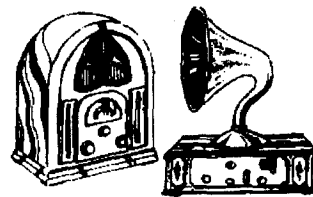


Vintage Radio

by ROGER JOHNSON



Workshops, equipment and SAFETY

From time to time it becomes necessary to return to safety issues, and that's what we're doing this month. For some, this column will be a refresher; while for others it should be informative.

In former times, dad's home away from home was quite often an extension to the garage or 'motor shed'. Nowadays things have changed somewhat. We no longer have the universal 'quarter acre block' with the house, sleep-out and detached garage/motor shed with ample yard space. Courtyard homes, home units, carports and contemporary style homes now mean that the ham shack or the workshop is anything from a spare room, to a garden shed, to a corner of the carport or an old style 'shed'.

Workshop layout

No matter what the locale or the layout, the environment **MUST** be safe. Employers have a responsibility to provide a safe working environment, and there is no reason why individuals should not extend the same principles

to their own home.

In Fig. 1 there is a stylised diagram of a 'perfect workshop' layout from around 1933. Whilst this is a pleasant trip down memory lane, we can still use it to good effect to illustrate useful safety aspects.

Firstly, there is space. Such elegance may be impractical in these times, but wherever the locale, it should remain as uncluttered as possible. Notice the absence of several dozen complete or cannibalised chassis strewn about the floor, such that moving about becomes an exercise in crossing a minefield.

Secondly there is a window! Natural light is the best of all. If a window is not feasible, how about a skylight?

Thirdly, the workbench (1) is quite high, with a stool (7) to match. If one is to be consistently up and down from the bench in a fetch-and-carry mode, a

high bench and matching stool are often easier physically, and less tiring upon the body.

Fourthly, there is no myriad of cables — e.g. power flex — to become entangled in one's feet to either trip one up or cause a piece of equipment to crash to the floor.

Fifthly, the hand tools (6) are out of the way, or else in a tool drawer (3).

Sixthly, there is the power supply, shown here as the battery compartment (10), and the associated terminal and distribution board (12). As shown these should be out of the way and at the back of the work bench.

Lastly, there should be adequate artificial lighting (21 and 22), although nowadays a couple of fluorescent tubes might be more effective.

With the advent of new technologies, second-hand test equipment such as a signal generator, a CRO, an audio oscillator and even a frequency counter can be had quite cheaply and are more than useful for most home enthusiasts. Therefore, a raised shelf at the back of the workbench housing these items is the safest, with both the electrical leads and the connecting cables out of the way and taking up little space.

Wiring

A check with my own state electrical authority revealed that it is illegal to 'expose any of the reticulated mains wiring'. This restriction extends to such simple tasks as substituting a ceiling rose with a batten holder, or replacing a single power-point with a double outlet, and applies to anyone except a licensed electrician.

Accordingly, this magazine can therefore neither countenance nor condone anyone performing any alterations to existing wiring, now matter how well 'informed' that person might think he or she may be.

However, it is certainly permissible to use the distribution boards that plug

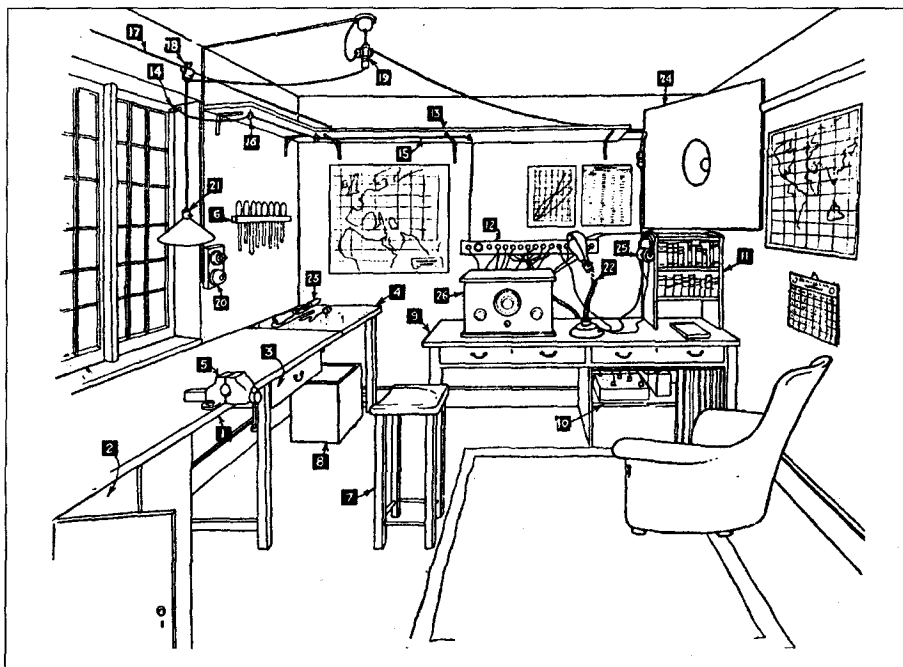


Fig. 1: This drawing appeared in *Practical Wireless* for 11th March 1933, illustrating the ideal workshop. The legend, where applicable, is explained in the text.

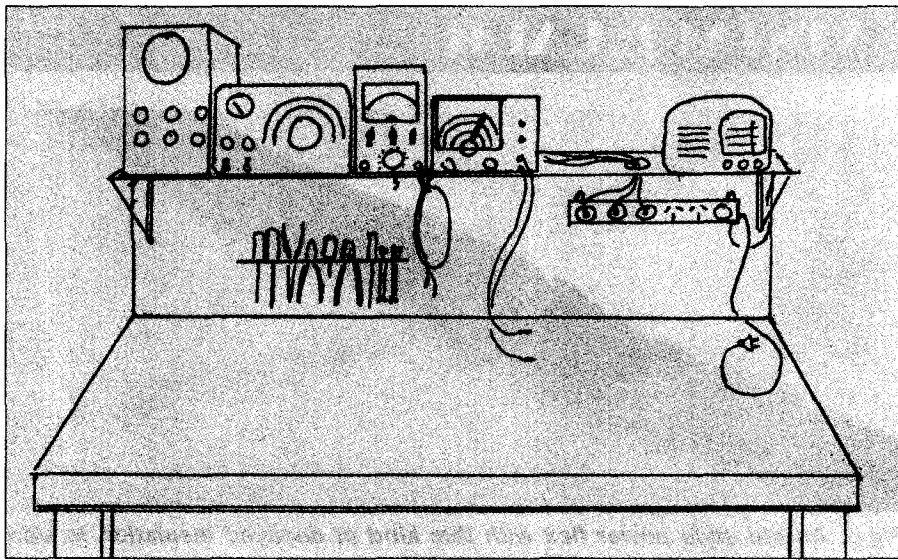


Fig.2: The author's suggested layout for a workbench. Ideally, the bench should be between 1.5 and two metres long.

into a power outlet, either directly or via an extension cord. The problem of sufficient power outlets can often be solved in that way, and a useful layout is suggested in the sketch of Fig.2.

Residual current detectors

The same spokesman from the electrical authority also advised that any alteration to existing wiring, by of course a licensed person, now requires the installation of an RCD or *residual current detector*. These devices are an example of Kirchoff's Law in that they work by detecting the difference, if any, between the current going into any given load and the 'return current' coming out of it. If this variation exceeds 30mA, the device will 'trip' and isolate the AC mains.

One form of RCD is the popular Earth Leakage Detector, in which the current leaking to earth will trip the device. However, there must be an earth for the current to leak, and these devices can be annoying when working with 'AC/DC' or 'universal' receivers, but that will be covered in a future article.

The rationale is that although these devices do have their critics, a person's life (possibly your own) may well be saved as a result of having one installed. Therefore any small annoyances are surely of minor consideration.

Equipment safety

In many ways it was the radio shown in Fig.3 that prompted this article. I want to look at it in more detail, because this will give me the opportu-

nity to talk about well intentioned but ill-informed people and the risks they can run — even by plugging in equipment in this kind of condition.

Look closely at the power plug in Fig.4. This old type of plug is downright dangerous, and nowadays if you find one on anything it should be discarded immediately. The bakelite rim cracks and chips away, exposing the connecting screw. There needs to be only one strand of the multi-stranded conductor poking out a fraction of an inch for some unsuspecting person to get a 'belt'.

Look now at the power flex, in Fig.5.

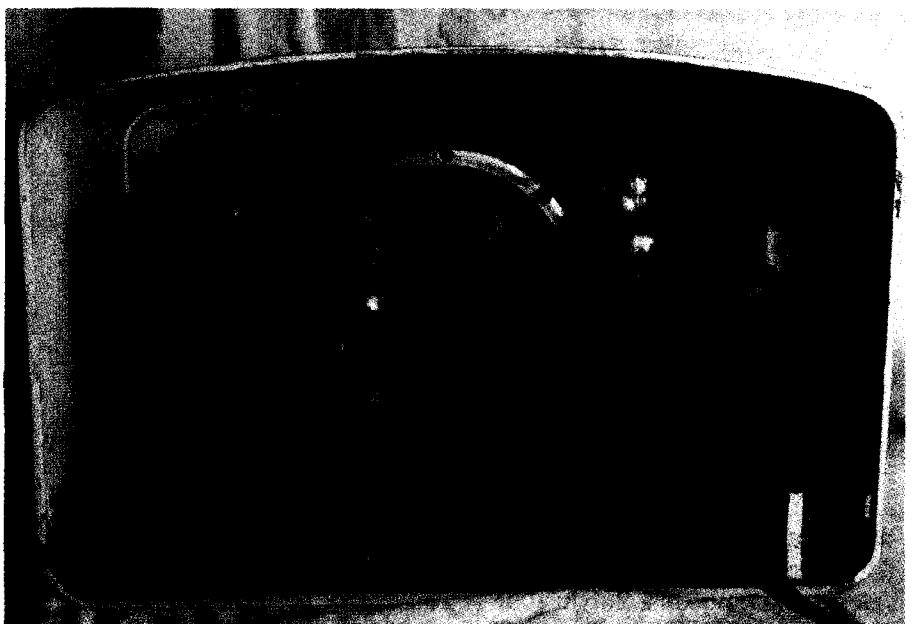


Fig.3: Radios in this kind of condition are often plugged in to 'see if they work'. This is fraught with danger, for reasons explained in the text.

The decayed insulation was marginally retracted for the purposes of the photograph. It goes without saying that this flex is liable to give a person a full 240V shock, or otherwise become the cause of a short circuit. Hopefully the latter would produce only a blown fuse, although more serious trouble can occur.

The radio itself (Fig.3) is also a haven for trouble. A combination of decaying insulation, moisture, dust and time is a recipe for an internal short circuit in the power transformer. Component failure, particularly capacitors, can provide a low resistance path to earth in the rectified HT circuit — seriously overloading, and often burning out, the power transformer.

In the case of a faulty radio the most likely scenario will be a blown fuse. There is often much heat and smoke associated with faulty equipment, and quick action will save damage to the electrical wiring. Most people, now matter how naive in these matters, do have enough sense to turn anything off that is sizzling, sparking or smoking.

If you are inexperienced in these matters, seek advice from a competent person. An electrical repair shop will very likely venture an opinion about the electrical safety, and a technician or radio amateur should help with the rest. Someone in a radio club or society, e.g. the Historical Radio Society of Australia or Wireless Institute of Australia (or their overseas equivalents where applicable) would very likely be able to assist.

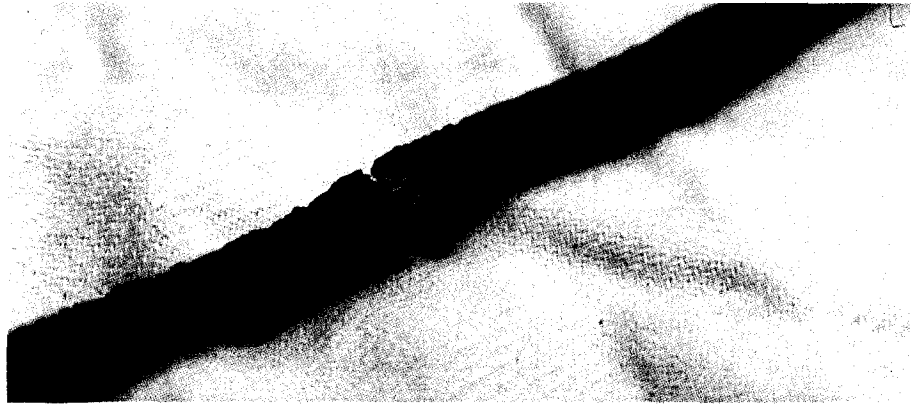


Fig.5: An old style power flex with this kind of decayed insulation is also extremely dangerous, for obvious reasons.

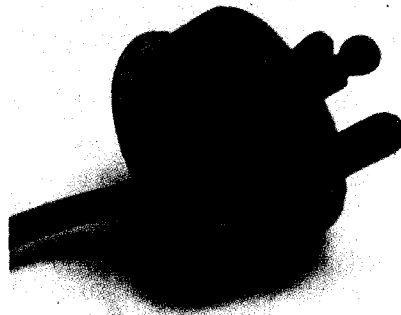


Fig.4: Old bakelite power plugs like this should be discarded without a second thought. They are dangerous in the extreme, and may be potentially lethal.

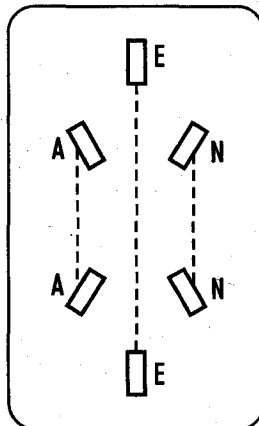


Fig.3: This old style of double adaptor with 'mirror image' outlets is now illegal, as well as being very dangerous. The internal connections are shown in broken lines, which means that one outlet has reversed active and neutral connections.

Double adaptors

You should be aware that the old style of double adaptor shown in Fig.6 are now banned. They effectively reverse active and neutral, for one of the outlets. Look at it closely and figure it out for yourself. If you have one, throw it out. The ones that can be purchased new are the correct type.

One of these old-style double adaptors caused a full 240 volt electric shock to one person some 15 years ago. Here is a first-hand description of the effect:

"I don't know how it happened. I had my hand on the chassis, holding it in place. The soldering iron had been just turned on, was not hot and for some reason I touched it."

"The effect was as though two strong men simultaneously and severely yanked my outstretched arms, and at the same time I was whacked across the chest with a baseball bat. The resulting convulsion threw me off the stool, and I landed on the base of the vertebral column, which in itself was painful and another injury."

"I was completely disoriented for what seemed an eternity (but was probably only a few seconds). Then the pain through my arms and chest, and over my heart in particular was very, very severe, and slowly subsided over an hour or so."

"I was quite weak and lethargic. I suppose they call that physical shock. I recovered overnight."

That person lived to tell the tale. Many, many others have been less fortunate. 240V AC can easily kill you. It is not worth the risk.

By the way, you can be absolutely sure that the story quoted is true, because it happened to the author. ♦