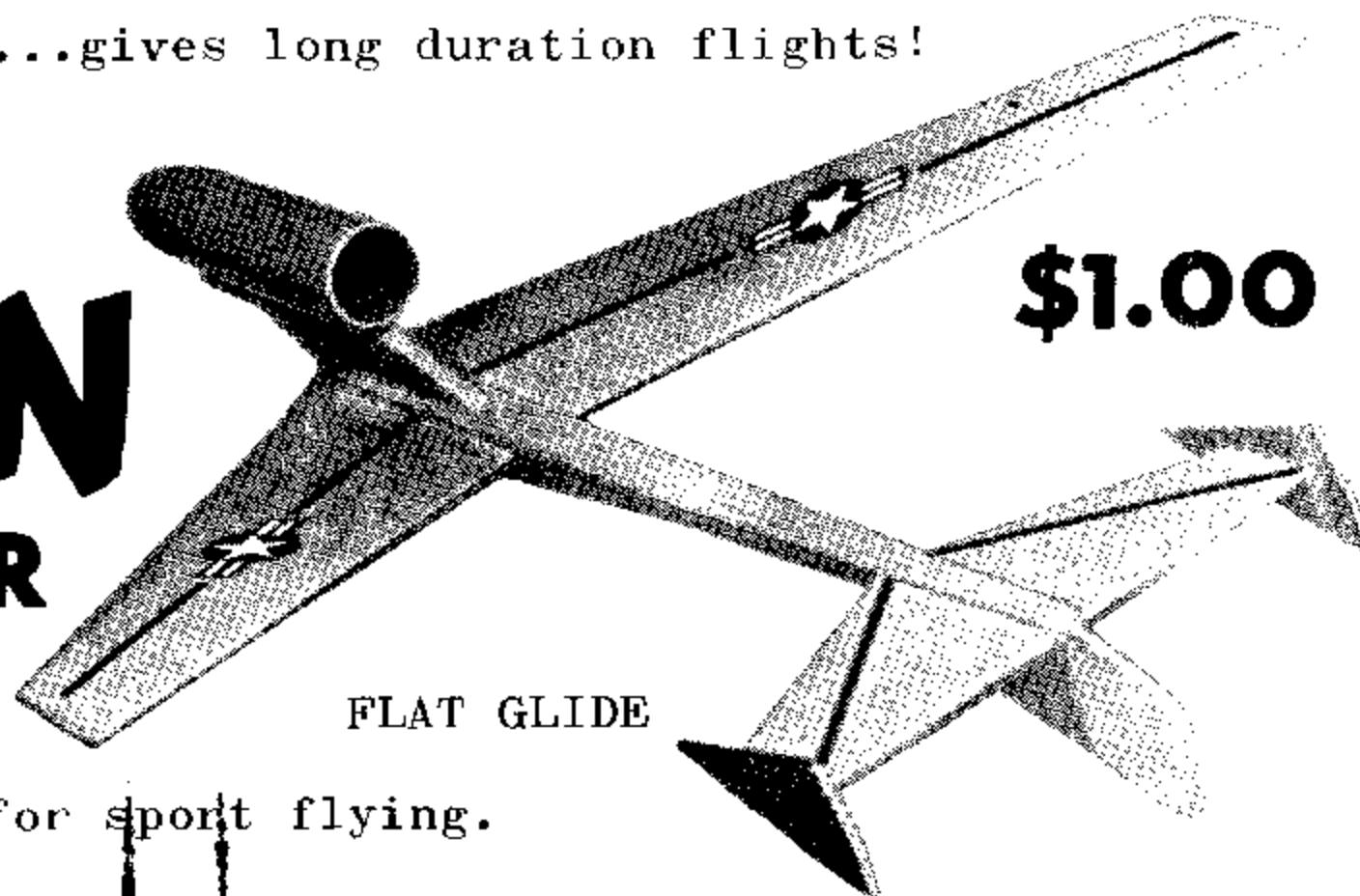


Kit # K-13

Climbs high...gives long duration flights!

Astron FALCON ROCKET GLIDER

\$1.00



FLAT GLIDE

1/4A and 1/2A engines recommended for sport flying.

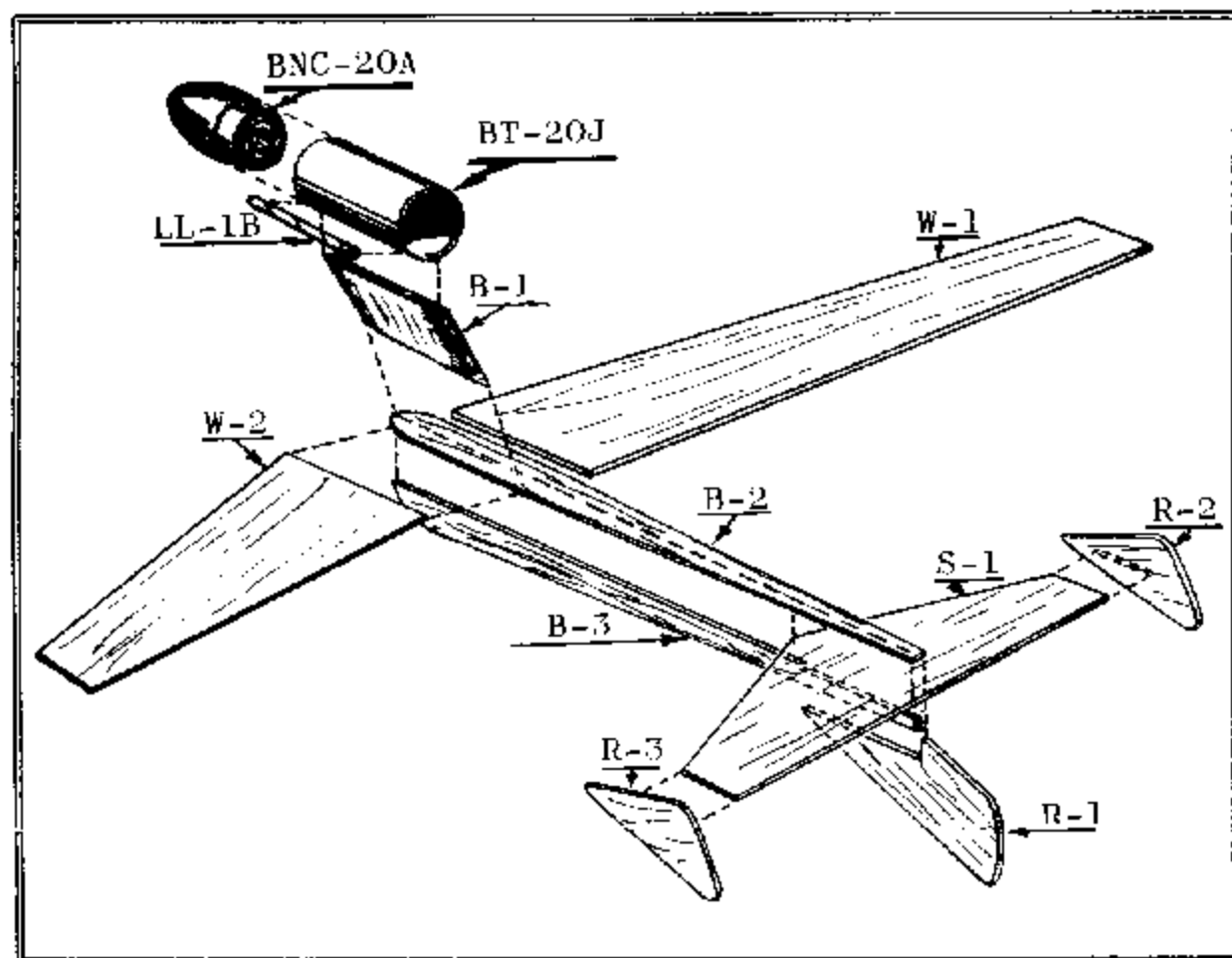
Estes Industries, Inc.

BOX 227

PENROSE, COLORADO 81240

ASSEMBLING the FALCON

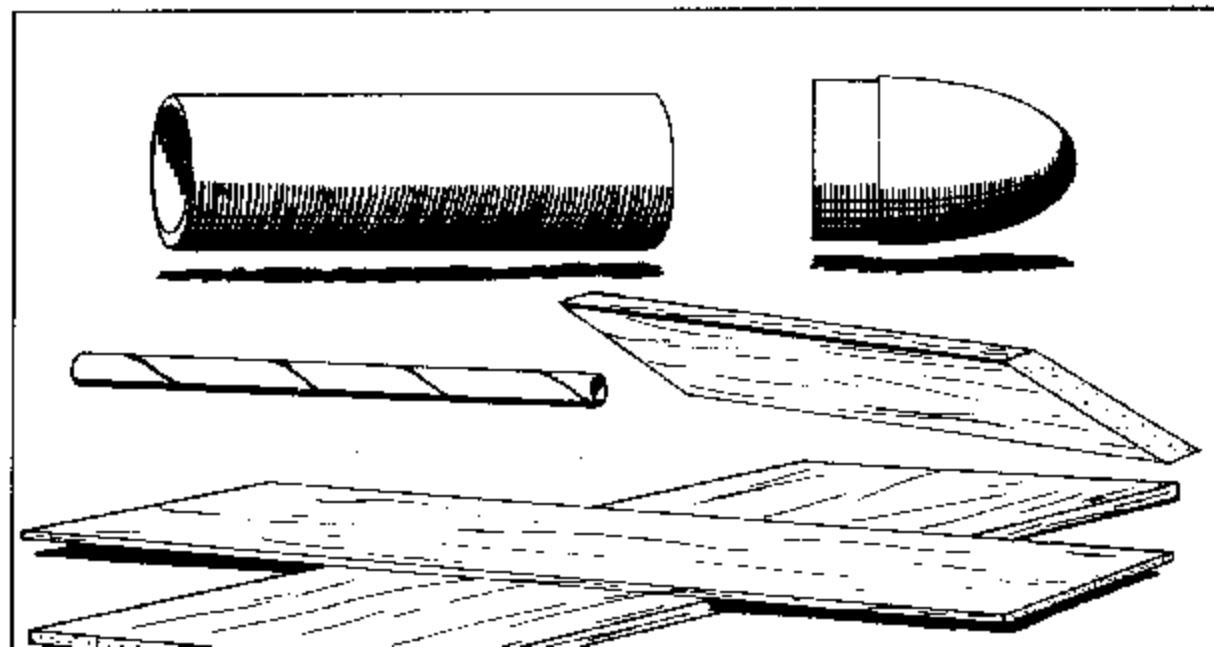
Read the complete instructions. As you read, look at the illustrations and pattern sheet. Study and identify each part. Learn the names and try to figure out where you will put each part when you assemble the glider.



Step 1.

Your ASTRON FALCON kit contains the following parts as illustrated in the drawing below:

- (1) Body Tube--Part #BT-20J
- (2) Nose Cone--Part #BNC-20A
- (3) Balsa Stock--Part #BFS-60S
- (4) Balsa Stock--Part #BFS-30
- (5) Balsa Stock--Part #BFS-20
- (6) Launching Lug--Part #LL-1B
- (7) Nose Cone Weight--Part #NCW-1
- (8) Pattern Sheet--Part #SP-4



Step 2

A. Mark and cut each part with care. Cut out all of the balsa parts patterns. Do not cut out any of the drawings which are not marked for patterns.

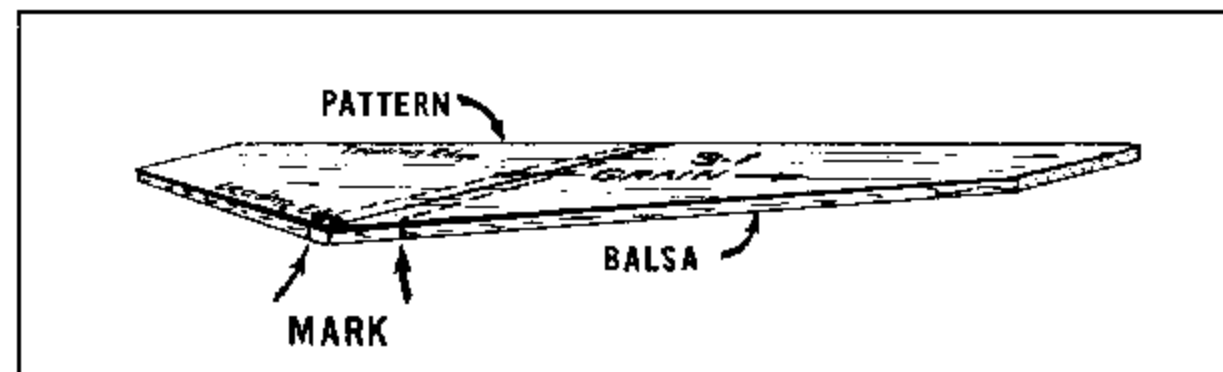
B. One of the large sheets of balsa is 1/16" thick, the other 3/32" thick. Select the thicker of the two (3/32"), lay the wing pattern (W-1) on it in the position shown in illustration A on the pattern sheet, and mark around it with a ball point pen. Turn the pattern around and mark around it for the second wing.

C. Position the patterns for B-2, B-3, R-1, R-2, R-3, and S-1 on the 1/16" thick balsa sheet as shown in ill. B. Mark around the patterns with a ball point pen.

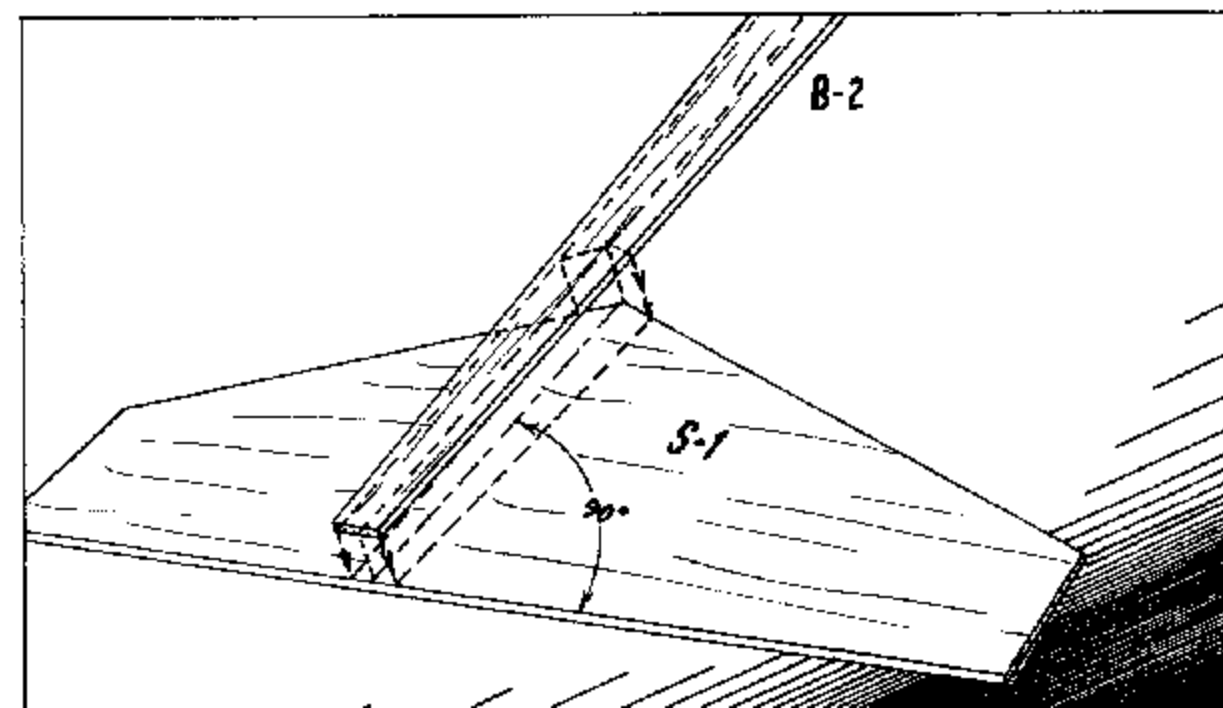
D. Cut out all balsa parts from both sheets. Lay the two wings on the table with their root edges touching (see pattern) as in illustration C. Sand the wings to the airfoil shown in illustration D. Be especially careful when sanding so that when the wings are glued in place the underside of the wing will be flat, the upper leading edge rounded, and the trailing edge tapered. If you goof here, your Falcon won't fly.

Step 3

A. Place the paper pattern for S-1 over the stabilizer and match the edges of the two pieces exactly. Mark the balsa with a pen at the exact points where the two broken lines on the pattern reach the edges of the paper.

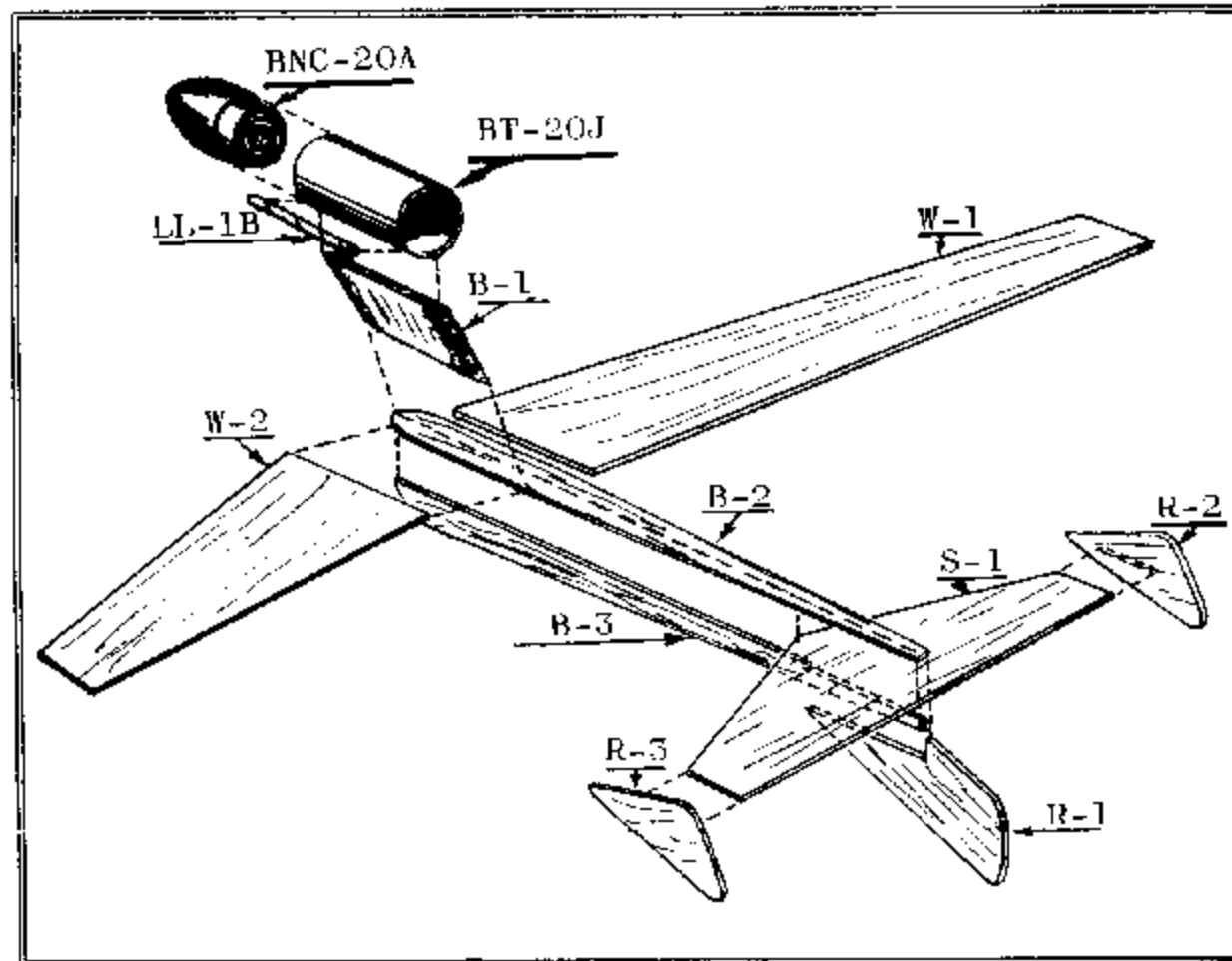


B. Glue the stabilizer to the rear of body piece B-2. Use the marks made in Step 2A to align the stabilizer so its trailing edge is at an exact 90° angle to the center line of the body.



ASSEMBLING the FALCON

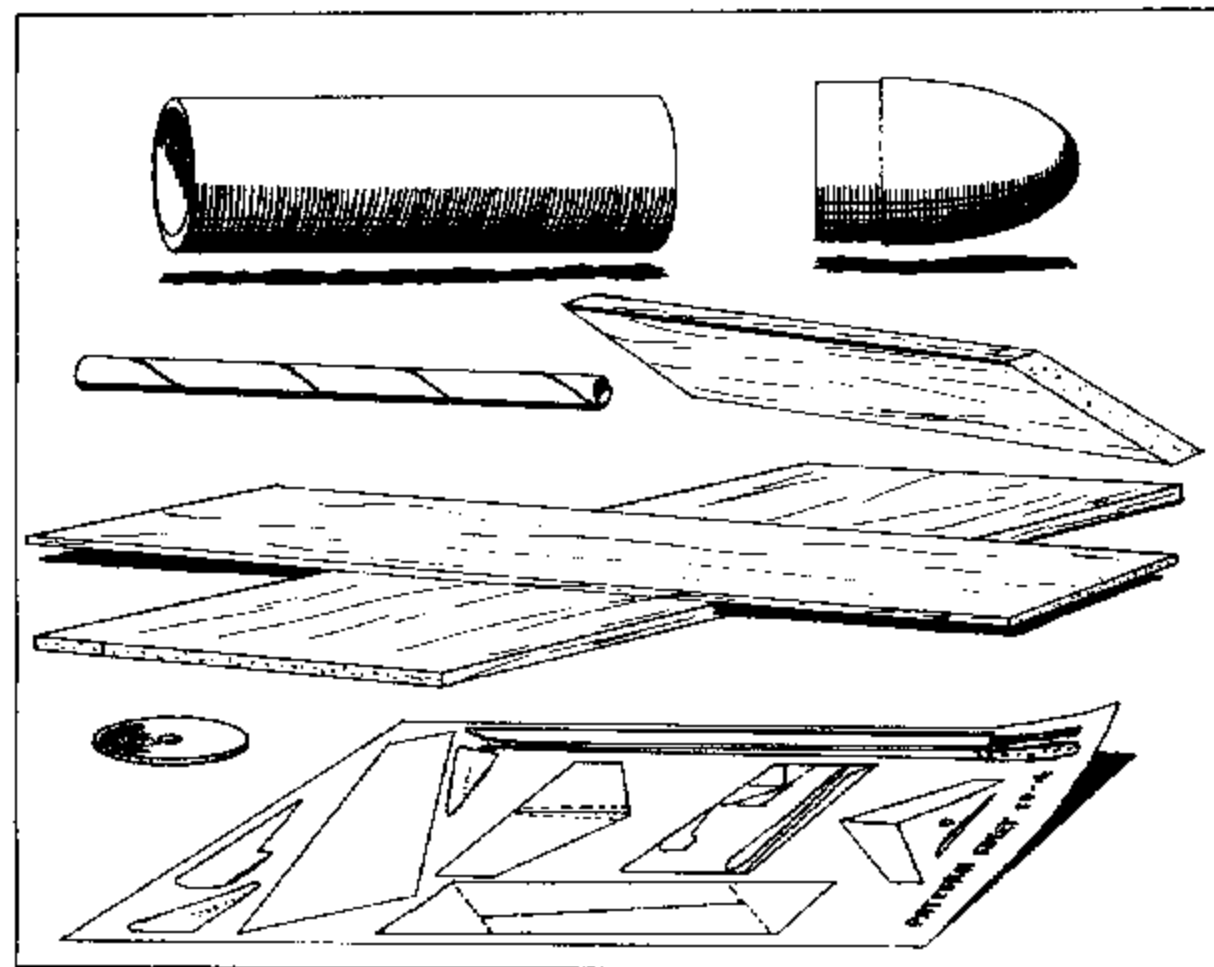
Read the complete instructions. As you read, look at the illustrations and pattern sheet. Study and identify each part. Learn the names and try to figure out where you will put each part when you assemble the glider.



Step 1.

Your ASTRON FALCON kit contains the following parts as illustrated in the drawing below:

- (1) Body Tube--Part #BT-20J
- (2) Nose Cone--Part #BNC-20A
- (3) Balsa Stock--Part #BFS-60S
- (4) Balsa Stock--Part #BFS-30
- (5) Balsa Stock--Part #BFS-20
- (6) Launching Lug--Part #LI-1B
- (7) Nose Cone Weight--Part #NCW-1
- (8) Pattern Sheet--Part #SP-4



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

1. Single edge razor blade or modelers knife
2. Scissors
3. Masking tape
4. Extra strong cement (White glue such as Estes #WG-1 is recommended.)
5. Fine and extra fine grit sandpaper
6. Ball point pen

A. Mark and cut each part with care. Cut out all of the balsa parts patterns. Do not cut out any of the drawings which are not marked for patterns.

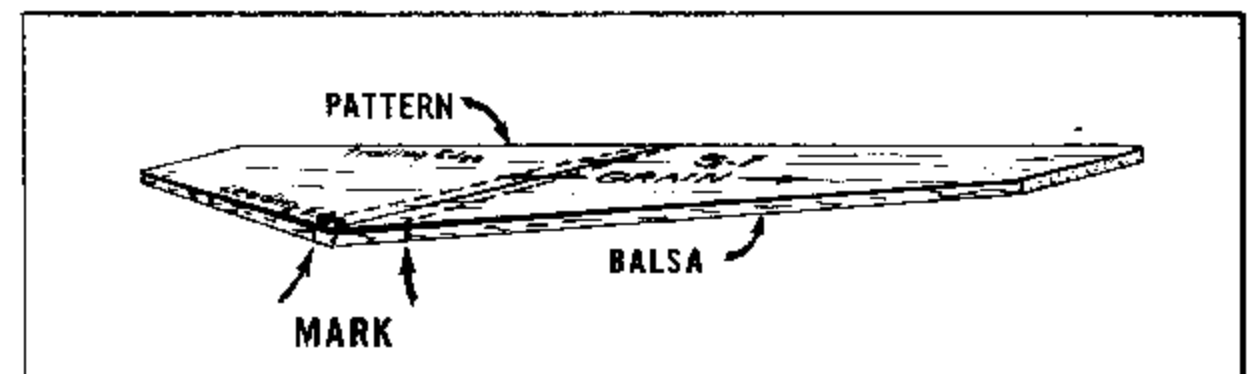
B. One of the large sheets of balsa is 1/16" thick, the other 3/32" thick. Select the thicker of the two (3/32"), lay the wing pattern (W-1) on it in the position shown in illustration A on the pattern sheet, and mark around it with a ball point pen. Turn the pattern around and mark around it for the second wing.

C. Position the patterns for B-2, B-3, R-1, R-2, R-3, and S-1 on the 1/16" thick balsa sheet as shown in ill. B. Mark around the patterns with a ball point pen.

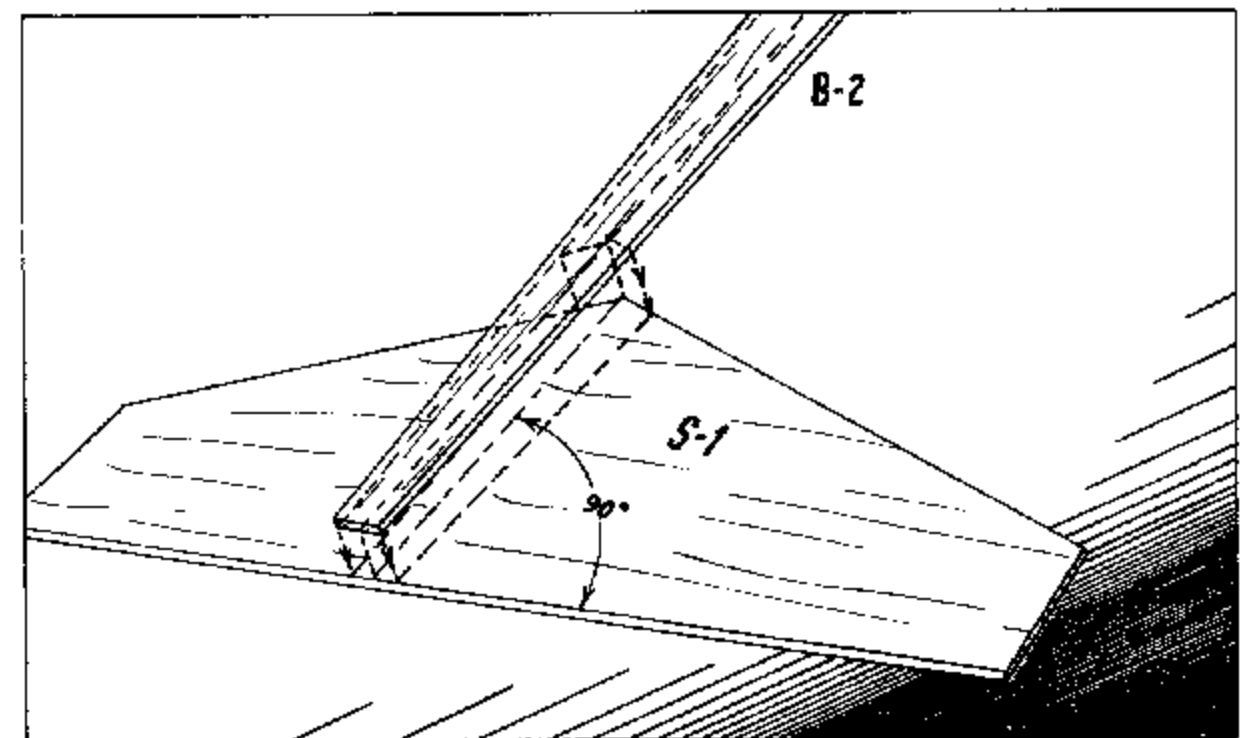
D. Cut out all balsa parts from both sheets. Lay the two wings on the table with their root edges touching (see pattern) as in illustration C. Sand the wings to the airfoil shown in illustration D. Be especially careful when sanding so that when the wings are glued in place the underside of the wing will be flat, the upper leading edge rounded, and the trailing edge tapered. If you goof here, your Falcon won't fly.

Step 3

A. Place the paper pattern for S-1 over the stabilizer and match the edges of the two pieces exactly. Mark the balsa with a pen at the exact points where the two broken lines on the pattern reach the edges of the paper.

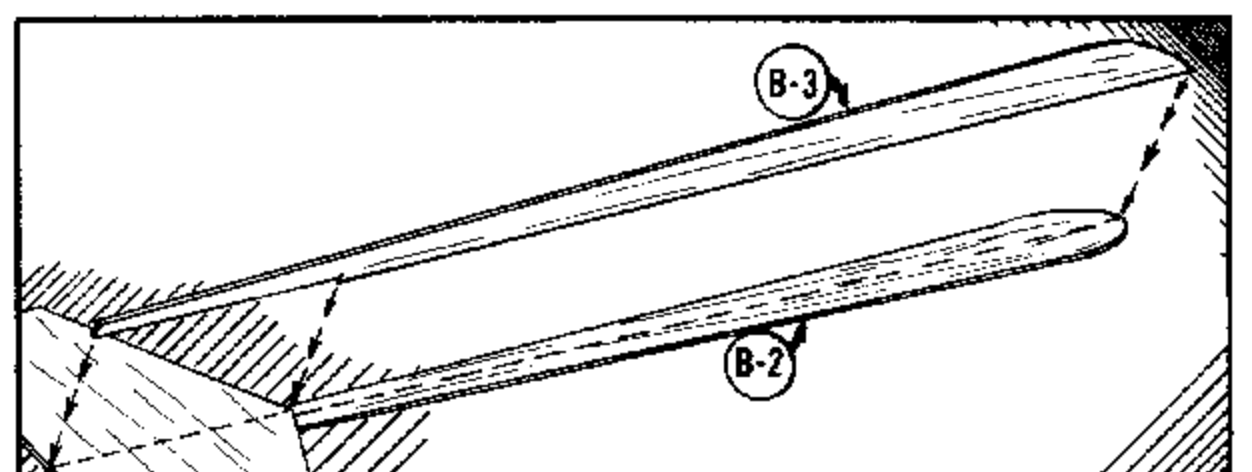


B. Glue the stabilizer to the rear of body piece B-2. Use the marks made in Step 2A to align the stabilizer so its trailing edge is at an exact 90° angle to the center line of the body.

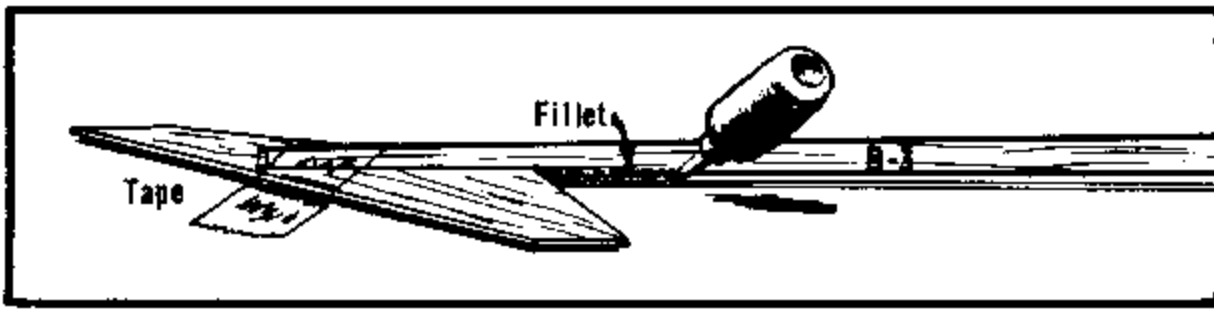


Step 4

A. Glue body piece B-3 to B-2 and S-1. Align B-3 to follow the centerline of B-2.



B. Tape the assembled unit to a flat surface to prevent warping.



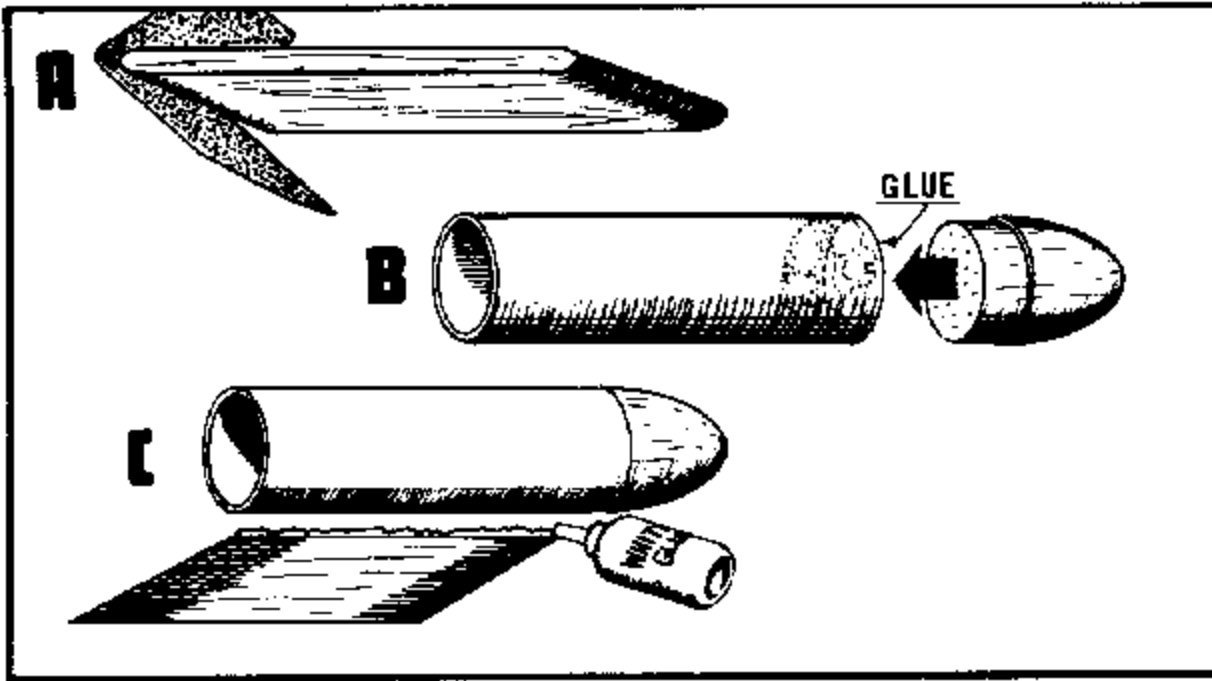
C. Apply a glue fillet to both sides of the joint between B-2 and B-3 and to both sides of the joint between B-3 and S-1.

Step 5

A. Round the front and rear edges of the pylon (B-1) with sandpaper. DO NOT sand the top or bottom of the pylon.

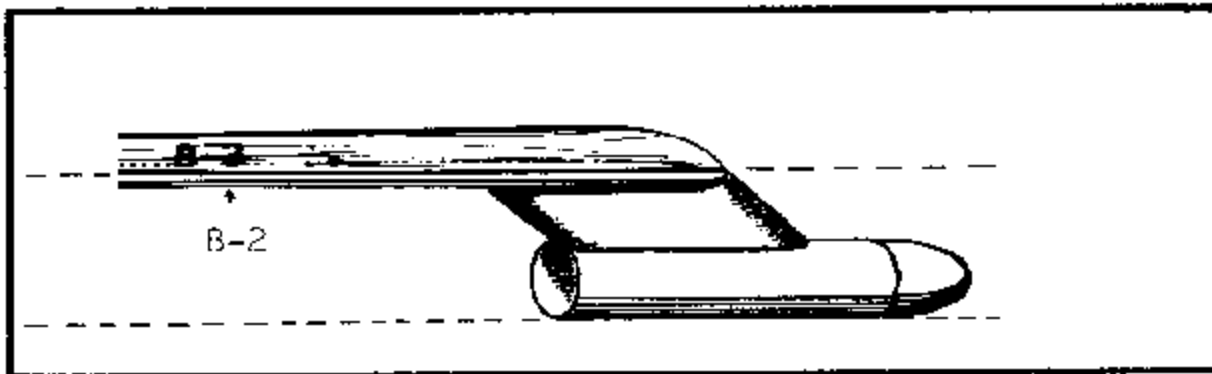
B. Spread glue around the inside of one end of the BT-20J engine holder as shown. Insert the BNC-20A nose cone.

C. Apply glue to the upper edge of the pylon and attach it to the engine holder in the position shown. Align it carefully so the two pieces run perfectly parallel. Let the glue harden.



Step 6

Apply glue to the bottom edge of the pylon. Glue it to body piece B-2 in the position shown. Align it so the pylon, engine holder, and body are perfectly parallel. Let the glue harden.



Step 7

A. Prop up the tail so it is parallel to the surface of the table. Check with a ruler--the front and rear of B-2 should be the same distance from the table surface.

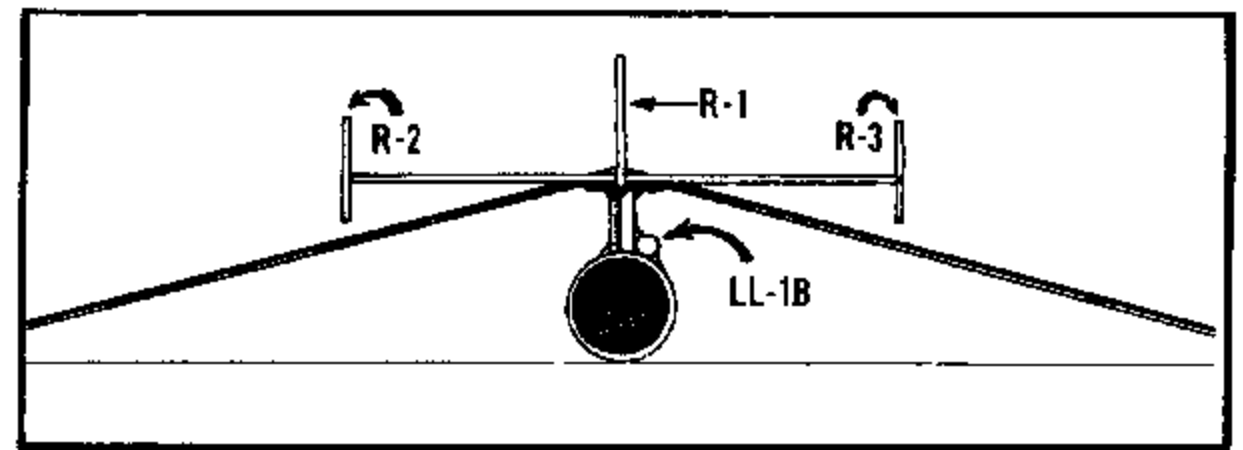
B. Apply glue to the root edges of W-1 and W-2. Place the wings against body piece B-3 so the front of each wing is at the front of the body piece and the top of the wing rests on body piece B-2. (The glider is upside down now, so the top of the wing will be nearest the table, the flat side of the wing away from the table.) Wing tips should rest flat on the table, and the bottom of the wing should be perfectly parallel to body piece B-2. Let the glue harden.

C. Apply a liberal fillet of glue or body putty all around the wing-body joints.

D. Glue LL-1B in place at the corner of the pylon-engine holder joint.



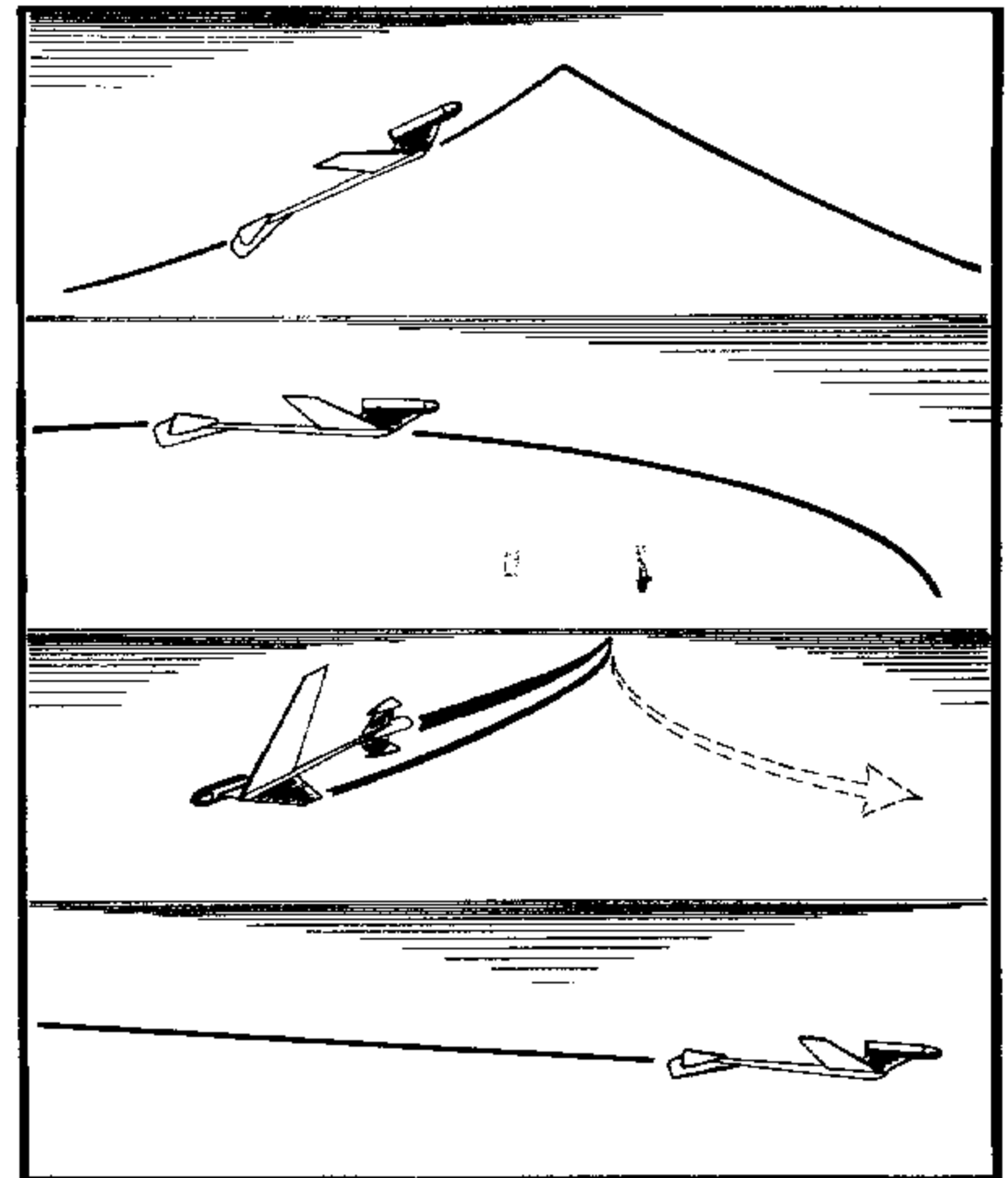
A. Glue R-1, R-2, and R-3 in place. Align these parts so they stick up at a 90° angle to the stabilizer (S-1). Let the glue dry.



B. Sand the body and tail assembly. Paint the Falcon red, fluorescent orange, cerise, or other high visibility color. Be especially careful when painting--apply the paint evenly to avoid warping the balsa. Use as little paint as possible to keep the weight down.

Step 8 BALANCING the FALCON

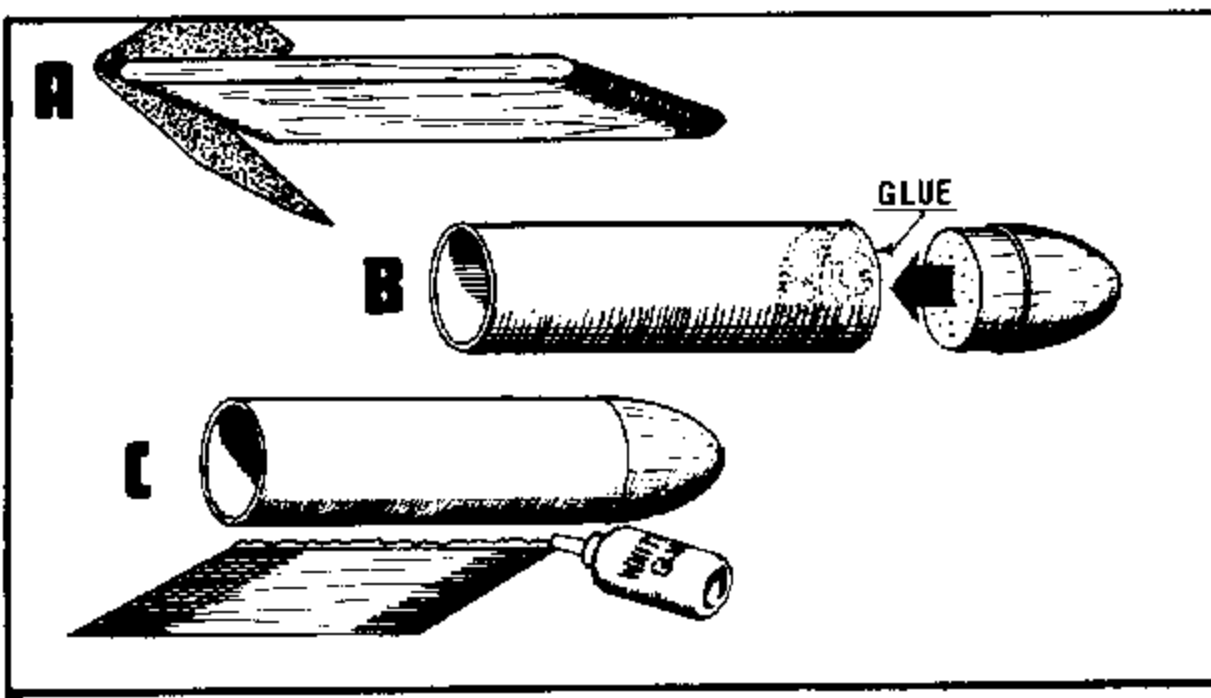
A. The balance of the Astron Falcon is extremely important to its glide characteristics. Wait until there is no wind blowing, then take the Falcon outside, and holding it under the wing, give it a light toss. Cut off about 1/10 of the lead nose cone weight with a pair of scissors. If the model stalls, attach the sliver of lead to the front of the pylon with masking tape. If the model dives, tape the weight to the tail. If the model turns left or right consistently, add weight to the tip of the wing on the outside of the turn. Continue adding or removing small amounts of lead at the nose, tail, or wing until the Falcon is balanced for a long, flat straight or circling glide.



B. When the Falcon has been balanced by hand-gliding, make sure the masking tape is holding the weights in place securely, then install a nichrome igniter in a 1/4A.8-2 engine and slide the engine into the engine holder. The engine should fit loosely, but should not slide out when the rocket is placed on the launcher.

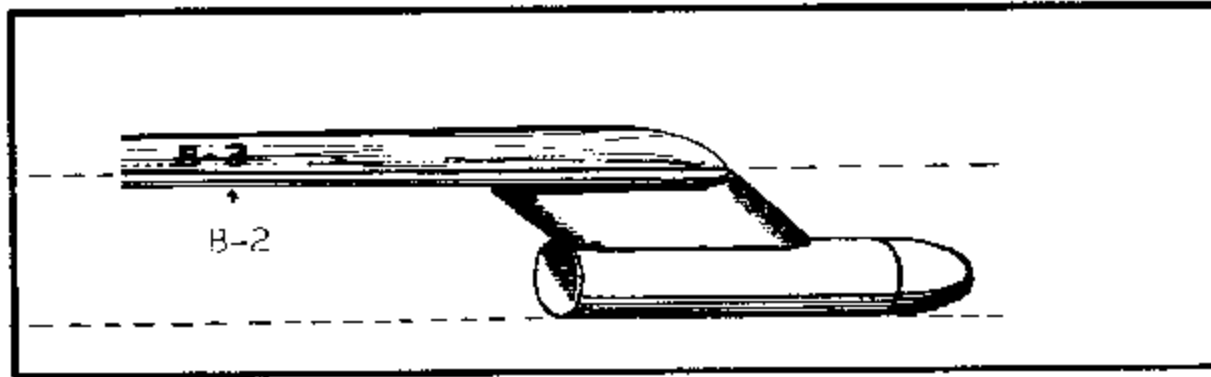
C. Launch the Falcon from a standard model rocket launcher with a 36" rail. Observe its powered flight and glide carefully. If the model's wing, engine holder, and tail are aligned properly, it will fly straight up under power. If it fails to rise vertically, check

Let the glue harden.



Step 6

Apply glue to the bottom edge of the pylon. Glue it to body piece B-2 in the position shown. Align it so the pylon, engine holder, and body are perfectly parallel. Let the glue harden.



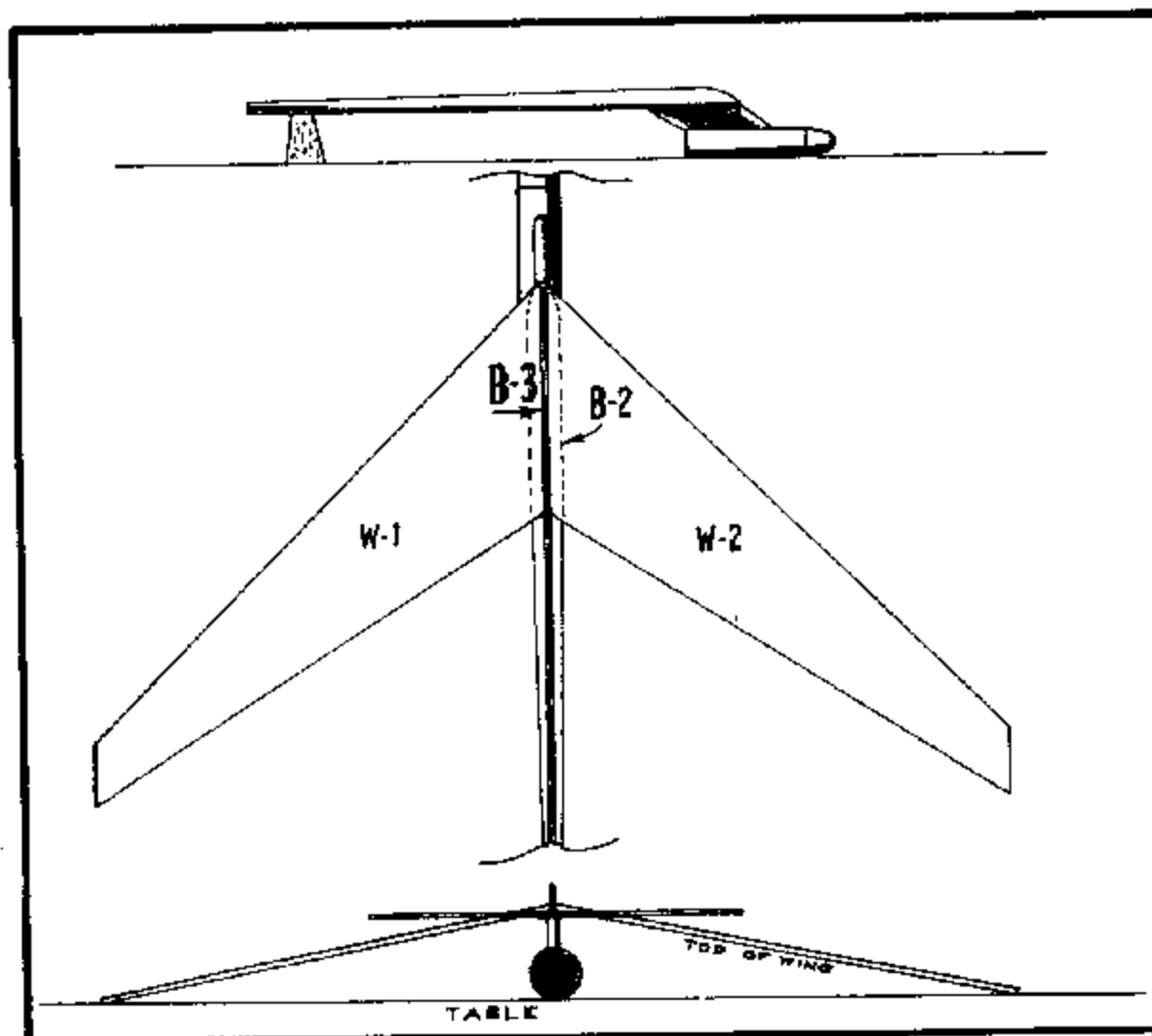
Step 7

A. Prop up the tail so it is parallel to the surface of the table. Check with a ruler--the front and rear of B-2 should be the same distance from the table surface.

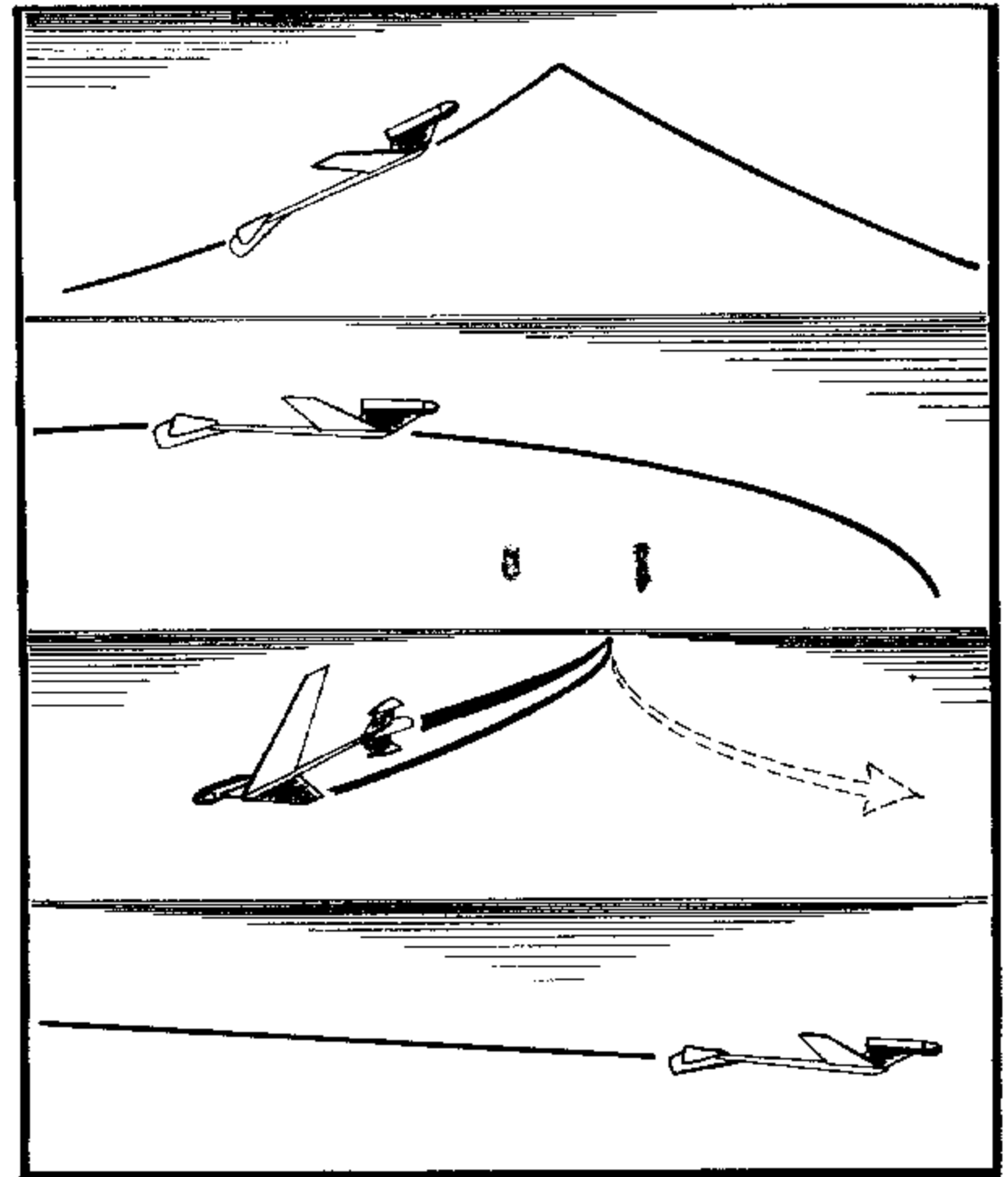
B. Apply glue to the root edges of W-1 and W-2. Place the wings against body piece B-3 so the front of each wing is at the front of the body piece and the top of the wing rests on body piece B-2. (The glider is upside down now, so the top of the wing will be nearest the table, the flat side of the wing away from the table.) Wing tips should rest flat on the table, and the bottom of the wing should be perfectly parallel to body piece B-2. Let the glue harden.

C. Apply a liberal fillet of glue or body putty all around the wing-body joints.

D. Glue LL-1B in place at the corner of the pylon-engine holder joint.



A. The balance of the Astron Falcon is extremely important to its glide characteristics. Wait until there is no wind blowing, then take the Falcon outside, and holding it under the wing, give it a light toss. Cut off about 1/10 of the lead nose cone weight with a pair of scissors. If the model stalls, attach the sliver of lead to the front of the pylon with masking tape. If the model dives, tape the weight to the tail. If the model turns left or right consistently, add weight to the tip of the wing on the outside of the turn. Continue adding or removing small amounts of lead at the nose, tail, or wing until the Falcon is balanced for a long, flat straight or circling glide.



B. When the Falcon has been balanced by hand-gliding, make sure the masking tape is holding the weights in place securely, then install a nichrome igniter in a 1/4A.8-2 engine and slide the engine into the engine holder. The engine should fit loosely, but should not slide out when the rocket is placed on the launcher.

C. Launch the Falcon from a standard model rocket launcher with a 36" rail. Observe its powered flight and glide carefully. If the model's wing, engine holder, and tail are aligned properly, it will fly straight up under power. If it fails to rise vertically, check carefully for misalignment. If the model dives, stalls, or turns sharply in its glide, add or remove weight as necessary.

D. When you are through balancing the Falcon, remove the masking tape from the weight, press the weight into the balsa at the same point where the tape was holding it, and anchor it in place with glue. Retouch this spot with paint.

E. Do not attempt to use engines larger than the 1/4A until sufficient test flights indicate that both a good vertical flight and a good glide have been obtained. When a good glide has been obtained, a 1/4A engine will produce a flight of 40 to 60 seconds or more. Avoid using larger engines when there is a breeze blowing, since a properly balanced Falcon can glide out of sight very easily. For most flying the 1/4A.8-2 and 1/2A.8-2 engines are best. Never use a Series II engine in a boost-glider.