PARTS LIST

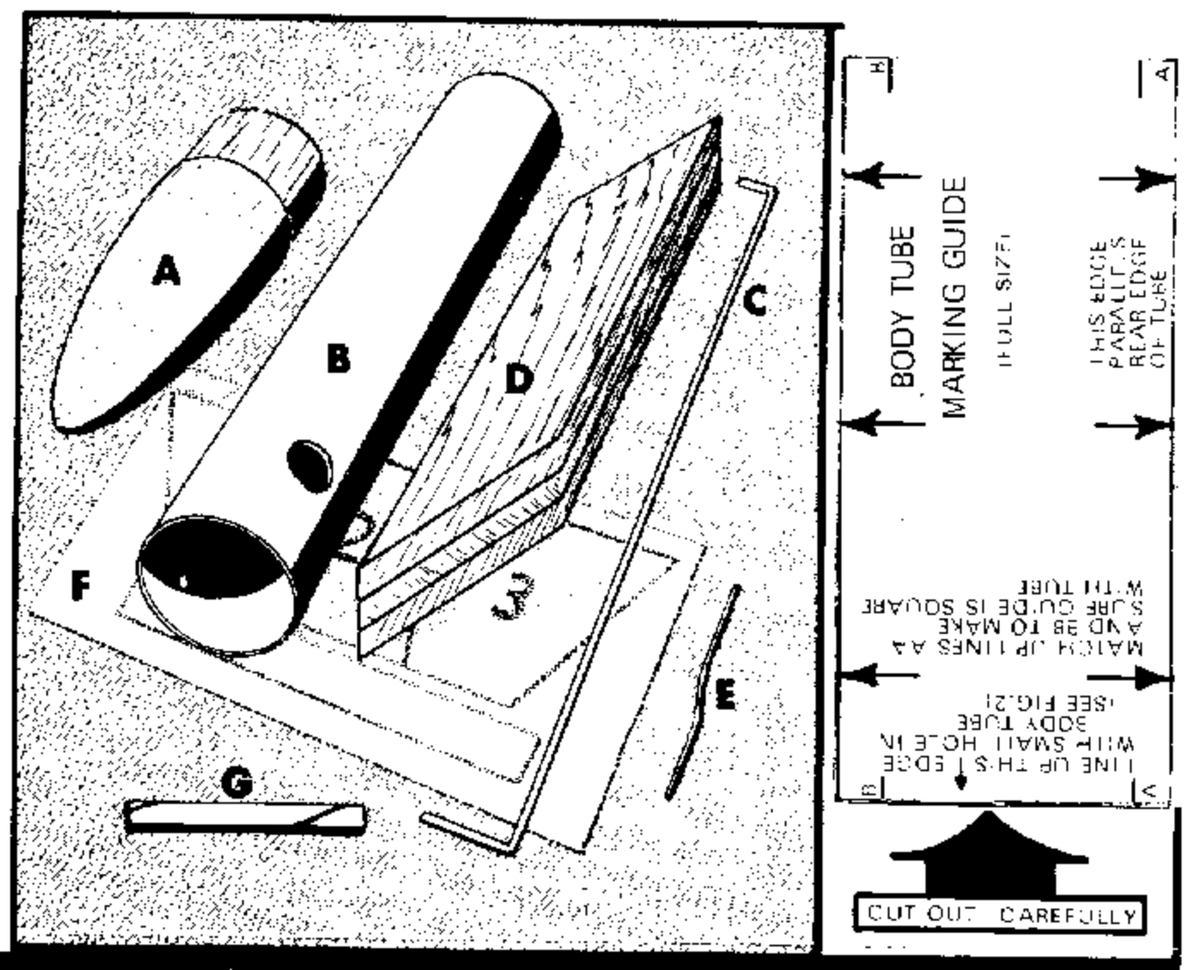
Your Astron Scout model rocket kit consists of the following parts as illustrated in the drawing at right:

(A) 1 Nose Cone—Part #BNC-30D
(B) 1 Body Tube—Part #BT-30A
(C) 1 Engine Hook—Part #MH-1
(D) 3 Precut Fins—Part #BFS-60S
(E) 1 Engine Retaining Wire—Part #RW-1
(F) 1 Gauze Reinforcing Material—Part #GR-1
(G) 1 Launching Lug—Part #LL-2A
(H) 1 Technical Report—Part #TR-1

In addition to the material included in your kit you will also need the following tools and supplies:

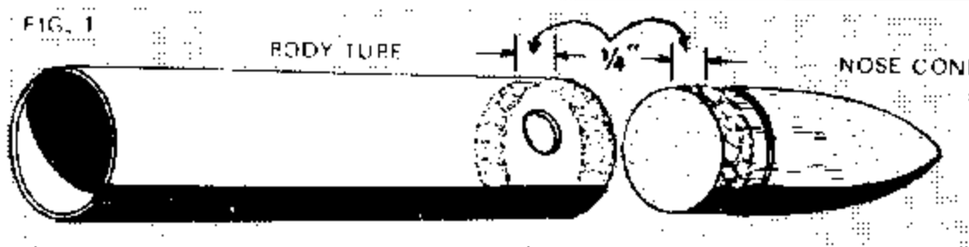
1) Modeling knife or single edge razor blade
2) Scissors
3) Extra-strong white glue
4) Ball point pen or pencil
5) Fine and extra fine grit sandpaper
6) White paint or dope

Read the entire assembly instructions carefully before beginning work on your rocket. Then start construction, following each step in order, checking off each step as it is completed.



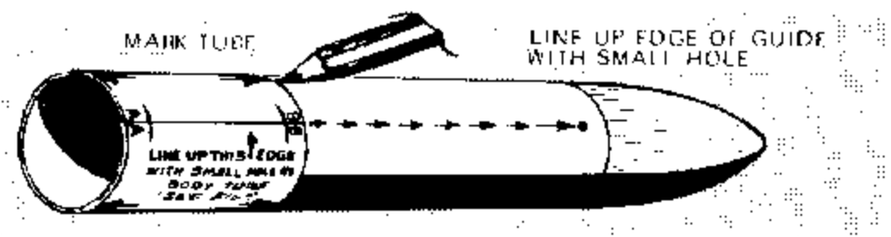
ASSEMBLY INSTRUCTIONS

FIG. 1



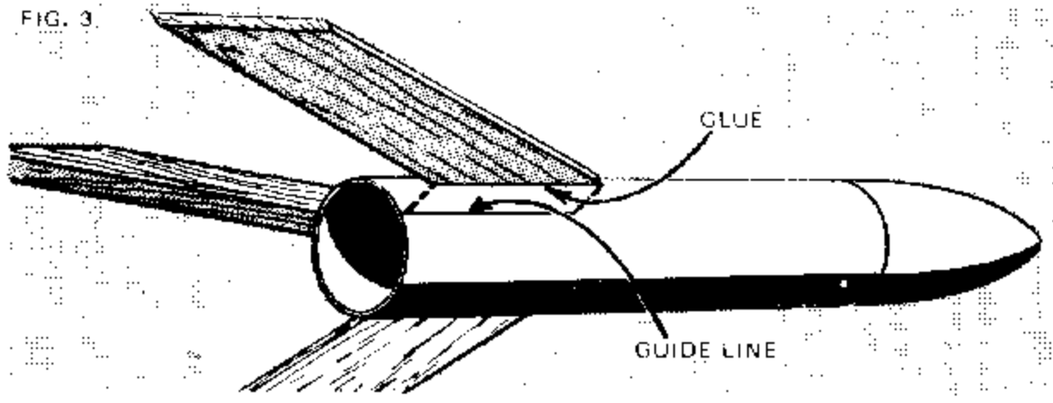
☐ 1. INSTALL THE NOSE CONE: Apply glue to the upper 1/4" of the body tube (the end with the holes) and to the lower 1/4" of the mating surface of the nose cone. Fit the pieces together and wipe off any excess glue.

FIG. 2



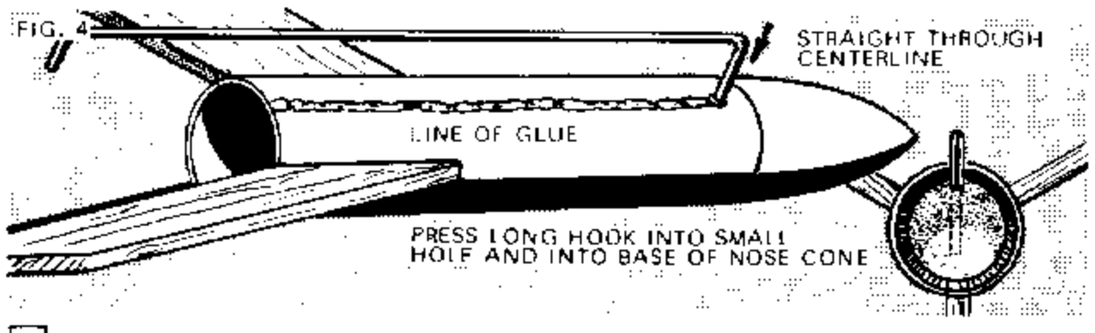
☐ 2. MARK THE TUBE: Cut out the body tube marking guide. Wrap it around the body tube with the hole locations on the guide lined up with the hole locations on the tube. Mark the body at each of the arrow points. Remove the guide and draw a straight line connecting each matching pair of front and rear marks as shown.

FIG. 3



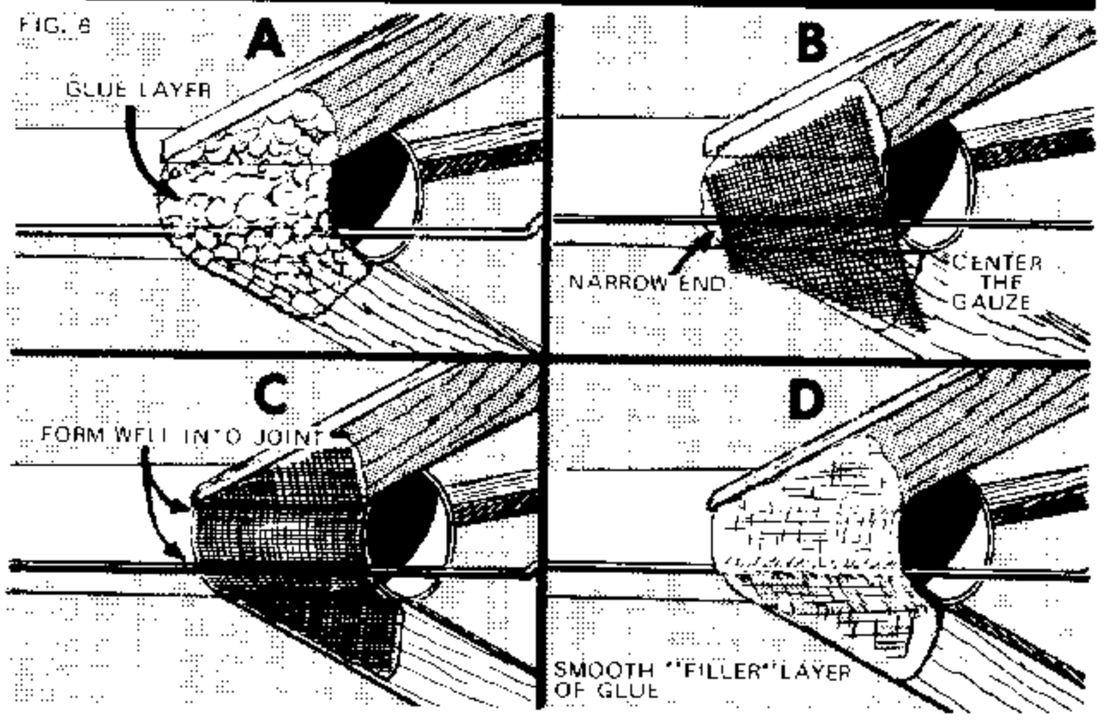
☐ 3. ATTACH THE FINS: Apply a light coating of glue to one end of one fin and press this end of the fin to the body alongside one of the lines made in step 2. Hold the fin in place so it sticks straight out from the body until the glue starts to stick, then repeat the same procedure with the other two fins. Do not set the rocket on its fins or apply any pressure to them until the glue has dried.

FIG. 4



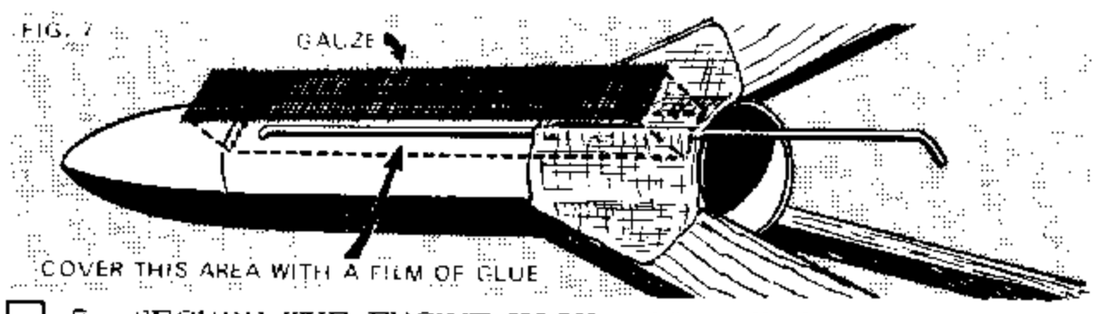
☐ 4. MOUNT THE ENGINE CATCH HOOK: The engine catch hook extends from near the forward end of the body tube to about 1-1/2 inch beyond the rear of the body tube. To install, first punch the long bend end of the hook through the small hole at the upper end of the body tube and into the balsa nose cone. Be careful to punch this hole straight into the nose cone so the wire goes through the centerline of the rocket as shown in the rear view drawing. Squirt a small amount of glue into the hole and apply a line of glue to the body tube straight back from

FIG. 6



C. Smooth the gauze evenly until it is free from all wrinkles.
D. Immediately apply a coat of glue over the gauze and spread it evenly with your finger. Be sure the gauze fits tightly into all corners and over wires as closely as possible to provide maximum strength.

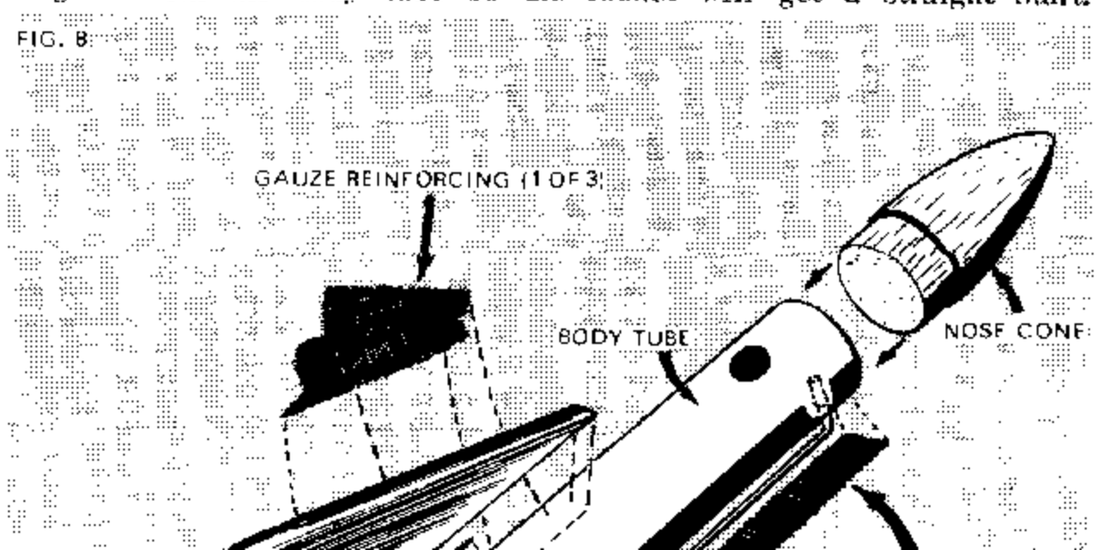
FIG. 7



☐ 7. SECURE THE ENGINE HOOK: After all three fin reinforcements have been completed, cut out the long rectangular section of gauze. Apply this piece over the engine catch hook in the same manner as the fin reinforcements. Let all the glue dry for several minutes, then apply until all the holes in the gauze have been filled with glue and the surface is smooth. Allow time for drying between coats. After the last coat has dried thoroughly, trim off all excess gauze.

☐ 8. INSTALL THE LAUNCHING LUG: Glue the launching lug into the corner made by a fin and the body tube. Be sure the lug is aligned with the body tube so the rocket will get a straight start.

FIG. 8



ASSEMBLY INSTRUCTIONS

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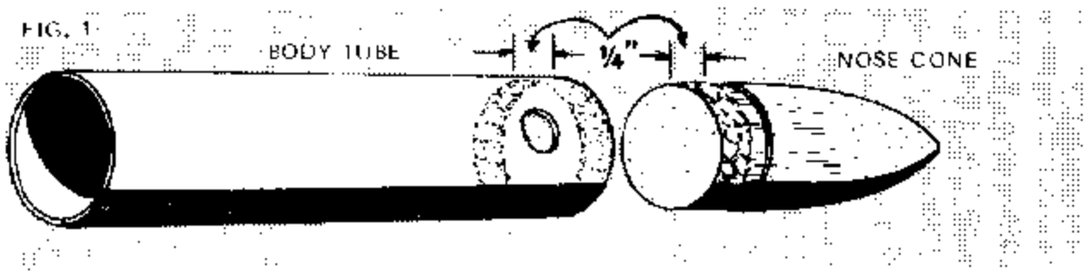

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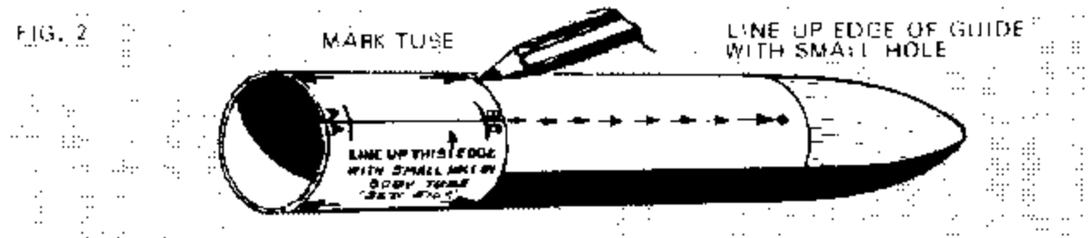

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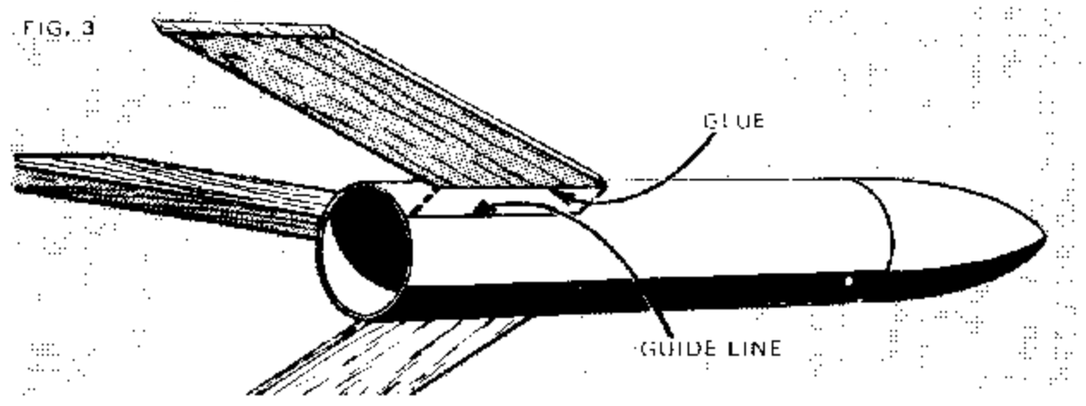

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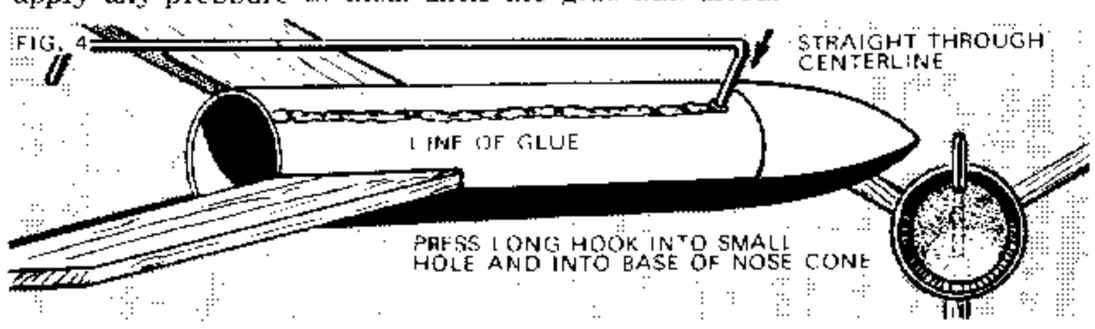

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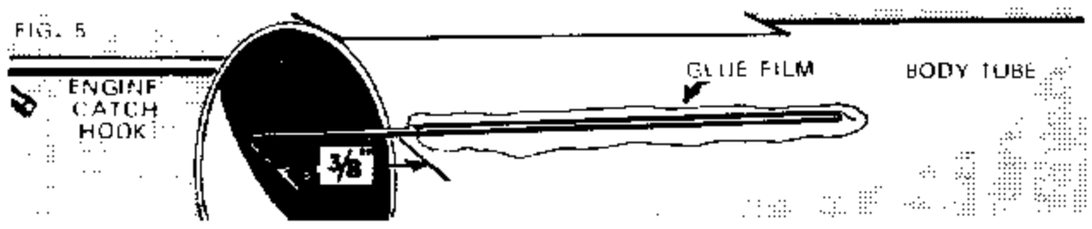
FIG. 5

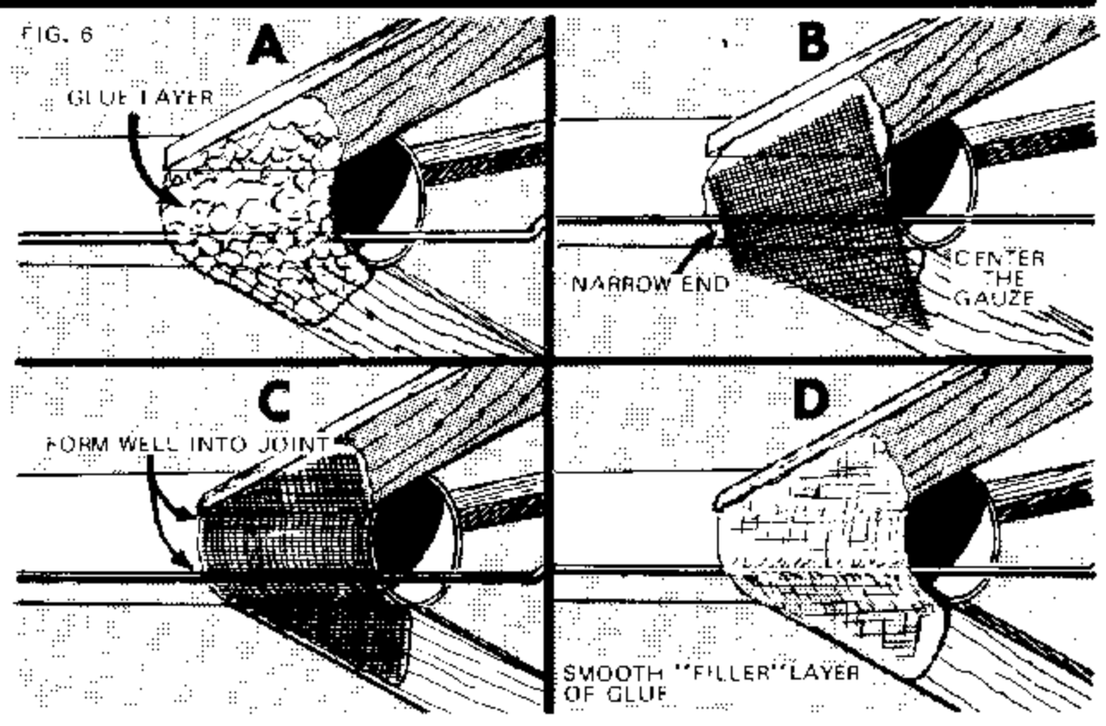


☐ 5. ADD THE ENGINE RETAINING WIRE: Glue the small copper engine retaining wire to the rear of the body tube so 3/8 inch of its length projects beyond the rear end of the body tube.

☐ 6. REINFORCE THE FINS: The gauze reinforcing is necessary if your rocket is to be flown more than once or twice. First cut out sections 1, 2 and 3. Apply these, one at a time, in the following manner:

A. Apply glue over the area to be reinforced.
B. Quickly spread the glue evenly with your finger and then apply the gauze with the narrow end forward.

FIG. 6



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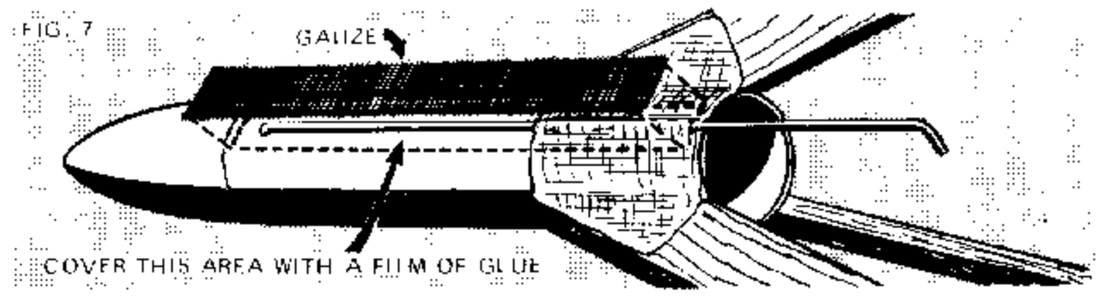

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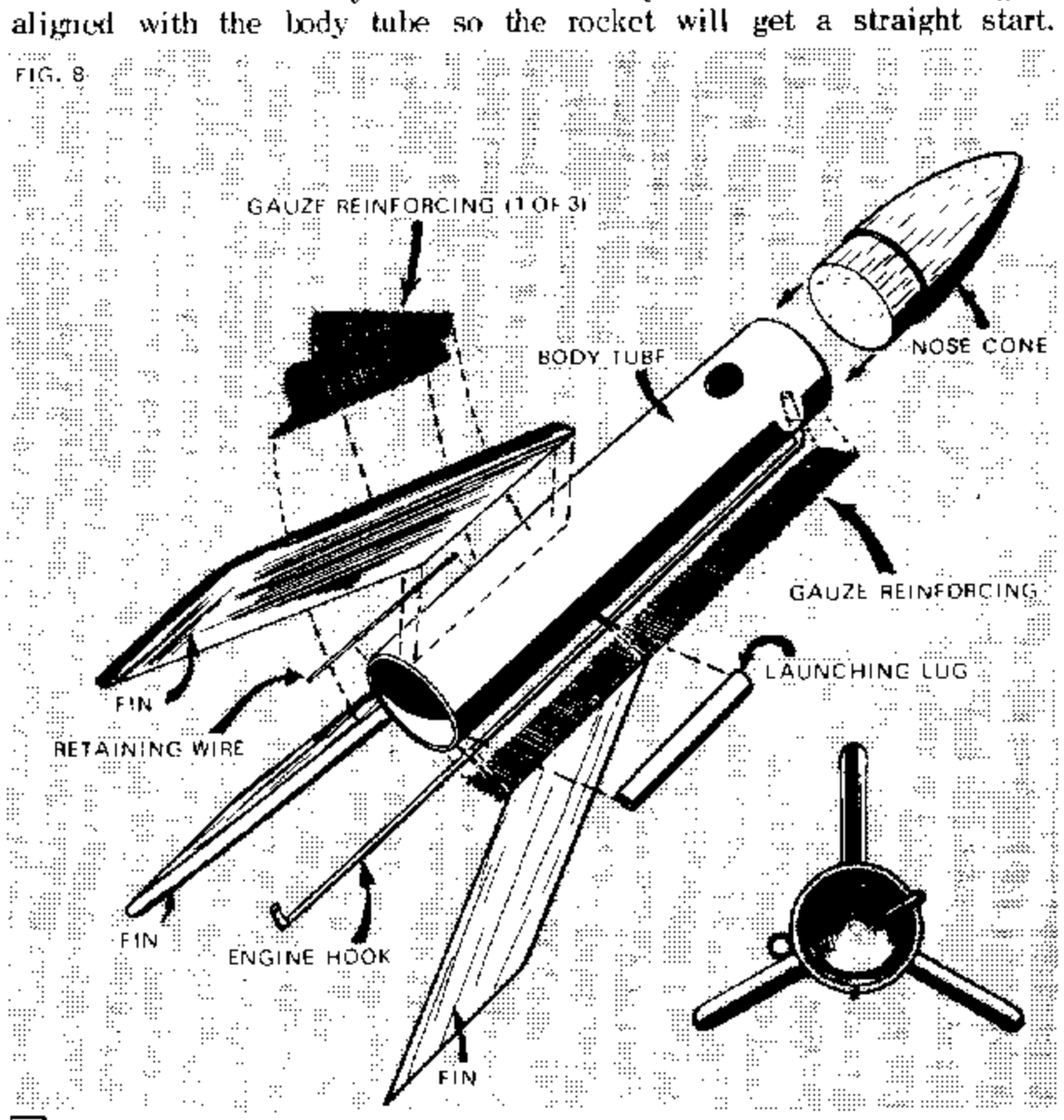

☐ 9. FINISH YOUR BIRD: Sand the forward and outer edges of the fins until rounded. Sand the nose cone and remaining surfaces until smooth. Then coat all balsa surfaces with sanding sealer, let dry and sand again with very fine sandpaper. Repeat this until all holes in the balsa are filled. Paint your model a bright color for easy visibility. Remember that the smoother the surface of the model, the higher it will fly.

A SUBSIDIARY OF DAMON

ESTES INDUSTRIES
BOX 227, PENROSE, COLO. 81240

INFORMATION ABOUT THE ASTRON SCOUT

WHY IT WORKS

Most model rockets require parachutes, streamers or other drag members to slow their descent. These systems work well, but they also have some disadvantages. Parachutes and streamers add unnecessary weight and bulk. If the wind is blowing, a parachute rocket will end up a long way from the launch area. If trees are present any rocket which returns in two pieces connected with a string is likely to end up 40 feet off the ground looking like a fancy bird's nest.

The Astron Scout is radically different in its design. Although, at first thought, it might seem impossible to make a rocket fly on the way up and then refuse to fly down again, it can be done. This is where the Astron Scout differs from most model rockets. It flys up but then comes tumbling down, head over heels, in one piece with no parachute to carry with the wind or catch in a tree. Read the enclosed technical report (No. TR-1) carefully. Then read the following paragraphs. You will not only learn how this rocket does the "impossible," but you will also learn one of the most important principles of all rocketry, large or small, regardless of the type of recovery system used.

The Astron Scout is designed so that in flight the engine sits forward against the nose cone. With the engine in this position, the center of gravity is about 5/8" ahead of the center of pressure. According to the principles outlined in Technical Report TR-1, your rocket will be stable and fly straight.

As the rocket reaches its peak altitude, the ejection charge in the engine is activated. This charge produces gas which pressurizes the space between engine and nose cone and forces the engine casing rearward. The engine casing is caught by the catch hook and held in this rear position. This shifting of weight moves the center of gravity back about 3/4 inch so it is now behind the center of pressure. With the center of gravity behind the center of pressure the rocket cannot fly straight and returns, tumbling, to a soft landing, since the air drag on an unstable object is extremely high.

If you do not understand this principle your rocket will still perform correctly. If you do understand it, you have learned one of the most important principles of all rocketry and should be able to begin designing your own model rockets.

WHERE TO FLY

WHERE TO FLY YOUR ROCKET: The best place to fly your rocket will be on a model rocket range. Most ranges are set up by organized groups of rocket enthusiasts. If there is no model rocket club in your area, you may wish to start one. Estes Industries has available a Guide for Rocket Clubs containing information on forming and operating a model rocket club. To obtain a copy, send a stamped, self-addressed envelope to Estes Industries.

CHANGING ENGINES

REPLACING THE ENGINE: After each flight the expended engine must be removed. Spring the catch hook out of the way and pull the engine out before releasing the hook. Next, be sure the paper cap ejected from the old engine is removed. Make sure the rocket body is free of debris and residue build up. After you have flown your rocket several times a deposit of ejection charge residue may build up on the inside of the rocket body. If this deposit gets too thick it will interfere with the proper fit of the engine. You can remove this deposit by scraping with a knife blade or similar object.

CHECK NEW ENGINE FIT

When a new engine is installed in the rocket body it must be loose enough to easily slide forward against the nose cone. With the engine resting against the nose cone you should be able to expel it by shaking your rocket. DO NOT LAUNCH YOUR ROCKET if you can not do this.

Before putting the Scout on the launch pad, be sure the nozzle end of the engine is even with the rear of the body tube. The engine is held in this position by bending the retaining wire over the end of the engine. At ignition the thrust of the engine moves it forward against the nose cone. It stays there until the ejection charge forces it rearward at the apex of flight.

CHOICE OF ENGINES

ENGINES TO USE: The Astron Scout model rocket is designed to be flown only with Series I and Series II engines manufactured by Estes Industries. The weight distribution (center of gravity — center of pressure relationship) of this rocket is very critical and other types of engines will not work. The types recommended are the 1/2A6-2, the A8-3, the B6-4 and the C6-5. The model can also be flown with 1/4A3-2, A5-2, A5-4, B4-4, B6-6, B14-5 and C6-7 engines. CAUTION: For beginners and those limited to small flying fields, the 1/2A and A engines are best. Larger engines will often take the model out of sight. Learn to fly and follow your model with the smaller engines before going to the larger ones. This way you lose fewer rockets.

LAUNCHING

LAUNCHING PROCEDURE: Always launch your model using a standard electrical system with a 1/8" diameter guide rod at least 30" long. For information on building a launcher, check the instructions which came with your engine. Follow the countdown procedure given below when flying to eliminate mistakes and to provide greater realism and safety.

COUNTDOWN CHECKLIST

☐ -12- Select an engine and install an electrical igniter as directed in the instructions which came with the engine.

☐ -11- Insert the engine into the body tube, making sure it slides easily. Bend the retaining wire to hold the engine in place.

☐ -10- Remove the safety interlock or key from the launch control panel. (If a simple spring switch is used, install the protector on the switch to separate the contacts.) Carry the key or interlock on the person of the launch control officer.

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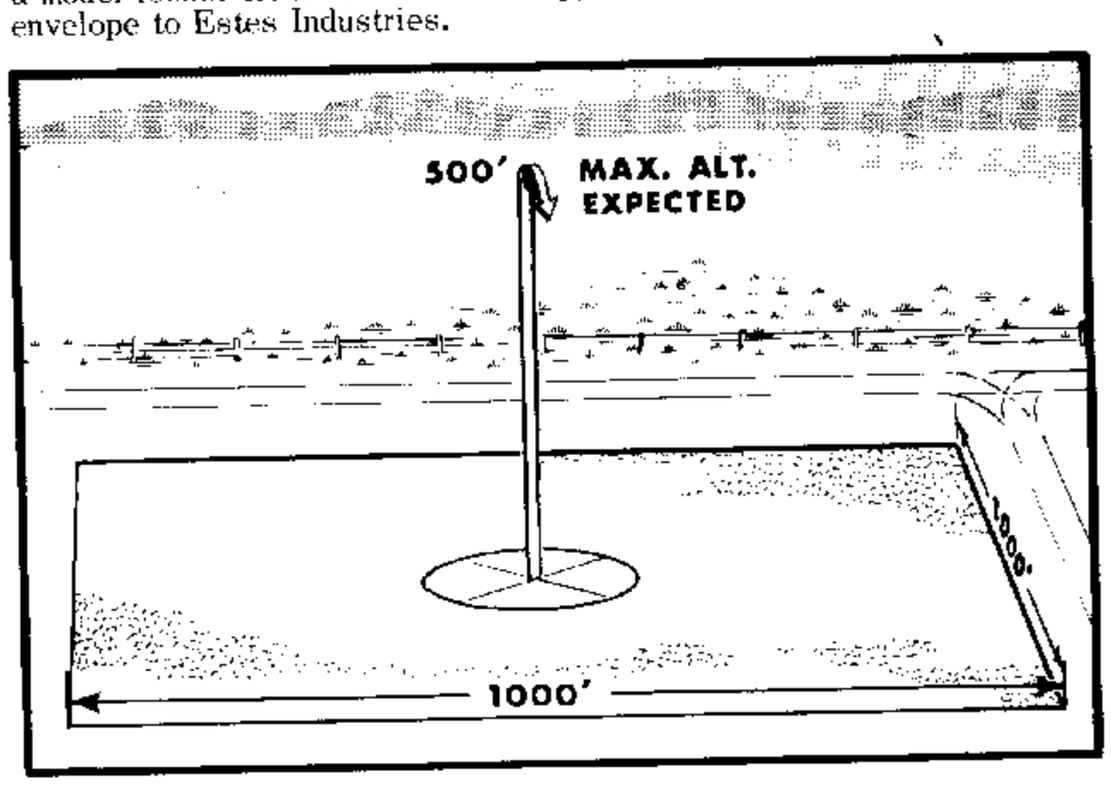

If you do not have a regular model rocket range available, select a place, free of trees and houses, that is large enough to allow recovery of your rocket. Generally the area should be at least 1000 feet on each side. Launch the rocket from the center of the area. Since the Astron Scout lands harder than some rockets, it will be ideal if the area is covered with grass. Landing your rocket on too hard a surface may result in the breaking of a fin. (Broken fins can be replaced, however, and the rocket will be as good as new.) The place you select to fly your rocket should be away from persons who are not participating in or watching the launching. Also, a model rocket should not be flown in high winds or near low flying aircraft.

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☐ -9- Place the rocket on the launcher. Chek to be sure the panel is disarmed. Clean the micro-clips and attah them to the igniter

☐ -8- Clear the launch area, alert the recover crew and the trackers

☐ -7- Check for low flying aircraft and unathorized persons in the launch and recovery areas before beginning the final countdown.

☐ -6- Arm the launch panel.

☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 LAUNCH!

STORAGE

STORING YOUR MODEL: In a dry climate the rocket may be just set upon the shelf where it won't be knocked of or crushed. In humid climates it will be necessary to protect the rcket from moisture. It should always be kept in a dry place. If it is being stored for a long period under extremely high humidity it shouldbe dried thoroughly and placed in a tightly closed plastic bag. The residue which builds up on the inside of the rocket body is hygroscopic and sticky if exposed to excessive humidity.