

voltages being very steady, but these figures show a drop of something like 15 per cent. between the newly-charged and the run-down accumulator. As the results from many valves vary appreciably with the "A" supply, it is obvious that here we have an important reason for volume variations. Fortunately modern valves are less critical than their predecessors.

#### Magnified Alterations

**A**DVANTAGE is often taken of this very fact that filament voltage affects output by connecting a variable rheostat in the filament circuit of an R.F. valve, for the specific purpose of controlling the volume of the output. Here the slightest touch of the rheostat will affect volume to a surprising degree, one reason for this being that the volume control in this case is followed by amplifying valves which magnify the effect of any input variations.

A powerful receiver amplifies the input many thousands of times, so that any changes in volume which take place in the earlier stages of the input are enormously magnified before they are reproduced by the loudspeaker.

Variations in "B" voltage supplied to the receiver affect volume in the same way as variations in "A" voltage, but generally not to the same degree.

It will thus be seen that there are many factors working simultaneously to vary volume, and the marvel is not that the strength of the programme is sometimes better than at others but that the cumulative effects of these variations is not too great to spoil our enjoyment of the fare provided by the R.B.C.

Ivy: "Have you got wireless in your house?"

Bob: "'Course. We've got two."

Ivy: "What do you want two for?"

Bob: "One each side of your head so it doesn't go in one ear and out of the other."

## Auckland Notes

(By "Call Up.")

**A** PARTY of 1YA artists recently gave a most successful concert at Thames on behalf of the Thames-Hauraki Cricket Association. There was a large attendance, many of the audience being interested to see what the artists they knew by voice looked like in the flesh, and as a result the cricket association benefitted to the extent of £30. The broadcasters received many thanks for their kindly effort.

**O**N the occasion of the opening of the magnificent new Civic Theatre, Auckland, on December 20, six loudspeakers were placed outside the theatre to enable the large crowds assembled on the street to hear the speeches of the opening function. Those who were unable to gain admittance greatly appreciated this service.

**L**OCAL reception of Australian stations has not been very satisfactory lately, being weak even on powerful sets. Some listeners report getting 2YA with extreme volume and clarity during the last fortnight.

**R**ADIO dealers in Auckland have greatly appreciated the extended hours of broadcasting during the week. The majority of them state that Christmas business has been good. Receiving sets and parts seem to be growing in popularity as Christmas gifts, particularly for children who plead for crystal sets from Santa Claus!

**A**CCORDING to the terms of the recent International Conference on Safety of Life at Sea, all passenger ships and all cargo ships of over 1600 tons gross will be required to be equipped with wireless.

## Improved Conditions Winding Solenoid Coils

### Better Valves and New Transformers

**A** POINT that is often lost sight of when considering the merits of various transformers is that present-day valves are, on the whole, much better than those available a year or two ago. The result of this is that, for a certain standard of performance, the transformer need not be such an expensive component as formerly.

To explain this point more fully, let us imagine we have a receiver having a transformer-coupled stage that is fitted with a valve whose impedance is 16,000 ohms, for a magnification factor of 10. We remove this valve and put in a modern one, having an impedance of 8000 ohms for a magnification factor of 10, which is quite reasonable.

Immediately it is noticed that the lower notes are strengthened and it may so happen that the higher notes are also strengthened in comparison with those of middle frequency. The effect of fitting a new valve in this instance is, therefore, to improve the reproduction.

If one happened to be satisfied with the reproduction of the old arrangement it would be possible to fit a new valve having about the same anode impedance as the old one, but having a greater magnification factor. The overall amplification would, therefore, be increased.

It is further possible for one to fit a new valve of lower impedance, but the same magnification factor as the old valve, and also to fit a transformer having the same ratio as the one used at present, but having less inductance.

Such a transformer would be cheaper, because inductance is dependent upon the size of the iron core, its quality and the number of turns of wire. Less iron could be used in the core or fewer turns of wire, whichever happened to be the cheaper.

It is not advisable to use a transformer having poor iron, however, as distortion may be produced. The distortion is produced by the way the iron behaves when it is magnetised, and it may be serious. There is also the question of magnetic saturation to be considered, but the manufacturers usually advise purchasers of their products how much current may safely be passed by the primary winding.

### Police use Radio

**T**HE New York police are fully aware of the advantages of rapid communication offered by wireless, for in the near future 500 motor-cars used by the Police Department will be fitted with receiving sets. The messages will be sent from the broadcasting station at police headquarters in a code which the motor-drivers will be trained to understand. Their sets will be tuned to the frequency used, and then locked; and, as the code will be secret, even should criminals discover the frequency, they will still be unable to decipher the messages.

**A** DRILL is exceedingly handy for the rapid winding of solenoid coils if the hard wood is tightly fitted into one end of the former used, and in the exact centre of this plug is fixed a short length of  $\frac{1}{4}$ -in. studding which can be gripped firmly in the jaws of the drill chuck. When winding is to take place, the horizontal hand-grip of the drill is removed and the stud to which it is attached is firmly held in the jaws of the vice. The drill itself is thus fixed parallel with the ground. The coil former is gripped in the way already described, the end of the wire is anchored to the former in the usual way, and the reel is placed in a holder provided with a brake which can be adjusted to give the right tension. If the crank of the drill is not rotated too quickly, the wire runs on quite evenly, and a 60-turn coil can be made with almost incredible rapidity.

### New British Stations

**T**HE largest broadcasting station in Northern England, will be erected at Slaithwaite, Yorkshire. The new station will be operated by the British Broadcasting Corporation, and is being erected at a cost of £20,000.

The new station will have two separate forty-kilowatt transmitting sets, and will be similar in design to those now in use at Daventry. The transmitters will require about a year before completion, but will incorporate all of the latest developments known to the broadcasting art. When finished these two new transmitters will replace all those in operation in the northern portion of England.

Work will be started immediately. Two separate aerials will be strung, each supported by two 200-foot steel towers. These two stations will replace about four lower-powered transmitters in the area. Present studios of existing stations will probably be retained and programmes will be relayed from these and from London.

### Making a Wireless Set

To make a set you may aspire  
So, if you copy me,  
You'll take a good-sized length of wire  
And fix it to a tree

Some insulators add with care,  
Then mix up all these terms—  
Inductance, megohm, volt, ampere,  
With metres, gas, and thermes.

Next weigh the cost of ebonite  
And use the cheaper kind,  
Though experts say this is not right—  
Nor is it, you will find.

Then take a brand-new valve and plate,  
(But do not take advice)  
Work in some cathodes, nine, or eight  
I think will quite suffice.

Flavour with zest, and do not get  
Depressed if parts don't fit,  
You will not make a wireless set—  
You'll make a mess of it!

—Leslie M. Oyer.

## How to Enjoy Your Holidays

The Railway Holiday Booklet contains glad tidings—it tells of how to reach all the delightful places you have longed to visit, with a maximum of comfort and a minimum of cost. Call, write, or 'phone for a copy—obtainable free at any Railway Station or City Booking Office.

Remember—Cheap Tickets are obtainable  
from 13th December to 11th January.  
Return up to 8th February.