



SCRAMBLER PARTS

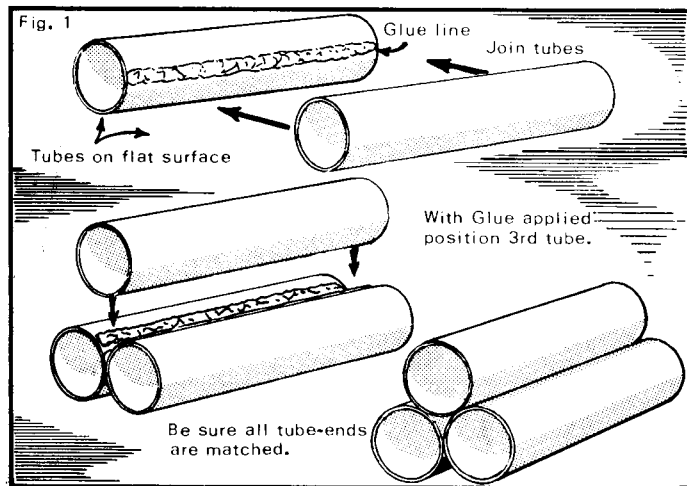
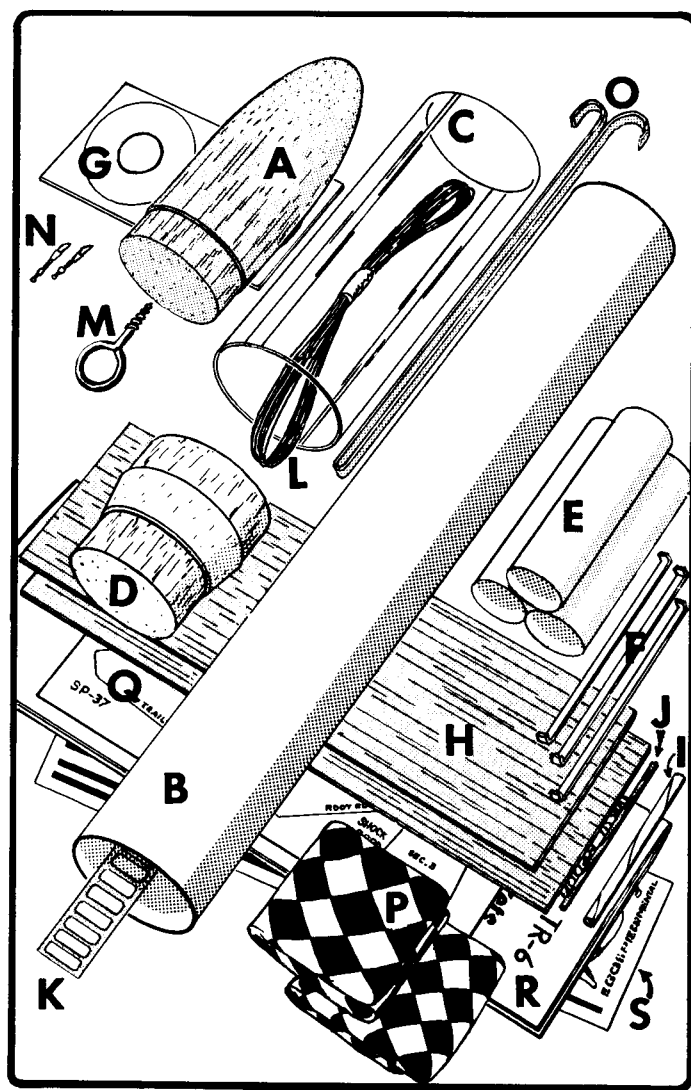
Your Astron Scrambler model rocket kit consists of the following parts as illustrated in the drawing at right:

- A 1 nose cone--Part #BNC-65AF
- B 1 body tube--Part #BT-60D
- C 1 clear payload tube--Part #PST-65R
- D 1 balsa adapter--Part #TA-6065
- E 3 engine mount tubes--Part #BT-20J
- F 3 engine retainer hooks--Part #EH-2
- G 1 ring set--Part #RA-2060
- H 2 sheets balsa fin stock--Part #BFS-40
- I 1 launching lug--Part #LL-2B
- J 1 launching lug stand-off--Part #WD-2B
- K 16 tape strips--Part #TD-2P
- L 2 108" shroud line cords--Part #SLT-18
- M 1 screw eye--Part #SE-1
- N 2 snap swivels--Part #SV-12
- O 1 shock cord--Part #SC-2
- P 2 parachutes--Part #PK-18A
- Q 1 pattern sheet--Part #SP-37
- R 1 technical report--Part #TR-6
- S 1 decal--Part #KD-37

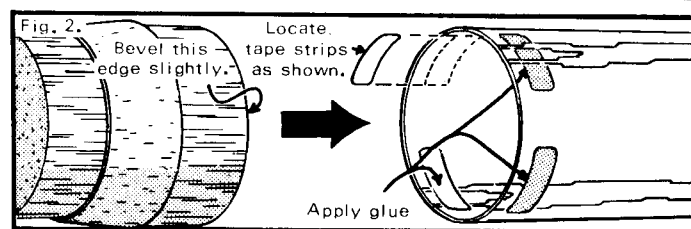
In addition to the materials included with your kit you will also need the following tools and supplies:

- 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) Paint or dope

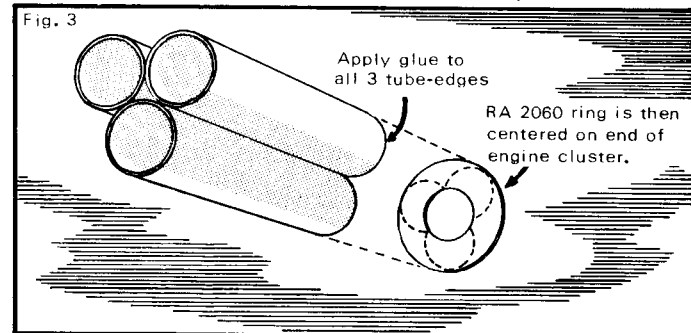
Read the entire assembly instructions carefully before beginning work on your rocket. Then start construction, following each step in order, checking off each step as it is completed.



1. Glue the three engine mount tubes together. First run a strip of glue down one side of one of the tubes. Place another tube against it so the sides and end of the tubes are matched and the tubes run perfectly parallel to each other. Glue the third tube to the first two in the same way. The completed assembly is shown in fig. 1C.

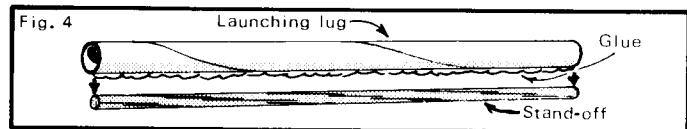


tape strips and slide the adapter into position in the tube.

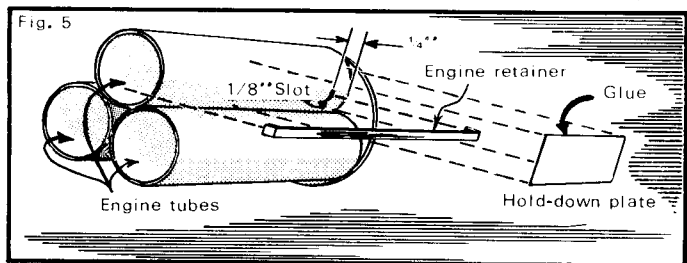


3. Punch out one of the RA-2060 adapter rings from the card. (The other ring is not needed in this kit.) Apply a line of glue to the three engine mount tubes at one end as shown. Center the ring on the end of the engine mount unit and press it in place. Make sure the ring is centered, then set the unit aside to dry.

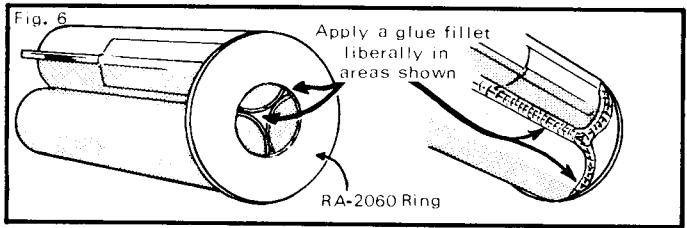
2. Stick four tape strips to the inside of the payload section tube as shown. Bevel the large end of the adapter slightly with sandpaper, smear glue over the



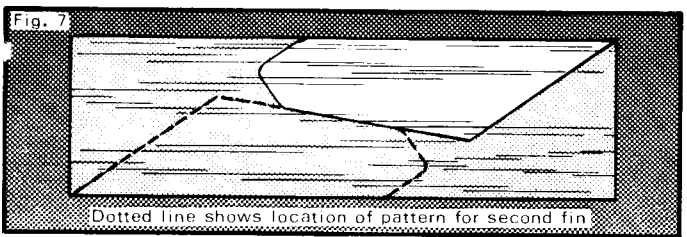
4. Cut the launch lug stand-off dowel to the same length as the launch lug. Apply a line of glue to one side of the lug and press the stand-off into place on the glue. Make sure the two pieces are perfectly parallel, then set the unit aside to dry.



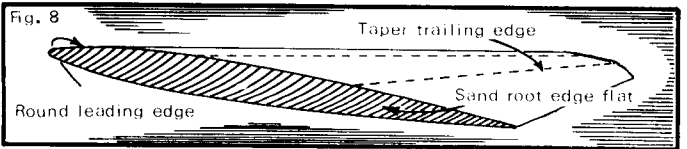
5. Measure 1/4" from the end-seal ring on the engine mount assembly as shown. Mark the engine mount tubes as shown. Cut a 1/8" long slit in each tube in the position marked. Cut out the hold-down plates from the pattern sheet. Insert one end of an engine retainer into a slit as shown. Apply glue to one side of a hold-down plate and press it down over the engine retainer. Repeat this with the other two plates, retainers and tubes.



6. Apply a good fillet of glue around all the ring-tube joints. Carefully seal all the gaps between the tubes and the ring (and the center hole) with extra fillets of white glue so the ring becomes an effective ejection gas seal. Set the unit aside on its end on a piece of waxed paper to dry.

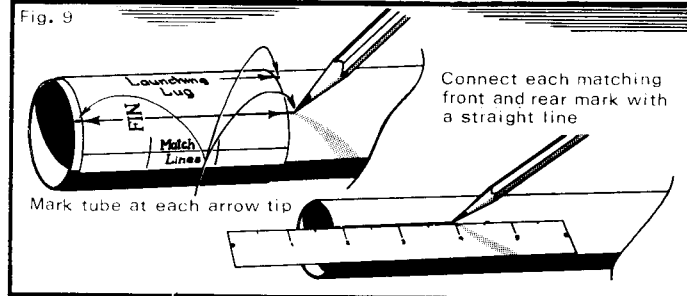


7. Cut out the fin pattern. Lay it on a sheet of balsa and align it so that the grain of the wood is exactly in line with the grain shown on the pattern. Trace around the pattern, then move it to the other end of the sheet and trace again. If the pattern is placed as shown in fig. 7 it will be possible to cut two fins from a sheet of balsa. Trace a third fin on the other sheet of balsa. Cut out the fins using a sharp modeling knife or single edge razor blade.

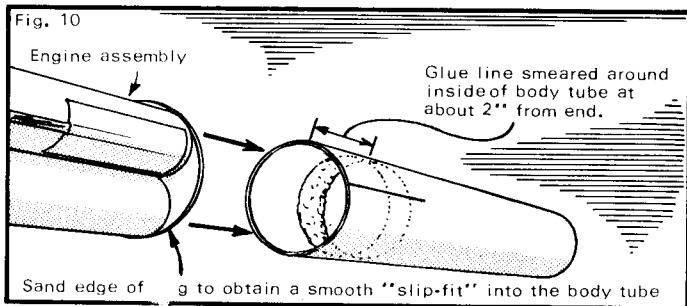


8. Using fine grit sandpaper, round the leading edge and taper the trailing edge of each fin to match the airfoil shown on the pattern sheet and in fig. 8. Sand the root edge (the edge that attaches to the body) of each fin

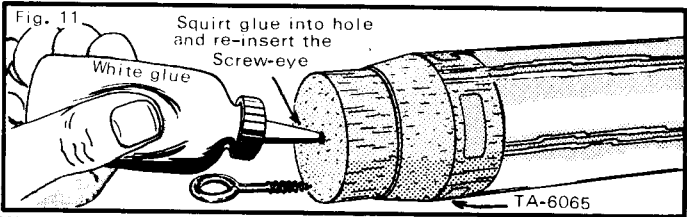
until it is flat and square with the sides of the fin. Smooth off the surfaces of the fin with extra fine sandpaper.



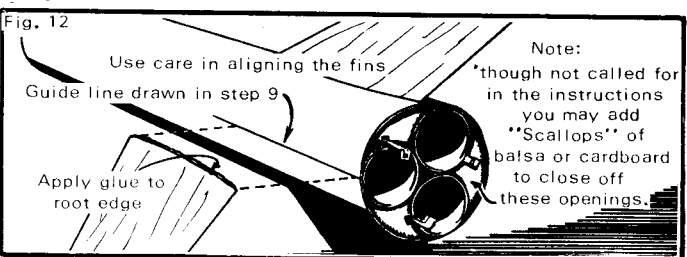
9. Cut out the tube marking guide from the pattern sheet. Wrap the guide around one end of the body and mark the tube at each of the arrow points. Draw a straight line connecting each matching front and rear mark (fig. 9).



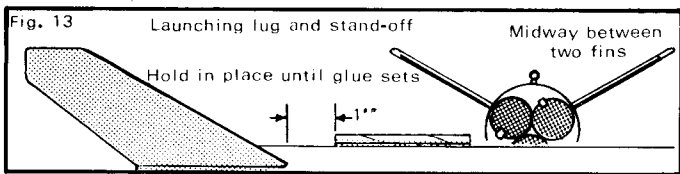
10. When the engine mount unit has dried completely, check its fit in the body tube. If necessary, sand the edge of the ring until it makes a smooth fit inside the body tube. Smear glue around the inside of the marked end (rear) of the body about 2" from the end and immediately slide the engine mount unit into place so the rear of the engine mount tubes is even with the rear of the body and the engine retainer hooks project from the tube. Do not pause while inserting the engine mount or the glue may stick with the mount in the wrong place. Set the unit on its rear end while the glue dries.



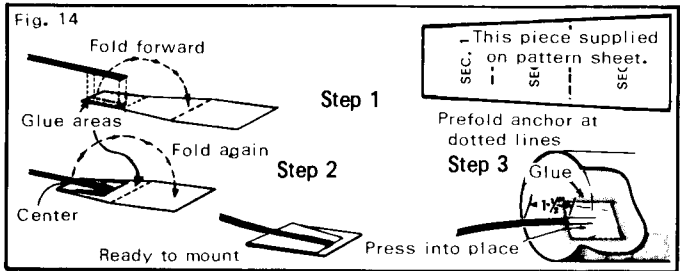
11. Find the center of the rear of the adapter and turn the screw eye into it. Remove the screw eye and force a small amount of glue into the hole. Replace the screw eye and wipe away any excess glue around the hole.



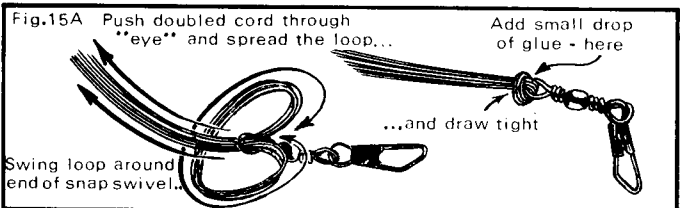
12. Apply glue to the root edge of one of the fins. Attach the fin to the rocket's body with the fin centered on one of the lines drawn in step 9. Align the fin so it projects straight away from the body tube. Following the same procedure, attach the other two fins. Do not set the rocket on its fins while the glue is wet.



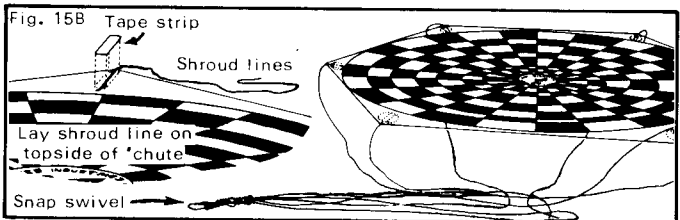
13. Apply glue to the launch lug stand-off as shown in fig 13 above. Attach the lug unit to the body so its rear is 1" ahead of the front of the fins and it is halfway between two fins as shown. Sight along the tube and align the lug so it runs parallel to the body tube.



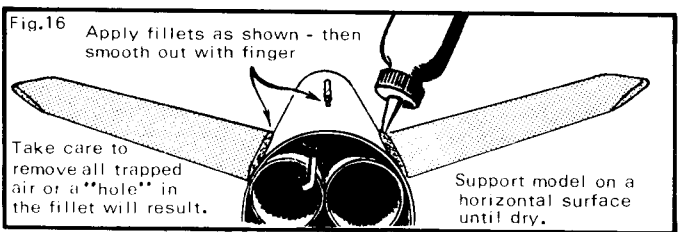
14. Cut out the shock cord mount. Prefold it on the dotted lines, then flatten it out again. Smear glue over section 1. Lay the end of the shock cord into place and fold section 1 over. Apply glue to the back of section 2 and fold again. Clamp the unit together with your fingers while the glue sets. Apply glue to the inside of the body tube over an area approximately 1" to 1-1/2" from the front end. The glue should cover a shape approximately the same as the shock cord mount. Press the mount onto the glue and hold it until the glue sets.



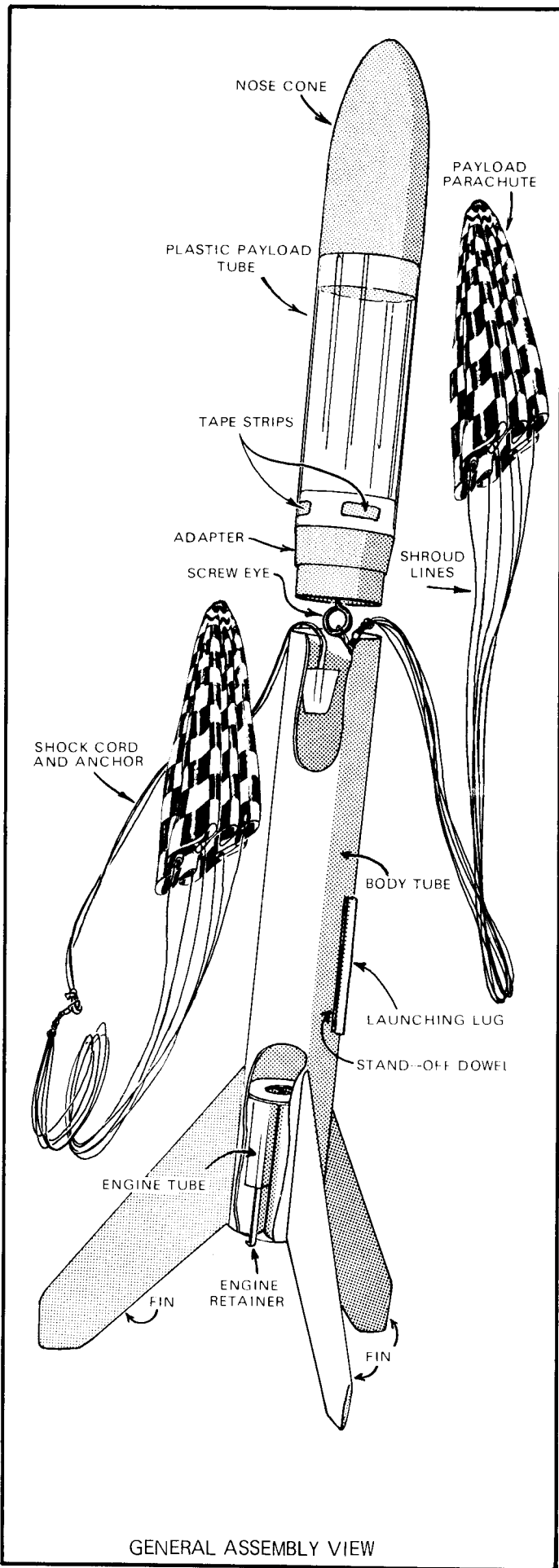
15. Cut out the parachutes on their edge lines. Cut six 36" lengths of shroud line cord. Double over three of these pieces of cord at their exact middle and loop



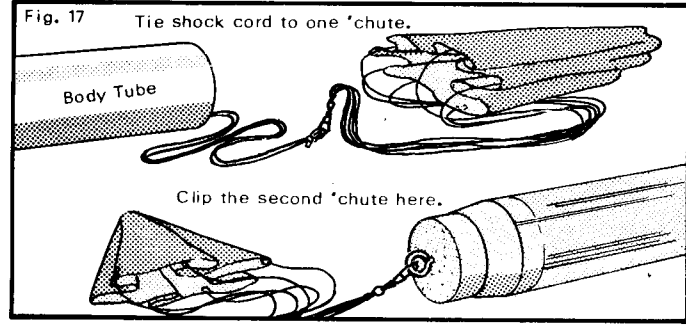
the cord through the eye of a snap swivel as shown. Pull the loop tight on itself and apply a small drop of glue to the loop. Attach one shroud line end to each point of one parachute with a tape strip as shown in fig. 15B. Repeat this procedure with the other shroud lines, swivel and 'chute.



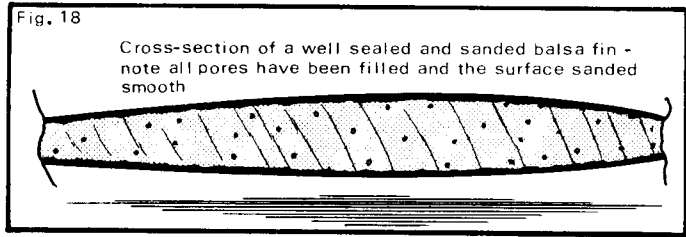
16. Apply a glue fillet to each of the fin-body joints and to the launch lug stand-off as shown. The fillets should be smooth and bubble-free. Support the rocket horizontally while the glue dries.



GENERAL ASSEMBLY VIEW



17. Clip one parachute to the screw eye on the base of the payload section. Tie the free end of the shock cord to the snap swivel on the other parachute. (When a payload weighing less than 1/2 ounce is being flown it is best to remove the 'chute that is normally attached to the payload section and instead clip the booster section to both the shock cord and the payload section screw eye. This prevents the model from drifting too far.) Pack the parachutes into the body tube and slide the payload section into place.



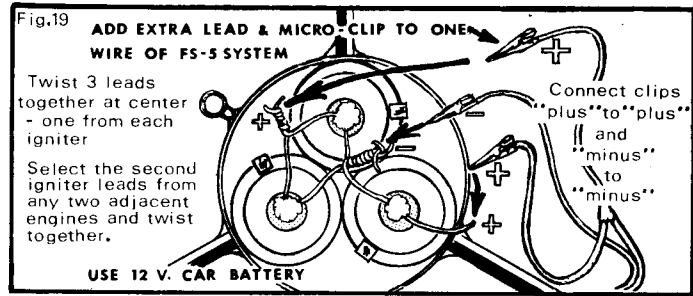
18. Before finishing let all the glue on the outside of the rocket dry so it is hard and clear. Cover all balsa surfaces with a coat of sanding sealer. Let it dry completely and sand lightly with extra fine sandpaper. Apply a second coat, let dry, sand and apply still another coat until all the pores in the balsa are filled and the surfaces look and feel smooth. Protect all parts of the transparent plastic payload section which you do not want painted by wrapping the tube with masking tape. Give the rocket a clean base coat of glossy white paint or dope, let dry and follow with a high visibility color such as red, fluorescent orange, cerise, etc. to aid in tracking and retrieving.

GENERAL INFORMATION

The maximum recommended payload weight for the Astron Scrambler is 3 ounces. For low altitude flights without a payload, A8-3 engines are recommended. For medium altitude flights with light payloads (under 1 oz.) use B6-4 or B4-2 engines. For medium altitude flights with heavier payloads (1 to 2 oz.) use B14-5 engines. For maximum altitude performance with or without a payload, use C6-5 engines.

One special activity you can perform with your Astron Scrambler is egg-lifting. The payload section is designed with enough room for most Grade AA hen's eggs. When flying an egg, use a separate 'chute for the payload section (see assembly step 17). Flexible plastic or rubber foam packed in front of and behind the egg is recommended to cushion it from most shock. A successful egg launching (and recovery) is usually considered evidence that a rocketeer has mastered basic payload flying techniques.

The launch rod or rail used with this model should be at least 36" long and should be securely anchored to a stable launcher base. Use a 12 volt car battery for your electrical power source. Connect the igniters as shown in fig. 19. Please read technical report TR-6



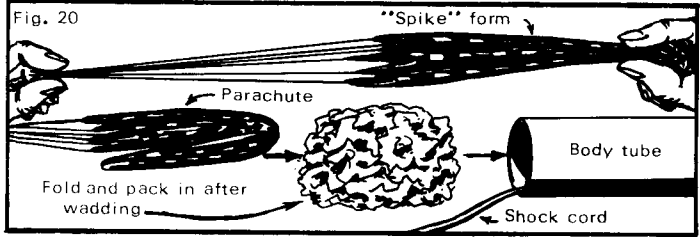
before attempting to launch your model. Follow the countdown procedure given below to eliminate mistakes and to obtain top performance.

COUNTDOWN CHECKLIST

15. Cut one square of flame-resistant wadding into 2" square pieces. Wad up one piece and insert it into the FORWARD end of one of the engines above the end cap. Repeat this with the other two engines.

14. Install an electrical igniter in each engine as directed in the instructions which came with the engines.

13. Insert the engines into the engine mount tubes, springing the engine retainers up enough to slide the engines into place. Use a pair of tweezers or small nosed pliers to twist the igniter leads together as shown in fig. 19.



12. Loosely crumple 8 or 9 squares of flameproof wadding. Pack the wadding into the body tube from the top. The wadding should fill the tube for a distance of about 2-1/2 inches and seal tightly along the sides of the tube. Hold the booster section parachute between two fingers at its center and pass the other hand down it to form a "spike" shape. Pack the shock cord and parachute into the tube, then fold the payload section 'chute and pack it in on top. Slide the payload section into place.

11. Load the payload into the payload section. When a heavier payload is being flown, a layer of masking tape should be wrapped around the nose cone-tube joint to prevent the payload from coming loose at ejection. When a small, heavy payload is installed, the extra space inside the tube should be filled with foam padding or wadding to keep it from bouncing around.

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

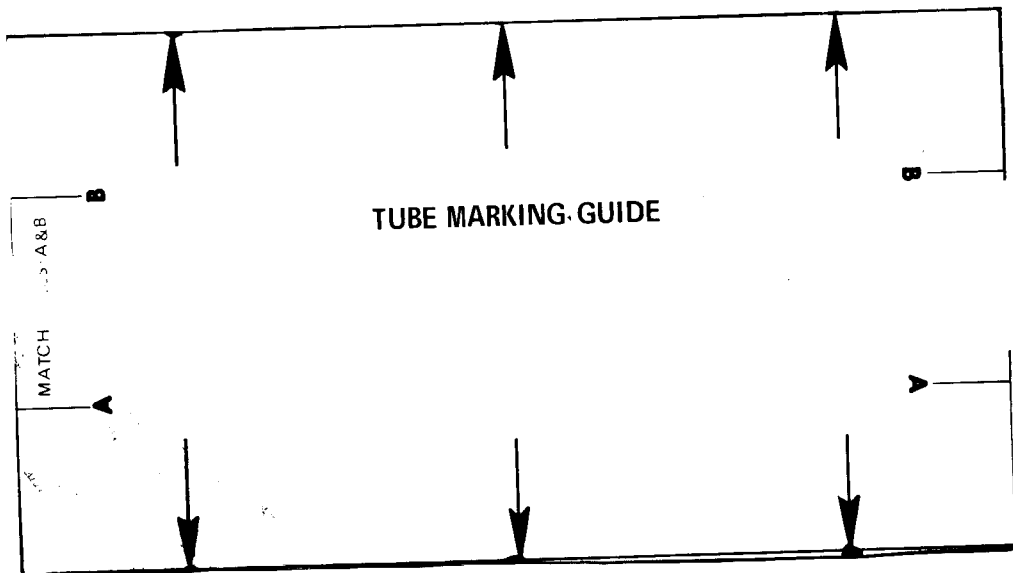
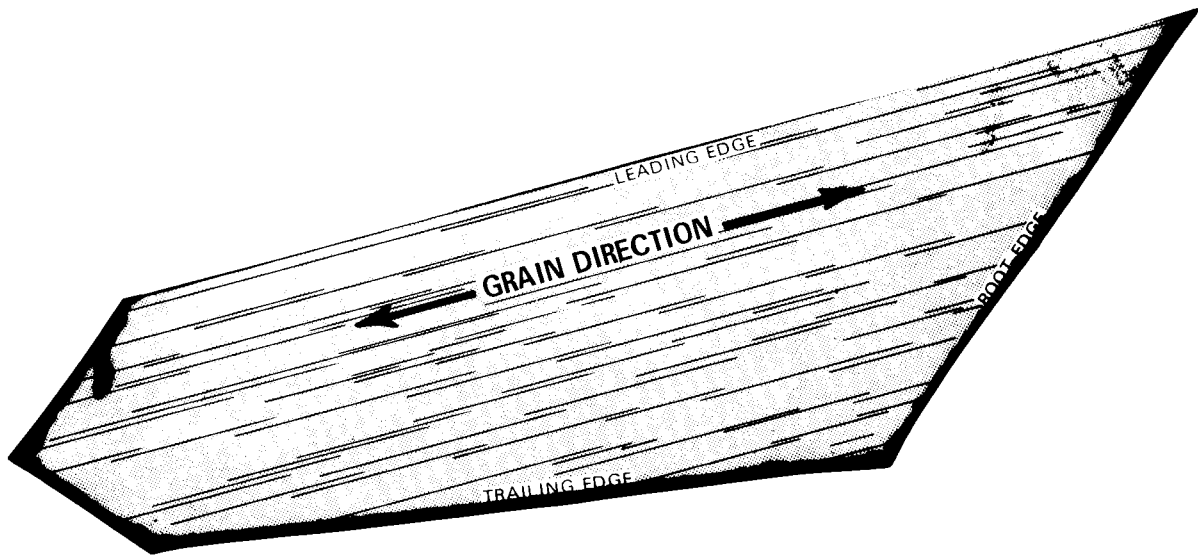
9. Place the rocket on the launcher. Check to be sure the panel is disarmed. Clean the micro-clips very carefully and attach them to the igniters as in fig. 19.

8. Clear the launch area, alert the recovery crew and trackers.

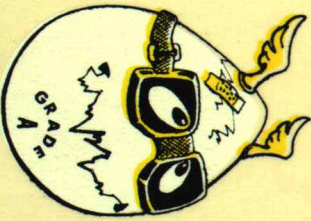
7. Check for low flying aircraft and unauthorized persons in the recovery area.

6. Arm the launch panel.

5. 4. 3. 2. 1. LAUNCH!



EGGSPERIMENTAL



Astron

DU SCRAMBLER DU



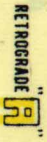
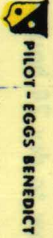
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AIRFRAME BY MACDONALD



NASA EGGSPEDITION



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