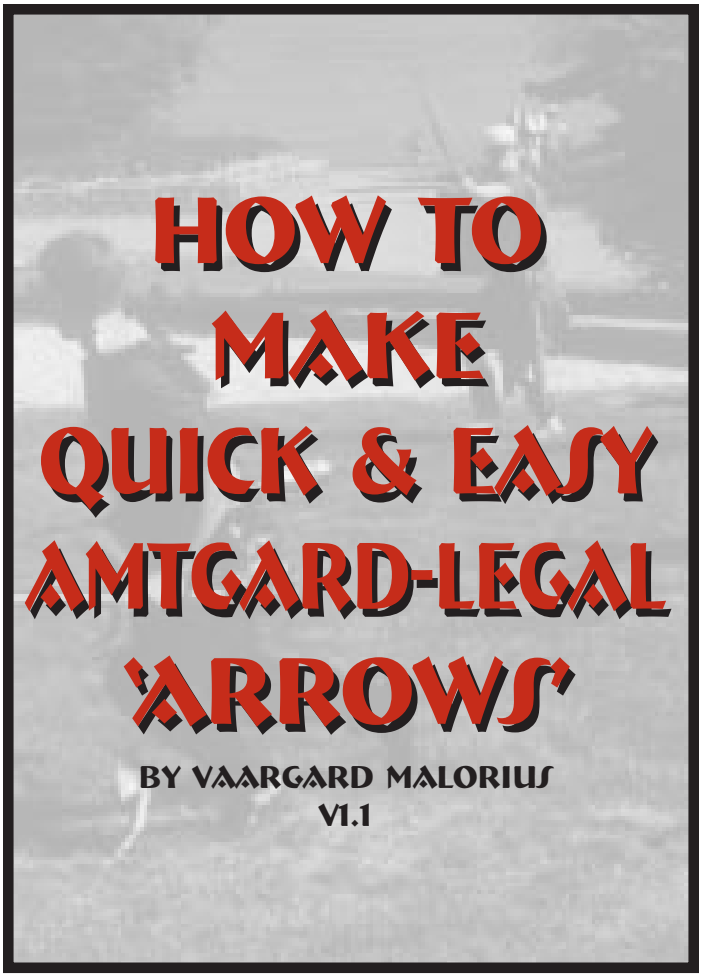

You will need the following supplies to create 3 field-legal arrows:

3 arrow shafts (preferably flu-flus, full length, with pre-attached nock and receiver for standard 'screw-in' arrow heads)
*(**A flu-flu can be identified by the very large (one inch wide or wider) turkey feather vanes (a.k.a. fletching) on the bottom of the arrow shaft. The nock is the piece on the end of an arrow that 'grips' the bow string). If you cannot locate flu-flus, then feel free to substitute more common arrow types. The reasons for preferring flu-flus is covered in the body text of this how-to).*
3 'practice heads'
*(**These arrow heads are about two inches long and as large in diameter as a penny and screw easily into most arrow shafts. They are most often made of hard rubber or plastic and offer a **great** many advantages over the 'penny and duct tape method' described in the Amtgard Handbook of Rules, most notably in the areas of weight and safety. They can usually be found wherever archery supplies are sold).*
1 Pack Franklin® Yard Lawn Balls (Sold in packs of 3)
1/2 yard fabric of your choice for cover
1 roll 1/4" 'white' camp foam
About one square foot of 1/4" open-cell foam
All-purpose Hobby Cement (Liquid Nails™) (or similar quick-dry Contact Cement)
Masking Tape (Used to hold foam in place while glue dries)
Scissors

Substitutions can be made at your discretion, but for purposes of this 'how-to', we will assume you have the above materials and are making 3 standard field arrows. This design has greater aerodynamic properties and is much safer than the design incorporated into the Amtgard Handbook of Rules. Feel free to elaborate, but always remember: SAFETY FIRST! Before we go into the actual how-to of creating an Amtgard-legal arrow, I would like to explain a few of my experiences as regard to my material selection and discuss briefly how an arrow works.

'Real' arrows tend to have very small heads and therefore need very little fletching to keep them aerodynamically stable. The fletching is usually attached in such a way as to give the arrow rotation as it flies and impart even more stability during flight. When such an arrow strikes its target, all its inertia is delivered at the point of impact generally overcoming the surface integrity of the target; the smaller the head, the less dispersal of force, the greater the penetration.

When you attach a couple of ounces of 'payload' of any sort to only one end of such an arrow, it tends to have a greatly reduced range, accuracy, and stability during flight. I am sure anyone who plays Amtgard regularly and has seen 'traditional' arrows in action has seen the 'wild' arrow that flies about sixty to seventy feet and then veers or drops radically. This is caused by the airflow passing over the 'head' and the fletching's vain (no pun intended) attempt to give the arrow some 'spin' during flight. All this generally combines to create an arrow that is pretty good within about fifty feet, but rather laughable at any greater distance and requiring more luck than skill to reach its intended target.

The keys to making effective amtgard arrows lie in making a symmetrical, balanced head and having large enough vanes to actually affect the huge

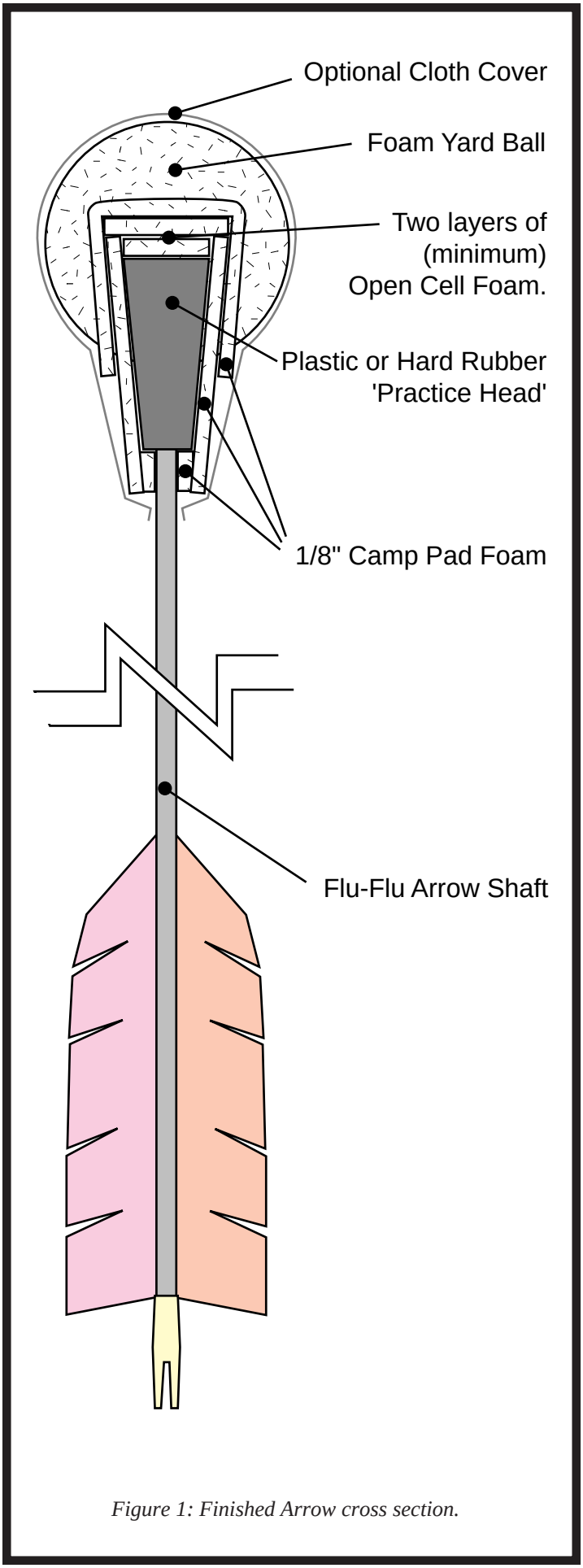

Figure 1: Finished Arrow cross section.

(from an archery standpoint) padded heads. Adding weight to an arrow makes arrows LESS stable, not more so and 'wrapped' padding almost invariably results in slightly uneven heads which can be noted by the radical wobble and veering off during flight. Unlike 'real' arrows, the huge padded heads of Amtgard-legal arrows have a great amount of wind resistance; if the arrow is heavy, this increases the amount of resistance and shortens the distance such an arrow travels. To get the best results from your modifications, you should concentrate on symmetry and weightlessness. That said, lets go on to how to actually fabricate

1) Screw practice heads into receiver on shafts.
2) Cut a 1/2" wide strip from your 1/4" camp mat.
3) Cut 3 pieces off this strip approximately 2" long.
4) Put a dollop of glue on the shaft beneath where the practice head meets the shaft.
5) Take one of the 2"x1/2"x1/4" pieces of foam and spread the glue around the shaft so it covers about 1/2" beneath where the head meets the shaft.
6) Wrap the 2"x1/2"x1/4" piece around this area and trim off any excess foam. (Fig. 2A) **You *might find it helpful to use a small piece of tape to hold the foam in place while the glue dries.*
7) Repeat steps 4-6 on the remaining arrow shafts.
8) Cut a 3" wide strip from your 1/4" camp mat.
9) Cut 3 pieces approximately 5" long from the 3" wide strip.
10) Put a line of glue along the side of the practice head.
11) Use one of the 3"x5"x1/4" pieces of foam and spread the glue around the practice head so that it is coated thoroughly.
12) Wrap the 3"x5"x1/4" piece around the practice head and trim off any excess foam. Make sure it covers the smaller piece of foam that you wrapped around the shaft and extends at least 1/2" beyond the tip of the practice head. Trim off any excess foam. (Fig. 2B) ***You might find it helpful to use a small piece of tape to hold the foam in place while the glue dries.*
13) Cut 2 circles of open-cell foam just slightly larger than the 'cup' made by the 1/4" foam that extends past the tip of the practice head to which it is glued.
14) Put a dollop of glue on the top of the practice head.

15) Glue one foam circle from step 13 to the top of the practice head. (Fig. 2C and 3)
16) Glue the second foam circle from step 13 to the top of the previous one from step 14. (Fig. 2C)
17) Cut a large circle from your 1/4” camp foam about 6”-7” in diameter. (Fig. 3)
18) Cut several triangles out of this circle until it forms a ‘foam star’. Make sure the uncut center of the star is sufficient to cover the entire head. (Fig. 3)
19) Put glue on the second circle from step 16. (Fig. 3)
20) Center the foam star on the head of the arrow atop the second circle from step 16. (Fig. 3)
21) Put glue on the bottom of the foam star and fold down onto the foam layer from step 12. Trim off any excess so that all the arms of the star lie flat against the rest of the head and do not ‘buckle’. (Fig. 3) **You *might find it helpful to use a small piece of tape to hold the foam in place while the glue dries.*
22) Repeat steps 13-21 for the remaining arrows.
23) Cut a hole into the yard balls slightly smaller than the head of the arrow (after all the foam components have been glued into place). Make the holes just far enough into the ball so that the extend just past the centerline of the ball. (Fig.3)
24) Coat the inside of the hole in the lawn ball with a thin layer of glue.

A beseiged combatant catches an unsuspected arrow in the torso

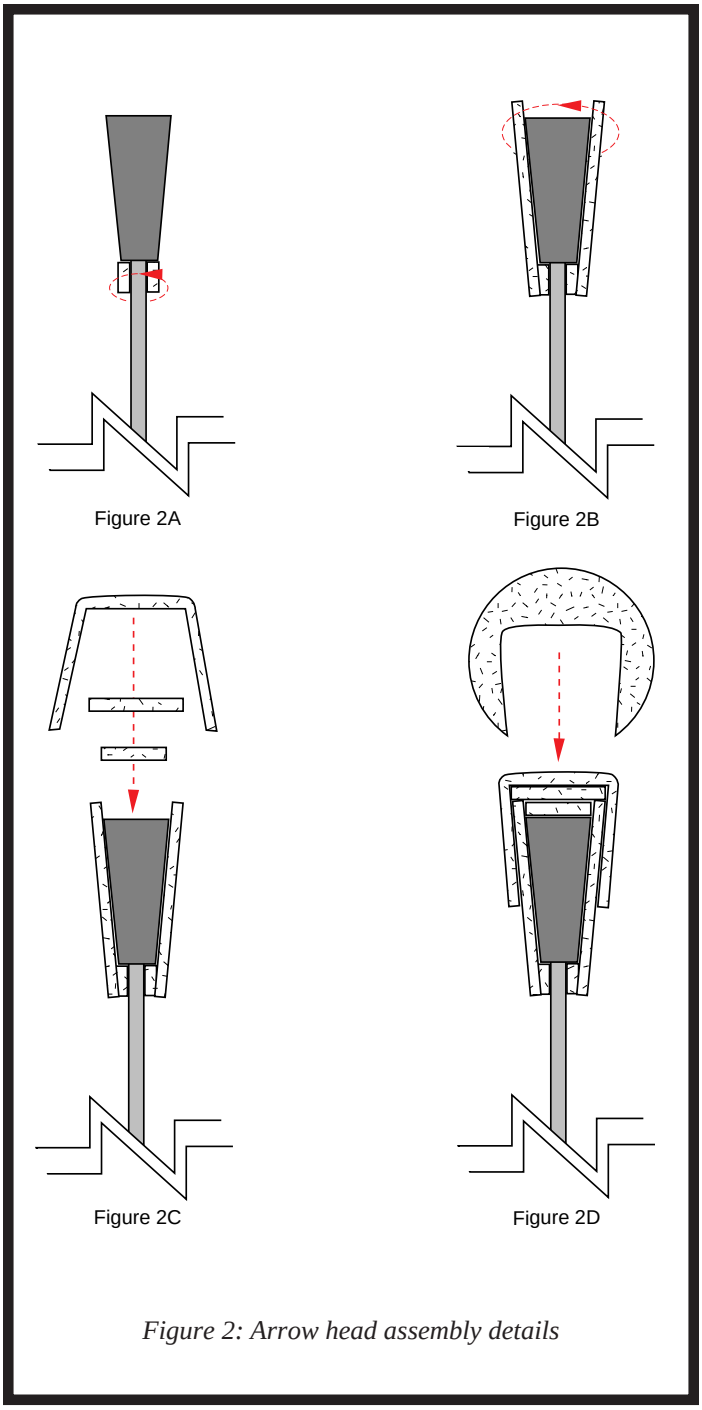

Figure 2: Arrow head assembly details

25) Push the head of the arrow into the hole in the ball. It should grim snugly with no ‘play’ between the inside of the ball and the foam that is glued to the head of the arrow.
26) Repeat steps 23-25 on the remaining arrows.
27) LET THE GLUE DRY. (I don’t like to wait either, but if you don’t wait for the glue to dry, the arrows tend to be more prone to self destruction at the most inopportune moments).

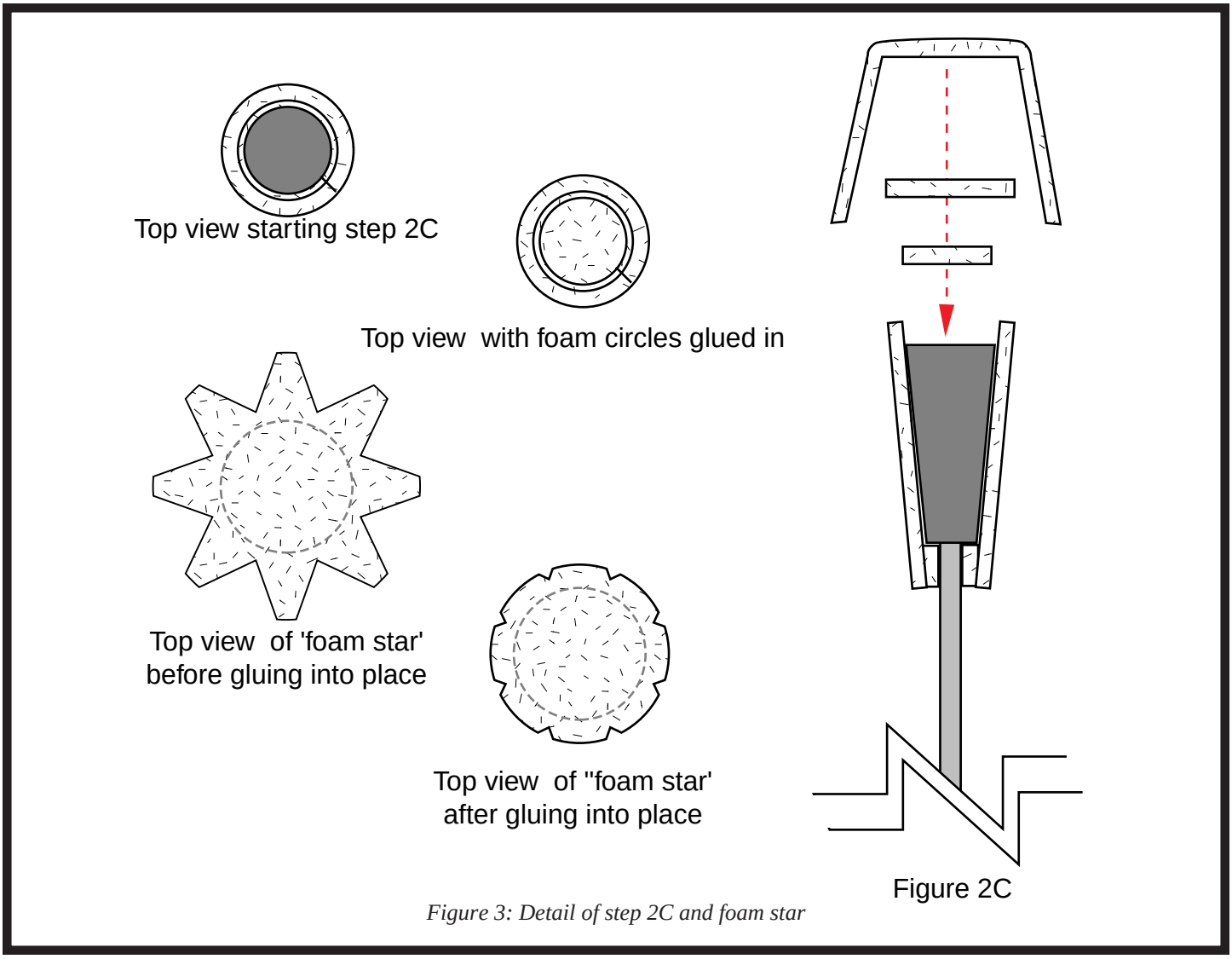

Figure 3: Detail of step 2C and foam star

28) Cover the heads with a slick, lightweight fabric of your choice. If you do not have access to a sewing machine, cut a large circle of fabric (about the size of a dinner plate), fold over the head of the arrow and tape down with the minimum of electrical tape to keep the fabric secure. Trim off any excess fabric and try to keep the fabric bunched evenly around the arrow shaft. I have had outstanding results using stretchy fabrics like lycra and spandex. They are a tad heavier than some fabrics but the fact that they are slick and can be stretched to eliminate wrinkles make them ideal for weapon covers, especially projectiles.

29) Most foam weapons tend to deteriorate quickest at the tip. Since arrows are nothing **but** tip, be sure to check your arrow heads for safety each outing that you intend to use them. Take your new arrows out to the park and find some unsuspecting Amtgarder to try your new weapons out on!

A bowman takes aim at a fleeing warrior.