

## M-09 "Constant Speed Buggy" Operating Tips

### Operating Tips:

- ❑ For 'fast' buggy operation, use two 'C' batteries.
- ❑ For 'slow' buggy operation, use one 'C' battery and one conductor (see note below).
- ❑ If the buggy operates in the reverse direction, switch the polarity of the batteries.



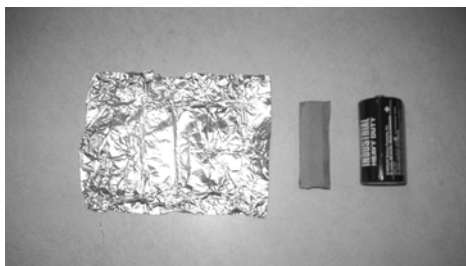
There are several ways to create a conductor that may be used in place of one battery:

#### 1. Copper Tubing Method:

Hollow copper conductors should be cut to fit adjacent to the negative (-) end of the battery. ( $\frac{1}{2}$ " -  $\frac{3}{4}$ " tubing works well.) The conductor should provide a connection between the (-) clip inside the battery compartment and the (-) end of the battery.

#### 2. Cardboard/Tin Foil Method

Cut a piece of cardboard to fit adjacent to the negative end of the battery. Wrap with aluminum foil and insert into the battery compartment between the (-) clip inside the battery compartment and the (-) end of the battery.



**Inquiry Tip:** Prepare two buggies, one with two batteries and one with one battery. Do not reveal the setup to the students. Demonstrate the motion of the buggies and challenge students to figure out why they run at different speeds. Nice opportunity to discuss energy, and simple circuits (a circuit is complete when there is a continuous path of conductors connecting the two ends of the battery.) Students should not be surprised (but they are!) that the buggy motor still runs. Remind them of what happens to their toys when the battery power is low.