The Radio Sets of To-day

An Answer to the Questions raised by the non-technical Listener

DECIDING what radio receiver to buy is harder this year than it ever was before. And, curiously enough, the difficulty now is due to to the fact that there are so many really fine sets on the market.

Cabinet designs have become so standardised that dozens of different radio sets varying widely in power, price, and so on look practically alike except for minor details in the finish of the cabinet. Of course the more expensive sets have finer cabinets, but the less expensive outfits are housed in cabinets so carefully built that they give the impression of high quality. In many cases only an expert cabinet-maker can distinguish between them.

Some of the important questions our readers are asking about this year's radio receivers are answered below. The answers should prove helpful to prospective set buyers.

"WHAT are the meanings of all the new terms used to describe tone quality?" Good tone quality means just one thing—the ability of the radio receiver to reproduce, as perfectly as is scientifically possible, the tone produced in the broadcast studio. And that in turn means that the electrical and acoustical characteristics of the receiver are such that every tone frequency is treated in a uniform manner. None should be over-emphasised, none suppressed, and none distorted. Many high-sounding but utterly meaningless phrases and words have been coined and applied to radio receivers to indicate that in one way or another they are better than other makes as far as tone quality is concerned. The basic fact remains, however, that a receiver is a piece of mechanical and electrical apparatus designed to do just one thing. That is to reproduce as faithfully as possible the air vibrations produced by the artists broadcasting. That function may be called by any name imaginable without improving the results.

"WHY are screen grid valves better? The screen grid valve, from a theoretical standpoint, is a remarkably efficient radio-frequency amplifier. If used in a well-designed circuit it produces, in a practical fashion, more radio-frequency amplification than can be obtained by the older type valve. It must be remembered, however, that the presence or absence of the screen grid valve in the circuit has nothing whatever to do with the tone quality that a radio receiver will produce.

Just because a receiver has screen grid valves does not guarantee improved tone quality. Thousands of radio receivers that have no screen grid valves, are being manufactured, and will be sold this year, and they will give excellent satisfaction to their owners. If the prospective purchaser is interested only in local reception or he is located where a good antenna can be erected, screen grid valves will be of no particular benefit. On the other hand, if he is located where it is impossible to put up a good antenna, and local reception conditions are very unfavourable, then a set using screen grid valves will help him to bring in stations that he otherwise might not receive.

"DOES power detection give greater distance and more volume?" Theoretically, power detection gives better tone quality simply because it eliminates a certain amount of distortion which takes place with the older type of grid condenser and grid leak method of detection. The difference, however, is hardly noticeable, except to the trained ear, and then only when the audio amplifier of the set and the loudspeaker are both of excellent quality. The fact that a set has or has not power detection should not be considered for or against it, provided the tone quality is satisfactory.

A power detector is not as sensitive to weak signals as is the conventional grid condenser and grid leak method of detection. This, too, is relatively unimportant. In circuits designed to use power detection the radio-frequency amplification is greater than in circuits not designed to use the new system of detection. In some sets the power detector is coupled directly to a single audio amplifier stage using power valves. This arrangement inherently produces less hum than does the circuit using two audio amplifier stages. In some cases, however, the manufacturer has taken advantage of the reduced hum to cut down the filter circuits so that the net result is little better than it has been in past years. In any case, modern radio sets are practically hum free in operation.

"IN what way are this season's sets better than last year?" Judging from tests of a number of different receivers, the radio sets produced this season are more sensitive, more selective, and give better tone quality than last season's sets. The improvement is perhaps more noticeable in the low-priced sets than in the high-priced ones, simply because there was more room for improvement.

The increased sensitiveness and selectivity of this season's products is due in some cases to the use of the screen grid valve and in other cases to a better design of the radio-frequency circuits used with the type 227 valve. In addition, there has been a noticeable improvement in factory production methods, so that the individual tuned stages are more accurately synchronised with each other.

DO the new sets cost more to operate? The cost of operation of any radio receiver can be divided into depreciation, cost of current per hour, cost for tube replacements, and repairs.

Depreciation cannot be figured by any ordinary method because a modern radio receiver will last for years. The cost of electric current depends on the number and size of valves used in the set. If, for instance, a set uses three screen grid valves, type 224; two heater valves, type 227; and two power valves, type 171A, it will use just as much current whether the set costs 100 dollars or 300 dollars. In any case the amount of current consumed, as compared with sets of last year of approximately equivalent price, will be only a small fraction greater. If the set uses 245 power valves the current drain will be somewhat heavier.

WHAT is the advantage of automatic volume control? Automatic volume control is another improvement for convenience rather than operation. In one form, automatic control is obtained by the use of a special valve in the circuit, so connected that the strength of the received signal changes the plate current flow, and the change in plate current flow, in turn, changes the grid bias on the radio-frequency stages. The result is that all local stations sound alike in volume. In addition a hand control is provided to cut the volume below the level to which it is controlled by the automatic arrangement.

WHAT is meant by uniform sensitivity? A theoretically perfect radio receiver should be equally sensitive on all wavelengths or frequencies. Most radio receivers in the past have shown greater sensitiveness to signals on the lower end of the wavelength band; in other words, on the higher frequencies. A station received on 545 metres or 550 kilocycles, for example, usually gave considerably less volume from the loudspeaker than a

The Microphone

Some creep up to a microphone
As though to bow before a throne;
Others approach with ready ease
And cry, "How do I use it, please?"
Some stand in solemn thought profound
Thinking their message will fly around.
Some in stentorian voices shout—
Thinking all Mikes are deaf, no doubt.
Some speakers great precautions take
That they a good result may make,
So first they shout; then whisper low;
Speak fast and faster, then go slow.
All this repeated, grave or light,
Ensures that "some of it is right."
Some speakers like to stand quite near
The Mike, because "he's such a dear."
While others, too, far back will go—
"I don't quite like the thing, you know."
A timid speaker will begin,
"Oh, can you hear me, listeners-in?
I fear my voice is hardly loud
Enough to talk to such a crowd.
So if you back rows do not hear
See if you cannot come more near."
Many there are who think "I'd like
To talk through this mysterious Mike!"
While others say, "Oh, I'd not dare
To throw myself out on the air!"
Oh, microphone, so weird and wise!
Do you us human folk despise?
Oh, no! You do your best to spread
Abroad each wise word that is said,
And many a person, kept at home,
Loves you e'en more than those who roam,
So take our thanks from one and all
In voices loud, soft, quick or drawl.
As to these lines, apologies we own
Are due. The writer never saw a 'phone!

—*G. Colborne-Veel.*