

Radio in 1932

(Continued from page 7.)

tinental manufacturers, it must be placed upon record here that these two, particularly the Continental manufacturers, were using the pentode valves long before they were introduced into the American States. The pentode is a somewhat similar valve to screen-grid, but it is designed for the last stage in the set, instead of the first stages. The last stage is called upon to supply power to the speaker, and to do this a valve needs, primarily, to be able to handle without distorting, a large amount of current, both signal and battery. This, the pentode, with its two extra grids, makes possible, but it is marvellously sensitive, more sensitive, in fact, than two ordinary, or as they are called, triode valves. Before its development the set employed a detector, a stage following the detector, and then two power valves (latterly the 245 type of power valve) in pushpull. Then along came the pentode, with sensitivity equalling both the first audio and the power valves. Furthermore, it can handle almost as much volume as the two 245 in pushpull, and give as much power to the speaker.

The set then became detector and pentode, doing away, not only with two valves, but also with the large and bulky associated apparatus. With the valves in pushpull it is usual to use transformers, and transformers take space, so, there are now only a few insignificant resistances. This has made possible building a set into a very small space, and has made the midget set popular. One of the difficulties of last season's midgets were that they would not with their one output valve handle the output required. But the pentode can, and so the midget has become as popular as the console.

THE screen-grid valve has been developed still further, and what is known as the multi-mu valve has resulted. The multi-mu valve reduces cross talk—one station breaking in on another, although neither spread themselves over the dial, and are well separated—they make possible more efficient volume control—the local station can now be tuned in without the necessity of having to remove the aerial—they give less distortion owing to the fact that they act as semi-power valves when the grid bias is adjusted correctly, they enable the set to be worked at a lower noise level—there is not the amount of parasitic noise in this type of valve as in the ordinary screen-grid, and decrease of hum.

The decrease in hum is a noticeable feature in the new sets, and is due to more efficient filtering circuits, though the amount of smoothing apparatus has been decreased, due mainly to the use of better valves and the cutting out of the audio frequency stages, which were the source of a great deal of hum and parasitic noises.

These are the principal developments that have taken place during the last year, and which will be incorporated in the 1932 radio receivers. Other features incorporated in some sets include twin detectors and pushpull pentode output. Pushpull circuit has certain advantages. It is capable of handling much greater volume than one of its valves can when used singly. We remarked a moment ago that the single

pentodes had replaced the 245 power valves in pushpull, because they supplied almost the same output, but now two pentodes are being used in pushpull to give even greater output. Of course, when these valves are used in this circuit, it is difficult to build the circuit into a midget form, although such is in many cases being done. The idea of providing the pushpull output is to make a set which can supply adequate output for really loud results.

Pushpull Detectors.

THE weakest point in any set is the detector, which has been described as the "bottle-neck" of the set. No matter how great the amplification given a signal before it reaches the detector, the output is restricted to the output of the detector valve. Of course, it will immediately be said, "Why not restrict the pre-detector amplification and increase the post-detector amplification," but the point is that the latter—audio amplification as it is called—is always likely to introduce noise, and pre-detector amplification makes for greater sensitivity and selectivity. Furthermore, it is easier to amplify a weak signal than a strong signal. In order to overcome this bottle neck, a system of pushpull detectors has been evolved, and this is likely to be one of the features of the 1932 radio set. Pushpull detectors and pushpull output valves make possible the delivery of a tremendous undistorted output.

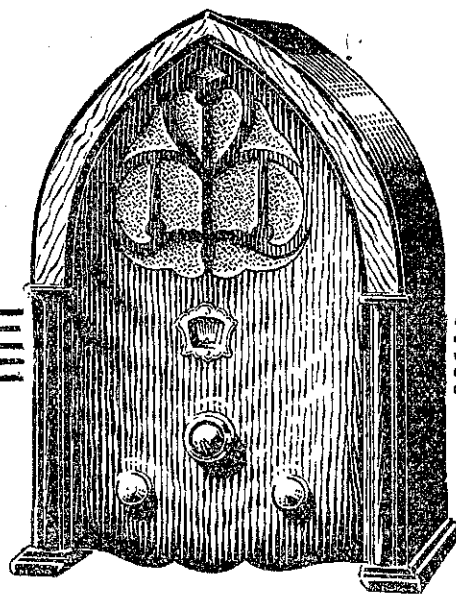
Another feature is visual tuning, or tuning by a meter or column of coloured liquid. To tuning in a station one must tune either for greater swing of the meter or greater height of the liquid. This is a splendid innovation, because many people have caused their sets to distort through not tuning them accurately. The superheterodyne in particular must be very carefully tuned. When there is a meter to indicate when the set is tuned and when it is not tuned, the human element is greatly decreased, and there is a much better chance of getting good results.

An important development is the all-wave set. We remarked in the earlier part of this article that the superheterodyne receiver took each wave as it was tuned in, and, through an adjustable oscillator, delivered a constant output. Now the short waves are beyond the reach of the average set.

They cannot be tuned in because of the limitations of the apparatus used, but if we could place in front of the set some piece of apparatus which brings them to a value that enables them to be tuned in on the broadcast set, then it would be possible to listen to them, and this piece of apparatus has been developed. It is known as the short-wave converter, and fulfils the requirements exactly. It picks up the short waves through its having specially-designed apparatus and converts them to a signal which can be tuned in by the broadcast receiver. They then go through the same process as does the ordinary signal. Quite simple, isn't it?

A short-wave set cannot, at the present time, be designed to cover the whole short-wave band without altering coils, and this necessitated a season or so ago the pulling out of the coils and their replacement, but changing devices have now been developed so that it is necessary only to adjust a dial on the front of the converter to bring in the various bands.

Long and short wave sets are being built into the one cabinet and a com-



The DIRECT COUPLED 2 - Receiver!

Which employs a modification of the Loftin White Amplifier, so noted for its remarkable power and fidelity of tone. This receiver achieved remarkable popularity in Australia.

The valves used are: 224 as detector, with a 245 power valve, and 280 rectifier.

It is extremely selective, and local stations are received without the slightest interference, an aerial of from 10 to 30 feet being quite sufficient in and around Wellington and suburbs.

Complete for

£12/10/0

With Twelve Months' Guarantee.

MANUFACTURED BY:—

F. J. W.

FEAR

Wellington

& CO.