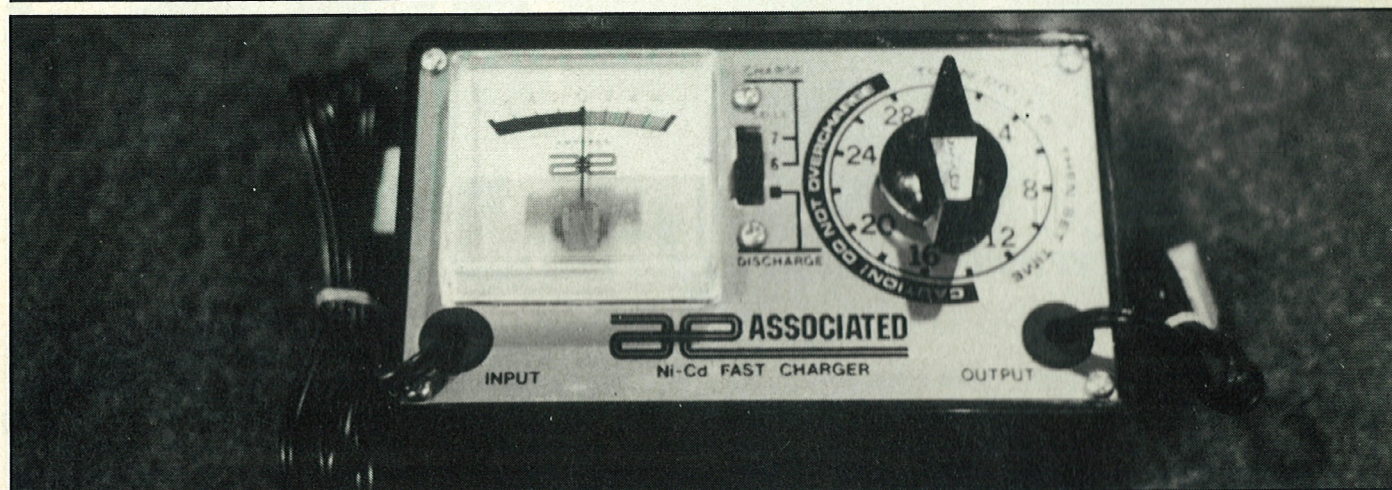


# C H A R G E A

# C C O U N T

*Jim Davey takes a look at two systems of recharging*

*batteries and some of the whys and wherefores.*



*Associated's timed charge system is a tough, reliable and attractive piece of kit. With sensible handling this unit should give years of service.*

Probably the most common of all the various methods of fast nicad charging used by the modeller is the timed charge system, where a known current is "dumped" into a previously flattened battery, for a controlled time. In fact, this could justifiably be called the traditional way. Whilst not being idiot proof, it is a well understood and, above all, simple method of getting the job done, and that's what a lot of us look for in a piece of kit.

To get the best out of this form of charging, you need a timer, some form of current control, and, ideally, a method of discharging the battery so that you can start from a known point. The Associated Fast Charger provides all this in one package.

#### **Associated Fast Charger**

The unit consists of a smartly turned-out box containing the various component parts of the charger. The timer is of the conventional, rotary, clockwork type. A clearly calibrated meter reads both charge and discharge current, up to 8 amps either way, and a switch is provided to select fast charging of 6 or 7 cell batteries or discharge of same. Current control, in both charge and discharge modes, is by the use of resistors.

The unit comes with a clear set of instructions, particularly handy for the newcomer, who may not know all the tricks of fast charging. Sensible advice is given for getting the best from various types of battery, and the use of a Digital Volt Meter (D.V.M.) for charge state monitoring is touched-on.

In use, the battery to be charged is connected to one cable, and the 12v charging source connected to the other. Selecting the discharge position allows the battery to be near-flattened, establishing the zero-charge state. The built-in meter monitors the current flow and, hence, the state of (dis) charge of the battery. You then select charging for the appropriate number of cells and set up the correct time. Charging current is now indicated on the meter, and will flow until the timer switches off, when a trickle current is selected automatically, continuing until the battery is disconnected. The whole cycle is carried out without having to disturb any connections.

A peek inside the box shows that construction is tidy, with the connections being well made and really substantially sized fixed resistors are employed. The unit is not totally "bomb-proof" however, as these resistors are only supported on their wires, so if you make a habit of throwing your kit on the floor at regular intervals, you may, eventually damage something. Given anything like sensible handling though, you should have no problems, and be rewarded with long reliable service.

#### **Tekin 850 Peak Detector Charger**

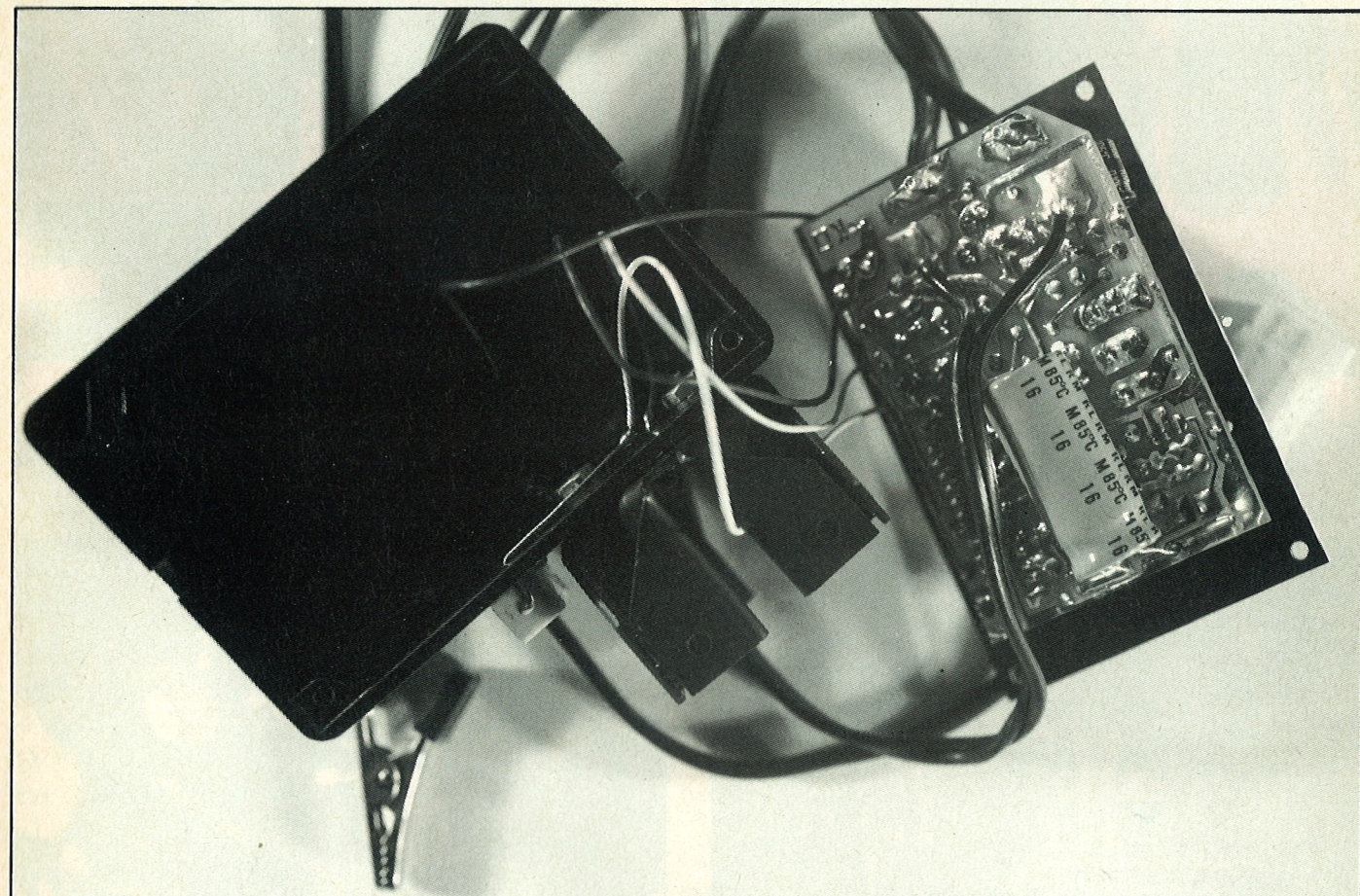
Probably the most common "high tech" method of fast nicad charging is the peak detector method, whereby the "plateau" or "roll-over" of terminal voltage that occurs at the full charge point (in some nicad cells) is detected and used to terminate the fast

charge. A number of devices are available to the modeller, from various sources, and one of the less well known, at least in the U.K. is the Tekin unit from the U.S.A.

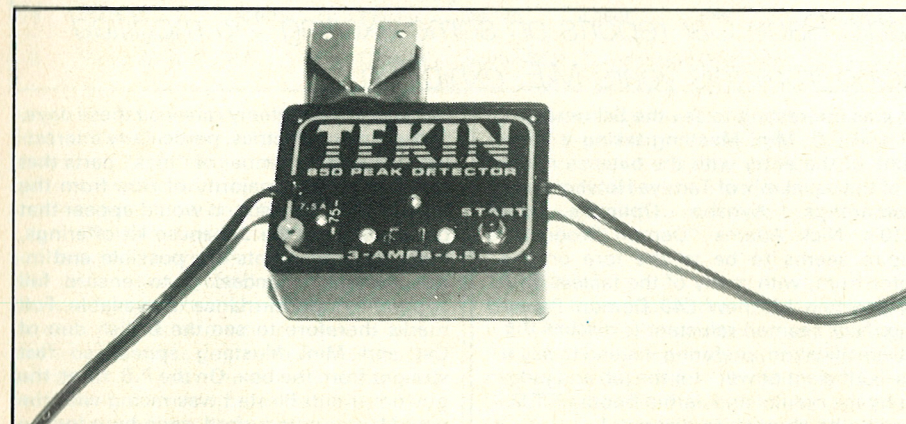
The charger is encased in a neatly silk-screened black case, with the external heat-sink anodised red. A switch permits the selection of charging at 3 or 4.5 amps, with LED indication of function. Fault conditions are protected against by the commonly used auto type fuse and a monitoring socket is provided for Digital Volt Meter (D.V.M.) connection. This socket is protected electrically against external short-circuits.

The Tekin 850 is an all electronic unit, i.e. it does not incorporate a relay for switching, nor large fixed resistors for charge current control. Charging current control and switching is performed by a power MOSFET device, under control of a couple of integrated circuits. This, solid state, approach to charge control should result in a very high level of reliability being achieved. Further, electronic control of charging current means that the actual current supplied to the battery is independent of the state of the charging source, within a reason, so that the time to recharge is substantially constant throughout a days use, and charging will occur down to the last gasp of the source battery.

Examination of the internal construction of the unit confirms an initial impression of a "no short-cuts" design philosophy. The electronics are carried on a neatly constructed printed circuit card, with wiring being secured against shock and vibration



*No short cuts design philosophy. All electronics are carried on a neatly constructed printed circuit card.*



*The Tekin peak detector is a high tech charger using a "roll over" detector to sense when nicads are fully charged.*

by a liberal coating of what appears to be contact adhesive or similar. In "our" unit, the very large capacitor, mounted on the back of the P.C. card, had missed a bit of the coating, and was not as well secured as it might be, possibly a point to check if you tend to throw your kit around a bit! The all-important MOSFET transistor is mounted externally on a finned heat sink which was clearly designed to be effective rather than aesthetically pleasing, a case of getting your priorities right. This device has to get rid of a lot of heat during the charge cycle, and with electronic components, reliability is very closely related to keeping your cool — literally — so it is nice to see adequate provision for heat-sinking!

All-in-all a very professional piece of kit, providing a delta-peak charging system for the connoisseur.