

has applied some modifications of his own, notably a 6BA6 in the RF stage; a single crystal for the 28 mc band (involving a second switched IF range for the full 2 mc coverage); and an S-meter operated by a 6C4 in the AVC line. The frequency stability of this receiver on all amateur bands is quite extraordinary in

comparison with any tuned first-oscillator type—the drift from cold on the 15 mc WWV signal is imperceptible, and it has been possible to calibrate the receiver accurately through all bands; this calibration is of BC-221 standard because of the first oscillators being crystal controlled.

MAKING THE GEAR LOOK BETTER

SOME IDEAS AND SUGGESTIONS

D. Pratt (G3KEP) and D. Noble (G3MAW)

THE aim of almost every amateur constructor is to make his equipment look as smart and as neat as possible. Some people are successful, but others try, in vain, to make their equipment appear as if it were commercially made. The purpose of this article is to suggest a few ways in which the appearance of home-built equipment can be enhanced. Not only is it hoped that this article will prove useful to readers building equipment from scratch, but several of the ideas suggested will, of course, apply equally to improving the look of surplus apparatus in order to soften that all-too-obvious "ex-Government" appearance.

The factors which determine the smartness of the equipment can be roughly defined under the following headings: Chassis; Cabinet and Front Panel; Scales and Dials; Controls; Labelling; and External Fittings.

Chassis

Before work is commenced on a chassis, a suitable component layout should be worked out on a piece of paper the same size as the proposed chassis before the metal is cut or drilled. If this is done, it will be less likely that holes will appear in the wrong places, and the components will fit together more neatly.

If the equipment is to be built into a cabinet, it is not necessary to get a surface finish on the chassis. If, however, a cabinet is not used, it is desirable to give the chassis itself some treatment. This can be done either by polishing or by giving it a matt finish. A matt finish can be obtained on aluminium by dipping it in a solution of caustic soda and water until a matt appearance results. An alternative, and somewhat easier, method is to drop a little oil on the surface, and then rub over it with a circular motion, using steel wool. After the required finish is obtained, the surplus oil should be wiped off with a soft rag. An even better appearance may be obtained by having the chassis black-crackle or silver-hammer finished. The advantage with this type of finish (which is a professional job) is that it is less susceptible to finger marks.

Cabinet and Front Panel

It is always important to give some attention to the front panel, both as regards layout and surface finish. The panel can be painted, or a matt finish produced as already described. A pleasing effect is often obtained by giving the cabinet and front panel contrasting finishes. For example, one could have a silver-hammer front panel and a black-crackled cabinet. If the equipment is fitted into a cabinet or carried in a rack, it is desirable to provide handles so that it may be withdrawn without risk of strain on control spindles. A simple hinged lid is useful, as it enables valves to be replaced without removal of the equipment from the cabinet.

Scales and Dials

On most items of radio equipment it is necessary to have dial scales on one or more of the controls, in order that the settings may be repeated. On a receiver, for example, it is essential to have a good dial for the main tuning control. Several types of slow-motion dials are available (Eddystone, Bulgin, Jackson, Muirhead), the choice being governed chiefly by the application of the dial and by the type of equipment on which it is to be used, having regard to the appearance of the dial with respect to the other fittings on the panel.

It is often an advantage to put smaller dials on rotary switches, volume controls and similar variables. Once again, there are several types of dial which may be used. If the controls are in line, a very smart appearance is given by drawing the required scales in Indian ink on a piece of tracing paper from which a black-and-white "photostat" print can be taken. A piece of 1/16in. perspex cut to the same size as the scales can then be used to hold them in position. (Tracing paper is suggested because any smudges or errors can be easily erased with a razor blade without affecting the quality of the print.) Also, if a print is taken, the surface will be free from any irregularities caused by the ink on the paper. This same method may be used for calibration graphs and charts.

When a dial covers several ranges—as it may in the case of a Grid Dip Oscillator, for example—it may be an advantage to fix the scale and have a circular dial with hair-lines affixed to the control knob.

A very pleasing effect can be achieved by the use of small dials in the form of transfers, such as the "Panel-Sign" marketed by Data Publications Ltd. These consist of white printing on a black background.

and are suitable for almost any application.

Control Knobs

When deciding on control knobs, it is a good thing to arrange for them to be all of the same sort. It is true that while one type of knob may be suitable for a particular piece of apparatus, it may not do for another. The trend is to use a circular pointer knob (such as the Bulgin K370) for audio equipment, while on gear on which there are rotary switches which are important in the operation of the equipment, e.g., the range switch of a receiver, a Bulgin K107 small instrument pointer knob is better because the pointer is more prominent.

The popular fluted instrument knob is very useful because it is available in several sizes, and this type is used to a great extent on oscilloscopes and other items of test gear. This type of knob often has three tapped holes in the rear, so enabling a pointer or dial to be fitted if desired.

Control Labels

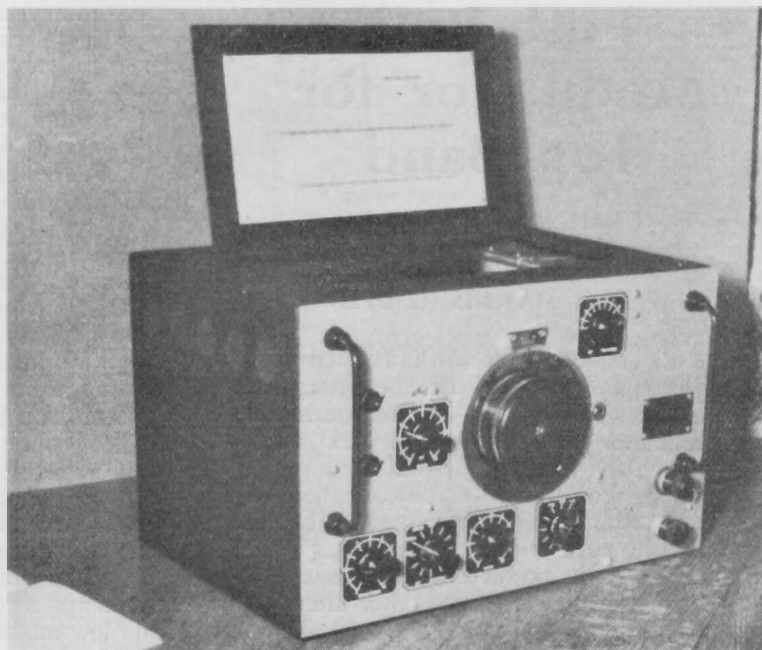
When a constructor has completed a piece of gear, as he himself knows the purpose of each control, he is often inclined to leave the controls unlabelled. Since in this article we are concerned about the finished appearance, it is important that all controls be properly marked. There are, of course, a few exceptions to the rule—for example, possibly one would not label the main tuning control of a receiver, as its purpose is obvious.

The most effective way of labelling controls is to have the panel engraved. Alternatively, small engraved labels can be made to order by any engraving firm in, say, "Traffolite," which consists of a black-white-black sandwich arrangement of bakelite; this can be engraved so that the central white material is visible.

Engraving, although extremely effective, is expensive. A substitute for this is the use, again, of "Panel-Signs" transfers. Sets of these can be obtained with all types of lettering that may be required for radio equipment. These transfers are available in black or in white, the choice of colour being governed by the shade of the panel on which they are to be used.

Additional Fittings

As mentioned earlier, in certain applications the use of chassis handles is desirable so as to assist in the removal and handling of equipment. Handles



Example of a piece of equipment—actually an R.1224A receiver—modified as to appearance in accordance with the principles discussed in the text. It differs greatly from its original form. The front panel is silver-hammer finished and fitted with ex-TU unit handles; modern jacks, knobs and dials replace the Service type, and are provided with indicating scales. The cabinet is black-crackled and to its hinged lid is clamped the calibration chart, under a perspex cover.

are available (from Imhofs) in several sizes, in bright or "satin chromium" finish. The handles removed from TU-units are quite smart when used in the correct manner.

Jack sockets can be obtained with both a black plastic or chromium-plated fixing nut. Once again, if we have more than one socket, they should all be of the same type, and the choice will be decided by which type will give the smartest appearance. (It should be pointed out, however, that in certain applications both connections to the socket may need to be insulated from the panel, and the insulated type of jack socket with black plastic fixing nut is then essential.)

Finally, it is recommended that chromium-plated screws be used on the front panel. It is unfortunate, however, that chromium-plated screws are not very easy to come by!

CORRECTION — "CASCODE CONVERTER FOR TWO METRES"

In this article in our July issue, the 4.7 μF condenser C9 should appear, in the circuit diagram on p.267, between pin 6 of V3A and pin 1 of V2; and the value for R10 should have been given as 47,000 ohms and for R11 as 3,000 ohms. We much regret any difficulty that may have been caused by these errors.