

Choosing an "A" Battery

Some sound practical advice on the choice and maintenance of different types of "A" batteries

ONCE a wireless set is made or purchased, if the owner does not happen to be of an experimental turn of mind, little is done in the way of alterations or renewals.

The batteries, however (assuming that the set is a valve receiver employing batteries), do require renewing, sometimes inconveniently often, and there arises the chance either of making a mistake or of spending wisely and improving reception. The results obtained from a valve set can be made or marred by carelessness with regard to batteries.

Take first the case of the "A" battery, which has the task of supplying the filament current of the set. Obviously, the more valves there are, the bigger should be the battery. And, of course, it must be of the correct voltage to suit the valves. The most popular type of battery valve is the 2-volt, because its efficiency is virtually the same as 4 or 6-volt types, and it requires a battery only one-half or one-third of the size of the other types.

Choosing an Accumulator.

Suppose then, we are going to use 2-volt valves. What size should the accumulator be?

To decide this, we must know the amount of current to be used. For an S.G. valve this will probably be about .15 amp., and for a detector .1 amp. Ordinary audio valves also take about .1 amp.

The exact figures for your own valves are available from the leaflets contained in the valve cartons. To find the total filament current of the set; simply add the respective figures together.

A typical case for a three-valve set would be:—

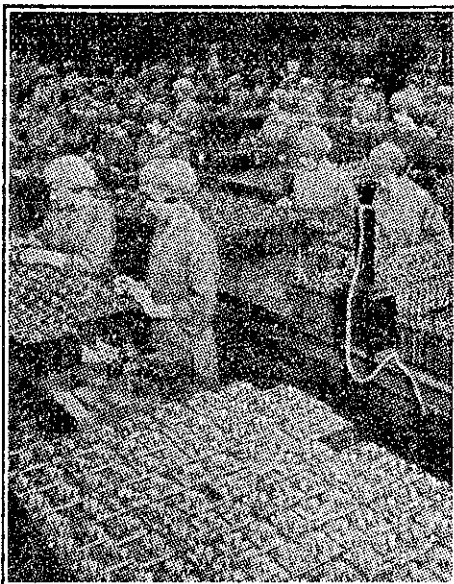
Screened-grid R.F. valve ..	.15 amp
Detector	.1 amp
Power valve	.2 amp

Total filament current .45 amp.

Thus the set will take a little less than half an ampere from the "A" battery all the time it is running. The next question is how long will that be?

You know approximately how much the set will be used, so there is no difficulty in this. Taking an average case again, let us suppose you will be using the set for about four hours per day, which gives you an average of 28 hours per week. We now know the total current required from the "A" battery in a week. It will be, in this typical instance, .45 amp. for a period of 28 hours.

You will notice that both "amperes" and "hours" enter into the calculation. So let us multiply one by the other and get it down to that very handy unit, the ampere-hour. All we have to do is to find the product. $.45 \times 28 = 12.6$ ampere hours per week. This is the heart of the matter. Now that we know in this particular instance we shall want about twelve-and-a-half



ACCUMULATORS IN THE MAKING

A corner of a huge battery factory in England. The view shows the assembly of celluloid-cased radio batteries of all types and sizes.

ampere-hours per week, we can see what the dealer has to offer us.

Actual and Intermittent Ratings.

We find that 2-volt "A" batteries are available in various ampere-hour capacities—20 ampere-hours, 30 ampere-hours, etc. But you may note in referring to them the dealer may say, "This is a 20-actual"; "This is a 30-actual," etc. What does that "actual" mean? Simply this: The ampere-hour capacity of an accumulator is very much less when it is discharged continuously for hours on end—as you will want to discharge it, for radio—than when it is discharged momentarily and then allowed to recover.

In fact, its actual discharge rating, under radio conditions, will be only about half of its "ignition" rating—more usually called the intermittent discharge figure. So you want to know the actual-ampere-hour rating. All good batteries give this figure, and all reputable dealers refer to it when they speak of a battery to be used for radio purposes.

Knowing that you are going to use a set which takes about $12\frac{1}{2}$ ampere-hours per week, your next concern will be convenience in the charging. If you get a 20-actual ampere-hour battery it would last between one and two weeks—a rather awkward period of time.

How about a "30-actual"? Two weeks' current at $12\frac{1}{2}$ is about 25 ampere-hours—that leaves a little margin for emergencies. A "30-actual" accumulator, then, would last two

weeks before it needed recharging, and you would easily remember to get it charged at the regular intervals.

Another advantage would be the margin—25 ampere-hours' use again a 30-ampere-hour rating. So you would always be on the right side if you wanted a little extra current for some specially good programmes.

Thus the 30-actual accumulator would be a good choice under the foregoing circumstances, and other requirements may be worked out in the same way. But there are several considerations to bear in mind. Don't be tempted to get too big an accumulator for very infrequent recharging. It will deteriorate if it is not kept actively working, regular discharges and charges being the ideal treatment for it.

On the other hand, too small an accumulator will often be liable to become run right down, which is very harmful, though there is much to be said for two fairly small accumulators, one running the set while its fellow is being recharged. In fact, if you carry your own to the charging station this is generally the most convenient method.

For Country Listeners.

Battery set owners who live in the country, away from charging facilities, and who do not wish to make their own primary cells, have a choice between two other types of "A" batteries, the 1½-volt dry cell, and the "air-cell." The former are comparatively cheap, but they have to be renewed every few months, the actual period depending, of course, on the amount of current taken by the set and the length of time the set is in use.

The air-cell, which is a comparatively recent invention, has a rather heavy initial cost, though it possesses the big advantage that it lasts from eighteen months to two years without any attention, except that it should be "topped up" occasionally with water.

Next week we will discuss the choice and maintenance of "B" batteries, which are just as important as the "A" in ensuring the best results from a receiver.

Preventing Rattle

WHEN records are being reproduced from a pick-up, a rattle on certain passages is sometimes noticed. The cabinet is often blamed, but often the rattle is due to a vibration which reacts from the

pick-up. This can be cured by mounting the pick-up on soft rubber, when it will be found that whereas before volume had to be kept down because of the rattle, this can now be increased to maximum.

