# Build the Armadillo

*by Jerry Irvine*

With the introduction of Eggloft Duration into the Pink Book, competitors now can fly a second version of one of the most popular events. Since Eggloft Duration is a new event there are virtually no rocket plans available. This design can be used in both altitude and duration events by making minor alterations during construction. This design has been proven in both altitude and duration events. It took second place in C Eggloft Altitude with a flight of 225 meters at NARWIN-2 in 1978, and first place in B Eggloft Duration achieving 79 seconds on one flight at SPOC-3 in 1979. Three things led to this success: the use of a drag-reducing shroud behind the egg capsule, the use of a piston launcher to obtain maximum altitude, and care in prepping the rocket prior to flight.



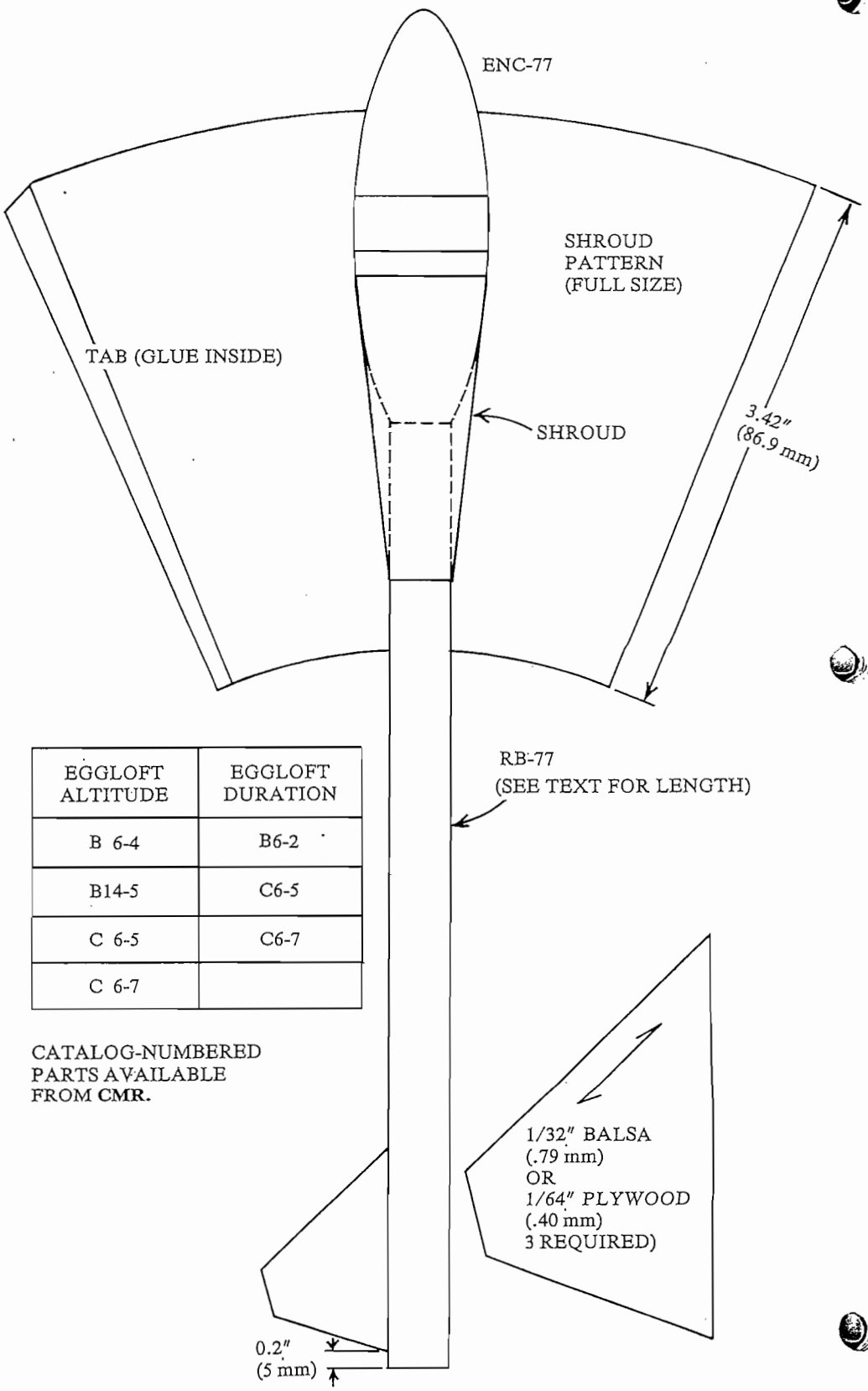
*Construction and Preparation Tips*

Decide which version to make and cut the RB-77 to the proper length. The body tube should be 10″ (254 mm) for Eggloft Altitude and 12″ (305 mm) for Eggloft Duration.

Cut a one meter length of 1/8″ *elastic* (not 1/8″ rubber) for the shock cord. Assemble a 12″ or 16″ kit parachute for Eggloft Altitude, or a 40″ to 48″ drycleaner-bag parachute for Eggloft Duration. (For a *big* 'chute, mark a point in the center of the drycleaner-bag material. Grab the point, form a spike, measure the desired parachute radius from the tip, and cut off the excess material. Your parachute will then be circular.) Use heavy-duty thread (not carpet thread) or Estes shroud line. Cut the shroud line into lengths that are about 2-1/2 times the 'chute diameter and attach the ends of each string to opposite sides of the parachute. Eight strings attached with 3/4″-square pieces of cellophane tape should be used.

Make the shroud from a *glossy* magazine cover. Trace the diagram from the drawing, cut out the shroud, and glue it together with *Titebond* or other aliphatic resin glue. Press the joint against a dowel, tube, or pencil to seal it.

Cut a one-meter length of nylon string. Tape one end to the side of your engine and hang the string out of the back of the rocket as you friction-fit the engine into the rocket. Allow the engine to extend about 0.4 inches (10 mm) from the rear of the rocket to allow for mounting to the piston launcher. Tie the other end of the string to one end of the shock cord, put the cord through the shroud, and tie the other end of the shock cord to the parachute. Then tie




| EGGLOFT ALTITUDE | EGGLOFT DURATION |
|---|---|
| B 6-4 | B6-2 |
| B14-5 | C6-5 |
| C 6-5 | C6-7 |
| C 6-7 | |

CATALOG-NUMBERED PARTS AVAILABLE FROM **CMR.**

the egg capsule to the *center* of the shock cord. Note: there is no inside shock cord mount so that the parachute won't get stuck.

Slide the shroud onto the body tube. Use a nose cone for a smooth fit over the top of the body tube. Push it down to the fins to keep it out of the way.

Park your egg in a plastic bag, put it in the egg capsule, and tape the capsule shut.

Fold the parachute and 2/3 of the shroud lines in a "Z" pattern to ensure fast opening. Don't forget to powder the parachute before you fold it. Use only Estes RP-1A wadding, and use two sheets. Pack in one sheet of wadding, insert about 3/4" (19 mm) of tracking powder, pack in the second sheet of wadding, the nylon string, the shock cord, and the parachute. Squeeze the parachute tightly and wrap the remaining shroud lines around the parachute. Stuff in the other half of the shock cord and set the egg capsule onto the rocket. Be sure you use the entire length of the body tube so that the parachute will slide easily and will not stick inside. When you have done this, the nylon string should be tight along the outside of the rocket and it should be straight to minimize drag.

Gently slide the shroud up to the egg capsule. Check for an airtight fit against the capsule *below* the capsule's tape joint. Tape the shroud in place by putting a one-inch (25.4 mm) piece of cellophane tape along the nylon string from the body tube to the shroud. The tape keeps the shroud from sliding down during boost and also keeps the string from slitting the shroud at ejection.

Mount the rocket on the piston launcher, hook up the controller leads, and launch!

## The Rocketeer Goes Metric!

Starting this issue, the *Model Rocketeer* will be presenting metric dimensions on its plans. Most measurements will be double-dimensioned (both English and metric) on all plans, except for items for which the English dimension serves to identify a product; e.g., 1/64" plywood or a 3/16" launch rod.

Submitters of plans need not include two sets of dimensions—in fact, the Plans Editor prefers that modelers not attempt to provide metric dimensions for models originally designed under the English system. Metric dimensions will be added before publication in the *Rocketeer*.

from the **Midwest Rocketeer**

# FLYAWAY!

*by Jim Zingler*

Sooner or later it happens to everyone. Your model is way off downwind, a speck in the sky, circling nicely in the day's biggest thermal. Look at her climb! Better think about getting your glider home though—she's starting to get hard to see!

"Come back!" you screech mournfully.

"Keep your eyes on it," a calm voice suggests. Your fellow rocketeers are always calm at this point. It isn't their glider, after all.

Your glider is disappearing downwind fast. Your next response is likely to be to give chase. (Feet move!) Be careful—the next three minutes can make or break your chances of ever seeing that glider again. This is no time to lose your head; you need to use those three minutes wisely!

Giving chase to the glider on foot may work but the odds aren't good. Unless the glider is drifting very slowly, you don't have a prayer of closing the gap on foot. Top-notch marathon runners can average 10 MPH on open pavement. Even a very anxious rocketeer would have to do darn good to average half that, over rough terrain, through tall weeds and knee-deep water. And how often is the wind aloft under 5 MPH? So before you dash off on foot, be sure someone is following you in a car, dirt bike, truck, or tank(!)

Don't squander your precious three minutes. Over the years, certain rules have evolved in chasing gliders, PD, and SD birds much as they have for fox-hunting in England or deer-hunting in Wisconsin.

The first rule is: never take your eye off the bird, even for a second! Even though you may note a model's position in the sky carefully, when you look again it will be gone. So keep your eye on it. If you're chasing by car, let someone else do the driving. No matter how near the bird appears to be, you must track it all the way to earth if you hope to recover it easily. I once lost a three-foot-tall D SD bird at TRIG-79 at Al Nienast's farm. It disappeared from sight before it landed in knee-high weeds, but the rocket couldn't have been over 50 feet high when I lost sight of it. "No problem," I said, and spent over two hours looking for it before giving up.

Keeping your eyes on the models can't be over-emphasized, and neither can the second rule: get every other available eye on the model. Shout loudly about your loved one; ask everyone on the field to watch where it lands. Don't be shy. You can't have too many people sighting, especially on either side of the bird's line of flight. By a sort of crude triangulation you can often get an idea of how far away it landed.

The third rule is no less important: when the model is close to disappearing (dropping behind the tree line, gliding into tall grass) stop the chase!! If you're afoot, stop running—catch your breath and prepare to take an accurate sighting on the model as it disappears. If you're in a car, get out. The most critical seconds of pursuit are those just before the model disappears. You must have both feet on the ground if you ever hope to see your model again.

The fourth rule is obvious: mark carefully the point where the model lands or disappears. Many fliers treat this rule too casually, either from overconfidence ("we've got it made") or lack of confidence ("well, that honey is gone forever"). But it's very important that you take an accurate, permanent sighting on the last point the model was visible. Which direction was it gliding? Which way was it turning? How high was it? How strong was the wind and which direction? These are questions that are going to bug you for days if you don't find the model. So make sure you know the answers to all of them.

When you take a sighting, think in terms of straight lines between two markers: "It went down just to the left of a line between this fencepost and that tall pine tree over there"; or, "It's on a line between the third electric pole from the left and the house with the green roof." Mark your markers well! Pine trees have a way of looking alike—so do fenceposts. The longer it takes to find the model, the more important knowing the *exact* fencepost you used will become. This is no time for haste! The model is out of sight anyway. You may think you can walk right over to where the model is sitting, and maybe you can. But don't count on it. Every model is a lost model until you have it back in your hand. So even though you saw exactly where it went down, take your sighting with care and hope those guys back at the launch area are doing the same.