



ASSAULT BY BATTERY

MOST PEOPLE are aware of what happens when they leave exhausted batteries in a hand-torch: the chemical content of the cells eats its way through the casing and starts to attack the body of the torch itself.

If left for a prolonged period, the damage and corrosion becomes so extensive that it is impossible to which consequently has to be scrapped.

The situation becomes much worse and considerably more expensive when battery corrosion affects electronic equipment. Transistorised tape recorders and radios are the most common victims, having been set aside and forgotten for a while, during which time corrosion can cause considerable damage.

The owner of apparatus so damaged is usually caught out completely, and quickly takes it to a servicing organisation in the hope that things can be rectified easily. Unfortunately, the devastation caused by corrosion can be so severe that some equipment has to be written off. This certainly applies to small transistor radios, where the economics of repair would be out of proportion to the value of the apparatus.

In the case of more expensive equipment, a rigorous approach can save it on many occasions.

The battery compartment will have suffered most; if it is a separate item it should be replaced in its entirety. Fortunately this compartment often serves to contain the bulk of the corrosion, and provided the caustic fluid has not escaped into the remainder of the equipment, there is a good chance that the repair will be 100 per cent effective.

If fluid has penetrated into the remainder of the equipment the situation will inevitably be much more

serious. Printed panels, switches, coils and transformers are particularly vulnerable, and a preliminary examination should be carried out to see to what extent these components have been affected. Note that the fluid can penetrate underneath larger components and seep through, causing damage at a later date. It is essential that all traces of corrosive material be removed, even if to do so involves the removal of components from a printed panel.

If a panel has been badly saturated, but not extensively eaten away by corrosive fluid, it is best to remove all inductive components and switches, then wash it off thoroughly in fairly hot water. A small toothbrush is useful for scrubbing, and a hair-dryer can be used for drying off afterwards. Healthy components will survive this treatment unscathed; sick looking ones may well be damaged and should be replaced.

Switches affected should always be replaced, and this also applies to RF and IF coils, ferrite rod windings and transformers, all of which may cause trouble at a later date even though they may appear to have survived superficially.

Repairs such as these usually take up a large amount of time, and often some expensive components, so the economics of any one repair should be assessed early on, so that work is not commenced precipitately on a job which will ultimately be uneconomic. Fortunately, assessment is not too difficult when one bears in mind the foregoing points. It is relatively easy for an experienced engineer to say that possibly three hours work will be required, plus a switch bank, battery box, several IF transformers and a loudspeaker. A quick mental totting-up will yield a figure which can

then be compared with the value of the repaired apparatus.

Do remember though that this sort of repair can never be guaranteed. It is possible for 'green spot' corrosion to occur in coils after a period of time, even if they appear to have escaped initial damage, and a customer should be made aware of this.

Spares availability plays a major part in the success or otherwise of a repair. This is true to the extent that a relatively cheap transistor radio of obscure origin, may need to be written off if there is any possibility of damage beyond the area of the battery compartment.

Standard battery compartments, of Japanese origin, are now easily available and can be used as standard replacements.

Portable tape recorders, when affected by battery corrosion, can present further problems in addition to those mentioned above. The mechanical side of the machine can be adversely affected, and in particular castings can be eaten away. The effects on ball-races, flywheels, and motors (let alone rubber drive belts!) must be seen to be believed. In any event, a complete stripping down operation is often the only sure approach, a process which is obviously time-consuming and expensive.

If ever the point should be made that prevention is better than cure, it applies in the case of damage by battery corrosion. Whenever equipment is being put away for a period, the batteries should be removed as a precaution. If it is obvious that the batteries are flat, they should be removed *straight away*. Do not wait until you have purchased new ones; you could slip up and break your leg on the way home, and by the time you are discharged from hospital, your pocket calculator could be a write-off!