

- 6.0 : Children's Song Service conducted by Uncle George, assisted by the Cambridge Terrace Congregational Sunday School Choir.
- 7.0 : Relay of Evening Service of St. Thomas's Anglican Church, Wellington South (Preacher, Rev. C. V. Rooke, M.A.; Organist and Choir-master, Mr. W. Gätteridge).
- 8.15 (approx.) Studio concert by Wellington Municipal Tramways Band (Conductor, Mr. E. Franklin) and 2YA artists:  
Hymn—Wellington Municipal Tramways Band, "Lead, Kindly Light" (Purdie).  
Overture—Wellington Municipal Tramways Band, "Pique Dame" (Suppe).  
Soprano—Miss Rosina Exton, "Hark! what I tell to Thee" (Haydn).  
Orchestral—Basle Symphony Orchestra, "Invitation to the Waltz" (Weber) (Columbia 02853).  
Baritone—Mr. Harry Matthew, "The Living God" (O'Hara).  
Violin—Efreim Zimbalist, "Zapateado" (Sarasate) (Columbia 04221).  
Contralto—Miss Mary Bald, "Ave Maria" (Mascheroni).  
Waltz—Wellington Municipal Tramways Band, "Golden Grain" (Trussell).  
Weather report and announcements.  
Soprano—Miss Rosina Exton, (a) "On the Banks of Allan Water" (Horne), (b) "Till I Wake" (Woodforde-Enden).  
Male voice choir—Sheffield Orpheus Male Voice Choir, "The Long Day Closes" (Chorley and Sullivan).  
Selection—Wellington Municipal Tramways Band, "Rose Marie" (Friml-Stolhart).  
Baritone—Mr. Harry Matthew, (a) "In a Monastery Garden" (Ketelbey), (b) "Home Along" (Sanderson).  
Violin—Efreim Zimbalist, "Liebeslied" (Old Vienna Waltz—Kreisler).  
Patrol—Wellington Municipal Tramways Band, "Jungle Drums" (Ketelbey).  
Contralto—Miss Mary Bald, (a) "Che Faro senza Eurydice" (Gluck), (b) "By the Waters of Minnetonka" (Lieurance).  
March—Wellington Municipal Tramways Band, "Invercargill" (Lithgow).  
God Save the King.

### 3YA, CHRISTCHURCH (980 KILOCYCLES)—SUNDAY, JANUARY 26.

- 8.0 : Afternoon session—Gramophone recital.  
4.30 : Close down.  
5.30 : Children's Song Service by children from Presbyterian Sunday Schools.  
6.15 : Chimes.  
6.30 : Gramophone recital—Selected items.  
7.0 : Relay of Evening Service from St. Paul's Presbyterian Church (Preacher, Rev. W. Bower Black; Organist, Mr. Norman Williams; Choirmaster, Mr. H. Blakeley).  
8.15 (approx.) : Relay of programme from 4YA Dunedin.

### 4YA, DUNEDIN (650 KILOCYCLES)—SUNDAY, JANUARY 26.

- 8.0 : Chimes. Programme of selected gramophone items.  
4.30 : Close down.  
5.30 : Children's Song Service conducted by Big Brother Bill.  
6.15 : Close down.  
6.45 : Relay Evening Service from Salvation Army Citadel, Dowling Street (Preacher, Capt. Chandler; Choirmaster, Mr. A. A. Millard).  
8.15 (approx.) : Programme of music to be rendered by the Kaikorai Band, under the conductorship of Thos. J. Kirk-Burnand, assisted by 4YA artists:  
Prelude—Band, "Prelude, Op. 28" (Chopin).  
Concert march—Band, "Resolute" (F. Newby).  
Tenor—Mr. W. Harrison, (a) "A Dream" (Barlett), (b) "Vorrei" (Tosti).  
Grand selection—The Band, (a) Beethoven's Works (Ord Hume), (b) Two Hymns by Greenwood—Wellington (Greenwood), Sacriston (Greenwood).  
Contralto—Miss Gwenda Burt, "Still as the Night" (Bohm).  
Weather report and announcements.  
Selection—The Band, "Spohr's Opera 'Jessonda'" (Spohr).  
Baritone—Mr. Wm. Ruffell, "When My Ships Come Sailing Home" (Doree).  
Cornet solo and chorus—"Holy, Holy, Holy" (Handel).  
Selection—The Band, "Jackson's Te Deum" (arr. Bidgood).  
Tenor—Mr. W. Harrison, "Eleanore" (Coleridge-Taylor).  
Selection—The Band, "Mendelssohn's 'St. Paul'" (Mendelssohn).  
March—The Band, "Simplicity" (Hume).  
Contralto—Miss Gwenda Burt, (a) "The Great Awakening" (Kramer), (b) "Tired Hands" (Sanderson).  
Baritone—Mr. Wm. Ruffell, "Toselli's Serenade" (Toselli).  
Concert waltz—"The Choristers" (Dodwell).  
Hymn tune—The Band, "Radiocast" (Thos. J. Kirk-Burnand).  
9.30 : God Save the King.

## Questions and Answers

### Amplifier Problem.

"H.R.H." (Christchurch), asks the following questions relative to the construction of an amplifier:

1.—Is it possible to build a 2-valve amplifier using one transformer?

A.: Yes, the first stage is resistance capacity coupled to the crystal. A diagram has been forwarded you.

2.—Would a 2-valve set halve the life of the "B" battery?

A.: That is difficult to say. It depends on the types of valves used, and the length of time they are used, and the grid bias. It would probably about halve the life.

3.—I am using a 90-volt "B" battery with 3 volts on the "C". According to the valve makers I should be using from 6 to 9 volts, but if I attempt to use this the signals are greatly decreased. Why?

A.: The application of grid bias acts in the same manner as a decrease in plate voltage, but with this important difference, that while the plate current is diminished by the application of bias, the quality is greatly improved. The recommendations of the manufacturers no doubt refer to the bias required when 150 volts is applied to the plate. When the volume decreases, the quality should improve if the application of the greater bias is in accordance with the manufacturer's recommendations.

### The "Combination" Set.

COULD you supply me with particulars of the "Combination" set published in the "Radio Listeners' Guide"—"A.G.G." (Wellington).

A.: Full details were published in the "Radio Record" of April 12, 1929.

### The Two R.F. Browning-Drake.

IN building the 2-R.F. Browning-Drake, must the coils necessarily be 2½ inches in diameter?—"Raydio," (St. Kilda).

A.: No, any convenient size from 2 in. to 3 in. will be satisfactory, providing adjustment in the number of turns is made. See "All About the All-Electric," and the table of comparative inductances in the reference section of the "Radio Listeners' Guide."

### A.C. Transformers.

I HAVE seen on the market lately small transformers to step down 230 volts A.C. to 6 volts D.C. Is this a miniature power pack? How is the A.C. stepped down to D.C. without a separate rectifier?—"R.G.H." (Wellington).

A.: Alternating current cannot be stepped down to D.C. of a lower voltage without some rectifying device. This may be a metallic rectifier which takes only a few inches of space. As we do not know the product in question, we cannot give any details.

### Robert's Reflex Circuit.

WHERE could I obtain a circuit for the Robert's circuit reflex?—"T.C.W." (Pt. Chevalier).

A.: See the "Radio Broadcast" data sheets which should be obtainable from a bookseller who stocks wireless literature. Try Te Aro Book Depot, Wellington.

### Coil Specifications.

WOULD you give me the number of turns for a 2½ in. former tuned with a .0005 condenser 24 d.c.c. wire?—"Kauspanka" (Hawke's Bay).

A.: 65 turns unspaced on the secondary and 15 on the reaction.

### Voltage Divider Problem.

I HAVE built an eliminator from the instructions in the "Listeners' Guide," and can supply 250 volts for a 245 valve. My trouble has been to get suitable resistances to break down the voltage to 150 volts for a 227 type valve in the first audio stage, 90 volts for the R.F., and 50 volts for the detector. Can you advise me where I can obtain a suitable voltage divider?—"P.W.H." (Palmerston North).

A.: The best plan is to put in variable resistances as shown in the "All About the All-Electric." These resistances need only be 0-5,000 ohms. If, however, a voltage divider is wanted, the following resistances should be placed in order. Between the 250 and the 150 tap, 4,000 ohms; between this and the 90 tap, 3,500 ohms, followed by 6,000 ohms to the detector, and a "bleeder" of 2,000 ohms. The total consumption of this resistance will be about 30 milliamps, and as the 245 will require about 30, the eliminator should be capable of supplying 60.

2.—The power transformer appears to affect the set in that when it is placed near it a decided hum is heard. I presume the power transformer will require shielding.

A.: Yes, and earth the shield.

### Obtaining More Volume.

CAN you tell me how I can obtain greater undistorted volume from my 7-valve all-electric factory-made set. Would it be an expensive operation to have the set altered to take 245 type of valve in the last stage?—"E.W." (Wellington).

A.: It is not advisable to interfere with a factory-made receiver. It will supply a definite output when used with the valve recommended by the makers, or their exact equivalents. We should not advise any attempt to adapt this set for use with the 245, as this would require great alterations to the power pack. The use of the valves suggested by the correspondent to replace those already in his set, would have little, if any, beneficial effect.

### A Construction Tip

IF you want to give your set a professional look avoid obtrusive screw holes and an irregular disposition of components. If there are several control knobs, make sure that they are all of the same pattern as well as symmetrically disposed. This may not seem easy at first sight, for different makers of components use different knobs; but most components have detachable knobs and standardised shafts, and for a very small additional expenditure you can buy matched knobs which you can substitute for those provided by the makers, thus giving a greatly enhanced appearance.

YOU CAN'T BUY A BETTER VALVE THAN

**Mullard**  
THE MASTER VALVE