

**B. Make certain that the correct cell count is set on your charger.** Watch the charger very closely for the first few minutes to ensure that the correct cell count continues to be displayed. If you don't know how to do that, get a charger that you do know how or don't charge the batteries.

**C. Use the Taps.** Before you charge a new Lithium pack, check the voltage of each cell individually. Then do this after every tenth cycle there after. This is absolutely critical in that an unbalanced pack can explode while charging even if the correct cell count is chosen. If the cells are not within 0.1 volts of each other then charge each cell individually to 4.2 volts so that they are all equal. If after every discharge the pack is unbalanced you have a faulty cell and that pack must be replaced. Taps are provided on most new lithium packs. Taps (balance plus) give you the ability to check individual cell voltages and charge one cell at a time. Make sure and get the appropriate connector to go into your taps. Don't try to stick your volt meter probes in the taps to measure voltage. They could slip and short your cells. Don't try to charge more than one cell at a time from the taps. Unless you have an isolated ground charging system, you'll short your batteries out. Refer to your individual cell maker for tap pin-outs.

**D. NEVER charge the batteries unattended.** This is the number one reason for houses and cars being burned to a crisp by lithium fires.

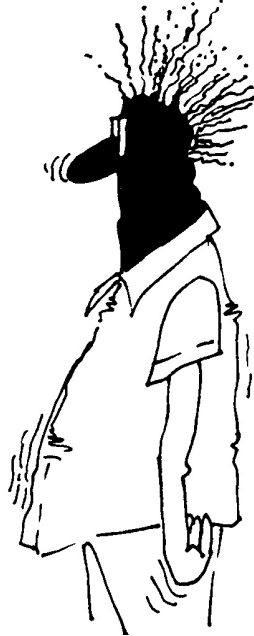
**E. Use a safe surface to charge your batteries** on so that if they burst into flame no damage will occur. Vented fire safes, Pyrex dishes with sand in the bottom, fireplaces, plant pots, are all good options.

**F. DO NOT CHARGE AT MORE THAN 1C unless specifically authorized by the pack vendor.** I have personally had a fire in my home because of violating this rule. Today's highest discharge batteries can supposedly be safely charged at greater than 1C, however so far in all cases doing so shortens the life of the pack. Better to buy 3 packs than to try to charge 1 pack 3 times quickly. This may change in the future but as of Winter 2005 1C is still the recommended charge rate.

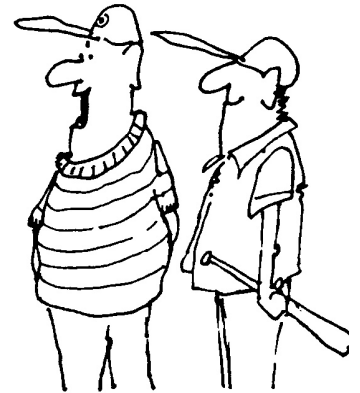
**G. DO NOT puncture the cell, ever.** If a cell balloons quickly place it in a fire safe place, especially if you were charging it when it ballooned. After you have let the cell sit in the fire safe place for at least 2 hours. Discharge the cell/pack slowly. This can be done by wiring a flashlight bulb of appropriate voltage (higher is voltage is ok, lower voltage is no) up to your batteries connector type and attaching the bulb to the battery. Wait until the light is completely off, then throw the battery away.

**H. If you crash with your lithium cells they may be damaged** such that they are shorted

inside. The cells may look just fine. If you crash in ANY way carefully remove the battery pack from the aircraft and watch it carefully for at least the next 20 min. Several fires have been caused by damaged cells being thrown in the car and then the cells catch fire later and destroys the car completely.



**"How's that new battery charger you made working out, Dad?!?!"**



**I. Charge your batteries in an open ventilated area.** If a battery does rupture or explode hazardous fumes and material will spew from the battery.

**J. Keep a bucket of sand nearby** when you are flying or charging batteries. This is a cost effective way to extinguish fires. This is very cheap and absolutely necessary.

**K. It can happen to you,** do not think to yourself that "it won't happen to me" as soon as you do that it you'll be trying to rescue your kids from your burning house or car. I'm very serious about this. Now that we have covered that important topic let's move on to lighter matters:

**2. Lithium What?** Lithium Polymer batteries are used in many electronic devices. Cell Phone, Laptops, PDA's, Hearing Aids just to name a few. Most, if not all, lithium polymer batteries are not designed for RC use, we use them in different applications than they were designed for. They are similar to Lithium Ion batteries in that they each have a nominal voltage of 3.6 volts, but dissimilar in that they do not have a hard metal casing but rather a flexible material encloses the chemicals inside. The "normal" lithium polymer batteries are thin rectangle shapes with two tabs on the top one positive one negative. The reason we use Lithium cells is that they are significantly lighter than comparable NiCad or NiMH batteries, which makes our planes fly longer and better.