BOATS AND PLANES

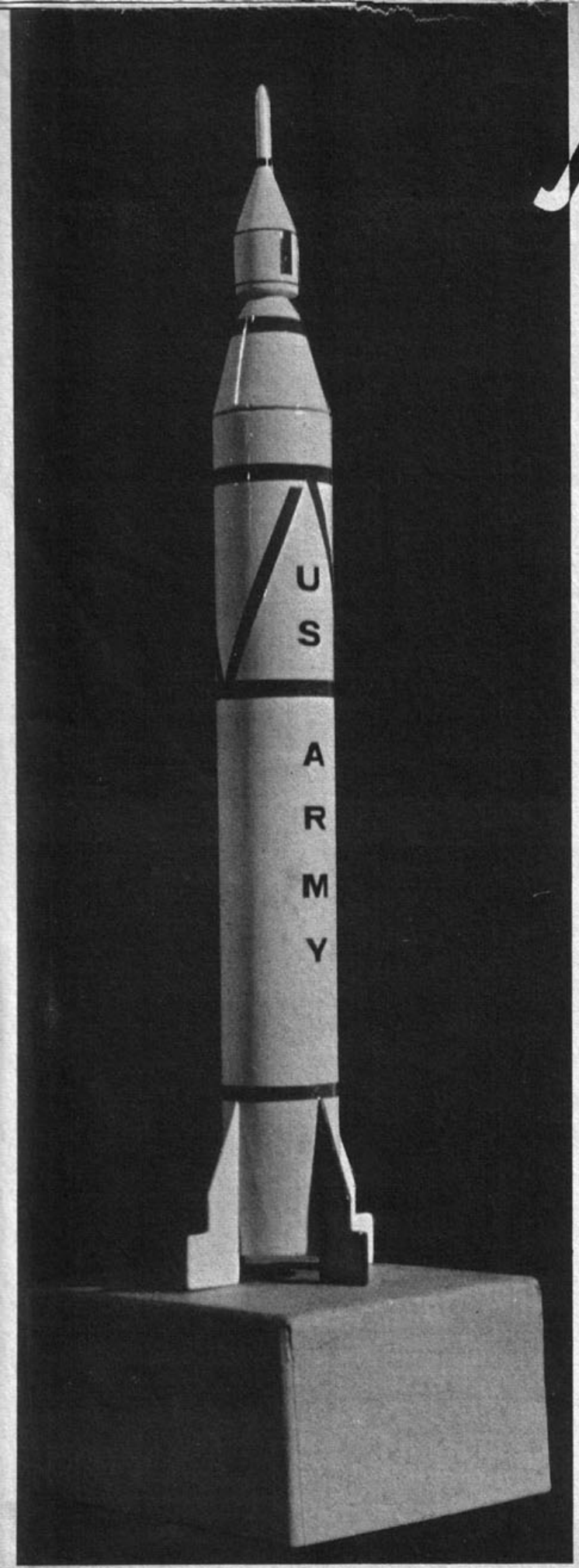
flying models

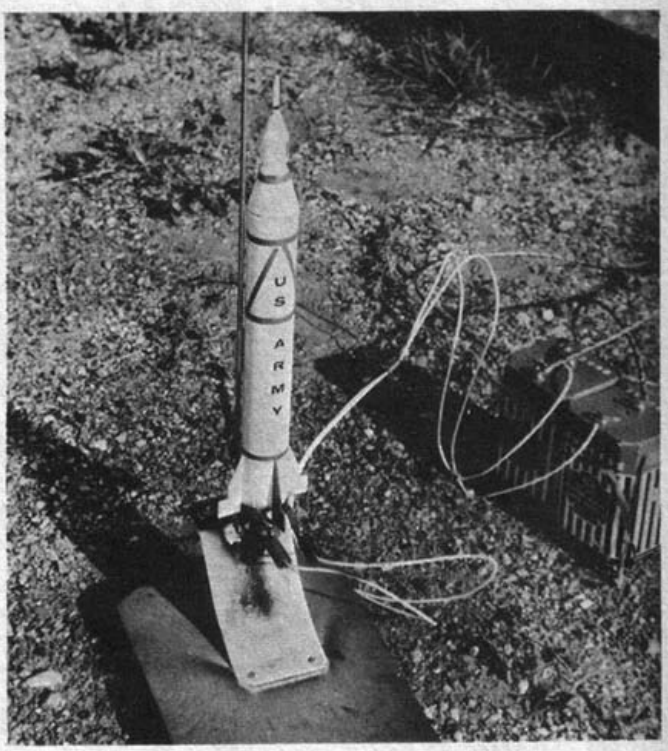
JANUARY 1959
35c

SD-3 "Flying Spy" by Paul Palanek

FIRE FLY
A Control-line Stunt Model
By Earl Cayton

JUPITER C





Above: The bird is all set and ready to launch. A board, some sheet aluminum, and a piece of ⅛" piano wire suffice for a pad. The motor is the popular "Rock-A-Chute" unit which can be bought at many hobby shops. Ignition is obtained through the use of a 6-volt battery supply and a remote firing switch.

The missile age roars on as modellers all over the U.S. start building launching pads for pet projects. Here's a simple start using a commercial rocket fuel pellet. With careful handling it can be fun.

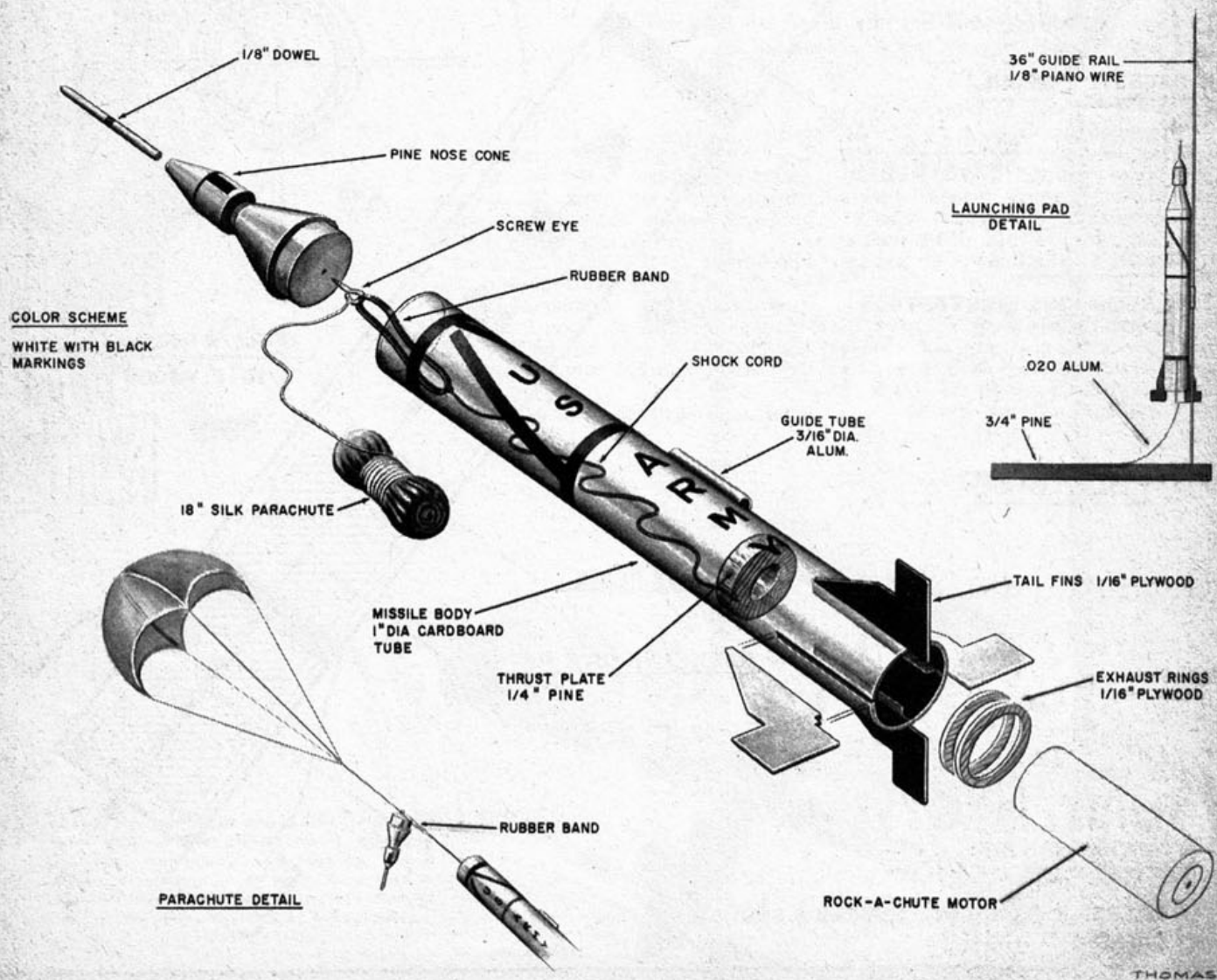
● Many American modellers have experimented with home-brew rocket fuels and have achieved excellent to disastrous results, all of which lead the general public and municipal organizations to frown on such tests. The appearance of the new "Rock-a-Chute" motor has put into the hands of the modeller a completely new medium with which to work. After many months of conflict with civil authorities, Model Missiles Inc., the manufacturers of the "Rock-a-Chute" motor, has finally been able to make this new means of propulsion available to the average model builder.

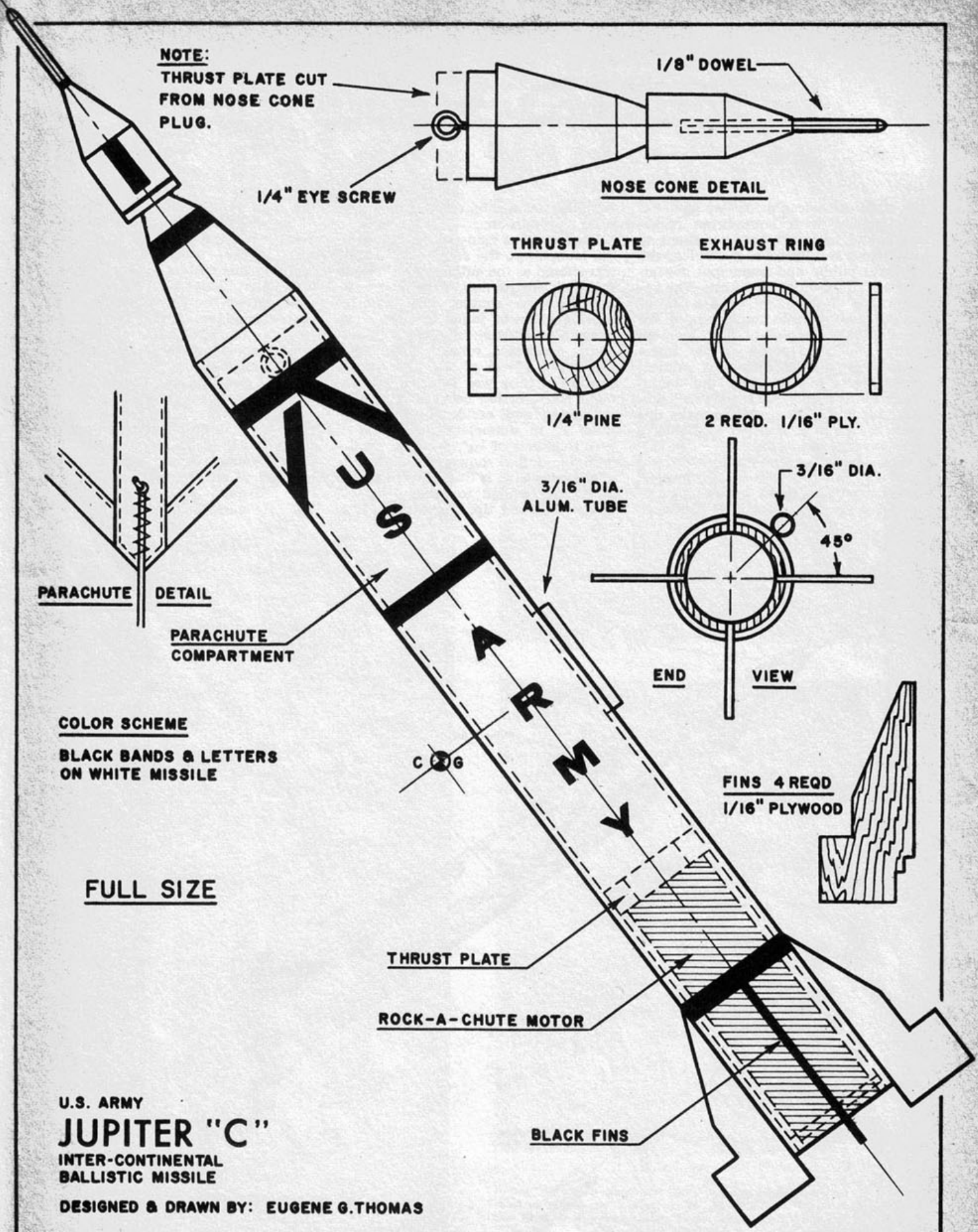
The model of the Jupiter "C" featured in this article has been flown at least two-dozen times without a single failure. At long last the American modeller has a safe, reliable means of rocket propulsion.

Because of its many successful satellite launchings, the Jupiter "C" ICBM was chosen as the author's first missile project. Construction of the missile itself is quite simple. The material necessary can be found in most scrap boxes. Construction involves a 1" diameter cardboard tube, a pine block and a few pieces of 1/16" plywood. A cardboard tube was selected for the main body section because it is light in weight and easily obtained. The tube, 1" in diameter and having a wall thickness of 1/16", is cut to the required length as shown on the plan.

The nose cone is turned from a pine block and drilled to accept the 1/8" diameter dowel tip, which represents the Explorer Satellite. The plug end of the nose cone is turned to the inside diameter of the tube and must have a slip fit. Take into consideration the fact that this will later be painted and will be at least .002" larger in diameter. After the entire nose cone has been sanded, cut 1/4" off the plug end to make the blast plate which is the same diameter as the nose cone plug. Drill the center to 5/8" in diameter; this will clear the small opening in the end of the rocket motor and still act as a stop for the rocket motor. Cement the blast plate in place with the parachute shock cord (see the exploded-view drawing). A depth gauge should be used to set the blast plate at the required depth.

(*Please turn to Page* 26)




NOTE:
THRUST PLATE CUT FROM NOSE CONE PLUG.
1/8" DOWEL
1/4" EYE SCREW
NOSE CONE DETAIL
THRUST PLATE
EXHAUST RING
1/4" PINE
2 REQD. 1/16" PLY.
3/16" DIA.
ALUM. TUBE
3/16" DIA.
45°
PARACHUTE DETAIL
PARACHUTE COMPARTMENT
END VIEW
COLOR SCHEME
BLACK BANDS & LETTERS ON WHITE MISSILE
C G
FINS 4 REQD
1/16" PLYWOOD
FULL SIZE
THRUST PLATE
ROCK-A-CHUTE MOTOR
BLACK FINS
U.S. ARMY
JUPITER "C"
INTER-CONTINENTAL BALLISTIC MISSILE
DESIGNED & DRAWN BY: EUGENE G.THOMAS

JUPITER C

(*Continued from Page* 11)

When the cement has dried, cut four 1/16" slots into the tail section to accept the 1/16" plywood fins. Sand the fins to a streamined shape before cementing them in place. The plywood rings which fit into the exhaust section are laminated and set in place last. Sand the inside diameter of these rings to assure a good snug fit around the outside diameter of the rocket motor, since this and the tail fins are the only things which hold the motor in place. If this is too loose, the motor will eject itself rather than the parachute and nose cone when the second charge goes off.

The guide wire tube shown on the drawings is a piece of 3/16" diameter aluminum tubing which must be free of any burrs or kinks and must slide freely over the 1/8" diameter tube used on the launching platform. Cement the tube in place using plenty of cement. Dimensions indicated on the plan may vary slightly due to available material; alter dimensions accordingly. When the tail section of the missile is thoroughly dry, give the entire model several coats of sealer and sand to a smooth finish. Since no hot-fuel is used here, the entire model can be painted with ordinary white dope. A good smooth finish is highly desirable and will affect performance considerably. Finishing touches can be painted or put on with colored decal sheets.

The parachute is made of red silk since that color is easily seen both in the air and on the ground. Cut a 20" square of silk and trim with rayon seam binding. The shock cord mentioned earlier should be made of some tightly woven cord, one which will not readily burn. Soak the entire parachute in "Twenty-mule Team Borax" to fireproof it. If this is not done the blast which ejects the parachute and nose cone will eventually burn holes in the silk and through the shock cord.

Attach the parachute and shock cord to the nose cone with a 1/4" screw eye as shown. A rubber band between the shock cord and nose cone will prevent the cord from pulling through the blast plate.

With the missile painted and the parachute attached, the model is ready for final assembly. Use the lining papers that come in the fuel box to line the interior of the parachute section. These will prevent the walls of the missile from becoming scorched and will also provide a smooth surface for the parachute to slide out on.

The best method of packing the parachute is as follows:

a. Grasp the 'chute from the center and hang out making sure all shroud lines are untangled.
b. Pull the cords out tightly and lay the 'chute down.
c. Fold the ends of the 'chute into the center and roll it up tightly making sure the lines are tight all the while. Two people should handle this operation.
d. Next, wrap the 'chute with the lines two or three times then, with a sheet of the small brown papers found in the fuel box, wrap the end of the 'chute that is to be inserted in the parachute compartment.

The 'chute should fit loosely or it will not be ejected when the second charge goes off. Packing the parachute two or three times will indicate how the 'chute must be folded. Lay the remaining shock cord in over the parachute in a circular pattern so it will feed out smoothly. The nose cone can then be slipped into place. Again, a great deal of caution must be taken to see that no parts of the parachute or shock cord are jammed between the missile wall and the nose cone plug, as these may prevent the ejection of the nose cone leading to the possible destruction of your missile and injury to a bystander.

As the Jupiter is only 11½" in length and weighs but two ounces ready to fly, it can be a dangerous device should it be allowed to go into trajectory. While testing the missile in its early design stages, the nose cone was not ejected and the missile plunged back to earth burying itself 3" into the

ground, so it can be seen how important these particular phases are.

The missile balances at the point shown on the drawings; weight should be added or taken from the nose cone if necessary. A good way to do this is to drill a series of holes ⅛" in diameter around the inner perimeter of the plug as needed, to lighten, or fill the holes with lead shot to add weight. The holes may then be plugged with dowel or plastic wood. An unstable missile will cause an erratic flight path and may lead to disastrous results as mentioned before. A missile traveling at the velocity of this model (224 ft. per second or 160 miles per hour) can kill a person.

Choose a wide open space to launch your model. Be certain that spectators are at a reasonable distance from the launching site and fully under your control, the upwind position as opposed to your launching site is ideal since the missile will drift with the wind.

A launching platform, or pad as it is sometimes called, can be made from a piece of pine shelving. Drill a ⅛" diameter hole close to one end and insert a 36" piece of piano wire. A length of .020" aluminum sheet was used as a thrust deflector and screwed to the board as shown in the photo. Since sizes are not critical, none will be mentioned.

The "Rock-a-Chute" motor can be ignited with 3 volts. Two miniature alligator clips were used as leads since the regular size clips were found to be too clumsy with the fine wire fuses used to ignite the motor. Keep a distance of at least 15' between the operator and the missile. A spring-loaded switch (OFF position) is highly desirable to assure no electrical contact at the time of hook-up. Place the missile on the launching pad and it is ready to be fired!

MISSILE PRE-FLIGHT OR COUNT-DOWN

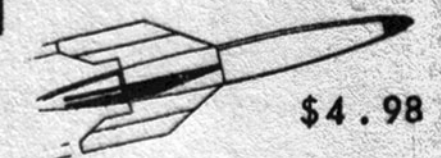
1. Rocket motor installed in missile with snug fit.
2. Parachute compartment liner installed.
3. Parachute checked (tears, shrouds, packing) and shock cord checked for burns.
4. Parachute installed properly with end wrapped in paper.
5. Nose cone—eye screw tight, rubber band not burned, all knots on cords okay.
6. Nose cone installed—loose fit.
7. Guide wire tube secure. Missile should slide up and down launcher guide wire smoothly.
8. Fuse installed—disc tape on properly—wires not shorted.
9. Area cleared of spectators.
10. Missile placed on launching pad.
11. Battery leads connected.
12. FIRE!

JETS & MISSILES

$3.98 KIT

EXPLORER MISSILE

Missile kit, easy to put together for young space age 'missileers' Includes 3 rockets, each 10½" long. Complete with fuel, motor and launching platform.



$4.98

ALPHA-1 BALLISTIC MISSILE & LAUNCHER

Real missile performance ...soars 150 to 200 feet through the air on safely tested 'fuel and oxidizer' Ready to operate, complete with remote launcher and fuel. Order yours from AHC!

$6.45 KIT

ROCK-A-CHUTE

Authentic scale model of U.S. Navy research rocket E-Z to assemble kit with safety-proved jet motors (solid fuel propellant). Peak altitude 500 feet. Has plastic parachute for safe recovery.