



What's What in Radio

By Hugo Gernsback

THE present radio season is quite an unusual one. As so often has happened in radio, the entire art right now seems to be undergoing a sort of silent revolution. About a year ago, it was unusual to hear the term, "An Electric Radio" or "A Socket-Operated" or "An Electric-Current-Operated Radio." Today, the public is asking all sorts of questions about these improvements; and these few remarks are addressed to those whose interest in radio is only from an entertainment viewpoint, and who do not as a rule care about radio technicalities. The questions are those which are most often asked by laymen today.

What is an electric radio receiver?

An electric radio receiving set, today, is understood to be a receiver which can be connected to a light socket, the tubes in the set being of the so-called alternating-current type. Such a set contains no batteries of any kind. It contains no liquids. It uses a "B" power-unit, which furnishes plate current by converting the house current into suitable form.

What is an electrified set?

By an electrified set is meant a light-socket-operated set wherein no changes have been made from the model operated by batteries. It uses the standard battery-type vacuum tubes; but, instead of a storage battery, an "A" socket-power unit is employed; and for the "B" current, a "B" power-unit is provided. These devices replace entirely the "A" and "B" batteries, and therefore require no recharging and infrequent renewal of tubes. It is possible, also, to use a storage battery which has attached to it a charging device. The charging is done automatically, and the battery then need not be removed from its place to be charged.

Can an electrified or an electric set be operated from any light socket?

No. It is necessary to find out, first, what sort of current you have. About 90 per cent of all current supplied in the cities of the United States is alternating, 110-volt, 60-cycle. Most of the appliances for electrified sets, and most electric sets, are designed to work on current of this kind. But there are sections in the United States, particularly in our large cities, where 110-volt direct current is still used. Wherever there is direct current or alternating current of unusual voltage or frequency, you cannot use an ordinary electrified or electric set. If there are any doubts in your mind as to what current you have in your home, call up the electric company to whom you pay your lighting bills, and they will give you the information as to what current they supply. In large apartment houses, the superintendent of the building will be glad to give the information.

There are also sections of the country where, though alternating current is used, it is not of 60-cycle frequency, but some other, such as 25. As a rule, neither electrifying accessories nor electric sets can be used with such current; although some manufacturers are making special appliances to meet such conditions. Be sure you post yourself on this point. In the country, particularly on farms, there are a great many 32-volt private lighting plants. Neither the electric set nor the standard electrified set can be worked from this 32-volt current.

Which is better, a battery-operated set, an electrified, or an electric set?

These types work about alike. As a rule, the electrified and electric sets can deliver more power. On the other hand, a battery-

operated set is apt to be somewhat quieter, in the present stage of the art. To the average user, the trifling line noises that occur in electrified or electric sets are of no consequence; particularly when the volume control is turned on full, such slight noises as occur when nearby lights are switched on are as a rule never heard. The battery-operated set, though admittedly somewhat quieter, requires constant care in the charging of the "A" battery and renewal of the "B" batteries. The need for attention disappears almost entirely with the other two forms of sets.

How much does it cost to operate an electrified or an electric set?

That depends upon the number of tubes and the system used in the particular set referred to. No exact answer can be given without knowing exactly what set is to be used, because all sets vary more or less. In any case, no current is used when the set is not in operation, except where a storage battery with an automatic charger is used. But in any case, on an average, the cost of running an electrified set is seldom more than five cents an evening, if the set is run for three hours. This may vary to as little as two cents, and as high as ten cents; the lower cost being for a smaller set and the higher cost for a larger set, say of the ten-tube variety.

How long should a modern radio set last?

Again this depends upon the type of set. You do not expect a \$400 car to last as long as one costing \$15,000; the same should be true with a radio set. The low-priced sets are not equipped with high-grade parts; whereas the sets of the better make are made with the purpose of permanent satisfaction uppermost. Temperature changes, wearing of the condenser shafts, dust, corrosion, particularly if the set is used near the seashore or in a moist climate, all have their effects upon the materials. The average life of a radio set is about three years; although we have seen many in use that are much older than this. It also depends upon how much a set is used. Usually most of the wear comes in on the tuning adjustments; but it is a mighty poor set that can wear out its condenser bearings in less than three years. The useful life of the average radio set is about that of the average automobile, and that is about three years.

Are battery sets obsolete?

No. Battery sets will be in use for many years to come. Wherever there is an unsuitable supply of electricity, such as direct current, or 110-volt, 25-cycle current, or 32-volt farm-light current, battery sets will be used. Indeed there may be, in time, a grand come-back of the battery-operated sets, due to the development of different tubes. We already have the double-grid tube, which uses only a fraction of the current that other tubes take; but its possibilities are yet more or less in the future.

Which is better, the cone or the horn speaker?

Both have their merits. It may be said that the cone speaker reproduces the lower notes more faithfully, whereas the horn-type speaker usually reproduces the higher notes more faithfully. This is true of the general run of speakers, though there are a number of cones on the market which reproduce the low and high notes equally well. The best combination, however, comprises a horn and a cone connected to the set, either in parallel or in series, and placed in different parts of the room. This gives the greatest fidelity in reproduction available today. There are, of course, such exceptions as the large exponential horn, which gives very excellent reproduction on both the low and high notes. This speaker, however, takes up a great deal of room.