

## Useful Tips and Jottings

### A Terminal Substitute.

**S**MALL springs, made from phosphor bronze wire, from handy connectors for the constructor when making temporary connections or when carrying out experimental "hook-ups." These are wound in a solenoidal shape on a cylindrical former about 1/4 in. in diameter. A good electrical contact may be made by pressing the ends of the wires to be joined between the turns of the spring. This method of making connections is also applicable when it is necessary to join two or more pairs of head-phones in series or parallel.

### A "Permanent" Crystal Detector.

**W**HEN a crystal used in a set is of the type which requires a very light pressure of the whisker on its surface, it is very annoying to find that the slightest vibration, such as that caused by a person walking across the room, upsets the adjustment. This trouble can be easily avoided by stretching a little muslin cap across the surface of the crystal. The whisker is then moved into contact with the crystal as usual, and the fine mesh of the muslin holds it permanently in position. Incidentally, the surface of the crystal is kept free from dust, which is injurious to its sensitivity.

### A Non-Corrosive Soldering Flux.

**S**PIRITS of salts (i.e., hydrochloric acid) should never be used as a flux in radio constructional work, because of its corrosive effect on copper. The set would probably function quite efficiently for a time, but it is quite likely that after a period the wiring would be completely eaten through. A good plan is to use "hard" solder in conjunction with a paste flux made by dissolving resin in methylated spirits.

### Repairing Ebonite Panels.

**O**LD ebonite panels which have unwanted holes drilled in them can be quite effectively repaired by the use of threaded ebonite rod. To stop a 3/8-in. hole, for example, a piece of 7/16-in. ebonite rod may be used. The hole is tapped 7/16-in., and a short length of rod previously smeared with Chatterton compound, is screwed in. The rod is cut off flush, and after the panel has been well rubbed down with knife powder and oil, the repair is almost indistinguishable.

### A Precaution in Screen Construction.

**W**HEN designing a completely screened receiver, it is a good plan to make up full-sized cardboard patterns of the parts that will afterwards be made from sheet metal. The exact dimensions of the portions to be cut away, and the positions of all holes required, can thus be determined, without any possibility of error. If first-class results are desired, drilling should always be completed before shaping is commenced. The cardboard patterns enable this to be done efficiently.

### To Remove Surplus Flux.

**F**REQUENTLY, after wiring and soldering a set, it is found that thin layers of flux remain spread over the adjacent surfaces. The panel must be cleaned if no leakage is to result. A little benzine or methylated spirits applied with a small paint-brush will en-

able even inaccessible positions (such as those which exist between valve pins or coil sockets) to be thoroughly cleaned.

### B Battery Efficiency.

**S**TRICTLY speaking, when the valves of a receiving set are not incandescent, no current should flow from the B battery. When the set is not in use however, it will always be found advisable to disconnect either one or both of the B battery leads. This eliminates the possibility of panel leakage, which, though, perhaps, very slight, yet in time would seriously impair the usefulness of the B battery.

### Mounting Panel Meters.

**W**HEN a flush-fitting meter is to be mounted on a panel by means of three bolts passing through a flange round the meter, it is as well not to drill every hole before mounting. One hole should first be drilled, and the meter bolted into the desired position. The next two holes can now be drilled, and the mounting completed. If all the holes are drilled first, the holes in the meter and in the panel probably will not coincide, unless very accurate measurements are made.

### Instrument Protection.

**T**HE efficiency of sensitive measuring instruments may be easily impaired by placing them too near powerful motors, dynamos, loudspeakers, or mains units. Powerful permanent magnets, such as those used for moving-coil loudspeakers, create strong magnetic fields around them. For this reason, close proximity to any of the above instruments is to be avoided. A delicate watch, for example, may quite easily be magnetised, and thus ruined.

### Drilling Large Holes.

**T**HE process of drilling holes of large diameter in ebonite or wood is not an easy one for those who do not possess a good fret-saw. Good results may be obtained, however, by utilising the following method. With a pair of sharp-pointed dividers, scribe a circle of slightly less diameter than that required. This is to allow for drilling and finishing. Next, make a succession of fine drill holes around the circumference thus marked. When the centre has finally been drilled out, the indentations should be trimmed down with a sharp knife. A smooth finish is finally obtained by running first a fine file and then glass-paper round the edges of the hole.

### For Transformer Protection.

**T**HE burning out of a low-frequency transformer can often be attributed to a too sudden application of current, and, in order to avoid this happening, the filament current should be turned off via the filament rheostats, so that this becomes a gradual change. Alterations in high-tension voltage can then be made as desired, after which the valve filament may once more be heated in a gradual manner. If this expedient is adopted, sudden rushes of current in the anode circuit will be prevented, and risks of transformer damage are thus considerably reduced.

## Renewing Valve Life

### A Method for Restoring Emission

**S**OME types of valves, notably the older dull-emitters, employ metal filaments coated with thorium. If this class of valve is overheated part of the filament surface coating evaporates, thus considerably reducing emission. Distributed throughout the core of the filament is additional thorium, and if this can be brought to the surface the life of the valve is renewed.

The loss of emission may be due to two causes. Firstly, the B battery supply may have been momentarily flashed across the filament by accident. Secondly, the A battery voltage supplied to the valve may be higher than the manufacturer's rating.

Restoration of filament efficiency can be accomplished with valves in which the filament is of the thorium-coated variety. Oxide-coated filaments, which usually operate at a dull red glow, do not appear to benefit from this treatment when once their emission has been lost.

The actual method of applying the restoring process is to connect the filament in series with some constant source of supply. The filament is then maintained at its correct temperature

of operation for two hours or more. There are two simple methods of carrying out the above "cooking" process.

(a) An accumulator of suitable voltage is connected directly across the filament pins and left in circuit for about two hours. The valve is then tried in a set, and if results are not up to standard, the "cooking" process should be tried for another hour or so.

(b) The second method of applying the necessary constant voltage is by the use of a step-down transformer which delivers across the secondary terminals an approximately correct voltage for the valve to be treated. It is an advantage to secure a transformer arranged with taps on the secondary, so that it may be used for 2, 4, or 6-volt valves. A rheostat is arranged in series with the secondary winding to give an accurate adjustment of the voltage applied.

The actual treatment of the filament is identical with that employed when an accumulator is used.

**O**CEAN stockbroking is now an accomplished fact, and in the near future every big liner will be fitted with a radio tape-machine. Whilst the Majestic was on her way from New York to Southampton recently, a message asking for a certain stock quotation was handed in to the wireless operator. The reply was in the hands of the passenger two-and-a-half minutes after he had made his request!

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