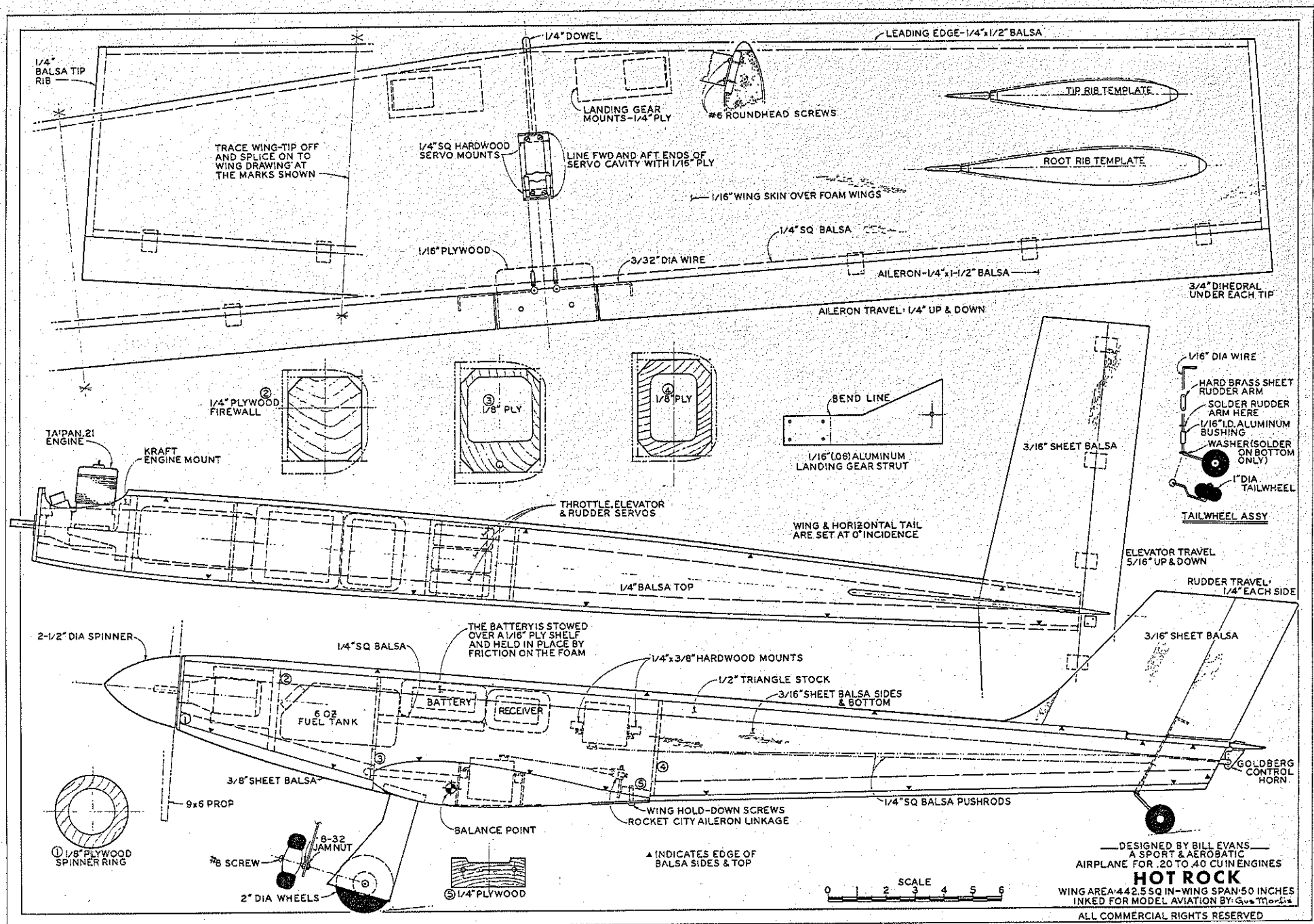

FULL-SIZE PLANS AVAILABLE .... SEE PAGE 104

maling models, again circle-towing downwind of the main pack. On the fifth, Bob tangled towlines with another glider, then re-started, found his own lift, and again maxed.

By then, the only other flier with all max flights was Segle, a Senior from Washington, who Isaacson thinks is a real comer. In the fly-off, Bob launched first, circled four or five times, and dropped the model off the line into good lift, and again maxed. Segle apparently didn't see Bob in lift, launched into air that was less than helpful, and the contest was over.

By Tuesday noon, Bill Vanderbeek had put up four max flights with his Xenakis-designed Tadpole, and a mediocre fifth flight would put him in first place in the A-1 Towline Glider event. But he had lost his model. Fortunately, he had brought along a second model but, unfortunately, it was one that had never performed especially well. On test flights it diverged badly when towed, going off to the right on one flight, to the left on the next. The self-appointed four-man ad-hoc advisory committee agreed that the towhook should be moved forward ¼-inch. That helped, but Bill's fifth official flight lasted for a mediocre 94 seconds, just one second too mediocre to win over Paul Stober.

At least five Tadpoles were flown in A-1, which is remarkable in that the design has only recently been published, and only in the form of small three-views. It is a highly developed model and has an outstanding track record.

Nats/Meuser

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used it to retrieve his model. The following day, I used it twice to retrieve my Pennyplane totally undamaged, and others used it successfully also. It is surprising such a simple and effective device isn't used more often.

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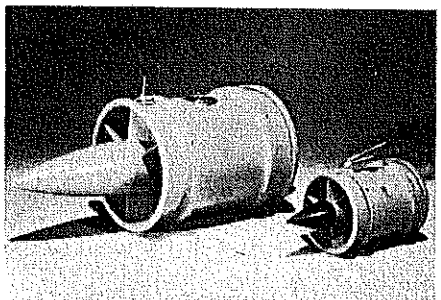

Axiflo Ducted Fans: Designed expressly for the sport flier, these kits feature light-weight, molded parts that can be assembled in two evenings. Intended for use with good stock engines, they are fully throttable, and operate with or without tank pressure. Integral tail cone is used as tank. First to be released is for .40 class engines, to be followed by an .049 version and an injection molded A4D for that power. **Midwest Products Co., Inc., 400 South Indiana St., Hobart, IN 46342.**

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Hot Rock/Evans

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21. Install strip aileron links to ailerons and cut out center-section blocks to allow for free movement of links.

22. Layout ¼" plywood landing gear blocks, rout out wing and 5-minute epoxy gear blocks in place.

23. Cover wings and ailerons.

24. Cut out and bend dural gear, then use screws to attach gear to plywood blocks.

25. Install hinges and make aileron torque rods to fit aileron servo arms.

26. Carve and sand fuselage to shape.

27. The tail surfaces are cut from 3/16" sheet balsa. Cut and sand to shape.

28. Apply your choice of covering; the original was covered with red Solarfilm.

29. Make radio, engine, and tank installation as shown on plans.

We hope you have as much satisfaction with your Hot Rock as we did with the prototype.

FF World Champs/Kaynes

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paid, free-country entry.

Glider: After five hours taken up by rest for the glider fliers or sorrow-drowning for the rubberband brigade, everyone was back into the routine of going to the airfield for commencing flying at 3:50 a.m. This time we were relieved to find that there was no rain and rather less wind, but it was rather dark as round 1 started. USA had drawn a launch pole next to USSR for the day, giving us a close view of the apparent masters of glider flying. However, soon after the start Jim Walters proceeded to give a most adept display of towing when he moved across the wind to a path and then circled downwind. The catapult launch was first class but the air was not quite adequate and he was 18 seconds short of a max. Likewise both Charlie Markos and Bob Sifleet were a little below the magic three minutes, of which a total of 24 were recorded by the field of 82 entries. USSR and Israel both had full team scores in what was assumed would prove to have been the most difficult time of the day. The latter team included an interesting model flown by Giora Herzberg, well designed and having a slotted tailplane airfoil among its features.

The Russians continued in this manner in round 2, when the Yugoslavs and the Austrians also had treble maxes. The latter team was notable for having two members not equipped for circle towing, namely Kraus and 1976 European Champion Zach; they were lucky to contact gentle lift just before running out of upwing towing space and then they had more good fortune in that the gliders did not go behind a ridge, which was causing some flights from that end of the line to be clocked off before they landed.