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Radio World

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JANUARY 15, 1948

*** ADVANCE ANNOUNCEMENT**

New Rola Speaker - Model 6.K.

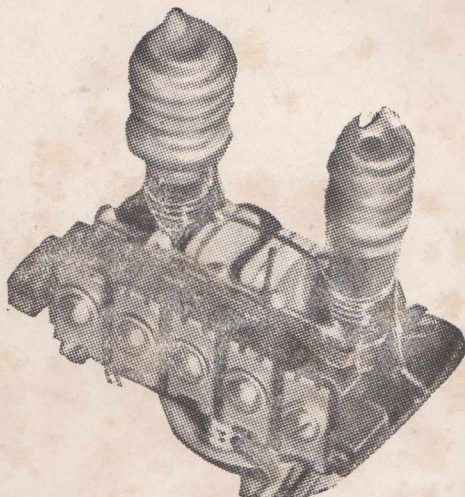
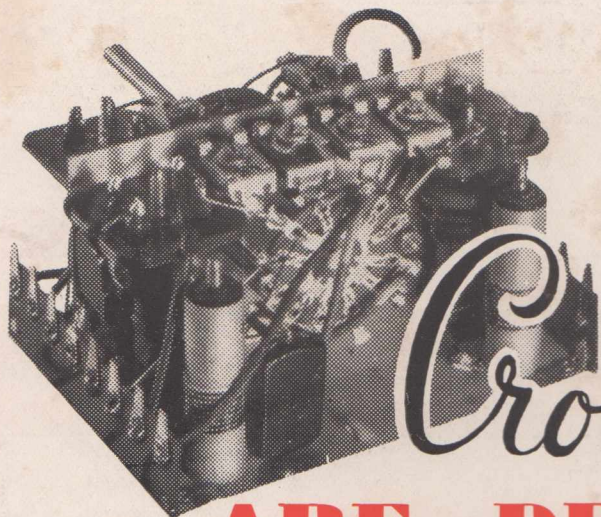
The most highly efficient 6" Speaker in Australia. Specially designed to provide extra speaker efficiency for portable battery and vibrator operated receivers.

Will shortly be available to
Distributors. Retail Price — 4/3.

Rola

LOUD SPEAKERS WITH
ANISOTROPIC ALNICO

Rola Co. (Aust.) Pty. Ltd., The Boulevard, Richmond, Vic. 116 Clarence St., Sydney, N.S.W.



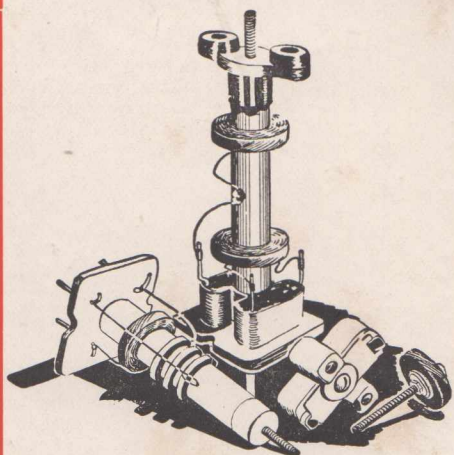
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No receiver is better than the parts built into it. Sound parts are just as important as sound assembly and circuit design.

Plan wisely when you are building your Radio Set—make sure that each part of your equipment is capable of fulfilling its part 100% in the finished job.

Be practical and insist on "CROWN" parts: D.P. 3A Tuning Units, D.C. 2A Tuning Units, B/C Coils, S.W. Coils, I/F Transformers, Tuning Dials, Padders, Trimmers, etc.

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EDITORIAL

It is just twelve months since I published a rather unconventional editorial in which I readily admitted that the issue was a weak one. Such a frank admission brought forth quite a lot of criticism and comment from those who were rather surprised at it. Since then I have published twelve issues, all of them better, I hope, but some a lot better than others.

Not so clearly in evidence in the issues, however, is a vast improvement in the background organisation. Back numbers are forwarded within a day or two, most letters are answered within 24 hours, complaints of non-delivery of subscribers copies are down to one-twentieth part of a per cent., and even queries get answered from time to time.

So the ground has been cleared for the start of the big job, getting real improvement into the editorial side. The shortage of paper is still critical, and it is mighty hard to find new and startling components, but I feel sure that quite a bit can be done and it is down on the programme. Adequate advertising support has been assured to carry considerable expansion.

Several component manufacturers have promised to have new lines ready for release in the near future, and quite a few interesting lines are coming in from England, especially in communications receivers, high fidelity pick-ups and speakers, and laboratory test equipment. The prospects for 1948 are excellent.

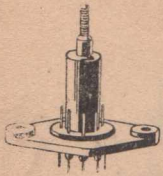
—A. G. HULL.

COIL

**FORMERS
BASES
COMPONENTS
PADDERS**

★ **For Mantle,**
★ **Console &**
★ **Personal Radios.**

MIDGET COIL FORMER



Ideal for use for broadcast or short wave coils—similar to those used on our new midget magnasonic coils—has 5/32 nuts moulded into top to take standard iron cores.

Size 1" x 1" can I 32.

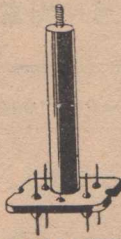
4 AND 6 PIN COIL FORMER

This former is suitable for the construction of all broadcast coils and may be grooved for use with dual wave coils.

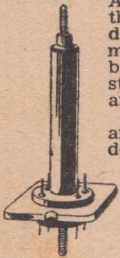
Available with or without iron cores to suit 1 1/2 square can x 2 3-8" deep.

4 Pin Type No. I 30

6 Pin Type No. I 31



INTERMEDIATE TRANSFORMER FORMERS



An outstanding feature of this component is that condensers of 70 m.m.f. or 100 m.m.f. are moulded into the base, simplifying the construction of the finished article.

The four protruding leads are spot welded to the condenser and cannot open circuit to the condenser.

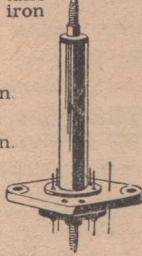
This former also has two 5/32 Whitworth nuts moulded in the base and top to take standard iron cores.

Available in three types.

1 3-8" x 2 1/4" for square can.
Type No. I.F. 27

1 3-8" x 2 1/4" for round can.
Type No. I.F. 28

1" x 2" for round can.
Type No. I.F. 29



STAND OFF INSULATORS

Mounting screw type—fitted with 5/32" Brass nut & bolt with solder lug attached. Mounting hole centre 1" x 1/8", moulded from Black Polystyrene.

1" Type No. A.F. 18

1 1/2" Type No. A.F. 19

2" Type No. A.F. 20



STAND OFF INSULATORS

Pin Jack Type — fitted with Pin Jack to fit standard Banana plugs. Mounting hole centres 1" x 1/8", moulded from Black Polystyrene.

1" Type No. A.F. 15

1 1/2" Type No. A.F. 16

2" Type No. A.F. 17



SOLDER LUGS

Pressed from tin steel, available in sizes as under:

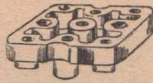
- SL 3 Single ended
- SL 4 Pear shaped
- SL 5 Double ended



I.F. BASES

As used in Air Trimmer Type I.F.'s, moulded with two 6 B.A. inserts capable of holding sufficient plates for 350 m.m.f. per side.

Type No. M. O. 15



I.F. BASE COMPLETE

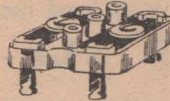
Moulded from Polystyrene with nickel silver top plates.

2 plates per side.

Type No. A2.

3 plates per side

Type No. A3.



6 PIN COIL PLUGS

Fitted with 6 standard nickel plated base pins, ideal for amateur use.

1 1/4" Type No. I 27

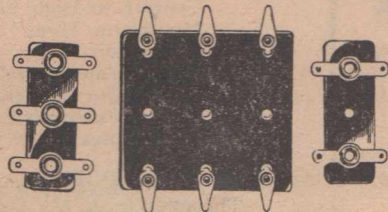
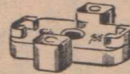
1 1/2" Type No. I 28



PADDER BASE

Clear Polystyrene with 6 B.A. insert for fine adjustment of trimmer plates.

Type No. M.O. 14.



RESISTOR STRIPS

Black Panel mounting strips 2in. wide by 12 1/2in. long with 25 lugs per side.

MS 7, retail, 3/6.

MS 8, retail, 1 1/2d. per in. (1/4in. wide any length).

MS 1, retail, 3d. ea. (Bakelite Anchor Strip).



FIVE IN ONE TRIMMER BASE

Moulded from Polystyrene, this base has the necessary inserts for four coil trimmers and one padder, complete in one unit.

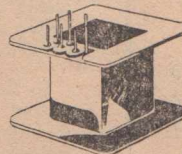
Type No. M.O. 12

SQUARE COIL BOBBINS

These are made in two sizes with 7-8 x 7-8 and 3/4 x 3/4 square hole, and are for use in Speaker Transformers, Audio Transformers and Filter Chokes, etc.

7-8 x 7-8, Type No. M.O. 10.

3/4 x 3/4, Type No. M.O. 11.



TRANSPPOSITION BLOCKS

Available in sets of eight. size 1 3-8" x 1 3-8".

Type No. A.F. 12



RELAY BOBBINS

Circular bobbin lin. dia. x 3/4in. long by 3-8in. centre moulded from Black Polystyrene. Type No. M.O. 13.



LOOP AERIAL COIL FORMER

This former is moulded in Clear Polystyrene, and is used for support of Loop Aerial Coils and has the necessary Aerial Trimmer fitted to one of the spokes and is engraved with terminal markings. Size 3 1/4" dia. Type No. M.O. 9.



DIAL DRIVE DRUM

This drum is moulded from Black Polystyrene with heavy brass bush drilled 3-8", fitted with 2-5/32" grub screws (& spring) drilled for use. 3" dia. Type No. M.O. 8.

IRON CAN

This core shield is moulded from Magnetite Iron dust and sprayed with copper as electro-static shield and is made in following sizes.

2" x 1" dia.

Type No. M.O. 6.

1" x 1" dia.

Type No. M.O. 7.



These cans can be fitted to short wave coils without loss.

IRON CORES

Magnetite (F.E. 304) 5/32" Whit brass screws made in five sizes.

3/8" Type No. M.O. 1

7/16" Type No. M.O. 2

1" Type No. M.O. 3

9/16" Type No. M.O. 4

3/4" Type No. M.O. 5

The above have particularly high Q at high frequency



6 PIN PLUG IN COIL FORMERS

Manufactured from Polystyrene powder (enhancing the electrical qualities.) Engraved for frequency and type and can be grooved for space winding. Nickel plated valve pins. Made in two sizes.

1 1/4" Type No. I 24

1 1/2" Type No. I 25

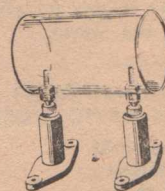


CLEAR POLYSTYRENE TUBING

Made in following sizes.

2 1/2" long, 1 1/4" dia
Type No. M.O. 16.

2 1/2" long, 1 1/2" dia.
Type No. M.O. 17



SPLENDID CONTEST

Details of Queensland Amplifier Championship

Recently a fine amplifier championship was staged in Brisbane by the Radio Industries Social Club. The contest was a great success, and the results provide a wealth of data for enthusiasts to consider. Here are some details as given in a letter from Mr. Yorston of the R.I.S. Club.

DEAR Sir,—I have pleasure in submitting herewith diagrams and notes on the winner and runner-up in the championship section of the Amplifier Contest.

As you will observe, the champion amplifier has been designed without much consideration to cost or bulk, and represents even a problem to those desirous of publishing the circuit diagram. I seriously doubt if any of your readers would care to construct this job as the design stands, but feel sure that a really good job could be evolved in much simpler form by eliminating some of the superflu-

ous refinements. A glance at the performance figures will satisfy anyone regarding its performance.

Regarding the second amplifier, frequency response and distortion figures were quite good, and as far as room level is concerned, it sounded just as well as the big job.

Contest Rules

Rules for the contest were framed with a view to making it as fair as possible and also to encourage as many entries as possible.

In this direction a "Microdyne" Pickup, with record equaliser (flat to 7 kC/s), and pre-amplifier capable of supplying considerably more than zero level was made available to any entrants wishing to use it. The turntable was B.R.S. 12in. model, which ensured good speed regulation and silence of operation.

A 15in. Utah speaker in a folded horn cabinet was also provided, and I might mention that all but

two entrants availed themselves of its use.

At the audience tests, three adjudicators were responsible for half the points allotted, and the audience for the other half, on the preferential ballot system.

The Pickup

It will be noted that the amplifier which gained the most points in this section did badly in the electrical measurements. This competitor used his own B10 Astatic pickup with an equalising network which gave a rising treble characteristic and had adjusted the amplifier to compensate for this. The rising bass response no doubt pleased the audience at the lower level of operation.

Test Record

The test record was part one of "La Gazza Ladra" (Rossini), played by the London Philharmonic with Sir Thomas Beecham conducting. The winner used as his own choice, a part of William Walton's "Facade Suite," which certainly is an excellent show piece.

RESULTS

CHAMPION: J. P. Callaghan, M.Sc., using push-pull-parallel triodes with cathode-follower driver stages.

2nd Place: J. P. Callaghan, M.Sc., using push-pull beam power valves with inverse feedback.

RESTRICTED CLASS

1st: P. G. Sutton.

2nd: R. W. Carter.

3rd: J. P. Callaghan.

No Swing

It was notable that none of the contestants used swing, or popular records as their own choice. Details of the technical judging are shown in the attached sheets, the winning amplifiers being noted in each case.

Costs Considered

In the restricted section, the retail value of the parts and valves, excluding speaker and pickup, was

(Continued on next page)

CONTEST

(Continued)

calculated as one debit unit per £ of cost. The power output of the amplifier at 4 per cent. was taken as achieved units plus 5 units for entry. For example, the winner in this section, Mr. Sutton, achieved 26.5 watts plus 5 entry units - equals 31 achieved units. His debit units were approx. 22, which gave him approx. 31/22 of the points allotted for this section, coming to approx. 117 (80 points being par).

In the open section, he gained 54.20 per cent. in the technical and 54.5 per cent. in the audience test, making a mean total of 54.35. The figures attained in the restricted section, however, brought this mean to 75.40 per cent.

This is all very involved, and I think future contests (if any) will

be conducted in sections for the various sizes of amplifiers.

In a few days I shall forward further diagrams with a few notes on others in the contest. These may be of interest; in fact, I think that competitor (1) C was most interesting.

Direct Coupling

There was one small job entered, a direct coupled single ended amplifier which performed quite well, at low power output, but was not good enough to beat the big jobs in the audience tests.

I trust this information is of use to you, and in conclusion wish you and your journal a prosperous 1948.

Judging

The technical judging was done by Mr. V. F. Kenna, Divisional

HOW ABOUT IT?

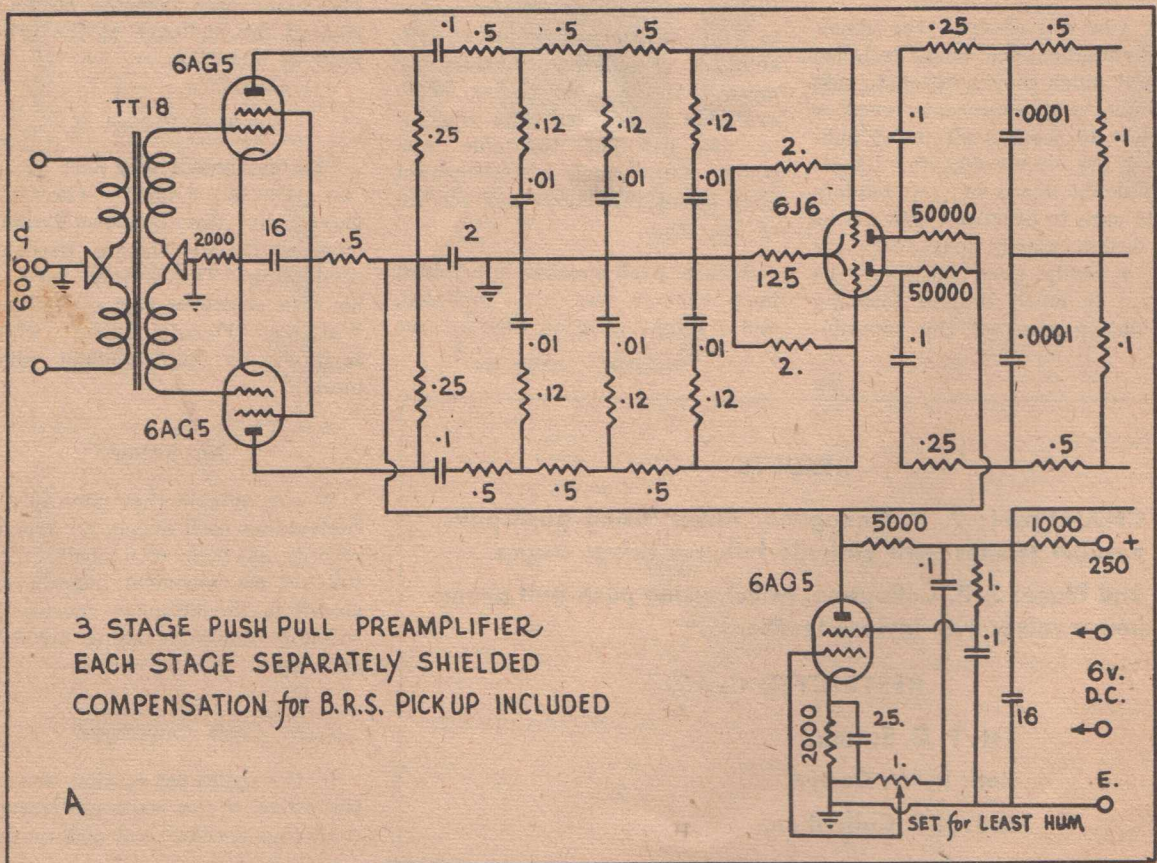
It is high time a few more amplifier contests were organised, especially in Sydney.

If any wide-awake club secretary cares to get started we will be happy to co-operate with publicity and advice about rules and conditions.

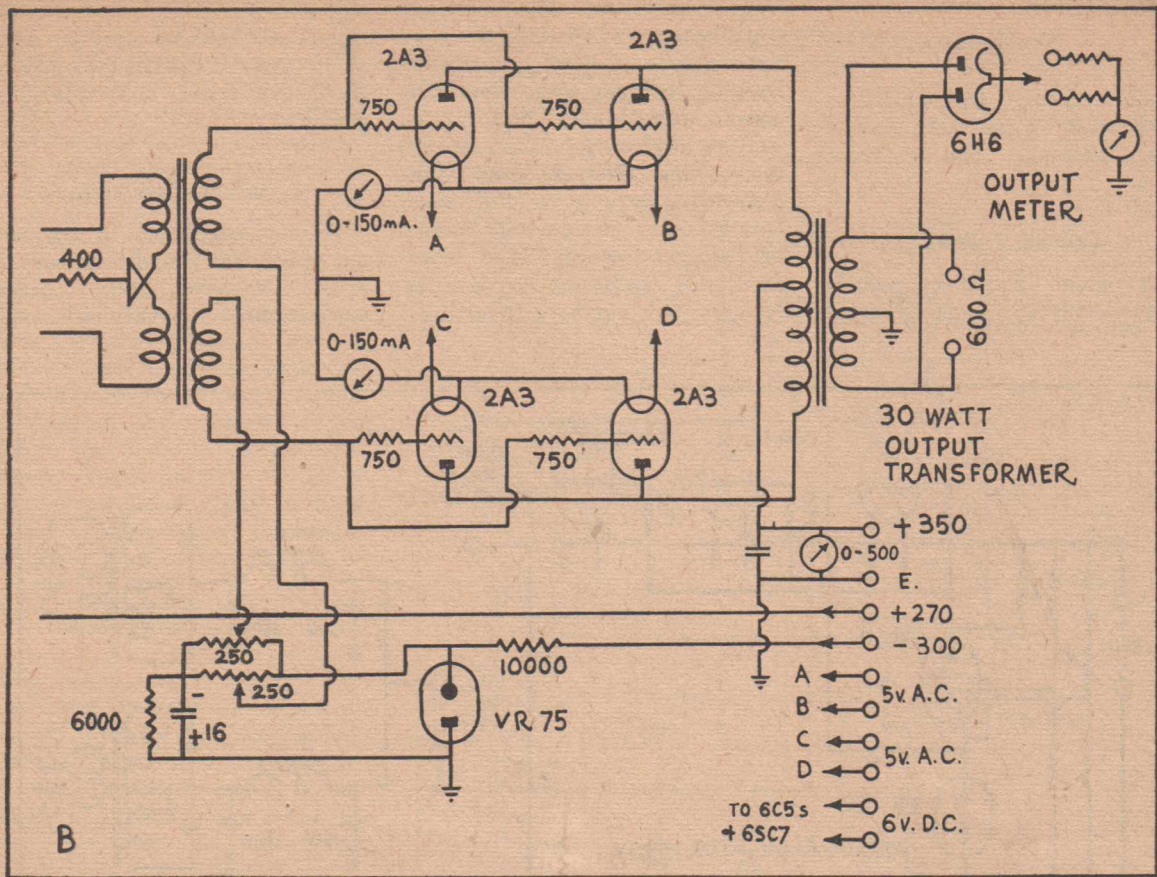
ment, and the audience tests were presided over by Win Redwood of Engineer, P.M.G. Radio Department Station 4KQ, to whom the committee is greatly indebted for their assistance.

Yours faithfully,
R. YORSTON,

for Radio Industries
Social Club.



Circuit of pre-amplifier used by champion.



The main output stage of the Champion Amplifier.

The Champion Amplifier

The amplifier was built in standard rack form, occupying five separate chassis, as follows, reading from bottom upwards:

- (1) Power Supply, HT.
- (2) Power Supply, Filaments.
- (3) Voltage Regulator, 330V DC Supply.
- (4) Space for Radio Tuner.
- (5) Preamplifier.
- (6) Main Amplifier.

The pickup used is a B.R.S. cartridge in an Astatic B16 arm. Two pickups will eventually be installed. These are fed through 12.5 ohm constant impedance attenuators into the two primaries of a

transformer of 600 ohm output impedance, thence to the preamplifier.

The preamplifier is by no means ideal and will probably be altered later, so that the bass and treble compensation will be made at 600

**Designed and
Described by
J. P. CALLAGHAN, M.Sc.**

ohms. However, the performance at present is satisfactory, the response of pickup plus preamplifier

being flat within ± 1 db from 100 to 4000 cycles, rising to +4 db at 50 and 6000 cycles. These peaks are probably due to arm and needle resonances respectively. A Decca record was used for the measurements.

Surface Noise

The surface noise is high on poor records, and a treble filter cutting off at selectable values of 6000, 8000 and 10,000 cycles is to be installed.

The output stage of the preamplifier was dictated by the availability of a single ended

(Continued on page 8)

(Continued)

transformer only. This will be replaced later by the more conventional push-pull output transformer.

Cathode Follower

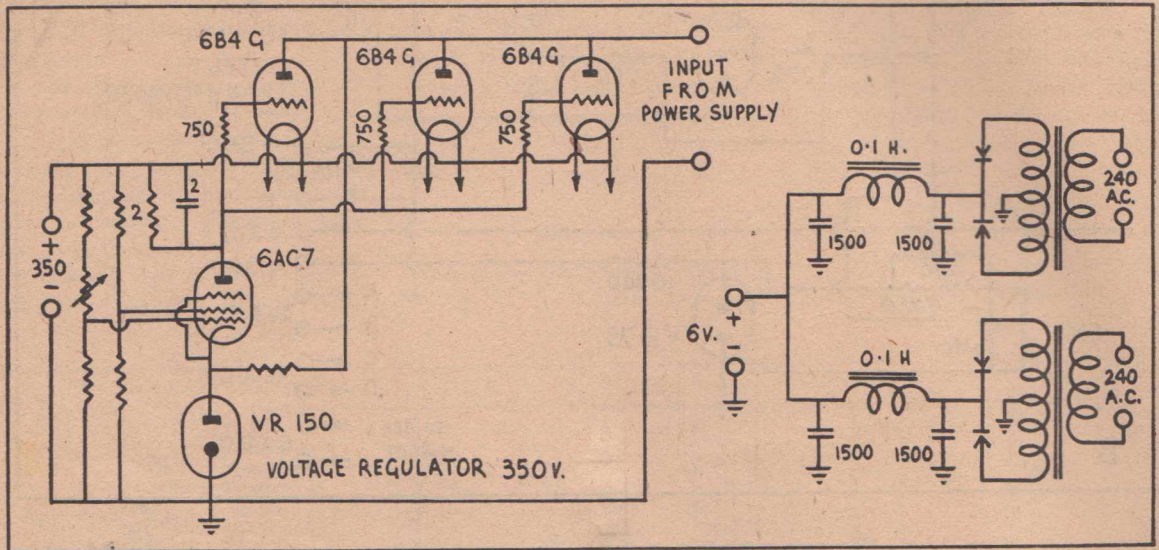
The main amplifier requires comment only so far as the driver

stage is concerned. The interstage transformer was specially designed for cathode follower operation. Despite frequent statements that cheap transformers perform as well as good ones in such service, it appears that uniform high-frequency response is maintained only by proper design, with correct primary impedance. Even standard good quality interstage transformers may not be satisfactory.

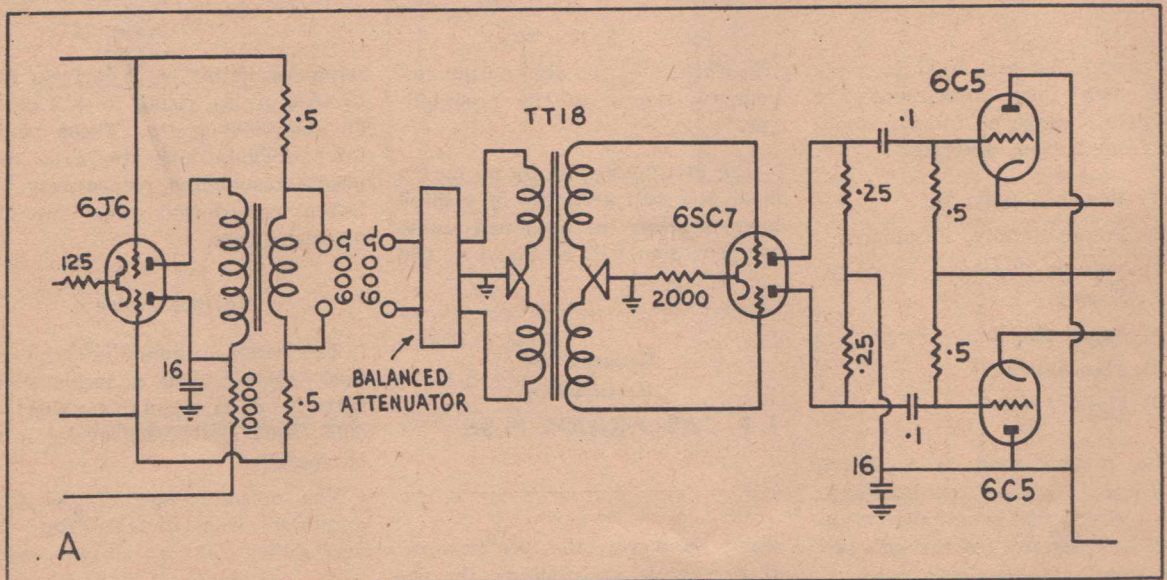
The output transformer was designed and built to carry 30 watts at 30 cycles. It is consequently by no means small, and weighs 15 pounds.

Voltage Regulation

Voltage regulation in the output stage was found necessary to avoid excessive plate current fluctuations with varying supply



Circuit of the voltage regulator.



Circuit of the driver stage and attenuator.

voltage. It also improved the distortion level considerably. The voltage regulator is quite conventional; no values are shown for a number of resistors, as these were found by experiment, and depend on the supply voltage available and the range of control desired.

D.C. For Filaments

The D.C. filament supply comprises essentially two S.T.C. 6v. 4 amp. battery chargers, with filtered output. The primaries of the transformers are connected so as to give the highest possible D.C. output. Approximately 6v. at 8 amps. is available, rising to 6.3v. at the actual current consumed. The ripple is about 0.4v.

Main Power Supply

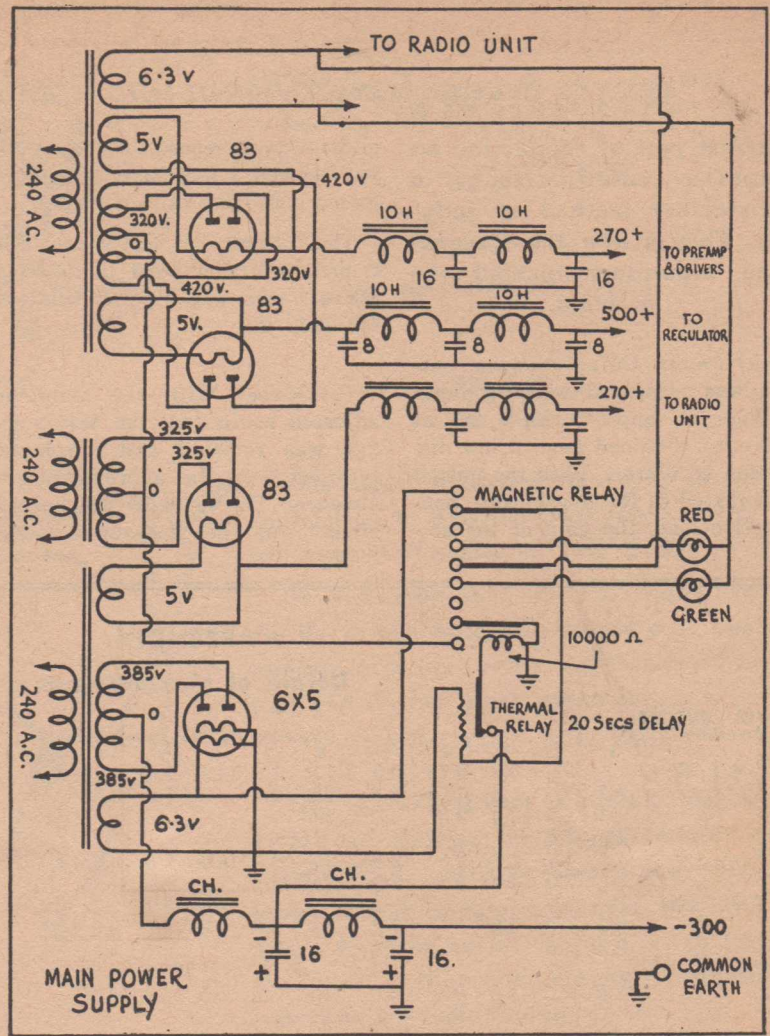
The main power supply was built from available material and was not specially designed. It has numerous faults, the main one being that the main power transformer has a very high external field, from which the high noise level is undoubtedly derived. It is planned to replace this transformer as soon as possible.

The speaker used is an Altec Lansing Duplex, housed in a large folded horn cabinet. The speaker is fed from the 600 ohm line through a 30 watt 600 ohm to 20 ohm speaker transformer. A switch provides for alternative output impedances of 30, 12, 8 and 5 ohms.

Slight Hum

Despite the figures obtained in the electrical test, the hum level of the main amplifier is practically inaudible six feet from the preamplifier is much lower than the record surface noise. However, improvement is necessary here, and it is anticipated that rebuilding of the power supply will make a big difference.

Much of the success of this amplifier is to be attributed to the



Circuit of main power supply.

excellence of the audio transformers used. Except for the output transformer of the preamplifier, which is a Trimax job, these were designed by Mr. J. B. A. Clancy, B.Sc. The driver output and speaker transformers were made by Transmission Equipment Pty. Ltd., the remainder by True-tone Equipment Co., both of Melbourne. Mr. Clancy also gave valuable advice during the planning and construction of the amplifier.

Expensive Job

Equipment of this nature is not

cheap, nor are good audio transformers readily available. In consequence, it is not anticipated that anyone will want to duplicate the equipment in its present form. However, considerable simplification could undoubtedly be effected without altering the performance materially, provided the audio transformers used are of the highest possible quality. The amplifier which gained second place to this one is very much simpler and little inferior in performance. Its cost was about a tenth of that of the larger output.

—J. P. CALLAGHAN, M.Sc.

METHOD OF ALLOTING POINTS

Several Factors Taken Into Consideration

Hardest part of conducting an amplifier contest is to get a satisfactory method of judging. This is how the Queensland organisers tackled the problem.

(a) **Power Output:** Power output was measured with an input voltage of approximately 2.0 at 400 c.p.s. obtained from a low distortion oscillator. With the output terminated in the appropriate non-reactive load, the gain of the am-

plifier was increased until the output showed a measured total harmonic distortion of 4 per cent.

The output in watts, so obtained, was expressed in decibels above 1 watt and 2 points allotted for each db.

(b) **Noise:** With the amplifier adjusted as in (a), the test voltage was removed and the input terminated in the appropriate resistance. The noise in the output circuit was then measured, using

the G.R. noise and distortion measuring set. The figure so obtained expressed the noise level in decibels below the output level for 4 per cent. distortion.

Deductions

The points allotted were then calculated thus:

$$\text{Points} = 25 - \frac{(60 - \text{db noise})}{2}$$

i.e., one point was deducted from a total of 25 points, for each 2 db

APPENDIX

Details of Measurements

POWER: OUTPUT: Amplifier	Distortion % for Watts Output														Remarks			
	1	2	3	4	5	6	7	8	9	10	12	14	16	18		20	26	
"A" 9/9/47		0.5	0.6	0.75	0.9	1.0	1.3	1.5	1.8	2.1	2.8	4.0						
"B" "	1.2	1.3	1.4	1.5	1.8	2.0	2.4		3.2	3.6								10.5 w. for 4%
"C" "	2.3	2.5	3.0	3.8		5.5												4.3 w. for 4%
"D" "	4.0	7.0																
"E" "	1.7	1.7	1.8	2.0	2.25	2.5	2.7	3.0	3.6	4.0	4.7							
"F" "		3.9	4.0	4.5	5.0	5.8												
"A" 19/9/47								2.0	2.1	2.1	2.4	2.6	2.7	3.0	3.5	4.0		
"B" "	2.6	2.5	2.3	2.5	2.5	2.5	2.6	2.6		3.0	4.5							11.0 w. for 4%
"C" "	3.0	4.0																
"D" "																		0.4 w. for 4%
"E" "	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5								
"F" "																		30.0 w. for 4%

NOISE AND FREQUENCY RESPONSE

DETAILS OF THE DISTORTION MEASUREMENT

AMPLIFIER	RELATIVE RESPONSE FOR EACH FREQ.														NOISE db.			
	35	50	100	200	500	1kc	2kc	3kc	4kc	5kc	6kc	7kc	8kc	9kc		10kc		
9/9/47																		
"A"	+6.2	+6.2	+6.2	+5.8	+3.6	0	-5.2	-9.5	-12.7	-15.7	-19.0	-22.0	-26.5	-30.0	-29.0	-59.0		
"B"	+7.3	+7.6	+6.2	+3.3	+0.2	0	+2.2	+3.9	+4.8	+5.2	+5.6	+5.5	+5.4	+5.2	+5.1	-53.5		
"C"	+10.0	+8.5	+4.3	+1.5	0	0	-1.0		-2.8	-3.9	-4.8	-5.8	-6.8	-8.7	-11.0	-48.5		
"D"	-1.0	-0.5	0	0	0	0	0	-1.0	-1.5	-1.75	-2.0	-3.0	-3.5	-4.0	-5.0	-41.0		
"E"	+11.0	+10.5	+6.7	+2.5	-0.6	0	+1.5	+3.0	+3.6	+3.8	+3.6	+3.3	+3.3	+2.5	+2.0	-51.5		
"F"	-0.8	-4.2	0	-0.3	0	0	-0.2	-0.8	-1.3	-2.2	-4.0	-5.3	-7.3	-11.0	-13.0	-30.0		
19/9/47																		
"A"	+2.2	+3.1	+3.8	+3.9	+2.1	0	-2.1	-3.0	-4.0	-4.8	-5.5	-6.0	-6.4	-7.5	-8.8	-38.0		
"B"	-0.1	-0.2	0	0	0	0	0	0	0	+0.3	+0.4	+0.5	+0.5	+0.6	+0.6	-35.0		
"C"	+1.0	+0.8	+0.5	+0.3	0	0	-0.3	-0.3	-0.4	-0.3	-0.4	-0.2	-0.3	-0.4	-1.2	-35.0		
"D"	-2.9	-2.6	-2.1	-1.8	-1.0	0	+0.6	+0.9	+1.0	+1.0	+1.1	+1.1	+1.1	+0.9	+0.3	-35.0		
"E"	-1.2	-0.3	-0.1	0	-0.1	0	-0.2	-0.6	-0.8	-1.2	-1.2	-1.2	-1.8	-2.2	-3.1	-36.0		
"F"	-0.5	-0.2	0	0	0	0	0	0	0	0	-0.1	-0.1	-0.1	-0.2	-0.2	-33.0		

In the Open Section "F" 19/9/47 was placed first, "B" 19/9/47 second and "B" 9/9/47 third.
In the Restricted Section "A" 19/9/47 was placed first, "E" 9/9/47 second, and "B" 19/9/47 third.

This chart shows the responses of competing amplifiers.



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RADIO INDUSTRIES SOCIAL CLUB

Amplifier Contest

Amplifier	Electrical Performance	Audience Test	Economy of Design	Total Restricted	Total Champion	PLACE	
						Open	Restricted
(1) A	47.50	59.79	35.55	47.61	53.5	7	8
(1) B	60.75	70.45	56.0	62.40	65.20	3	4
(1) C	35.45	78.65	27.52	30.84	47.92	11	12
(1) D	34.50	60.40	36.72	44.17	47.90	12	10
(1) E	52.55	73.30	86.96	70.93	62.92	4	2
(1) F	27.70	78.05	27.36	44.27	52.87	8	9
(2) A	54.20	54.5	117.52	75.40	54.35	6	1
(2) B	57.46	78.15	71.84	69.15	67.80	2	3
(2) C	41.10	64.4	56.0	53.83	51.83	9	6
(2) D	33.50	69.65	24.80	42.65	51.53	10	11
(2) E	49.14	73.40	35.60	52.71	61.27	5	7
(2) F	66.20	72.90	37.52	58.87	69.55	1	5

1st Champion: J. P. Callaghan, 30 watt amplifier F. played on 19/9/47.

1st Restricted: P. G. Sutton, 30 watt amplifier A. played on 19/9/47.

2nd: J. P. Callaghan, 11 watt amplifier B. played on 19/9/1947.

2nd: R. W. Carter, 11 watt amplifier E. played on 9/9/47.

3rd: J. P. Callaghan, 11 watt amplifier B. played on 19/9/47.

Special commendation to (1) B, who just missed a place in either Section.

Final score board of the Queensland Championship.

RESULTS

Amplifier	Power Output	POINTS ALLOTTED		Total
		Noise	Freq. Response	
"A" 9/9/47	23.0	24.5	0	47.50
"B" "	20.4	21.75	18.6	60.75
"C" "	12.6	19.25	3.6	35.45
"D" "	0	15.5	10.0	34.50
"E" "	20.2	20.75	11.6	52.55
"F" "	9.5	10.0	8.2	27.70
"A" 19/9/47	28.4	14.0	11.8	54.20
"B" "	20.8	12.5	24.16	57.46
"C" "	6.0	12.5	22.6	41.10
"D" "	0	12.5	21.0	33.50
"E" "	14.0	13.0	22.14	49.14
"F" "	29.6	12.0	24.46	66.20

formulate a fair basis for allocation of points for the reason that in many instances, gain control settings which gave high values of gain, also showed high noise figures. In the circumstances, knowing that all amplifiers had demonstrated ample gain when used with a standard type of pickup, no attempt was made to assess it in this direction. It is recommended that, in future contests, the method of assessing gain be closely defined in the rules.

Amp. "F" (19/9/47) was not marked as such, but has been allotted this letter as all other Amps. were designated.

Thus, order of merit:

1st Amp. "F" (19/9/47)	Points 66.20
2nd "B" (9/9/47)	" 60.75
3rd "B" (19/9/47)	" 57.46

Complete list of competing amplifiers, showing points allotted.

of noise below a value of 60 db.

(c) **Frequency Response:** Frequency response was measured with a constant input voltage at a level well below that obtained in (a). The output voltage for each input frequency was measured on a G.R. output meter, and expressed in decibels with reference to the output at 1000 cycles.

Points were allotted as follows: Taking the figures obtained above,

the algebraic mean of the values for 35 c.p.s., 1000 c.p.s. (0 in all cases) and 10,000 c.p.s. was calculated. The maximum deviation from this value over the range was then calculated by simple arithmetic and 2 points were subtracted from a total of 25 for each db of deviation.

(d) **Gain:** Although a measurement of gain was specified in the contest rules, it was difficult to



Though its package was pretty well banged up, a GE Type GL-211 which survived a 10,000-foot fall from an exploded Flying Fortress is now enjoying more peaceful days in the final stage of the transmitter of the V.E.R.O.N. (Netherlands amateur group) station.—"Q.S.T."

FCC has granted Ernest Melvey, Seattle, special permission to change his call from W7HVS to that of his late son, W7HUX. In waiving \$12.81, which requires that calls be issued systematically to insure impartiality, the Commission made it possible for Mr. Melvey, to perpetuate fittingly the memory of Robert Melvey, a World War II hero, who died in action aboard the cruiser "Nashville."—"Q.S.T."



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Parts Comprise —

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 - 2—tuning controls.
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 - 1—carrying case (including back and front panels).
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AMATEUR PERSONALITIES

A Few Words About Individual Hams as the Writer Sees and Knows Them

(Continued from last month's issue)

VK2AT . . . Lew Altman of Lakemba, N.S.W. . . . a bit of a wizard with QRP rigs; adapts little jobs like the A Mk 3 for modulation without too much diving inside the innards. Is heard at times on 40 phone and is a shrewd purchaser where Disposals bits and pieces are concerned . . . is a familiar figure around the counters of well-known Sydney dealers.

VK2BA, Bruce Chapman of Balgowlah, N.S.W., is strictly a CW man and steadfastly refuses to be talked into a microphone. Has been 2BA ever since there has been CW and at one stage was active for a year or two as VR4BA in the Solomons . . . holds an executive position in the shipping world and was Lieut. R.A.N. during the recent war.

VK2BM . . . Fred (Pop) Treharne, father of Ross (VK2IQ) and Elgar (G3CSJ) and active mostly in early morns on 14 mC/s phone looking for and contacting G3CSJ. Located at Burwood,

N.S.W., and is Director of Musical Education, N.S.W. Government. Recently passed his AOCPE exam and secured his "ticket" in fine style, no small achievement at the age of 60 years plus . . .

VK2IN . . . Jack Kebblewhite, Wahroonga, N.S.W. . . . also a newcomer to the ranks at an age past the half-century . . . is active on 14 mC/s CW . . . and will not use phone until he has had, in his personal opinion, sufficient experience with the key. Is getting in among the DX with a new well-engineered zepp antenna. . . .

VK2BV, Waverley Radio Club . . . heard at intervals on 14 and 7 mC/s phone with club transmitter operated by club members. This is reputed to be the oldest Australian Radio Club and still functions in the original location, McPherson St., Waverley, N.S.W.

VK2BZ "Dave" Davies of Newcastle is making a fair-sized hole

in the 50 mC/s band these days and nights with a nice signal from an 813 final. Reaches Sydney on that band most times and has been figuring in the interstate DX.

VK2CE Alf Barnes of Bondi is active mainly on 28 mC/s but heard at intervals on 14 and 7 mC/s. Is plagued by restricted space for antennas but gets out nicely. Is using a natty double conversion RX of his own concoction that covers all bands, including "Six."

VK2CL Les Taylor, Ashfield, is active mainly on 14 mC/s CW but occasionally uses phone. Is an accomplished designer of attractive QSL cards. Served during the war in Signals and Army Inspection as Staff Sgt. Known to lots of AWAS as "Uncle Les." . . .

VK2CP, Orme Cooper, Kingsford. Functions mainly on 14 mC/s phone but puts in an occasional appearance on 50 mC/s . . . does very nicely in the DX tally despite restricted antenna space . . . misses his pre-war 8JK beams as at the old location. . . .

VK2DF, Jack Cocks, Arncliffe . . . a seriously-minded experimenter with a flair for S meters, noise limiters and VHF receivers. Is engineer with the Master Instrument Co. of Sydney and heard mainly on 50 mC/s phone. Sometimes appears on 7 mC/s . . . but prefers the quietude of "Six." . . .

VK2DQ . . . Dudley Nourse of Broken Hill . . . a first-rate key-puncher with not much affinity for the microphone. Heard at intervals on 14 mC/s and is slowly recovering from a bad crack-up in Libya where he was a RAAF Navigator/W'Op. . . .

VK2EH, Ern Hodgkins . . . in between teaching the youth of Wagga finds time to have a yarn with the lads on 7 mC/s. Was noted in pre-war days for meticu-

VALE VK2ALD

It is with the deepest sorrow and regret that we refer to the sudden passing, on the night of December 16, 1947, of the Rev. R. B. Dransfield, of Canberra, A.C.T., known to his many amateur radio friends simply as "Reg . . . VK2ALD." His familiar cheery voice will no longer be heard on the 7 mC/s band, and his passing leaves a gap in the ranks of Australian radio amateurs. Reg Dransfield was of the type that the hobby in this part of the globe can ill afford to lose. He was the friend of all and vastly liked by all who knew him, and they are legion. To this writer he had been known for 20 years . . . from the time when earlier-day technique attracted him, through the years when the inevitable occurred and he became an active transmitter, to the post-war years when he again became

actively engaged in communing with his fellow man through the medium of amateur radio. The war years no doubt took their toll . . . Reg went through the Libyan campaigns and saw continual front-line service in his calling . . . and as a man amongst men. With the war clouds rolling back in 1945, he was one of the first to take part in discussions and negotiations for the re-opening of amateur radio in this country, and there are those of us who know that he played an influential part in that process. His memory will live long among his old and new friends . . . those recently-licensed amateur transmitters whom Reg helped towards the goal of the A.O.C.P., and our sincere sympathy is expressed to his family.

—Don B. Knock.

(Continued on next page)

PERSONALITIES

(Continued)

lous workmanship in his exhibits at amateur radio exhibitions. . . .

VK2EM, Arthur Sutton, Killara . . . is a dental surgeon who finds relaxation on the 50 mC/s band where he is often to be found at week-ends. Another hobby is that of audio amplifiers and good reproduction of recordings. Was active pre-war on the old 56 mC/s band and used almost every kind of beam array extant on that band. Reaches out in fine style with a ground-plane aerial and a single 809 in the final.

VK2FA . . . Don French, Strathfield . . . the VK2 with the American accent . . . the reason being that he is an ex-W8 from New York. Is an executive of the Goodyear Co. Gets a lot of pleasure and makes many friends by the use of amateur radio. His VK2 callsign was once that of the Aero Club of N.S.W. in the days when radio in the vicinity of airports and aircraft was almost frowned upon. . . .

VK2FO . . . Tom Griffiths, Strathfield . . . has a powerful signal over Sydney on the Six-metre band from a ground-plane aerial and is often to be heard in learned confab with VK2MQ on various technicalities.

VK2MQ, "Bill" McGowan, Concord West . . . is another station using "Six" to the exclusion of all other bands. Has a hefty wallop from either a G-P or a new 5-element horizontal array with PP 834's in the final. Has been in the 6-metre DX picture, which isn't surprising.

VK2FJ, Jack Ferguson, Bronte . . . one of the old hands at the game who is as much of a DX man as ever. Is using one of the W9-NLP version "inductive dipoles" with a director aimed on U.S.A. and has no trouble in "raising" W's on a comparatively dead 14 mC/s band.

VK2GQ, Ted Barlow, Mosman . . . makes the most on 14 mC/s phone of comparatively low power phone and gets out in fine style. Is fired with the urge for "antennitis," and although he hooks plenty of DX, is never quite satisfied that he has the best possible antenna (who is?). An old soldier who flew with the AFC in the Kaiser's war, and had a bit to do with Signals in the last show. . . .

VK2HC, Ray Carter, Quirindi . . . is to be found enjoying his pre-war liking for 80-metre phone and so far hasn't ventured to the other bands. Keeps a sked every Sunday evening with Chas. MacLurcan, and has a distinct aversion

to being asked for his "handle." Was RAAF officer i/c an important Sigs set-up at Madang not so very long ago.

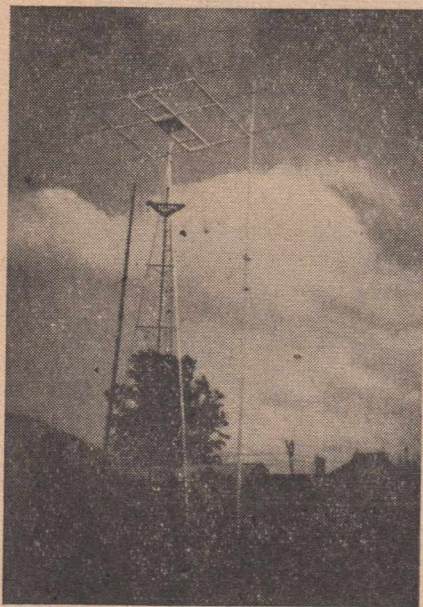
VK2HF . . . Alan Furze, Beecroft . . . has had flying in the blood for many years and combines that with the hobby of radio very effectively. Was F/instructor and saw combat service with RAAF during the war, and now handles Constellations for Qantas. Is just as likely as not to put in a little spare time as an "airborne portable" station and is heard one day in San Francisco . . . three or four days later in Sydney . . . and a week later in London.

VK2HL . . . Horrie Laphorne, Chatswood . . . a staunch supporter of the 6-metre band, where he is to be found exclusively on 51 mC/s. Was very active on the pre-war 5-metre band.

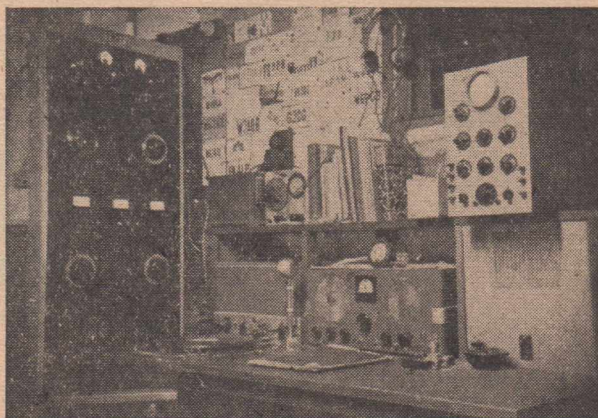
VK2HO . . . Roy Hart, Roseville . . . is an old hand at the VHF game and is now active on Six, but is in difficulties owing to a badly-screened location. Uses both vertical and horizontal radiators. Did quite a bit of Coastal Patrol communication on Five in the pre-war days.

VK2HP . . . Harold Peterson, Coogee . . . erstwhile president of W.I.A. N.S.W. Division in pre-war 1940 days . . . has been heard at very rare intervals on 14 mC/s phone with the usual good quality transmission but is comparatively inactive.

(Continued on page 50)



The neat 28 Mc/s rotary Beam array used at the station of H. G. Wohlers, VK3YV, Wangaratta, Vic.



Inside the station of Howard Wohlers, VK3YV, Wangaratta, Victoria. Looks like one of the Hallicrafter's range of receivers on the table OM.

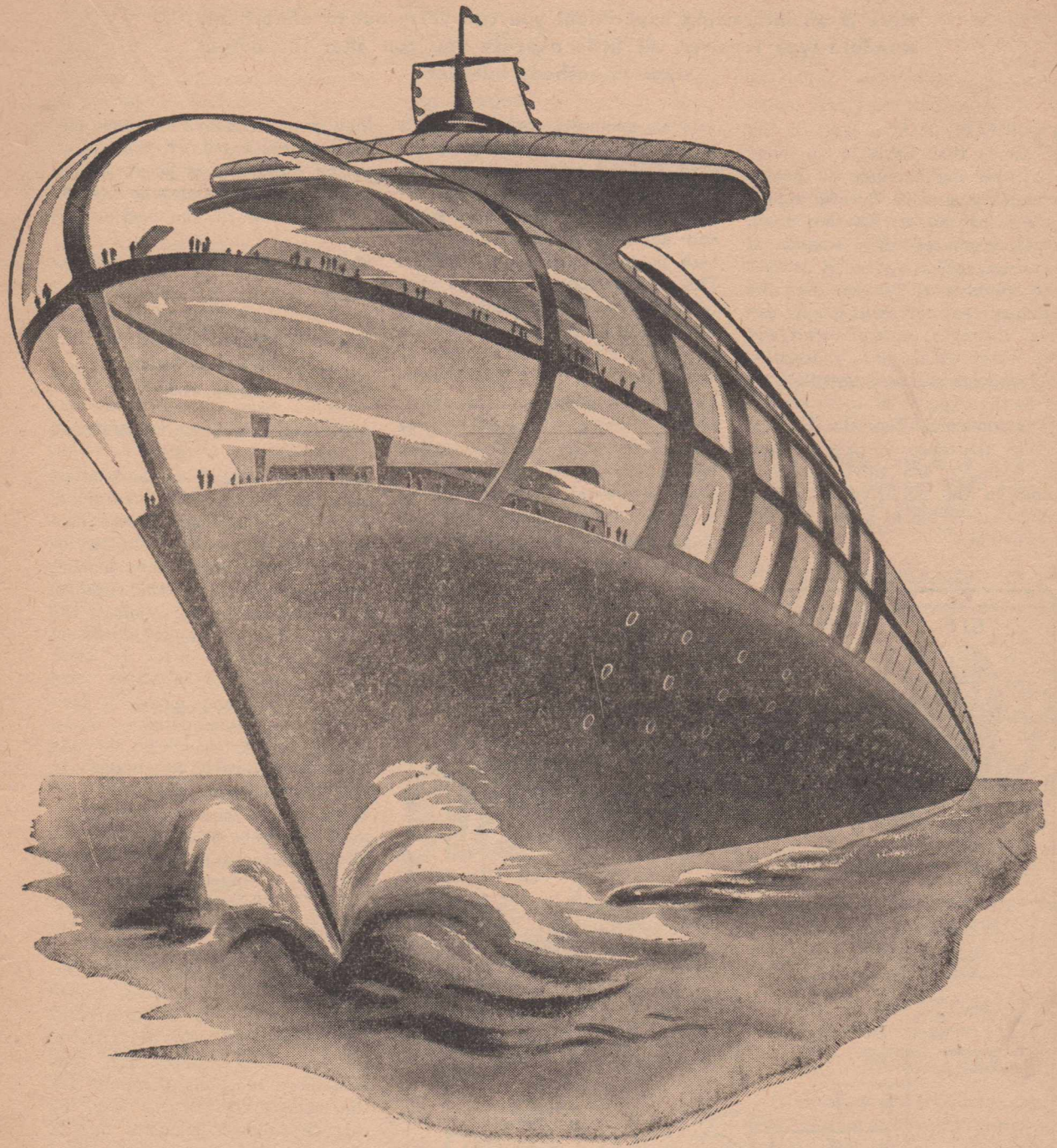
Success Afloat

To visualise the future **Titans of the Seas** is no easy task; but there will be revolutionary developments in both design and motivation. Yes, navigation has certainly advanced since the days of the wool clipper—to-day the modern liner offers everything in speed, comfort, efficiency and security.

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CONVERT TO HIGH FIDELITY

Here is an interesting experiment you can carry out to almost any standard-type receiver. At little expense you can alter the output stage to cathode follower.

PERHAPS it is a sign of the times that there is an ever-increasing number of people demanding a more faithful reproduction of music. To the small, select group of Hi-fi experts is now being added a class of listener who wants more realism than the ordinary set or radiogram can give. However, most of us already own a set which gives reasonable performance and are unwilling to go to the expense of more elaborate equipment. The aim of this article, therefore, is to show how the ordinary 4/5 valve superhet, found in the majority of homes, can be converted to a high fidelity instrument.

It is generally agreed that a pair of push-pull triodes gives the most faithful and true-to-life reproduction, affording pleasant relief from the annoying bass boom and top-note screech associated with pentodes and beam tetrodes. This excellence is due to the triode's lack of third harmonic distortion and its low plate resistance, the latter providing a measure of damping for the loudspeaker. Thus, with an ideal output transformer (which will cost two or three pounds), an instrument using triodes can be expected to overcome the usual disadvantages of amplifier design, namely, the increased power output at low and

high frequencies and harmonic distortion introduced by the output valves. But this is poor consolation for the listener who already owns a set which, like most domes-

By

JOHN C. HOPKINS

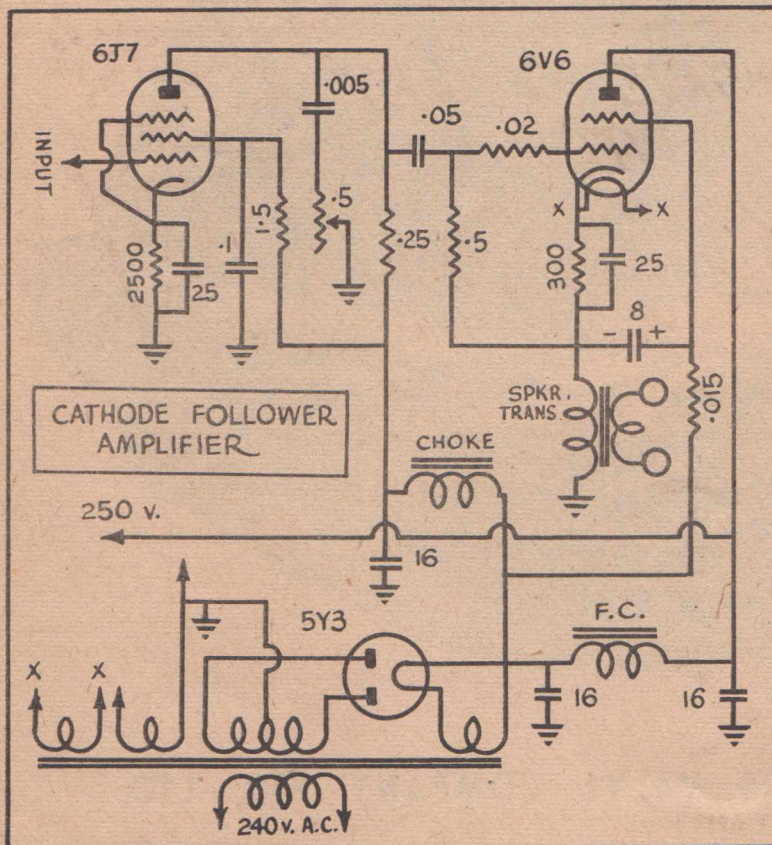
174 Raglan Street,
Mosman, N.S.W.

tic radios, uses a single pentode or beam tetrode and a mediocre coupling transformer in the output stage. However, the fidelity of triodes can be obtained by placing the speaker load in the cathode, instead of the plate, circuit of the single output valve, as shown in the diagram.

Cathode Follower

This device is known as the Cathode Follower, an impedance matching method commonly used in television and testing equipment, but only recently applied to loudspeaker coupling. In fact, there is a present rage in the U.S.A. for cathode follower amplifiers, their popularity with the experimenters being their alleged flat response at very high frequencies. But to the technically-minded listener, the attractive features of the cathode follower are, firstly, its low output impedance, thus providing excellent damping for the loudspeaker. In this way, the cathode follower achieves one of the advantages of triodes used with an expensive output transformer, for the power output across the secondary of any cathode-coupled output trans-

(Continued on next page)



HI-FIDELITY

(Continued)

former is quite independent of frequency and impedance in the primary. Therefore, the cathode follower amplifier can be expected to reproduce all frequencies at the one level. Secondly, the one hundred per cent. voltage feedback involved in cathode follower action makes the output stage almost distortionless.

Less Gain

The normal 4/5 superhet can be converted to a cathode follower for the outlay of a few shillings. Since the voltage amplification of the output valve is lost in cathode follower action, it must be compensated for in the first audio amplifier. This could be achieved by using an inter-stage transformer, but the price and size of a worthwhile transformer puts it out of the question. The same effect was obtained by taking the 6J7 plate voltage direct from the heater of the rectifier, the necessary decoupling being provided by an extra 16 mfd. condenser and a filter choke of the type usually used in small mantel sets. The latter is small enough to be tucked away in any normal chassis. In this way, the 6J7 is provided with about 400 volts which is sufficient to drive the output valve when cathode-coupled. The cathode bias resistor of this stage was also increased to 2,500 ohms.

Circuit Changes

The primary of the speaker transformer was transferred to the cathode circuit of the 6V6, as shown, and the plate connected direct to 250 volts HT. The screen voltage for this stage must also be taken from the heater of the rectifier and decoupled as indicated in the circuit. The addition of a grid "stopper" completes the conversion process.

Listening Tests

When this amplifier was tested by listening to a radio programme,

the most noticeable effect was the clarity of speech and the lack of bass boom. Records were reproduced with a feeling of natural balance between bass and treble notes. However, the crowning excellence of the cathode follower was illustrated in realistic reproduction of the higher frequencies, especially of massed strings in orchestral recordings, and the usual top cut tone control can be eliminated. However, most existing sets are already provided with a tone control, so the circuit contains a top cut control in the 6J7 plate and could be used to advantage with very worn records.

For Pick-up

Since the output of this type of amplifier is substantially flat, the usual 6Db loss at low frequencies in recordings must be compensated for by the pick-up. Crystal pickups have a fair degree of bass boost and because of their high output must be considered an ex-

cellent combination with the cathode follower amplifier. The ordinary magnetic pick-up also contains bass boost and the person lucky enough to possess a low output high fidelity type will also be ingenious enough to contrive an extra tone control stage.


* * *

(The theory of cathode-follower amplifiers and the application of the idea to output stages was described in detail in our issue of October, 1944. This issue is now out of stock and out of print.—Editor.)

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"MANTLETTE THREE"

A Small Battery-Operated Receiver

THIS small receiver, being very sensitive and battery operated, is ideal for use in country areas situated within reasonable distance of the metropolitan area.

The circuit consists of a R.F. stage, followed by a regenerative screen-grid detector, this in turn

By

G. MUNRO

Hunter's Road,
Warragul, Victoria

followed by a pentode output valve. This type of set is designed for those who do not wish to build a superhet, yet require a selective and sensitive type of radio.

The building of the set should not present any difficulties. The

- 1—chassis, 6" x 4" x 2".
- 1—aerial coil (air core). See text.
- 1—R.F. coil with reaction winding (Air core.)
- 1—.002 mfd. tubular condenser.
- 1—.00025 mfd. mica condenser.
- 2—.1 mfd. tubular condensers.
- 1—.0001 mfd. mica condenser.
- 1—.02 mfd. mica condenser.
- 1—2-gang "H" tuning condenser.
- 2—trimmers, to suit gang condenser.
- 1—dial to suit gang.
- 1—.0001 mfd. reaction condenser.
- 1—2 meg. resistor ($\frac{1}{2}$ watt).
- 1—250,000 ohm resistor (1 watt).
- 1—150,000 ohm resistor (1 watt).
- 1—500,000 ohm resistor (1 watt).
- 1—500,000 ohm volume control and switch.
- 1—500 ohm wire wound resistor (3 watts).

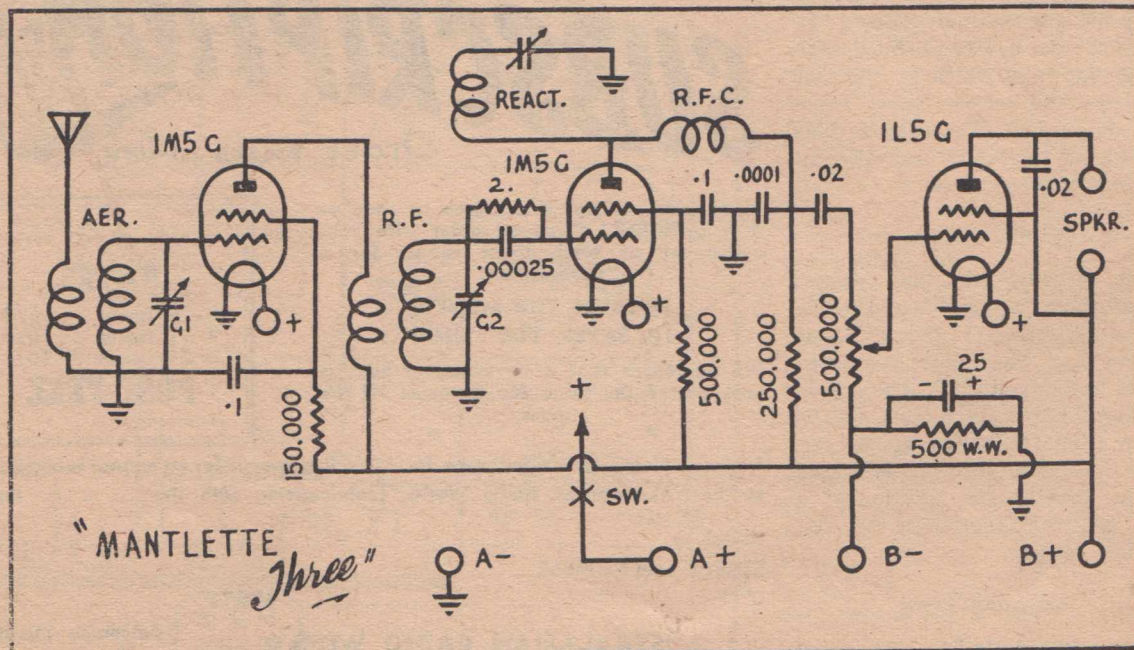
PARTS LIST

- 1—25 mfd. 40 volt electrolytic condenser.
- 1—R.F. choke.
- Valves:
- 2—1M5G.
- 1—1L5G.
- 3—octal sockets to suit.
- 1—2-volt accumulator.
- 3—45 volt "B" batteries.
- 1—4 pin valve socket.
- 1—4 pin battery plug with wire for battery cables.
- 1—5-inch Permag. speaker, matched to 1L5G.
- Sundries: Hook-up wire, bolts and nuts, tinned copper wire for earth network, 3 knobs, 4 terminals for aerial, earth and speakers. 2 small grid clips. Cabinet.

arrangement of parts on the chassis is shown by Fig. 1. In order to keep the set as small as possible, the loud-speaker is bolted

in the front righthand corner when looking from the back of the set. Two grid leads have to be

(Continued on next page)



This circuit has been thoroughly tested by one of our readers under country conditions.

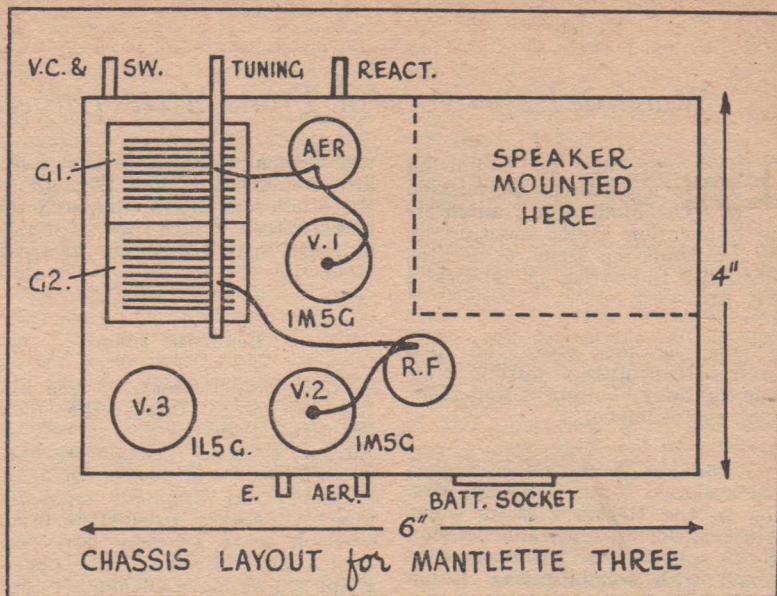
(Continued)

taken to the tops of valves 1 and 2. Keep grid and plate leads as short and direct as possible. Also don't have plate and grid leads together.

When buying the coils make sure the aerial and R.F. coil are of the same make, and that the R.F. coil has a reaction winding. Experienced constructors may use iron-cored coils. These will help to improve output and selectivity. A trimmer condenser must be soldered across each section of the tuning condenser (G1 and G2).

Automatic "C" bias has been used as this helps to keep the plate current down and saves another battery. The batteries are connected to the set by means of a 4-pin plug and socket. The length of the battery leads depends on where you place the set. Make your own judgment here.

When the wiring has been completed check over very carefully for mistakes. Then connect the "A" battery and switch set on to see if valve filaments are alight.



Then connect "B" batteries, aerial and earth. Rotate dial, a station or two should be heard if everything is O.K. The next job is aligning and peaking the trimmers. If the set squeals, back off the reaction a little. To peak the set, unscrew the aerial trimmer on G1, half way, and tune in a station about 3XY. Adjust R.F. trimmers on G2, for loudest sig-

nal. Then tune to 3AR and set dial pointer to that station. Now tune again to 3XY and calibrate dial to this station by adjusting G1 trimmer. This set, though small, is capable of giving very good reception and is very easy on batteries, the "A" battery drain being .48 amps., and "B" batteries drain about 10 mills. at 135 volts "B" battery.

AUSTRALASIAN RADIO WORLD

Australasian Radio World is again in short supply, due to the necessity for paper conservation under economic measures applied by the Federal Government in its effort to assist Britain.

It is, therefore, suggested that you ask your newsagent to reserve your copy.

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"OPERATION ANNIE"

Wartime Experiences of Transmitters Hilversum and Luxembourg

THE text of the following article is given by permission of "The Modulator," an internal publication issued monthly by the Transmission Dept. of Philips Electrical Industries of Australia Pty. Ltd.

"This is the story of two foreign transmitters during wartime, of their equipment and technical performance.

"It was in March, 1945, that I was assigned to the SHAEF Mission to the Netherlands as Chief Technical Officer. The radio division of this mission was primarily concerned with rehabilitating Dutch broadcasting after the Germans had been driven out. A small section of the country was free, and a 10 kW transmitter was in operation, by the Philips people, from their factory in Eindhoven. A sudden push by the Canadian army opened additional territory, and I went forward to inspect the Kootwijk transmitter site.

"The towers and buildings were in ruins. The 400 kW longwave transmitter was gutted, and the 200 kW rig a mass of melted copper and ceramics. The Germans had used incendiary bombs, set under the cubicles.

"An 'armed truce' to permit the passage of food into the still-occupied portions of Holland found us near Apeldoorn, attempting to get to Lopik where the medium-wave transmitters of Radio Hilversum were supposed to be. It

was several weeks later that I finally managed to get through to the studios at Hilversum, and the transmitters, which proved to be nowhere near Lopik, but at Ijsselstein.

Beautiful Jobs

"Both transmitters, on 995 and 722 kC, were intact—the most beautiful transmitters in all of Europe, I think. These were built by Philips, and were Doherty-system linear amplifier transmitters. All stages, except the finals—which were triodes—used pentodes and tetrodes. The photograph shows more adequately than words the physical beauty of these two identical installations. The regrettable thing was that having acquired these high-powered and beautifully-clean transmitters, we were unable to run them. The total power required from the high-lines was in the order of 1000 kW, and there just wasn't enough coal in the whole of Holland to generate that much power at that time. What stocks were left had been carefully allocated for a small ration of lights and emergency power to hospitals, etc.

"The operation of these transmitters was identical with that of the high-power Doherty as installed at many 50 kW stations in America. There were, however, several novel features. From the oscillators the entire transmitter chain, up to the final linear amplifiers, was in push-pull. The two transmitters were arranged in a large hall, facing each other. Built in three decks, the power supplies and generators were in the basement, and the main amplifiers on the ground floor. The exciter stages were arranged on the third floor, or deck, accessible by a chromium-plated winding ladder at each end of the main deck. The driver stages of each transmitter were situated in the centre, and the subsequent stages radiated in opposite directions to the ends of the deck, thence down to the lower deck where the final amplifiers were located. The grid and plate circuits of the Doherty Linear Amplifiers were arranged behind the final tube cubicles, with complete accessibility for tuning purposes

through side doors. A massive console for each transmitter was arranged in front of each, on the main deck, and all metered circuits were duplicated, and a large oscilloscope installed for checking. Built-in scopes were in each successive compartment of the lower-power stages. The final amplifiers used water-cooled triodes, mounted on small dollies for quick replacement, and a spare was in place in a separate compartment with switches to the main tank circuit. Radiated power for each transmitter was 125 kW with separate vertical antennae.

"The main power supplies were mercury-tank rectifiers—an almost universal type power source in Europe and England—with a single spare high-vacuum power supply, which could be switched to either transmitter in case of failure of the tank system.

"Because of the lack of power, only the lower-powered stages were tuned initially, but in conversations with the Dutch engineers I was told that tuning the grid and plate networks of the finals was just as simple and easy as I had experienced with Western Electric Doherty transmitters in the States.

Radio Luxembourg

"The second transmitter of technical interest, it seems to me, is the famous Radio Luxembourg, one of Europe's most powerful stations.

"I arrived at the newly-captured long-wave transmitter of Radio Luxembourg in September of 1944, carrying a raft of studio gear and K rations. This transmitter—a 147 kW job, on 232 kC—had suffered only minor damage; the studios, however, were thoroughly dynamited, illustrative of the Germans' technique. The Luxembourg engineers salvaged four Bell (Belgium) amplifiers, and created a control console from bits of debris. Using two Western Electric 630 and two Western Electric 633 Microphones and a S T & C relic which Metty Felten, the Luxembourg Studio Chief, had brought from his home, we had the studios

National Bureau of Standards has discovered that a small diamond crystal placed between electrodes of approximately 1000 volts potential difference will indicate the presence and intensity of gamma rays by the number and frequency of pulses flowing in the circuit. These pulses result from action on the diamond by the gamma rays.—"Q.S.T."

in operating condition in three days.

"Nicolas Schmidt, Senior Transmitter Engineer, had been instrumental in convincing the Reich-post supervisory personnel (non-technical) that the proper way to keep the Americans from using the transmitter was to damage the contact circuits, and destroy the big tubes in the final. Consequently, when Morris (R. Morris) Pierce went out to give a hand while I worked on the studios, this relatively minor damage was nearly repaired. A set of tubes had been located in a barn near Diekirch and we were almost ready to go.

Luxembourg

"The Radio Luxembourg transmitter is based on a system developed by H. Chireix called Out-phasing Modulation. This system results in high efficiency with low-power modulators because the entire chain of amplifiers is operated Class C. The transmitter is divided into two parallel chains fed by a balanced modulator, so that the sideband frequencies are shifted 90 degrees and inserted in equal amounts but in opposite phase in

the two parallel amplifier systems. The outputs of the two amplifiers are then combined in the load impedance so that the net input to the load is the vector difference of the outputs of the two amplifiers. A 'scope is essential in tuning this large and complex transmitter.

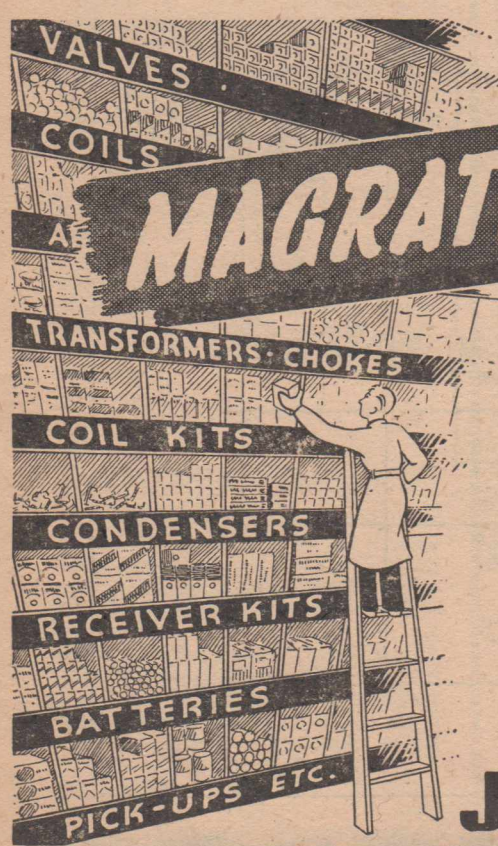
"The angle difference between the two final amplifiers is important, if linearity is to be had, and we evolved a quick method of measuring this angle (135 degrees) by using some a-c theory. After detuning the plate circuits, the current readings of each branch were noted, and the current into the third leg feeding the load taken. By division this gave a figure which was twice the cosine of one-half the angle. The whole thing took a couple of minutes, compared to half-an-hour's tuning and retuning with a 'scope.

"Operation Annie"

"This transmitter was operated at 90 kW, to conserve the tubes, but later went to the full power. We were concerned with some nice technical legerdemain for an operation by OSS when, after our regular hours as 'Radio Luxem-

bourg,' we changed frequency from the normal channel of 232 kc to 247 kc and reduced power to 30 kW for 'Operation Annie,' known to the Germans as 'Radio 1212' since the wavelength of the new operation was 1212 meters. The job took place in half an hour, no mean accomplishment of frequency changing. One of the OSS sergeant technicians had to run a quarter of a mile out to the antenna tuning house, eluding the transmission line supports and stray trigger-happy American sentries, while various long-range guns, air-planes, and an occasional bomb carried on their part of the war around him! After four hours of this operation, the transmitter was placed back on its original frequency, and we all collapsed for half an hour until the regular day's schedule began.

"Although I spent considerable time at the Luxembourg transmitter, and on high-power transmitters in Germany, I would have traded them all for the Doherty's at Ijsselstein. My biggest regret is that because of the shortage of power I wasn't able to fire up those 125 kW finals there!"



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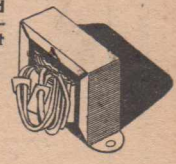
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SOUND SYSTEM UNITS

(Direct from an American Correspondent)

FAIRCHILD Camera & Instrument Corp. has announced details on all 13 units of its new Unitized Amplifier System for the varied requirements of the professional and educational sound recording industry.

Full details can be secured from Charles V. Kettering, sales manager, sound equipment division, the Fairchild Corporation, 88-06 Van Wyck Blvd., Jamaica 1, N. Y.

The system provides a sufficient number of stock units for combinations to meet the variety of amplification requirements for professional, high quality sound reproduction, from the simplest to the most complex.

Fairchild engineers emphasise it is impractical and costly either to

produce a single audio system that will satisfy all the varied and changing requirements of individual recording operators, or to supply each customer with a custom-built installation. But with the Unitized Amplifier System it is possible to combine standardised units in an audio system tailored to an individual recording application which still remains flexible, economical and free from obsolescence.

The Unit 620 Power Amplifier is the heart of the Fairchild Unitized System. The actual performance of this important component far exceeds the specifications. It has a frequency response of 20 to 20,000 cycles, plus or minus 0.2 db. Intermodulation tests show less than 0.8 per cent. intermodulation at 5 watts, and less than 2 per cent.

intermodulation at 25 watts. This performance is achieved through unique circuits which provide, simultaneously, all advantages of class A AB₁ and AB₂ operation. All of the other units are matched to Unit 620, and to each other.

The 12 other units:

Unit 621 Microphone Preamplifier. A quickly interchangeable plug-in packaged unit.

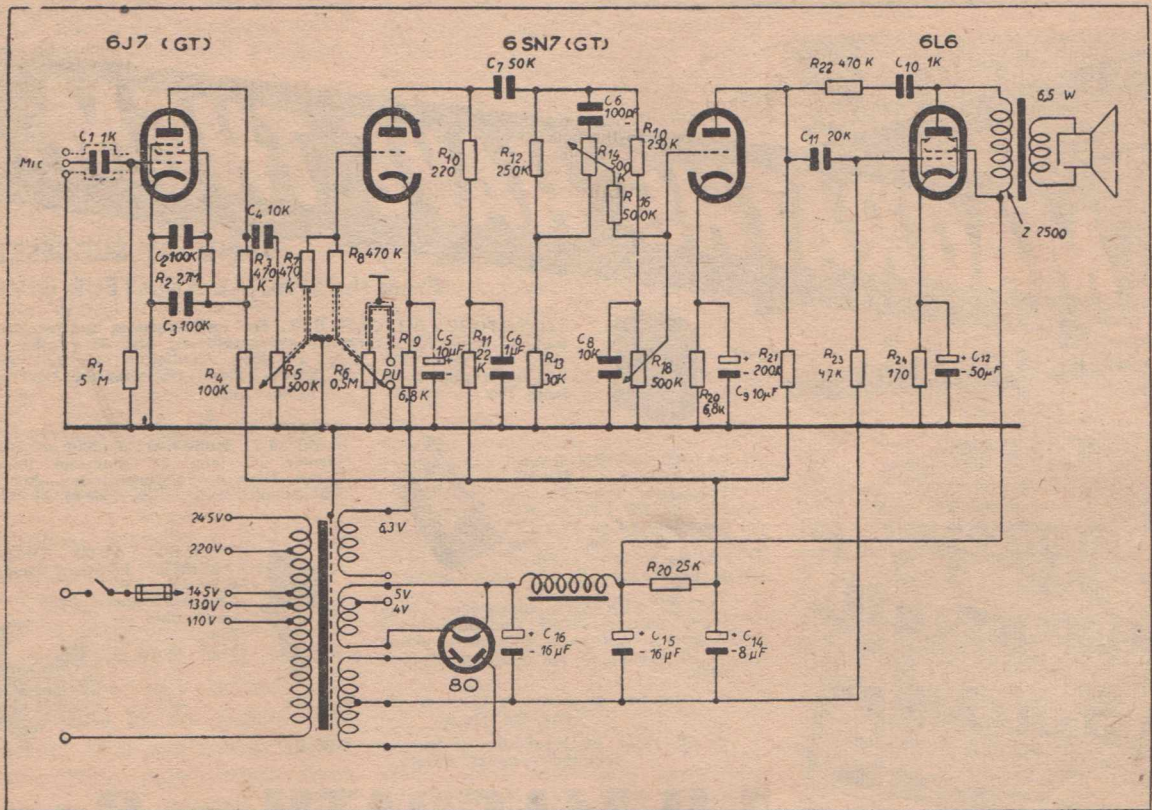
Unit 622 Pick-up Preamplifier Equalizer. Combines equalization of pick-up to match standard recording characteristics with preamplification, to produce an equalized output of mixing level.

Unit 623 Line Amplifier. An interchangeable plug-in unit which may be used either as a programme amplifier or a monitor amplifier to drive a small speaker.

Unit 624 Output Switch Panel

(Continued on next page)

HANDY AMPLIFIER CIRCUIT FROM BELGIUM



Reproduced from the Belgian technical journal "La Radio Revue" is this amplifier circuit. Although using Continental symbols, it is easy to follow. It has lots of gain and a wide control of tone.

with V I and monitor take-off. Provides all switching and monitoring facilities to operate two recorders from a single power amplifier.

Unit 625 Input Switch Panel. Includes a Unit 621 plug-in preamplifier and provides switching for single channel operation.

Unit 626 NAB Equalizer. 626-A1 is an NAB equalizer with 22db. insertion loss. 626-B1 is the NAB equalizer mounted in a chassis with a Unit 621 Preamplifier booster, for use when the 22db. equalizer loss cannot be tolerated.

Unit 627 Variable Equalizer. Affords continuously variable independent control of low and high frequencies. It controls both the amount of equalization and the frequencies at which maximum equalisation is applied.

Unit 628 Diameter Equalizer. Supplements Unit 627 by automatically applying the necessary equalisation to compensate for high frequency diameter loss.

Unit 629 Mixer. Provides mixing facilities for 2 to 4 channels (as ordered), with master gain control.

Unit 630 V I Panel. Includes a standard V I meter of the highest quality, a vernier calibrator, a meter attenuator, and selective input switching.

Unit 631 Bridging Device. Provides for complete isolation, at no loss, of the different recording channels in large installations.

Unit 623 Auxiliary Power Supply. A plug-in unit that provides voltage for filaments, and up to 210 ma., filtered, for plates.

The Fairchild Unit 633 Rack Frame mounts up to 6-unit 621 preamplifiers, or 3-unit 623 line amplifiers, or 2-units 632 auxiliary power supplies, or any equivalent combination.

* * *

A BRITISH DEVELOPMENT

A new type of VHF transmitter has been developed by a British radio engineer. The only portion visible is the miniature ear-piece which gives the impression that the wearer uses a deaf-aid. A throat microphone is used and a quarter-wave aerial is stitched into the clothing. Outstanding features are: 1. Unusually good quality speech for such small equipment. 2. High sensitivity. 3. No frequency shift when changing from send to receive. 4. A new system of quench frequency generation. 5. Frequency range between 75 and 100 mC/s.

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14. PHILIPS MANUAL OF RADIO PRACTICE FOR SERVICEMEN. Compiled by E. G. Beard. A valuable book of reference for every serviceman, engineer, experimenter, amateur, student. 496 pages, illustrated. 1947. 22/6 (post. 10d.)

15. REFERENCE DATA FOR RADIO ENGINEERS. Compiled by W. L. McPherson, B.Sc. 175 pages. 8/6 (post. 6d.)

16. MODERN RADIO AND HOME RECORDING. (The Listener In Handbook No. 16.) Edited by A. K. Box. A handbook covering both elementary and advanced material. 67 pages, illustrated. 1947. 2/- (post. 3d.)

17. PHILIPS VALVE DATA BOOK. Published by Philips Electrical Industries. Covers Australian-made series—valve data—socket connections—cathode ray tubes. 96 pages. 1947. 1/- (post. 2d.)

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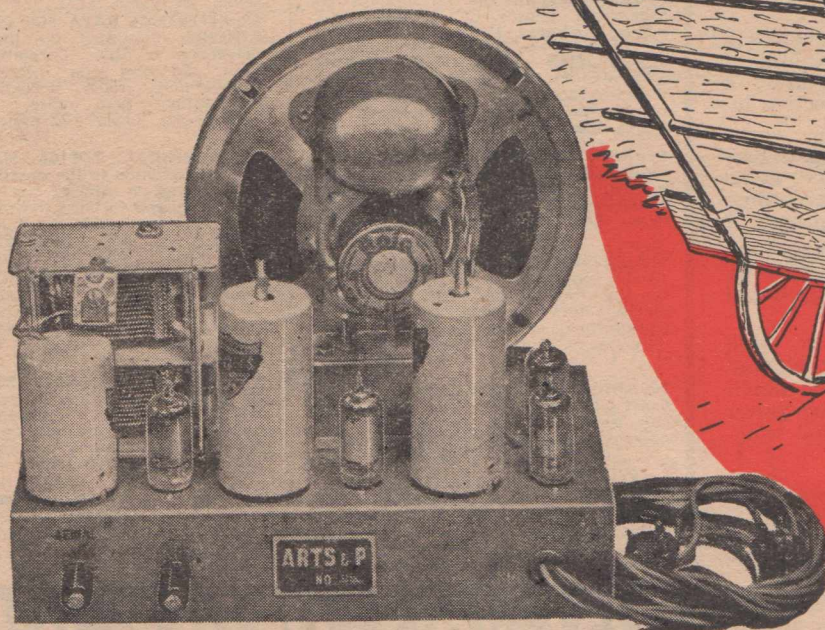
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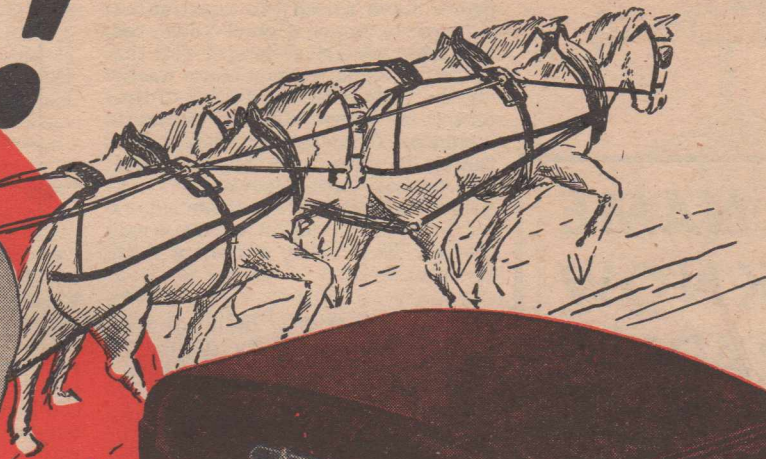
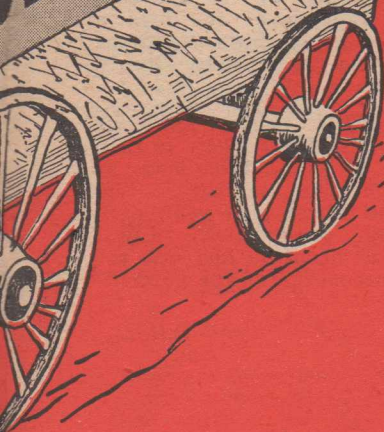
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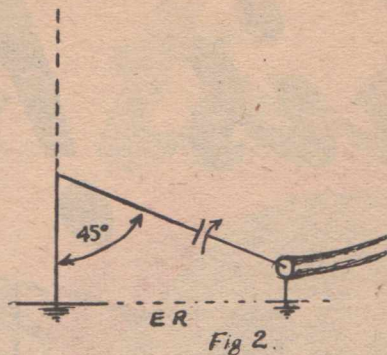
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SHUNT-FEEDING A VERTICAL RADIATOR

THE description of the composite beam array used at VK3KU, in the issue for September, 1947, brings the following comment from the owner, H. K. Love. Howard says . . . "So many people have raised the question as to how to tune a steel tower of uncertain electrical length for the 40-metre band that a few words on the 'know how' will be of interest to many. If the tower is insulated from the ground, series tuning is quite easy by a variety of means, but a tower of any height is better well grounded as a protection against electrical storms. This being so, shunt feed is necessary.



which is inductive, and any reactive element may be tuned out with a variable condenser. As one portion of this turn is formed by one-fifth of the tower, coupling is complete . . . it is advisable to bury a wire to make a good earth return (ER Fig. 2) as the ground may vary from wet to dry conditions. Tapping of the feed a few inches up or down the tower will find the exact point. That is all there is to it."

As VK3KU points out, this scheme is simplicity itself. In fact, good use of it has been made at more than one amateur station where tall sewer pipe ventilators of metal construction project handily for about 45 feet into the sky at the bottom of the garden!!

—D.B.K.

"Such a method of tuning is well understood and is fully treated in the 'Radio Engineer's Handbook' (Terman). Reference is made to the theory of doing this on pages 845 and 847. In simple language, the matter resolves itself into something like Fig. 1. Here we have a metal mast or tower, of which we know the approximate height H , but not the electrical length. Coupling to the transmitter is carried out via coaxial cable and a variable condenser. A lead is taken from the point X on the tower, which should be about one-fifth of the height; and taken away at an angle of 45 degrees, through a tuning condenser to the inner conductor of the coaxial cable. The outer is earthed. It will be seen that this, as at Fig. 2, forms a large single turn of inductance,

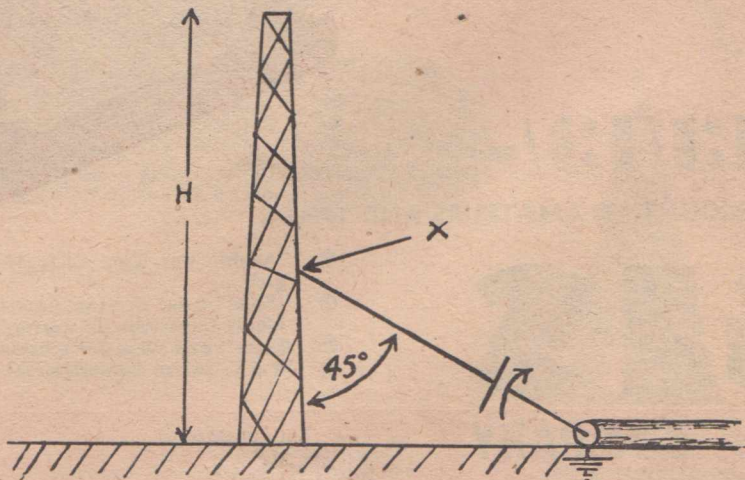
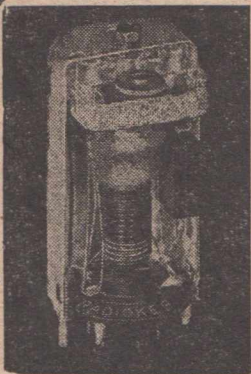


Fig. 1

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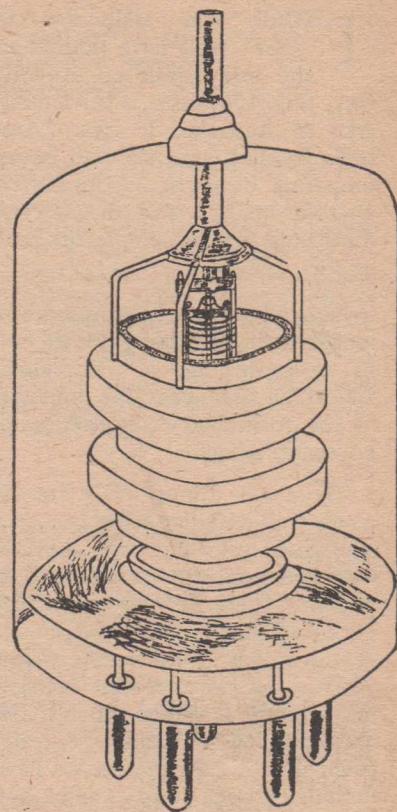
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R-56

RECENT VALVE DEVELOPMENTS

FROM Philips Electrical Industries of Australia we hear of recent valve developments in the Eindhoven (Holland) laboratories. Two interesting new valves are the TB2 5/300 Triode and the QB2 5/250 Tetrode, which are specially suited to working at 100 mC/s and higher. The tetrode is particularly applicable for FM transmitters, and the triode is useful in industrial RF work, especially sheet plastic sewing. An outline sketch is shown of the QB2 5/250. The flat glass bottom of the valve is made by the "powder-glass technique" in which the pins are set up in a mould and powdered glass poured around them. The upper portion of the mould then presses the powder firmly into place and the whole is heated

until the powdered glass fuses into a solid piece. This technique greatly simplifies the production of bases of various sizes and with a wide variety of seals. It removes the difficulties encountered when trying to make glass flow round and seal properly a group of pins. As all the elements except the anode are mounted on the inner ends of the pins, a very rigid structure is assured and losses are kept low because of short connections. The anode, being supported from the top of the bulb, has the best possible insulation, there being nothing between it and the other elements. The small size of the bulb for these relatively high-power valves is made possible by the use of hard glass, which in the last few years has brought startling changes in valve dimensions. Full data is not available on these valves but it is known that they will deliver outputs of around 300 watts at 100 mC/s, and will do equally well at lower frequencies.



Sketch showing internal construction of new Philip's valves.

TYPE 24G

PHILIPS Electrical Industries of Australia announce that a small stock is on hand of the type 24G. This valve is suitable for VHF and will deliver up to 100 watts telegraphy and 60 watts telephony with anode modulation at conservative ratings. Characteristics are as follow:

Filament: 6.3v, 3 amps.

Amplification factor: 23.

Transconductance: 2500 micromhos.

Typical Operation Class C Telegraphy.

Anode voltage: 1000, 1500, 2000v.

Anode current: 72, 67, 63 mA.

Grid voltage: -80, -110, -170v.

Grid current: 15, 15, 17 mA.

Peak R.F. grid volts: 200, 225, 295v.

Driving power: 2-6, 3-1, 4-5w.

Anode input: 72, 100, 125w.

Anode dissipation: 25, 25, 25w.

Power output: 47, 75, 100w.

Inter-electrode capacities are small, with the anode brought out at the top of the bulb and the grid at the side.

Grid to anode: 1.5 mmfd.

Grid to filament: 1.7 mmfd.

Anode to filament: 0.3 mmfd.

Base: Standard 4-pin type.

The 24G should be of special interest to those working in the range from 30 to 200 mC/s. Price is £3/2/-, plus 2/- duty.

A useful little tetrode now available from Philips Electrical, England, is the QV04/7. This can be likened to a 6V6 built in the same form of construction as the EF50. This construction gives superior insulation and lower losses, and the valve operates at full ratings to 130 mC/s. It is an attractive valve for amateur use in particular.

Appeal by British Amateur

In a letter to Dave Broadley, VK2AFU, Publicity Officer of the Experimental Radio Society of N.S.W., G3AWQ says . . . "I am hoping to emigrate to Australia under the scheme which is now in operation, but the only snag I've encountered is that at present only persons nominated by friends or relatives in Australia are going. Nomination is needed to the effect that accommodation for the first months on arrival in Australia would be forthcoming, as the authorities like to know that temporary accommodation is available for emigrants when they get there. My wife and I want to get to Australia under this scheme, but have no relatives living in your country, and we are trying to

get in touch with anyone who would be so kind as to offer us accommodation on arrival. Accommodation seems to be the only difficulty according to the authorities here, who say that my trade classification of architectural draughtsman is in demand in the housing programme of Australia. If you know of anyone who could kindly accommodate us temporarily I would be most grateful, whether it be in Adelaide, Melbourne, Sydney, or surrounding districts . . ." G3AWQ is Desmond R. Hill, 81 Rye Hill Park, Peckham Rye, London SE15, and any VK willing or able to help would do him a good turn by dropping him a line to that address.

PERTINENT PONDERINGS

THOSE who subscribe to "QST" will have noticed in the first report on Atlantic City, July, 1947 issue, a brief reference to Australia. It says: "Australia has not done too well by us, proposing bands at 3.5-3.8, 7-7.2, 14-14.4 mC/s," and the rest of the bands that we at present have in this country.

Perhaps we have become accustomed to having things doled out to us in this age of "Freedom," and to the Americans, the proposals by the Australian delegation seem, no doubt, stingy.

These are things VK's are already well familiar with . . . we manage to get along with the DX and domestic bands as allocated at present. There is one point that does stick in the gills a bit in our considerations. One wonders just what is the Departmental aversion to granting us bands around 230 and 400 mC/s, bands we really could do with. At present we have nothing between 166-170 and 1,345 mC/s, and that is a mighty big jump in terms of anybody's equipment. It means all the difference between standard valve practice and "plumbing". If we don't get an intermediate allocation, it is likely that 170 mC/s will be the highest frequency band to come in for general usage. Not more than a mere handful is interested in the UHF's as distinct from VHF's. There is a reasonable chance of being able to QSO lots of other fellows on 230 and 400 mC/s, but around the 1,400 mC/s mark it is a matter of two stations only, working point to point . . . "firing" straight at each other, to the exclusion of everything else. Which is OK if you want a "secret" channel with your cobbler. But that isn't the kind of thing to appeal to many.

The foregoing had no sooner been written, than your scribe copied a W1AW ARRL official

broadcast on 27 August last which was to the point and conclusive. Amateur radio has lost 50 kC/s off the HF end of the 14-14.4 mC/s band . . . bad enough in itself . . . but that's not all. The U.S.S.R. got away with a blatant chunk of piracy that could be incredible if one didn't have long memory about pre-war attitude of that country to *any* internationally decreed radio frequency allocations. The U.S.S.R. has bluffed the rest of the Atlantic City delegates into use of 14250 to 14350 kC/s on a so-called "shared" basis with amateurs. They say that they need this region for "internal domestic" communication, and that they will "employ all necessary technical measures to minimise QRM to amateurs". America and Canada agreed to this bit of thievery "reluctantly". The Reluctant Dragon had nothing on that . . . and how amateur radio will fare with T3U stations using kilowatts of power in the same region . . . doesn't bear comparison. "Internal Domestic" communication couldn't by any chance mean "broadcast propaganda" . . . or could it? There is a sop to all this in reference to the proposed 21 mC/s band, about 400 kC/s wide, exclusively amateur. That should have been done additionally anyhow . . . without greedy expansionists spilling over into our already meagre territory. Good solid Australian adjectival thinking can only express adequately the feelings of many of us who have grown up with and helped to pioneer this hobby of amateur radio. Apart from the soulless attitude of organisations who would prefer to see amateur radio in our way of life silenced, there are those who have contributed materially to any material obstacle that may be placed across the amateur pathway . . . those who have *talked* amateur radio into disrepute. That has been emphasised time and again in columns . . . the moronic utterances of individuals armed with

microphones . . . their drivel falls upon the ears of unsympathetic delegates to conferences such as Atlantic City. And the result? If *anything* is left for amateur radio breathing space in the near future . . . it will be due to the influence mainly of that unparalleled organisation, the American Radio Relay League. The A.R.R.L. means more to us than many realise, and "learned discussions" as heard on 7 mC/s about "the ARRL is in there fighting, and there is nothing Australia can do about it" may be intended to laud American efforts . . . but savour too much of the "let George do it" attitude. Australian amateurs could do much to help, and if they haven't the brains to realise how . . . then they deserve literally to be talked off the air by those who will surely bear considerable responsibility if the official muzzle is ever applied.

FOR ROTARY BEAMS

Spotted one or two ex-Radar parabolic scanners the other day in a Sydney dealer's store in central Sydney. These gadgets were complete and appeared to be quite unused. They were strongly made and fitted with 24 volt DC motor. Idea that comes to mind, of course, is the possibility of revamping such gear as a rotary Beam Head. As it stands there is not enough reduction in speed, but the mechanically adept Ham could easily incorporate an extra worm-drive and thus obtain his needed one rev. per minute for 360 degree coverage. Incidentally, these assemblies are designed around a rotary coaxial affair, which at once solves quite a problem. It is a handy Beam gadget that can go round and round, irrespective of feedline. Price asked for these was £5 . . . they must have cost at least all of £50.

AMONG OUR READERS

Already one of our most popular features, here again are a few extracts from letters received from subscribers during the month giving details of their activities and their likes and dislikes.

"I read your magazine because I am interested in amateur activities and it is the only Australian magazine I know of dealing with such matters. I follow radio these days purely as a hobby, although for some years before '39 I was employed in the trade as a technician, thus my interest lies mainly in test and measuring equipment and in new developments and their theory. In conclusion, Mr. Hull, I'd like you to know that I like your magazine and I like your policy of saying what you think concerning amateur and other radio activity when the need arises."—R. B. Hunter, 6 Northcote Street, Torrensville, South Australia.

(Glad to hear from you, Mr. Hunter, and to know that you appreciate the candid policy. I try to air both sides to anything that crops up and there is always space waiting for those who want to express their views.—A.G.H.)

* * *

"I have subscribed since No. 1 issue and still have every issue and often pass the time going through them and noting the very little changes in circuits since then, although component parts may have changed through the years. I often wonder if we will ever see A.R.W. up to the standard attained in the early issues. I have been mucking about with wireless since the very early days. Long before broadcasting began I listened to the time signals coming from VIM, the spark station with the huge aerial in the Botanical Gardens in Melbourne. I started off making up one of those de-colorers, where nickel and iron filings in a glass tube were the main ingredients in a rather cumbersome arrangement for detecting signals. By mistake I got on the wrong track and instead of making up the receiver I was well on the way to making up the transmitter before I 'woke up.' I made up a spark coil using pounds weight of No. 36 d.s.c. wire which cost me pounds sterling. I had to pay £1 per pound weight for the wire and still have some of the

slabs of coils I made up. I went through the crystal stage, on to my first valve, a UV199, which cost me 35/-. I think my first one-valver cost me £10 for the parts. I remember one country place I was at I had my aerial slung between two pine trees conveniently placed near the house. One of the country yokels one day, seeing the aerial, asked what the wire was up in the trees for. I explained that it was the clothes line, whereupon the lad remarked, 'Cripes, it shouldn't take long to get the washing dry up there.' In those days very little technical matter was available for the amateur. In fact, there were very few amateurs. Through the years I have followed radio as a hobby, and have made numerous testing equipment gadgets from descriptions in A.R.W., built sets, tried them out and wrecked them for another design. I have made up many A.C. circuits but find myself wandering back to the battery jobs."—J. R. Depster, Elphinstone, Vic.

(A very interesting letter, and I feel sure that you hold the record with your continuous subscription since Volume 1 Number 1. Sorry that I can't find an answer to your problem about the transformer with the seven leads and feel sure that the only way to find out about it will be to write to the firm which sent it to you. At a glance it seems that they have sent you the vibrator transformer by mistake.—A.G.H.)

* * *

"I find Australasian Radio World a very fine radio monthly as it contains some good technical features, especially for the ordinary radio man—receivers, amplifiers, short-wave news and, above all, the Ham notes. I look forward to the six-metre band notes. One or two Hams here in Dunedin, who subscribe to your magazine, are keen experimenters on 6 metres,

(Continued on next page)



A loyal supporter of Australasian Radio World, Mr. J. H. Magrath, of the Aegis Manufacturing Co. is here showing a sample of his latest kit. It is a baby personal portable, to be released shortly. The photo was taken in the showroom of Chandlers, Aegis distributors in Brisbane.

OUR READERS

(Continued)

due no doubt to the doings on 6 in VK. I shall have details shortly regarding our Centenary Contest to be held about February, 1948. I shall let you know about it later."
—J. Lunn, 65 Duncan Street, Dunedin, New Zealand.

(Will be pleased to have details of the contest, but they will need to be on hand soon to be in time for the February issue. Glad to know that the ZL Hams are encouraged by the reports on our six-metre activity.—A.G.H.)

* * *

"I don't think you can improve the paper except by making it bigger. I think you have done a good job while moving."—John T. Crichton, Federal Post Office, Lismore, N.S.W.

(Thanks for the kind words, John. It has been a pretty tough job carrying on over the past six years, but only production problems—there being no doubt about the loyal support of enthusiasts. Not being backed by a big newspaper organisation, I find it difficult to get enough paper to maintain present size.—A.G.H.)

* * *

"Could we have more on audio transducers, and if you can dig out anything, a bit on cutting heads. The latter seems to be a matter which has not been dealt with in any standard reference books. I'm a hi-fi fan and the line up now is a moving coil pick-up (home made) with compensation for bass. The amplifier has a

— WANTED —

MELBOURNE REPRESENTATIVE

"Australasian Radio World" needs an editorial and advertising representative. A reliable young man able to spend about ten hours per month in Melbourne, collecting advertising copy from advertising agents, picking up trade news, etc. Commission basis with unlimited possibilities, but starting with a guarantee of five guineas per month.

Apply by letter immediately to A. G. Hull, Box 13, Mornington, giving 'phone number if possible.

tone control based on Cutler's circuit and this feeds into an Amplion 12P10, doctored up as suggested in your March 1947 issue, in a box (lagged) about 18in. x 16in. x 16in. There is no doubt about the treatment. I can strongly recommend it to anyone with a similar speaker. Keep up the good work."—A. March, 144 Pacific Highway, North Sydney.

(I am most interested in the promised description of the amplifier and feel sure that you have a good story to tell if you deal fully with the making up of the pick-up, the circuit of the bass compensator and the full story of your own experience with the doctoring of the speaker.—A.G.H.)

* * *

"I have been reading your magazine for the past eighteen months and find it full of interesting data. I fully appreciate all your difficulties re space, paper, etc., but I would like to see some more articles on sound reproduction and recording. Wishing you all the best for the future."—Ian D. Marshall, 69 Rose Street, Armadale, Vic.

(Yes, I agree that we have been a bit short on articles on home recording lately, and it is a big subject which could provide ample scope. Have any of our readers any stories about their experiences in this field?—A.G.H.)

* * *

"I have been interested in the technical side of radio, as a hobby, for about twenty years now, and find your publication very interesting and instructive. I am particularly interested in the description of kit-sets which you publish from time to time. As a result of one of your last descriptions I have the 'Rural Four' kitset on my bench, awaiting a few spare moments to commence its assembly. I might add that I have a client waiting its completion."—E. C. Lade, "Sunny-Glen" private bag, Broadford, Vic.

(I am sure you will find the little battery set is a great success, as the new miniature battery valves have far better performance than you might imagine from their published characteristics.—A.G.H.)

"I have been reading your paper for some years now and think it very helpful."—N. Lewis, Radio Service, 4 Craig Street, Cronulla, N.S.W.

(Thanks for the kind words, Mr. Lewis. The back numbers you require have been posted and hope they arrive safely.—A.G.H.)

* * *

"All articles and features leave little to be desired, I think. When you get into your stride properly I don't think anybody will be able to grizzle about anything. Work up a trade release feature, what the trade is up to, including photos."—K. J. Koen, 87 Darebin Street, Mile End, South Australia.

(Thanks for the suggestions. It is a pretty tough job to find anything very new around the trade, but we have done our best with the Kingsley stuff as doubtless you have noticed. The paper shortage is still acute.—A.G.H.)

* * *

"Enclosed is cheque to cover two years' subscription, which I think is the most practical way of saying 'I like your journal, Mr. Hull: keep up the good work.' I am interested mostly in hi-fi gear and some day hope to treat myself to the 'F.F.R.' amplifier. That is when I can raise the wind to include the associated equipment able to do it justice. I often think that not enough attention is given to articles dealing with the final and deciding factor of the good amplifier, the speaker. A couple of your recent articles were very good, but I am sure there is a lot more advice you can give us in this regard. I am going to build up a vented enclosure baffle as per one of your articles a few months ago. So far I haven't been able to get the right timber. I am wondering if your technical radio slogan could be interpreted to include some articles on acoustics. I know it is a pretty colossal subject, but I'm sure that you could give us a lot of good ideas in an article or two. One thing I like about Radio World is the number of contributors, which I think gives us a grand cross-section of expert opinion."—J. E. Ward, 6 Ronald Street, Dubbo, N.S.W.

(Thanks for the subscription renewal, which is, as you say, the most concrete form of appreciation. The problems associated with the acoustics of the room in which a speaker is used provide plenty of scope for articles but it is a little difficult to know where to start.—A.G.H.)

IDEAL BROADCAST STATION CONSOLE

Particulars of Latest Design

EFFICIENT handling, cueing and playing of various transcription has long been the goal of control engineers. Technicians of WJR, Detroit radio station, under direction of Control Chief Fred Friedenthal, have perfected a turntable console capable of meeting the most exacting reproduction problems with utmost flexibility.

The console, designed by Friedenthal and his staff with co-operation of Fairchild Camera & Instrument Corporation engineers, was custom-built and installed by Fairchild, and has proved highly successful. Two operators are assigned to the bank of four Fairchild turntables equipped with vertical-lateral pick-ups. Each pick-up has its own filter network and built-in cue circuit with separate cueing loud-speaker.

Because of the system of playing recordings of music as well as spot announcements from this blind

position, the operators also have built-in talk-back equipment connected directly to the announcers' stand-by and spot studios. The console is so designed that each

**Direct from our correspondent
in U.S.A.**

table can be fed to a different circuit or mixed on one channel. Two separate amplifiers have been wired in, one handling the left two tables, the other the right pair.

Many times throughout the day all four tables will be in use, one possibly feeding an audition to a client, one for a chain break spot, another for a delayed network programme, and the fourth feeding into the cutting circuit for re-dubbing purposes.

This centralisation of all waxed activities decreases the percentage of damaged or misplaced discs, and allows for better over-all operating efficiency, according to Mr. Friedenthal. It also minimises such errors as misunderstanding of scheduled studio origination, etc.

Accompanying photographs show push-button controls and attenuators as well as filter controls giving the operator full fingertip jurisdiction over two outgoing channels. Additional channels may be patched in upon a moment's notice.

Such a bank of turntables is most useful during disc jockey programmes where frequent 33-1/3 rpm commercial spots are inserted between live patter and 78 rpm recorded music.

The Fairchild console incorporates ideas of the entire engineering staff of the Motor City's 50,000-watt CBS affiliate. It is sturdily built, and done in baked grey enamel with stainless steel trim. This motif is carried out through the entire master control room.

The Fairchild corporation's distributor for Australia is Perkins (Aust.) Pty. Ltd., Bowden Street, Alexandria, N.S.W.

MILLION VOLT GENERATOR

We are informed that the Philips laboratory at Eindhoven, Holland, has just completed the construction of a million-volt generator for Oxford University. This high-tension installation is to be used at Oxford in the department of nuclear physics for converting one kind of atom into another. Meanwhile Eindhoven have already started on the construction of another new installation.



Turntables of the Fairchild Console.

A COMPETITION FOR OUR READERS

First Prize—Eddystone Communications Receiver

TO obtain publicity for the "640" Receiver, and to give radio amateurs and short-wave listeners an opportunity of competing for one, Stratton & Co., Birmingham, have decided to present, free of charge, a new Eddystone "640" Receiver to the writer of the best article on one of the three following subjects:

(i) How do you visualise the application of the new Microwave Channels shortly to be allocated to radio amateurs?

(ii) It is evident that Band Planning will be essential if the most is to be made of the Amateur Bands. What proposals have you to make in this connection?

(iii) What are your views on the subject of the relative merits of British and American Communications Equipment? (We wish to make it clear that articles on this subject should be written without prejudice).

Choose one of these—the one you feel you can write about easiest—and write an article about it, running to not more than 1,500 words. To the writer of the best essay, an Eddystone "640" Receiver will be presented FREE. When judging the work, points will be awarded not only on literary style but also on clarity, force of argument, constructiveness, and other similar factors. All, therefore, have an equal chance.

The following have kindly consented to act as judges:

Mr. John Clarricoats, General Secretary, R.S.G.B.

Mr. Austin Forsyth, O.B.E., Editor "Short Wave Magazine."

Mr. Geoffrey Parr, M.I.E.E., Editor "Electronic Engineering."

Competition Rules

1. Write an article of not more than 1,500 words on any one of the specified subjects.
2. All entries to be preferably typed or, alternatively, written in ink, on one side of the paper only, with wide margins.
3. Entrant's name, full address, and occupation to be clearly shown on each entry.
4. Entries to be posted in sealed envelopes, marked "Competition" in top left-hand corner, to Stratton & Co., Ltd., Eddystone Works, Alvechurch Rd., Birmingham, 31, England.
5. Closing date for the Competition is April 30, 1948.
6. The winner will be notified by cable as soon as possible after the closing date.
7. The copyright of all entries is reserved by Stratton & Co., Ltd.
8. Competitors must be resident outside the United Kingdom.
9. It is a condition of entry that the judges' decision is final and legally binding. No correspondence can be entered into on the subject of the competition.

Entrants may mention that they read "Australasian Radio World."

HANDY RESISTOR BOX

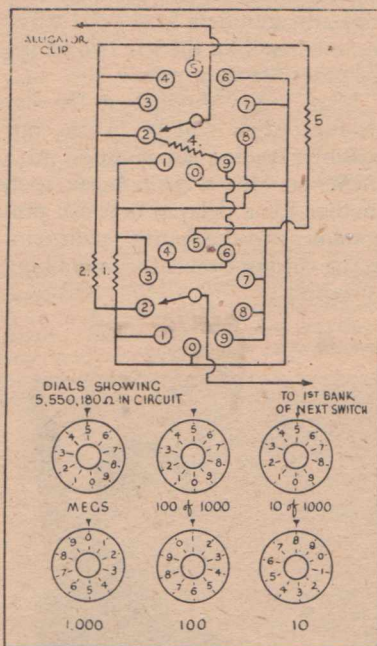
THERE are only four resistors used in each of the six 2-bank 10-position switch circuits. On the first switch positions 1, 2, 4 and 5 switch in 1, 2, 4 and 5 megohms respectively; the intermediate values are made up with

Submitted by a Reader whose name and address has been mislaid.

series connections of these same resistors as follow: 3 meg. = 1 and 2 meg.; 6 meg. = 2 and 4 meg.; 7 meg. = 2 and 5 meg.; 8 meg. = 5, 2 and 1 meg., and 9 meg. = 5 and 4 meg. Position 0 shorts out the section, giving zero ohms.

The remaining five 2-bank switches are wired exactly as the first shown in the diagram but the value of each resistor is decreased to one-tenth of the value of its equivalent in the preceding two bank circuit, i.e. 100,000; 200,000; 400,000 and 500,000 ohms are used in the 2nd switch; 10,000; 20,000; 40,000 and 50,000 in the 3rd; 1,000, 2,000, 4,000 and 5,000 in the 4th; 100, 200, 400 and 500 in the 5th; and 10, 20, 40 and 50 in the sixth.

The six 2-bank switches are connected in series with one another, the movable arm of the 2nd bank going to the movable arm of the 1st bank on the next switch. The moving arm at each end of the en-



tire circuit (1st bank of 1st switch and 2nd bank of last switch) are brought out to alligator clips.

Including the position where all switches are at zero there are just one million different values that can be switched in giving a range of from 10 ohms to 9,999,990 ohms in 100-ohm steps.

If 0 to 9 knobs are used on the switches any of these million values can be quickly switched in as indicated by a direct reading from left to right.

PERFORMANCE WITH ECONOMY

Notes on Amplifier Gaining Second Place

Much simpler than the Champion Amplifier is the job which gained second place, yet its performance was not so very far behind.

This amplifier is a three-stage resistance coupled push-pull job, with feedback from voice coil winding to input.

Phase inversion is achieved in the first stage by the simple grounded grid cathode coupled circuit. No attempt was made to balance the audio output from this stage, but this could be done by using unequal plate resistors. Some improvement would certainly result from this.

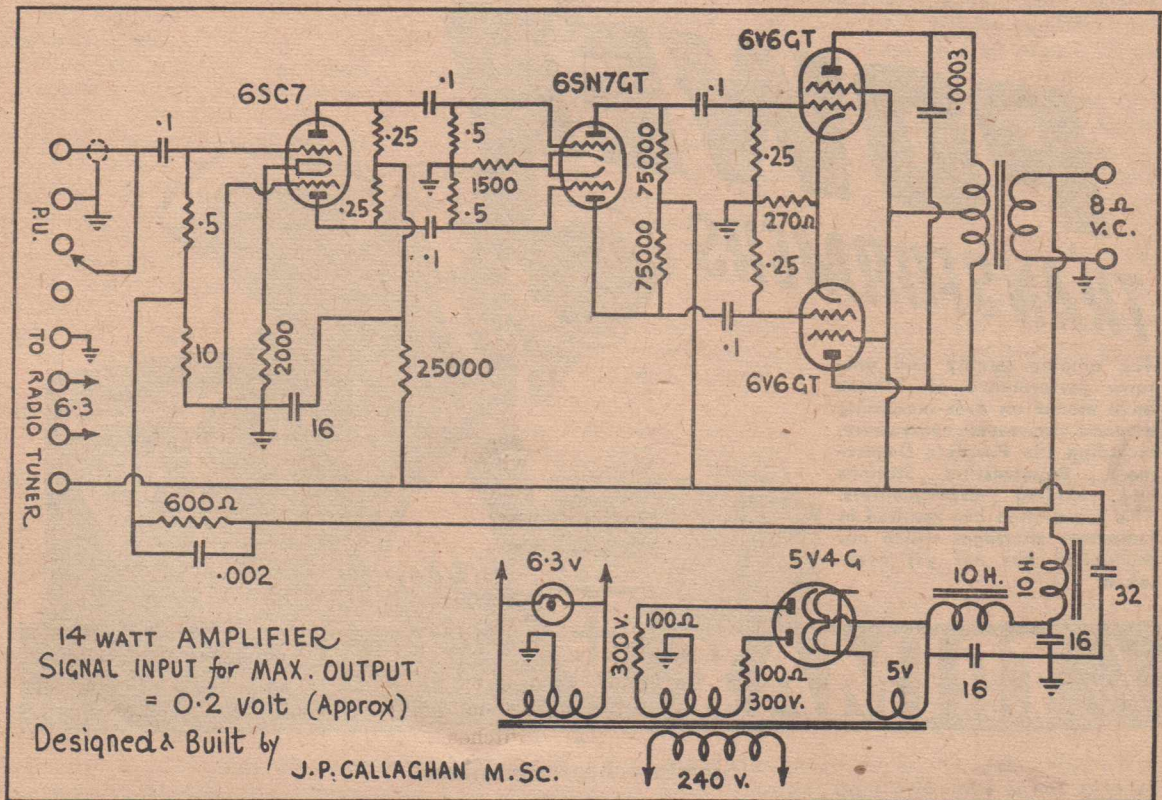
The feedback circuit gave some trouble due to high frequency phase shift, resulting in supersonic oscillation. This was eliminated by the .0003 UF condenser between the plates of the output tubes, and the .002 condenser across the 600 ohm feedback resistor. The output transformer was a cheap commercial job made in Brisbane; a better component here might eliminate the difficulty of achieving stability.

The pickup used was a Rothermel crystal cartridge in a locally-made sheet iron arm, which tracked excellently down to 50 cycles with low needle pressure (1¼ ozs.). No equalisation was

used. The speaker was that supplied for use of competitors, namely a 15in. Utah in a folded horn cabinet. Normally an old Amplion 12P64 is used, with excellent results.

The amplifier was built on a commercial chassis with cover; the layout of this chassis is atrocious, is being quite impossible to keep components belonging to the input stage away from the output stage. Some of the hum is due to this cause. Proper layout and good shielding of the input stage would effect a great improvement.

—J. P. CALLAGHAN, M.Sc.



TECHNICAL TOPICS

The wire recorder habit is spreading. On a recent morning I yarned with MW9AD in Graav, Austria, and during an over he recorded the transmission from this end and shot it back without warning. The machine was running somewhat on the slow side, or maybe my voice is a bit deeper than I thought. If you haven't had the experience, get somebody to record your transmission and to let you hear a bit of your own voice. The effect is surprising and always at first not quite recognizable as one's own voice. Almost as if you are listening to a stranger repeating what you have said.

Since the DX bust through on 30 mC/s recently, some of those who have been using receivers of uncertain design and performance have found things are not what they might be. Some of those ex-Disposals receivers in particular are about as unselective as they could be and are not much use when the band fills up. I.F. channels a megacycle or so wide at 30 mC/s or so just aren't usable under such conditions. Nor of

course are squeeggers. Heard a station in Sydney using one of the latter contraptions complaining loudly that VK2WJ and VK2NO were interfering with each other. Of course they were, on that receiver. But on a rationally designed RX there is exactly 80 kC/s between the two stations and that is plenty of elbow room. A good converter into a communications RX is the easiest answer.

Those of you who may be interested in the Grounded-Grid form of RF amplifier in VHF reception should note that the highly efficient RL37 valve (CV66) is stocked at present in quantity by Philips and A.W. Valve Co's. It is a difficult matter to apply the RL37 in a cathode input scheme as an RF amplifier with a stage gain of 35, and in which the input circuit is 100 mcs wide. That means—the design of a Converter or receiver with really effective gain with one coil in the front end to cover from about 27 mcs to 60 mcs. With an ECH35 Mixer using aperiodic input and output circuits—this means a handy arrangement with a real 10 and 6

metre performance with only one tuning control and no tracking troubles. Another valve that the VHF boys will do well not to pass by as just another valve—is the EF50. With valves of that calibre appearing in dealer's windows at 10/- each—they are indeed a gift. Don't let anybody tell you either, that the 6AK5 will "run rings round the EF50"—the 6AKF and EF50 are about neck and neck in gain, and the EF50 is easier to "tie-down." Advantage of the 6AK5 is its miniature size—whereas the EF50 takes up a bit of space.

A Converter of the type mentioned with RL37, ECH35, and Philips Log-Dial for tuning control is something handy to have in front of your receiver.

Over in England, Ken McTaggart, ex VK3NW, who kept these columns posted with VK3 VHF doings, is now on the air as a G. His call is G3CUA and his locale is 11 Mount Pleasant, Cambridge. So far Ken is key-punching in the CW end of 14 mC/s. Also on the G air is Elgar Treharne, ex VK2AFQ-3AFQ, and now G3CSJ. He is located in the hub of Empire and keeps skeds with brother VK2IQ and father VK2BM.

POWER TRANSFORMERS

The reliable quality and uniform performance of Trimax have meant an ever-increasing demand by users everywhere, including the P.M.G.'s Department, Broadcasting Stations and leading experimenters. This recognition has resulted in temporary shortages which our production has not yet overtaken.



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INQUIRE FROM YOUR NEAREST SUPPLIER

NOTICE

Clearance Sale of Old Back Numbers

Owing to shortage of storage space it has been decided to dispose of all back numbers dated prior to September, 1946. Therefore the following back numbers are offered at a special price of 6d. each, or 5/- per dozen, post free to any part of the Commonwealth.

These issues contain a wealth of technical data and information. Only small stocks of some issues are available, so don't hesitate.

- September, 1939.—Six-band frequency meter, Dual-wave battery four.
- December, 1939.—Loop portable 3, Junior class B battery amplifier, "Air-scout" communications six, multi-meter circuit.
- February, 1940.—Companionette 3 for a.c., Receiver alignment, 3-watt midget amplifier, World-Cruiser 8, etc.
- May, 1940.—De-Luxe Fidelity 8, 12-valve Super Set, "Vibra" p.a. amplifier, S.W. Converter for battery operation.
- November, 1940.—Transport a.c. portable, T.r.f. mantel 4, "Criterion Crystal," Two champion amplifier circuits, 8-valve battery superhet.
- December, 1940.—"Tip-top" 3/4 superhet (one of our most popular circuits), tone-corrector for magnetic pick-ups.
- February, 1941.—The Club Special, Local-tone Four (a.c.), First article on tone compensation by inverse feedback.
- March, 1941.—Second article on compensated acoustics, also the "Acoustic Compensated Superhet."
- April, 1941.—"Master 4" battery set, Car radio, Club Special with vibrator, etc.
- June, 1941.—Super-seven dual-waver, Paraphase amplifier, extension speakers.
- July, 1941.—Countryman's vibrator 4, 13-watt amplifier, power oscillator for code class.
- December, 1943.—Design of folded horns, five-way tone control, High efficiency aerial for short-wave listening.
- January, 1944.—Simple v.t.v.m. with magic eye, home-made high-fidelity pick-up head, all-wave two-valver.
- February, 1944.—How to make a soldering iron, 12-valve super-quality amplifier.
- March, 1944.—Making electric musical instruments. The Three-Two battery special.
- April, 1944.—How to make an electric guitar, simple volume expander circuits, Mystery crystal set.
- May, 1944.—Multi-vibrators, an amplifier beyond reproach, wide tone-control unit.
- June, 1944.—Utility battery set, Direct-coupled t.r.f. 4, How to wind your own output transformer, etc.
- July, 1944.—Simple v.t.v.m., Three circuits by Stevens, Home-built communications 13, scratch filters.
- August, 1944.—Home-made hi-fi pick-up, wide-range audio oscillator, useful a.c. bridge, bass booster amplifier.
- September, 1944.—How to design direct-coupled amplifiers, crystal circuit which receives N.Z., Eclipse champion amplifier, simple valve tester, R.f. heating.
- December, 1944.—Victorian champion amplifier circuits, pick-up equalizers, English fidelity radiogram circuit.
- March, 1945.—Superhet for D.C. with lamps, multi-meter with wide range, Reflex for Results, Moving coil meters.
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- June, 1945.—Well-tried reflex circuit, Theory of microphones.
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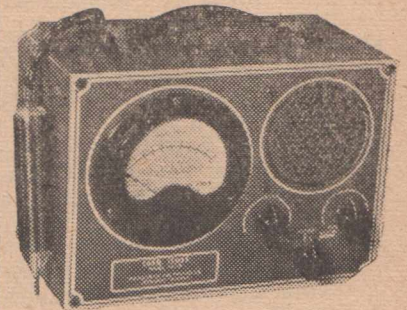
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CALLING CQ!

By Don Knock, VK2NO

THERE is really no end to the scope for adoption of what may be termed "Phantastic Phonetics" for most amateurs with a flair for the original (and what Ham isn't?) think up some queer verbal expressions for callsigns. After the "Six Vicious Jumping Tigers" of a W6, I heard another gem, this time from a W8. He tells all and sundry that he is "Double You Eight Yellow Coloured Zeebras." Our American friends don't have it all on their own in this respect . . . our own kith and kin are well to the fore, as may be noted oft-times on the 7 mC/s band.

One doesn't have to be a rabid DX hunter to tot up a goodly score of distant stations during casual operation on 14 or 28 mC/s. Have just been glancing through my log of G's worked on phone and CW in recent weeks. Since installing a single section W8JK beam a scant few weeks ago the total of G con-

"out of the blue," mostly in the early mornings around 6 a.m. . . . ah . . . there's the rub! Nevertheless, I don't consider myself anything of a "DX Hound" these days in comparison to some of the VK's around my locality.

One of those getting excellent results with W9NLP's "inductive dipole" is Jack Ferguson, VK2FJ, of Bronte, N.S.W. He is in what may be considered a mediocre DX location, almost on sea level at the beach. His antenna, installed a month or two ago after everything else imaginable had been tried, is an inductive-coupled dipole with director, and it hauls back the W's and sundry other DX in no uncertain manner.

Listened to a laddie on 7 mC/s phone complaining bitterly that he gets heavy interference from people in flats around his location, tacts is 76. None of these QSO's resulted from "skeds"; they were

with vacuum cleaners, cake mixers, sewing machines, etc. Almost in the same breath he mentioned that "my wife has a mixer and sewing machine and of course she can't use them when I am on the air. I know that an easy way to fix it would be to instal suppressors." Well, OM . . . why not do it . . . and thereby give the XYL, yourself, and other amateurs in your vicinity a break?

How things have changed! There have been ex-army No. 4 sets selling in and around Sydney for £6 to £8, depending upon condition, which has been fair. At the price, they are a good purchase, possible faults included, and the valves needed to get them into action are standard types. For the benefit of those who may not know, and I know that many have found out the hard way, the power transformer in the early series No. 4 set was the weak link. The receiver started production just before tropicalising became imperative, and unpotted transformers absorbed lots of moisture in regions like Milne Bay. Later models were, however, a much better proposition. My advice to those who may have purchased No. 4's with the "open" type power transformer is to change this for a better job from the start.

Congratulations are in order for Jim Wetherill, G5UB, radio officer on the Canadian vessel "Wairuna." Jim announces his engagement to Miss Ruth Dixon of Auckland, N.Z., and the indications are that in due time Jim will be a ZL.

The era of Disposals bargains is anything but over; in fact it seems likely to persist for months, perhaps years to come. It serves to illustrate just what you and I have already paid for and how the "wolves" are handing it to you again on an expensive platter. Nevertheless, there are attractive bargains to be had if the peepers

(Continued on next page)

Experimental Radio Society of N.S.W.

The recent Field Day held by the ERS proved to be most successful. Two rigs operated on 7 mC/s and worked throughout N.S.W., whilst several mobile stations and "walkie talkies" functioned on 166 mC/s.

The 7 mC/s stations used 5 and 20 watts input respectively, obtained from vibrator and 24-volt inverter to 240 volts A.C. Calls used on 166 mC/s were VK2AHT and VK2OQ. The 7 mC/s callsigns were VK2AHT, 2OQ, 2AGL, 2VP, and the ERS' callsign, VK2LR. A good day was had by all and plans are already in hand for the next similar occasion, scheduled for March 14 next. The catering supervisor, Mr. Fred Hunt, deserves special praise for his excellent part in this Field Day. At the meeting following, Mr. Arthur Platt described some of the equipment used.

A sad note is the sudden and unexpected death of Ted Clune, VK2DK, a popular member and

our representative on the P.M.G. Advisory Committee. Members were shocked to hear the news, and, although notice was short, many were able to attend the funeral. Radio Inspector O'Sullivan attended on behalf of the P.M.G. Department. Business was suspended for three minutes at the subsequent meeting as a mark of respect for our lost friend.

After a lengthy illness we are pleased to welcome Jeff Carter back to meetings.

Recent lectures included one by Mr. Dent (VK2AHU) on "Modern Elevators," which, although exclusively electrical, was much appreciated by all members, who now feel much safer in such transportation devices after learning of the safeguards demanded by the Law.

The Xmas Party evening was held on December 18, and details of that will be contained in the next report.

HAM NOTES

(Continued)

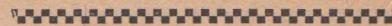
are kept open, but that is not the prerogative of the so-called "city slicker." There are VK's in certain country areas who have had access to far more attractive propositions than ever the city man has seen in dealers' windows. AT20's and wire recorders don't get around in the city at all; nor do certain American communication receivers. But such things nevertheless are in the stations of some country VK's. For the benefit of the Sydney city VK2, here are a few items to whet the appetite, particularly the VHF kind. In a window in an arcade, once known as "Radio Row" I saw things like these . . . 2 deck ceramic 4-position switches at 6/-; 14 mC/s aerial tuning units at 3/6; complete 160-170 mC/s receivers at £7/10/-; wireless sets Nos. 22 at £3; selenium rectifiers (HT type) at 3/6; and a week or so ago there were 813 and 803 valves offered by a Sydney Pitt St. store at £1. Nothing vanished more quickly than those valves . . . a flock of birds had nothing on them . . . which isn't surprising. But the other things I mention . . . they seem still to be available.

Ex-Radar men shouldn't fail to see a current British movie, "School for Secrets." There is much of more than passing technical interest, centred around a group of civilian scientists, known

in R.A.F. slang as "Boffins." This film, the plot for which is laid around the Battle for Britain, serves to remind us that not so long ago, these grim things were happening, and that but for the magnificent courage and success of the "Few," among other things in our lives, the many radio amateurs of the British Empire wouldn't be enjoying the freedom of the frequencies.

One never knows where an old contact is likely to turn up. Last QSO I had with VK2HF was in pre-war days some time or other, and on the evening of Sunday, October 26, last, I was agreeably surprised to find myself in QSO with "VK2HF portable/airborne." It turned out that Alan was doing a spot of 14 mC/s phone DX whilst flying a Constellation from California to Sydney. At the time of the QSO he was between Honolulu and Canton Island, using a type ART13 transmitter.

Congratulations to VK2IN, who, like VK2BM, at the age of 60 years or thereabouts, has made the grade, passed the AOCIP with flying colours, and emerged a licensed amateur. VK2IN, Jack Keblewhite of Wahroonga, N.S.W., is having a great time putting his excellently engineered equipment to good use by working sundry DX . . . all on CW. He says there is plenty of time to use



CANADIAN AMATEURS

A chain of emergency amateur radio stations, for use in case of civil emergency or disaster, was recently set up across Canada. Sponsored by the Royal Canadian Air Force, the Air Force Amateur Radio System, as it is called, is open to any Canadian citizen. It does not demand Reserve or Service attachments, and places no obligation on its members to enlist in a Fighting Service at any time. Among the aims of the organisation is to provide additional channels of radio communication throughout Canada that may be used to augment or replace telephone and telegraph services in time of civil emergency or disaster and to give Canadian amateurs a knowledge of Service communication procedures and equipment.



phone later on, an outlook in distinct contrast to many lads who, after having got through the exam., virtually sneer at those who use CW.

If anything riles the deep-thinking amateur it is that annoying habit of some advertisement copy writers of referring to transmitting radio amateurs as "amateur broadcasters." Sounds like a quiz session or something, and the worst of it is that such "copy" appears now and then in strictly "Ham" magazines advertising a line of components.

Latest Australian old-timer back on the air is none other than Jack Pike, of Greenwich, N.S.W. So long as there has been radio in existence in this country, JP has been associated with it. He started off as an amateur in 1909 and had a hand in the inauguration of the Wireless Institute of Australia. For many years he dropped out of the amateur DX game and almost his last effort at that time was in 1930 when he handled more than 20,000 words of CW traffic with VK6NK during an emergency. He is in among the phone DX and enjoying himself, but considers that the present-day "Ham" is a different type to the oldsters.

Tasman Crossed on "6"

Starting on the evening of Saturday, December 21, a dream of eventual VHF communication across the Tasman Sea reached reality. That evening around 6 p.m. Sydney time, ZL3AR was heard on phone calling "CQ Six Metres" repeatedly. Flocks of VK2's went back at him but all efforts brought no response. It later transpired that ZL3AR's receiver wasn't functioning that night. Realising that the path was open, VK's 2OC and 2NO took the step of calling New Zealand on Six and looking for replies on Ten . . . a procedure which brought excellent cross-band working with ZL4BN in Dunedin. Meanwhile ZL3AR was heard for two hours on Six at S9! The next morning, Sunday, some Sydney stations were early on the job and in

speedy succession many two-way contacts on Six were clocked up with New Zealanders in all ZL districts. Prominent in the contacts, which lasted right through the day until 9 p.m. Sydney time, from 8.30 a.m., were VK's 2NP, 2WJ, 2ZH, 2NO, 2OC, 2BZ, 2ADT, 2GU, 2TA, 2TC, 2JU, and probably many others. It was an amazing day for the 50 mC/s men on both sides, and the band opened up for almost the whole of Australia and New Zealand. VK2's, 3's, 4's, 5's and 7's worked ZL1's, 2's, 3's and 4's. The day will live long in the memories of VK's and ZL's who had worked for so long toward the goal . . . it was strongly reminiscent of the pioneering days on 10 metres about 20 years ago.

—Don B. Knock.

VHF NEWS AND NOTES

Those fortunate enough to possess type 6C4 miniatures will find them excellent oscillator valves for use in VHF converters, receivers in general, and transmitters. In some oscillator applications they can be a bit stubborn, particularly where the cathode is directly earthed. In such cases a simple remedy is to place the cathode sufficiently above earth to induce feedback, and a simple way of doing this is to connect in series with the cathode to earth, an RF choke. About 45 turns of small

gauge insulated wire on a quarter-inch form will do the trick. It never fails.

Whilst the quest for 6-metre DX goes on in the Eastern States, there are those in the Sydney area on the watch for any trace of VK6 signals. Many of the old hands only need a Westralian to have made WAS on "Six." On Sunday, December 7, last, the VK6's were pounding in all day long at S9 in Sydney . . . on 28 mC/s phone. One or two Sydney stations concluded that then was

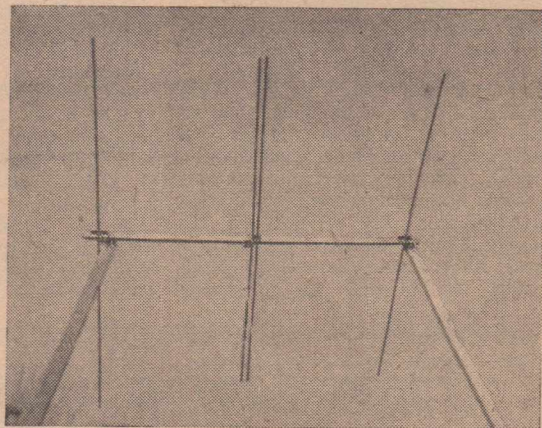
the time to get that elusive VK6 on 6 and beams were swung west and lengthy calls made at intervals accordingly. Negative result prompts the thought that, after all, perhaps the Westralians were all on Ten, and that nobody could have been active at the time on Six over there? Certainly the Westralian 6-metre leading lights were among those callsigns that held up on Ten from 1300 to 1900 hrs. Sydney Time. In passing, it is noted in "The Wavetrap" that the very live-wire Subiaco Radio Society is no more . . . in name.

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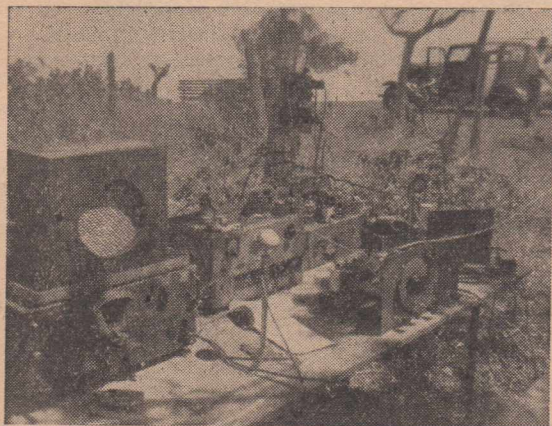
SIX-METRE FIELD DAY AT BUNDABERG



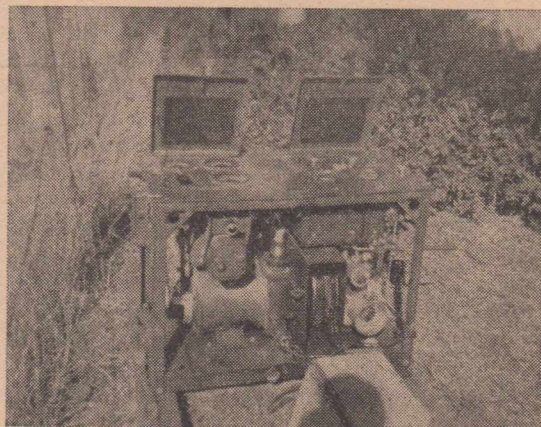
Four keen members of the Bundaberg and District Amateur Radio Society during a 6 metre Field Day. They are, left to right: VK4PG, 4XJ, 4AD and 4BJ.



The 50 Mc/s beam array with Reflector, Folded Dipole, and Director, erected at "The Summit" near Bundaberg.



This is the equipment used on the occasion of the Bundaberg Club's 6 metre Field Day. Left to right: BC348 receiver and 3B Teleradio; 12 valve 50 Mc/s. receiver; 3 stage CC transmitter with PP 809's in the Final, and speech amplifier.



The Power Unit . . . a 110 volt 3 phase 3 KVA generating set . . . quite a job for a Field Day installation.

A few shot's taken during a recent outing of the Bundaberg and District Amateur Radio Society at the highest land position around Bundaberg (Qld.). The object of the day was to push 6 metre signals through to Brisbane. Results were negative, but nevertheless the boys had a lot of fun. VK4PG was the photographer. P.O. Box 97, Bundaberg, Qld., is the Club's address.

VHF NOTES

(Continued)

As from May 8 next the name is to be changed to "The Radio Society of Western Australia."

One of the queerest instances of localised VHF propagation occurred in Eastern VK on the evening of November 15, 1947. In Sydney, there were quite a few VK2's active on 50 mC/s phone, following on a DX opening the previous night. Nevertheless, in Brisbane a VHFL using a single valve "rush-box" with an indoor aerial heard VK2MQ of Concord West at S9 for several minutes; and that was the only signal heard from N.S.W. In Sydney there was not the slightest indication or evidence that the band was "open" as it must have been. There are increasing instances of such localised reception of distant stations.

Sydney members of the VHF section of WIA don't lack interesting lecture material when the monthly get-together night comes around. There have been subjects covered by lecturers with scientific qualifications far ahead of the average amateur, and these lectures have often been well illustrated by movie or projected

material. Recently a lecture on "Waveguides and Their Application to UHF's" was delivered by Mr. Whyte, VK2AWW, who in his daily life is a lecturer to Navy Radar men. You could have heard a pin drop right through to the end. That meeting was attended by the Coalfields and Newcastle 6-metre men who had driven en masse to Sydney that night for the purpose. That takes enthusiasm, because there is the tortuous homeward journey, landing the boys back home in the small hours. VK2BZ and VK2ADT just about reached home territory in time to start the daily grind. Future lectures arranged by the energetic VHF Section Officer, Chas Fryar (VK2NP), include an outstanding subject, "Moon Radar." It will be delivered by one of the scientists who recently co-operated in the Shepparton tests. Members of the VHF Section of W.I.A. N.S.W. Division are intrigued by the two lady visitors who always attend meetings, but don't say anything.

DX conditions on 50 mC/s are quite unlike anything experienced on the HF's with regard to the localised nature of individual reception. On the night of November 13 last in Sydney, when the

Queenslanders broke through with startling intensity, the strongest station from VK4 heard at VK-2NO was that of Bill Harston, VK4RY. At the same time, over at Concord West, VK2MQ was hearing VK4PG of Bundaberg much stronger. Aural observation was not the basis used, for VK-2MQ made actual measurements. A.V.C. voltage developed in his receiver read 10 volts from VK4PG and 8 volts from VK4RY. The stations immediately local to VK2MQ—VK's 2FO and 2NP—show a voltage reading of 8 volts also. The strength of the Queenslanders had to be heard to be believed, and the meter doesn't tell lies . . . not in VK2MQ's case! Actual measurements were not taken at VK2NO, but VK4RY was definitely the strongest VK4 at his location.

It was bad luck indeed for Roy Hart (VK2HO), of Roseville, N.S.W., that the very night they carted him off to hospital for an appendectomy, the DX should break through with a wallop on "Six." That was what Roy said as they took him off, "I'll bet the DX opens up" . . . and sure enough it did. Anyway, Roy is back on the band again and is determined to get among the next burst of 6-metre DX or bust.

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OCEAN LETTER FROM G3BQH

MV "Chumleigh",
Red Sea.

Dear Don,

Many thanks for your letter of June 4 and also for the copy of "A.R.W.", received at Port Said after a twenty-six day passage from Galveston, Texas. Your reference to undercover Mobile Marine operation is interesting, as I consider those who indulge in it are foolish. I hear a few examples, and what is more, they are making use of the ship TX which is often quite unsuitable for amateur band working. The usual circuit is a single valve self-excited oscillator! There have been reports in a certain American publication of maritime activity, indicating that American R/O's have been quite successfully picked up in the amateur bands and D/F'd all the way to the States. That should make would-be pirates think! So far the British PMG doesn't seem to favour amateur Mobile/Marine operation, which keeps me silent afloat, but I get a lot of fun listening, nevertheless. I am using a BC348 receiver of the latest type, somewhat different to the Model Q that is being sold as War Surplus in U.S.A. It is a pretty good job, but I have hopes of getting an AR88 when I get back home. That was a good show your working ZD6DT on 7 Mc/s. phone.

Whilst around your coastline I maintained that far better results were obtained between the hours of midnight and 8 a.m., than during the sessions of the "Dutch chorus." Nearly all my DX was worked in the early morning hours and, as you know, I enjoyed almost nightly yarns with VK2AGU and VS1BD. I have been doing a spot of listening on 14 Mc/s. lately and one morning I heard VK's at S9, with VK2ABD outstanding. QHT at the time was near the Azores. If I had been M/M this trip I could have worked with some choice calls, considering we have been around the Mexican Gulf where the Latin Americans come in like locals. We passed 25 miles off Bermuda, through the Mediterranean, and in the vicinity of the VS9's at Aden at the foot of the Red Sea. The card collection would have been an interesting result of operation on that trip. Talking of cards . . . I

see that a GW has been complaining in a magazine about VK's not QSL'ing. I think I shall send him a photo of mine . . . that would change his ideas. Main trouble is that they take a long time to get through the bureaux and it is nothing to have to wait 6 months for Australian cards. Also, some of the chaps do not co-operate with the bureaux and that all adds to delivery time. During my absence from home, I am informed that a stack of cards awaits me from the VK Bureau.

Incidentally since I had H/F on the "Chertsey," the owners have decided to fit all their vessels with H/F gear. I really do not know if

my amateur activities have been responsible for the decision, but I do know that the "Old Man" used to send in reports of my DX success and was particularly pleased whenever I managed to work with the United Kingdom. I suppose you will still remember what the Red Sea is like in August (verily OM . . . DBK) . . . it is hot and oppressive at the moment.

We are en route for Singapore, and there is a chance that we may get to Australia from there, but that is not definite. You may hear from me some time doing a spot of operating from some VS station when I get ashore.

Regards to my VK friends,

ERIC SHERLOCK,
G3BQH.

TECHNICAL TOPICS

THE following observations are from Philips Transmission Dept. . . . A recent request for advice on the neutralisation of a single-ended amplifier using a 812 valve described some phenomena which are normally present when neutralising, but which are not usually so striking. The correspondent stated that he was unable to neutralise the amplifier because when he had excitation applied, but the anode supply switched off, the anode current meter showed about 20 mA and the mercury vapour in the 866A rectifiers ignited. Check with a voltmeter showed 100 volts DC at the anode of the 812. If any triode amplifier is not neutralised, RF power from the grid will find its way into the anode circuit under the above conditions. The test for neutralisation is to determine that no RF energy can be detected at any setting of the anode tuning condenser. In this particular case, the amplifier was very far from neutralised and a considerable amount of energy was getting into the anode circuit. This being rectified, set up a DC potential, thus causing the observed anode current. It is a normal phenomenon, but is not usually conspicuous. In general, the anode current is very small. The correspondent was trying to make his neutralising adjustment by observing the dip in grid current as successive adjustments were made to the neutralising condenser and resonance of the

anode circuit. In such cases it is a good plan to do the preliminary adjustments with a pea-lamp and a two-turn loop coupled to the anode circuit, and to do the fine adjustment only on the grid current dip. In this way the anode current mentioned above may be ignored and the adjustment properly carried out. A neon tube may be used as an alternative to the lamp and loop, but more effective still is the use of a sensitive RF indicator using a crystal diode and meter.

* * *

If you consider using the RL37 grounded-grid triode as RF amplifier . . . make sure of one simple but very important point. Connect the grid direct to earth (the chassis) by as direct a route as possible. There are four pin connections to the grid of this valve, and you might as well earth all of them thus. Even an old hand can fall in . . . your scribe was some hours trying to stop an RL37 from "taking off" until he awoke to the fact that a length of wire 1½ inches from one grid connection to a nearby solder-lug on the chassis was the offender. It placed quite a measure of inductance at the grid, placing it virtually "above earth." The remedy was as outlined. Make sure also, that the metal shell of the RL37 is effectively earthed through the locator pin.

TECHNICAL TIPS

THERE is extraordinary congestion of communication channels between 2 and 3.5 mC/s, and at times the crowding is so severe that spacing between channels is only 4 kC/s. To a considerable extent this is due to the fact that a number of public utilities and government bodies have been able to purchase Disposals equipment which works in this range, and hence they have applied for frequency allocations accordingly. 4 kC/s is workable on purely communication channels if the transmitters are all crystal controlled and the speech frequency range suitably limited. Unfortunately this is not always the case and serious interference often occurs. Another consideration is that adjacent channels should have wide geographical separation and this also does not always happen. At night-time the ranges of sky-waves on these frequencies open out to hundreds of miles. Thus, around the capital cities of Eastern Australia it is often possible to hear at quite fair strength some of the outback stations around Katherine and Alice Springs.

Many of these stations use Traeger transceivers which are built under Philips licence. Anywhere within 50 miles or so of capital cities channels between 2800 and 2850 kC/s should be particularly avoided as in that range are aircraft approach control stations of rather high power. Several networks have been forced to apply to the P.M.G. for channels around 6 mC/s because of the terrific interference in the range referred to. Commercial enquirers would do well not to ask for allocations there as things are.

* * *

That was a good bargain in coaxial 70 and 50 ohm cable the W.I.A. announced in a VK2 Division Sunday broadcast . . . lots of it at a penny halfpenny per foot. Coaxial cable doesn't usually come as cheap as that . . . which shows what the W.I.A. can do for the lads when the rapacious type of Dealer isn't in for his cut also. Another very attractive bargain was offered in the form of petrol-electric generating sets, sporting a 2 Hp engine and 240 volt 300 watt alternator. The price . . . around £27 . . . and verily a gift for the country VK . . . or the man considering installing his own emergency power plant. Only thing I could think of better than that would be the Philips Hot Air engine . . . that revolutionary power unit that does so much for almost nothing and runs on anything that will generate heat.

* * *

Here are some valves, shown by service marking and commercial types . . .

VT50 is HL2K, Marconi Osram make.

VT52 is EL32, Philips. (audio pentode).

VR53 is EF39 (EF9), Philips. (RF pentode var: Mu).

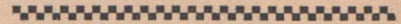
VR54 is EB34 (EB4), Philips. (duo diode similar to 6H6).

VR55 is EBC33 (EBC3), Philips. (duo diode triode).

VR56 is EF36 (EF6), Philips. (RF pentode).

VR57 is EF32 (EF2), Philips. (RF pentode var: Mu).

That antenna described in October 1947 "QST" as the HALO has much to commend it, not only for mobile station 6-metre work but for fixed locale operation also. It is a horizontally polarised radiator of the large and smaller conductor folded dipole variety; curved around to form a circle about 21 inches diameter. It certainly looks like its description. It is claimed that car ignition trouble is very considerably minimised when using the system for reception in a car; a claim that is understandable enough to those who are using horizontally-polarised arrays at home locations. The radiation pattern shows definite superiority over the usual vertical whip kind of antenna and although the angle of radiation would not normally be as low as the usual ground-plane system, it could be made so by using stacked HALO radiators. The trend among many experienced 50 mC/s men is undoubtedly toward the use of horizontally-polarised antennas. Present objection to the horizontal array that "it must be rotatable" in order to cover all points affectively will not exist if stacked HALO's are used. The idea is worth thinking about.



DATA ON NEW VALVE

TUBE TYPE 24G

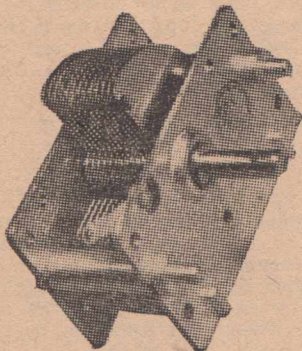
High Vacuum Power Amplifier Triode:—
 Filament Thoriated Tungsten
 Filament Voltage 6.3 volts Ac
 Filament Current 3.0 ampere
 Amplification factor 23
 Transconductance 2500 micromhos
 Direct interelectrode capacitances:—
 Grid to Plate 1.5 micromicrofarads
 Grid to Cathode 1.7 micromicrofarads
 Plate to Cathode 0.3 micromicrofarads
 Base 4 pin (small)
 Dimensions:—
 Overall length 4-3/16 inches
 Diameter 1-7/16 inches
 R-F Power Amplifier and Oscillator, Class C Telephony:

Typical Operation—1 Tube Max. Ratings

	1000	1500	2000	2000	volts
DC Plate Voltage:	1000	1500	2000	2000	volts
DC Plate Current:	0.072	0.067	0.063	0.075	ampere
DC Grid Current:	0.015	0.015	0.017	0.025	ampere
DC Grid Voltage:	-80	-110	-170		volts
Plate Power Output:	47	75	100		watts
Plate Input:	72	100	125		watts
Plate dissipation:	25	25	25	25	watts
Peak R-F Grid Input Voltage:	200	225	295		volts
Driving Power:	2.6	3.1	4.5		watts

For further details, see page 29 of this issue.

SINGLE GANG CONDENSER



High Grade British
 Capacity 13-430 mmF.
 Size 2 1/2" x 2 1/8" x 1 1/4"

8/6

Plus 6d. Postage

Price's Radio

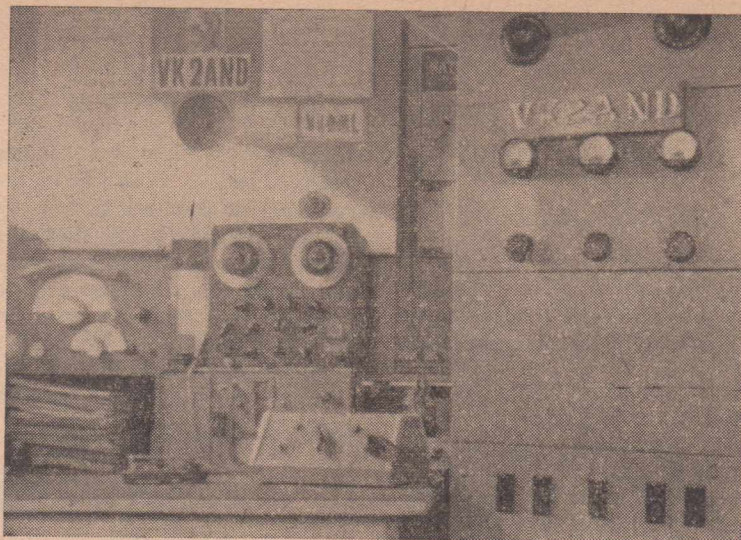
5 & 6 ANGEL PLACE
 SYDNEY

(Continued)

VHF records at higher than usual frequencies went by the board recently in U.S.A. when an airlines operator of Braniff Airlines at Houston Tower (Texas) found himself in verbal QSO with an Airlines of India pilot on 150 mC/s. The Indian Dakota was circling over Shanghai airport, China, preparatory to landing there, and signal level reached S8 both ways. There were several such instances during the recent war when VHF orders were received by the wrong people a thousand or so miles distant.

That announcement over W.I.A. N.S.W. Division B/C on Sunday morn, 7/12/47, that a VK2 in the Young, N.S.W., area had heard a J station working a VK2 on "Six" was, unfortunately, premature. What actually happened was that VK2TA, using a receiver in which the oscillator is in the range between "Ten" and "Six," plus or minus the I.F. difference, heard something ostensibly on "Six" that was actually happening on "Ten." The stations heard in contact were J2AAM and VK2PW, and in any case the latter has not so far indulged in any activity on "Six," but is very active on "Ten" and 166 mC/s.

Good work is being done by VK2JU in Sydney and VK's 2TA, 2TC and 2GU in investigating the possibilities of reliable extended-local communication on 50 mC/s. So far, the contacts have all been "cross-band" with the Young (N.S.W.) and Canberra (A.C.T.) stations hearing VK2JU on "Six" and replying on 7 mC/s. Level of the signal from the Sydney end over the VHF path varies from 4 to 9 over most evening periods, but on occasions goes right out. Horizontally polarised arrays are used in these tests and the station at the Sydney end is in a well-elevated position atop one of the tallest city structures. The 50 mC/s signals from VK2TA have been heard at near sea-level elevation by VK2WJ, Kingsford. Distance between the country stations and Sydney is about 186 to 200 miles air-line. It is doubtful whether a consistently reliable channel can be established over the VHF path quoted as even what may be considered as ground-wave or partially direct ray communication is subject to considerable absorption and fading because of air-mass and temperature inversion effects.



Some of the gear at the neat station of VK2AND, Bryan Anderson, Mosman, N.S.W. To the left of the AR8 receiver is the original "VK2NO V SIX" as described in the March, 1946, issue of "A.R.W." The rack houses a TX line-up with Jones type 6A6 C.O.-doubler, 807 doubler-buffer, and 811 final. Modulators are 807's AB1.

One often hears much glib talk about ex-service gear by people who didn't have even a nodding acquaintance with it three or four years ago. Conversely, there were some people in positions of technical authority in service signals who would have been more efficient in their jobs if they had acquired a "Ham" background in pre-war days instead of sneering at the "Ham." I know lots who, during the dark days, scrambled on to the band-waggon of rank by posing as technical authorities; and in the commercial world these very people treated radio amateurs as something to be tolerated. They were glad enough of the services of the experienced amateur often enough. I well remember a visit to a N.S.W. military camp by a sigs officer who brought with him the first of a new type of field transmitter. It was connected up and he tried his hand at tuning it up but, not having the slightest idea of what he was doing, made a botch of things. An NCO, one of the students in the class, showed him how a PA minus aerial load is tuned for minimum anode current and not maximum, as he imagined. It was early in the war, and I'm pleased to say that the NCO later reached AEME rank well above that of the botch artist.

Notice that the popular pre-war "Raymart" variable condensers are again on the Australian market,

and are available in all sizes. They are a little more expensive perhaps, but as ever are productions par excellence.

VALVES AT BARGAIN PRICES

TYPE EF39

H.F. Pentode OK to 60 megs. var. mu. spray shielded standard octal base 6.3 volt filament.

TYPE 1J6G

Class B twin triode. 2-Volt battery fil. 2 watt output.

Both types 9/6 each
Packing and Postage 1/- per Valve.

RADIO MART

439 Pitt Street,
Sydney, N.S.W.

Shortwave Review

CONDUCTED BY

L. J. KEAST

NOTES FROM MY DIARY

THANKS A MILLION

Space will not permit of me listing the names of all who sent cards this Xmas but I want to take this opportunity of thanking them all.

* * *

HOPE FOR BOB

Every week more than 5,000 letters from all over the world are sent to Bob Hope. Some are addressed to Hollywood Paramount Studios, some to Chicago, and thousands just to Bob Hope without an address—the writers evidently believing that only Uncle Sam can keep track of the comedian who may be in Los Angeles one day, New York the next and Atlanta the next.

The letters come from all kinds of people, from big towns, little towns and the rural areas. They come from ex-GI's, from wounded veterans, from school teachers, older folks and teen-agers. A peek at Bob Hope's mailbag reveals much of interest.

There was, for instance, the Indiana mother who wrote "I am working in a dime store to help put my boys through college, so there isn't much money for entertainment, but there is always Tuesday, so we have fun. You're wonderful, so keep on just being you. Long quip the king!"

And that goes for me . . . Bob is certainly one of my favourites too.

* * *

1948

Despite the thunderstorm that spoils the opening day of the New Year, reception of overseas stations was splendid after dinner, and, as usual, the BBC were at their best.

Heard a very fine transmission, "Harry Lauder's New Year Programme." It took me back to the days of the old Palace Theatre in Sydney when I heard Lauder sing most of the songs he gave over the air that night. Maybe I could find the exact date if I troubled to rumble through the old papers in my den, but I think it must be nearly 30 years ago.

* * *

STOP PRESS

Thanks to "Universalite" I am able to mention ZJM3 is call-sign of the Jaffa station shown under "New Stations." The information was supplied to them by "Radio News," Chicago.

And from the same source I learn call-sign of Jaffa on 6.135mc, 48.90m (reported by Arthur Cushen 17/8/45), is ZJM-4. And there are three more frequencies allotted to Jaffa: 6.17mc ZJM-5; 6.79mc, ZJM-6; and 11.72mc, ZJM-7. The 6.79mc frequency was reported by Mr. Edel in August, 1945.

SAYS WHO?

Rex Gillett of Adelaide reports:

Luxembourg. Radio Luxembourg heard on 15.36mc at good level till signing off at 11 p.m. This seems to be a regular schedule now.

Madagascar. Radio Tananarive heard till sign off at 6.45 a.m. on three frequencies: 10.615, 9.59 and 6.065mc. Last two are fine volume. Programme concludes with playing of "Marseillaise."

Philippines. KZFM has made its third frequency change and is now on 11.90mc instead of 11.80 as previously. Earlier frequency was 9.515mc. Very fine signals are be-

ing heard from about 7 p.m. till sign off at 1 a.m. Slogan used is "The People's Station."

Iran. EPB, Teheran, has been excellent in its English session at 10.15 p.m. on 15.10mc. EQC has been followed at the same time on 9.68mc, but signals are spoilt by interfering stations.

Malaya. The British Far Eastern Broadcasting Service, Singapore, is another station on the 13-metre band; frequency is 21.72mc and English is used from 7 till 7.30 p.m.

Ceylon. Radio SEAC now operates on 17.82mc instead of 17.77 mc; signals have been quite good at 8.30 p.m.

Japan. Tokyo has been heard to open at 6.30 a.m. in the Jap Home Service using the BCB call, JOAK. Frequency is 9.655mc and listed call is JFK1.

Trinidad. VP4RD, identifies with "This is Radio Trinidad, Port-of-Spain, British West Indies, at the crossroads of the Caribbean." Signals have been logged at reasonably good strength at 6.30 a.m. on 9.645mc.

U.S.A. "This is the Armed Forces Radio Service New York Shortwave Station" is the announcement from a station using transmitters WRCA, 15.15mc; WBOS, 15.21mc; WGEX, 17.88 mc; and WNRX, 21.73mc. Announced schedule is 5 a.m.-7.45 a.m.

India. Delhi has been heard till sign off at 11.35 p.m. on 6.11mc. News in English is read by an Indian on 15.13mc at 10.30 p.m.

And here is a newcomer from the Shaky Isles, Mr. William S. Milne of Invercargill. Have an idea I know someone in that very southern town of the South Island.

Seem to connect him in some way with radio loggings. Anyway, Mr. Milne is using a well-known 7-valve commercial dual-waver and, with the help of an inverted L aerial, 100 ft. in length and only 20 ft. high, running south-east to north-west, he has 343 verified stations on shortwave. Here are some recent loggings:

EPB, Teheran, 15.10mc, 19.86 m; at 10 p.m. news in English. KZPI, Manila, 9.50mc; good at 9.30 p.m. Manila, 11.84mc, 25.34 m; heard at 8 p.m. Jaffa, 3.32mc,

90.36m; all Arabic at 5 a.m. XGOA, Chungking, 11.835mc, 25.36m; good at 7.30 p.m. Radio Saigon, 6.165mc, 48.66m; news in English at 8 p.m. WLKS, Japan, 6.065mc, 49.46m; at 7.15 p.m. SEAC, Ceylon, 9.52mc, 31.51m; at 2 a.m. VUC, Calcutta, 7.21mc, 41.61m; BBC news at 10.30 p.m.; VUM-2, Madras, 4.92mc; news in English at 10.30 p.m. Macassar, 5.03mc, 59.64m; 9.23 p.m.

(And that is a very fine list and incidentally some new stations,—L.J.K.)

NEW STATIONS

VP4RD, Port-of-Spain (Trinidad), 9.645mc, 31.06m; Rex Gillett reports this new British West Indies station and says they can be identified by "This is Radio Trinidad, Port-of-Spain, British West Indies, at the cross-roads of the Caribbean." Signals have been reasonably good at 6.30 a.m.

SHARQ AL ADNA, Jaffa, 9.645mc, 31.06m: This new one is reported by "Universalite" as being heard in U.S.A. The times to listen are from 12.30 a.m. till after 1.45 a.m. It is also in parallel with 11.72mc, 25.60m.

ZJA-6, Georgetown (British Guiana), 15.085mc, 19.89m: I am indebted to Ray Simpson for this one. He was fortunate in picking it up when broadcasting a cricket match. It is one of the many stations controlled by Cable and Wireless Ltd. They are always pleased to have reports. I picked up their station in Bridgetown, Barbadoes, British West Indies, in March, 1944, and the thanks by letter from the Engineer made one very pleased to have sent a report.

JAFFA, 3.32mc, 90.36m: This looks like a new one to me. It is briefly reported by Mr. Milne of Invercargill. He is hearing it at 5 a.m. our time and as that is 7

o'clock in New Zealand it gives some idea of what an ideal spot the South Island of New Zealand is for DX work. I think it would be impossible to log them here at 5 a.m.

RADIO LUXEMBOURG, 9.527 mc, 31.49m: Mr. William Milne also reports hearing Luxembourg testing on this frequency at 2.35 a.m. This is evidently a new time, as they were listed to be testing from 8.40-9 p.m. and from 3.40-4 a.m. Elsewhere I have shown their schedule for the various frequencies employed by this 5 kW station.

MACASSAR, 5.0301mc, 59.64 m: Reported being heard at 9.23 p.m. Am sorry but noise in this area at present prevents me from picking it up.

FORCES BROADCASTING STATION, Benghazi, Libya, 11.82 mc, 25.39m: "Radio Australia" gives information on this one. They commenced broadcasting on November 8 and schedule is: 3-4.15 p.m.; 7-9 p.m.; 11 p.m.-midnight and 4.15 a.m.-8 a.m.

PORTUGAL

Here is a complete list of new call-signs of Emissora Nacional at Lisbon:

CS2MA,	6.374mc	47.07m
CS2MB,	7.26 mc	41.32m
CS2MC,	9.635mc	31.14m
CS2MD	9.67 mc	31.03m
CS2ME,	9.68 mc	30.99m
CS2MF	9.727mc	30.84m
CS2MH,	9.74 mc	30.80m
CS2MI,	9.94 mc	30.18m
CS2MK,	11.027mc	27.19m
CS2ML,	11.04 mc	27.17m
CS2MM,	11.84 mc	25.34m
CS2MO,	11.995mc	25.01m
CS2MP,	12.749mc	23.53m
CS2MQ,	15.10 mc	19.86m
CS2MR,	15.11 mc	19.85m
CS2MS,	15.12 mc	19.84m
CS2MT,	15.32 mc	19.58m

And that's a very nice list and was supplied by Roger Legge through "Universalite." Regular listeners will note that CS2ML is on the frequency of our old-timer CSW-6.

* * *

HELP WANTED

They are hard if Rex Gillett is puzzled, but he sends along a couple of mysteries as he calls them in the hope that someone may be able to solve them. He says: "A station is now being heard on about 6.085mc at 6.30 a.m. Programme seems to be similar to those of Radio Tetuan on 6.065mc. Signals are only fair." (Could it be "Radio Tabriz" on 6.087mc?—L.J.K.) "Is it Lausanne on 6.345mc, heard till 7 a.m.? Languages used are French and German?"

Baden Baden is possibly the German-speaking station about 6.32mc, at 7 a.m.

* * *

RADIO LUXEMBOURG

(Experimental)

5kW. Daily.

2.10-3.10 p.m.	15.35mc	19.54m
3.10-3.30 p.m.	6.09mc	49.30
8.00-8.40 p.m.	15.35mc	19.54
8.40-9.00 p.m.	9.527mc	31.49
3.00-3.40 a.m.	15.35mc	19.54
3.40-4.00 a.m.	9.527mc	31.49
5.00-7.30 a.m.	6.09mc	49.30

VERIFICATIONS

Here is Rex Gillett's list:

Johannesburg, 4.895mc, 6.007 mc; ZNB; LRR; LRX1, 6.12mc; OZH-2, 15.32mc; XEBR; Rangoon, 6.04mc; Vienna, 11.785mc, new coloured verie card showing Viennese entrance gate with building set back in spacious grounds. Verification details on back. HER-6, 15.31mc; HER-5, 11.87mc; HER-3, 6.165mc; WLKS, 6.065, for report on opening night of this frequency, viz., Sept. 12; ZBW, 9.515mc, verified at last after sending nine reports; this made my 91st verified country.

I count a verie from Radio Eireann, Eire, one of my best to date. The letter verie was for 9.595mc, heard on June 27, during English session. News in English is broadcast daily at 3.30 a.m. on 17.84mc and 7.10 a.m. on 9.595 mc. States the letter, "Your report is most helpful and we shall be glad at all times to hear how the Irish transmissions are received in Australia." Letter signed by John O'Keefe of the Engineer-in-Chief's Department. Address is Office of the Engineer-in-Chief, Department of Post and Telegraphs, The Castle, Dublin, Eire.

"Apparently LRR is now verifying, as a report in May 'Universa-lite' quoted a listener having no success over a 3-years' period. Verie I received was in form of a letter in Spanish."

The Danish verie is a very plain card showing calls as OZH-2 and OZF. (Well, Rex, as usual you have a nice bunch of veries.—L.J.K.)

William Milne of Invercargill says his latest veries are: CBLX, CFVP, CR7BV, CFRX, CBRX, KGEX (17.88), KRHO (15.25), Hamburg (6.115), HEI-7, HER-6, Brazzaville, CNR-3, VLG, VLG-8, WCRC (17.83) and XLRA.

SHORTS

Norway

LLG, Oslo, 9.61mc, 31.32m, heard well 5-8 a.m. with Home Service; may be the new 100 kW transmitter that has been under construction.—Legge.

LLN, Fredrikstad, 17.825mc, 16.84m, was heard testing in the evenings but seems to be off now.—Legge.

French Equatorial Africa

Brazzaville is expected to use 21.00mc, 14.285m shortly.—W. Howe.

(Well, that's quite likely, as their neighbours over the river, Radio Congo Belge, have been heard on 21.4mc and also have an allotted frequency of 20.04mc.—L.J.K.)

U.S.S.R.

According to DX Bulletin, N.Z., Moscow is now verifying by a card printed in English, with a photo of Moscow. If you would like to try your luck, address is: Radio Moscow, Overseas Service, English Programmes, Moscow, U.S.S.R.

(This information, I think, came from Ken Boord, S.W. Editor of "Radio News," and it looks like a start. I remember when they were most prompt in acknowledging reports and if you did not send another within a reasonable time you received a veritable "please explain." They were most generous with photos and schedules arrived regularly.—L.J.K.)

U.S.A.

KCBA, San Francisco, is being heard again on 6.17mc, 48.62m, from 7 p.m.-1 a.m. It is just about two years since I first found this station on 6.17mc.—L.J.K.

Philippines

"The Voice of America," Manila, 11.48mc, 25.35m, operates daily from 7 p.m.-1.05 a.m. The address for reports is: The Department of State, Office of Inter-

national Information and Cultural Affairs, International Broadcasting Section, c/- American Embassy, Manila, Philippine Islands.—Radio Australia. (And that is as big an address as I remember.—L.J.K.)

Turkey

TAP, Ankara, 9.465mc, 31.70m, has Listeners' Mail Bag session on Mondays at 7.30 a.m.

BCOF station, WLKS, at Kure, Japan, has moved back to 6.105mc.

RADIO NACIONAL DE ESPAÑA, Madrid, 9.368mc, 32.02m, is sending out verification cards signed by Jose R. Boeta, Director of Programmes and Broadcasts.—DX (N.Z.).

Armed Forces Radio Service programmes can be heard over: WROA, 15.15mc; WBOS, 15.21 mc; WGEX, 17.88mc; and WNRX, 11.83mc, from 5-7.45 a.m.

A.B.C. NATIONAL SHORTWAVE PROGRAMME

VLH Call signs		W/L	Freq.
<i>Sundays</i>			
VLH4	0645-0900	25.25	11.88
VLH5	0815-1815	19.69	15.23
VLH3	1828-2400	31.32	9.58
<i>Weekdays</i>			
VLH4	0600-0900	25.25	11.88
VLH5	0915-1815	19.69	15.23
VLH3	1828-2400	31.32	9.58

Power of the above stations is 10 kW.

VLR Call signs		W/L	Freq.
<i>Sundays</i>			
VLR2	0645-0815	48.78	6.15
VLR	0830-1715	31.45	9.54
VLR2	1730-2400	48.78	6.15
<i>Weekdays</i>			
VLR2	0600-0815	48.78	6.15
VLR	0830-1830	31.45	9.54
VLR2	1845-2400	48.78	6.15

Power for the above stations is 2 kW.

VLG Call sign		W/L	Freq.
VLG7	0600-0800	19.79	15.16

Power for the above station is 10 kW.

BBC PACIFIC REGIONAL SERVICE

Listeners to the BBC Pacific Service will doubtless have noted that as from December 28 the schedule of this service does not continue till 8 p.m. but ends at 5.45. From 4 till 5.45 it is known as BBC Pacific Regional Service and then the programme is taken up by General Overseas Service. The news is given as usual at 4 p.m., followed at 4.10 by "This Evening's Programmes" and Radio Newsreel is still featured at 4.30. "From Today's London Newspapers" is listed for 5.30 and at 5.35 "Tomorrow's Programmes."

THE HAPPY STATION BROADCASTS HAPPY NEW YEAR PROGRAMME

PCJ. Hilversum, on 15.22mc, 19.74m, was in great form on Tuesday, January 6, when they put over a special New Year programme for "Our Friends in Australia." Opening at 7 o'clock, it ran for 90 minutes non stop. Some excellent items were given and the singing by the little Dutch children was certainly fine. At 8.30 the international service of PCJ brought the News of the Netherlands, followed at 8.40 by "Review of the Press," the first for 1948. Reports on reception were invited.

"WYATT EARP" TO RETURN[®] TO AUSTRALIA

It is quite probable many DX-ers settled down in the hope of hear-

ing some transmissions from the Polar Exploration ship "Wyatt Earp" as call-signs and frequencies allotted to maintain contact with Sydney were announced by "Radio Australia," as follows: VJH, 9.94 mc; VJH-2, 12.255mc; VJH-3, 15.845mc; VJH-4, 19.255mc.

The above were to be the calls from Heard Island, whilst from Macquarie Island the same frequencies would obtain but the calls changed to: VJM, VJM-2, VJM-3 and VJM-4.

However, just as we go to Press it looks as though the vessel will return to Melbourne, she having been found unsuitable for the work expected.

THEY COME AND GO

FIA6, Doula (Cameroons), 8.00 mc, 37.50m, which seems to have been inactive for a long time, is now being heard in Sydney. Ray Simpson tells me that "around 4.45 a.m. strength is quite good." All announcements are in French and news in this language is given at 4.45. From 5 o'clock many American records are put over. According to my list, slogan is "Radio Cameroun" and power 800 watts.

VERIE HUNTERS NOTE!

If you log those Finnish stations, address of OIX stations according to Bill Howe in "Universalite" is Oy Yleisradio Ab: Lahden Vleis Radiosema, Lahti, Finland.

GENERAL

We have several orders for back numbers on hand which have been received without any name or address on them. As a result we are unable to send the issues. If you have ordered back numbers and failed to receive them within a week or so, try to remember whether you put your name to the list. Orders on hand at present are with postal notes issued at the following post offices: Auburn South, Westgarth, Rocklea, Adelaide, Bairnsdale, Newcastle, Sydney Money Orders, Strathfield and Broken Hill.

WOLLONGONG (N.S.W.) RADIO CLUB

This recently-formed radio club held the inaugural meeting in November last year. Twelve enthusiasts attended and the chair was taken pro tem by Bob Thorburn, VK2AIP, of Woonona. Active amateurs interested in this club include VK's 2MT, 2MU, 2AGZ and 2WP, the latter being an old hand at the game with many years of experience in brass-pounding on 7 mC/s and DX bands. It is anticipated that club accommodation may be made available at Wollongong Tech. and it is intended to affiliate with the W.I.A. Information about club progress, etc., may be obtained from George Dennys, c/- Lavis Radio, Crown St., Wollongong.

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Speedy Query Service

W.A. (Perth) writes to say that modern radio valves are getting more and more unreliable, and claims that 25 per cent of new valves which he has bought lately have been duds.

A.—Not being in close touch with the valve factories we cannot offer an official explanation for the deterioration in valve quality, but it is significant that you have found that all brands of valves are equally unsatisfactory. Probably, like most people, the valve factories find it hard to get raw materials up to standard. If we complained to them we would expect to be told that we are lucky to get any valves at all. We doubt if the valves are the only components which are now not up to the standard which

was demanded by Army Inspection a few years ago. It was expected that once component manufacturers got used to making stuff stand up to rigid inspection they would continue to offer the very best in the post-war period. It doesn't seem to have worked out that way. Possibly price control has had an influence. Can only suggest hoping for the best as doubtless time will tell.

* * *

W.B.T. (Auburn) asks about the English Quality Amplifier which we reprinted from the English "Wireless World" in our issue for August.

A.—Yes, this is proving a successful job amongst local builders, using 807's in place of the KT66's and 6C5's for the triode drivers or 6J7's with screen and plates tied. Swales & Swann have made the special output transformer available in the "Red Line" brand as type AF10, listing at £6. It is a weighty job capable of handling the full 15 watts.

* * *

E.D. (Katoomba) enquires about a triode amplifier with inverse feedback.

A.—You would be thinking of the English circuit, designed by Williamson which was originally published in the Wireless World and re-printed in our August 1947 issue. It is proving popular locally and from reports received it seems to be good. Copies of the issue are available from our back dates dept., at 1/- each, post free.

PERSONALITIES

(Continued from page 15)

VK2JP . . . Jack Pike, Greenwich . . . needs no introduction as Australian amateur radio's oldest amateur . . . in years and experience. Was one of the original seven signatories to the W.I.A. charter in 1912 or thereabouts, and is active again after a few years off, on 14 mC/s phone. Figured in rescue traffic in 1930 on 14 mC/s CW with VK6NK (Wyndham), handling 20,000 words of "copy" . . . wore phones for about 40 hours non-stop. Is getting in among the phone DX.

BARGAIN CORNER

Advertisements for insertion in this column are accepted free of charge from readers who are direct subscribers or who have a regular order placed with a newsagent. Only one advertisement per issue is allowed to any subscriber. Maximum 16 words. When sending in your advertisement be sure to mention the name of the agent with whom you have your order placed, or your receipt number if you are a direct subscriber.

FOR SALE—5-valve Dual-wave Console Radio, Magnetic Pick-ups, Carbon Microphones, Morse Keys and Sounder. A. M. McGregor, 6 Murray Street, Red Hill, Queensland.

WANTED TO SELL. Back numbers of Australasian Radio World, 1943, Oct., Nov., Dec.; 1944, Jan., Feb., Mar., April, May, June; 1946, June, July, Aug. Price, 1/- each. F. D. Holmes, Ascot Ave., Cairns, Queensland.

WANTED TO BUY.—Back numbers of Australasian Radio World: 1936, Sept., Nov., Dec.; 1937, Jan., Feb., Mar., April, May, July, Sept.; 1940, May, July, Aug. F. D. Holmes, Ascot Ave., Cairns, Queensland.

FOR SALE.—"FS6" Transceiver, brand new (almost), also 2 6-volt Batteries, 1 "H" gang, 1 3-gang Condenser. A. R. Pettiford, Flat 1, 32 King St., Ashfield, N.S.W. Phone UA5936.

WANTED TO SELL.—New condition, Type A, Mark 3 Transceiver, complete with built-in A.C. and separate Vibrator Power Supplies. £10. Stan Bourke, c/- Box 20, Earlwood, N.S.W.

FOR SALE.—"Popular Pressman" reflex camera, 1/4-plate, recently overhauled, £25, or will exchange for radio gear. Write Box 13, care Radio World, Mornington, Vic.

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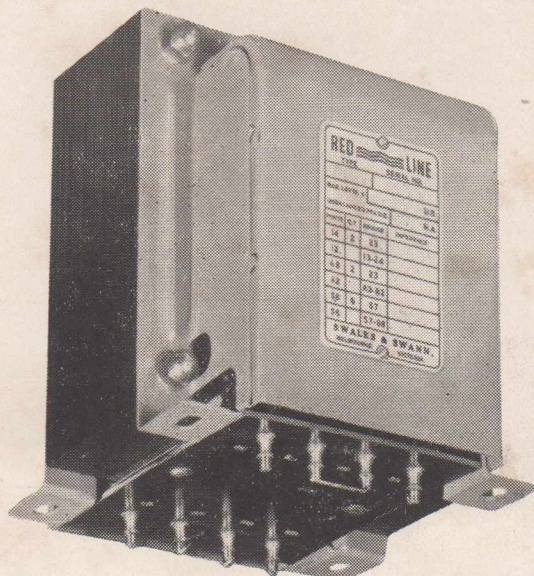
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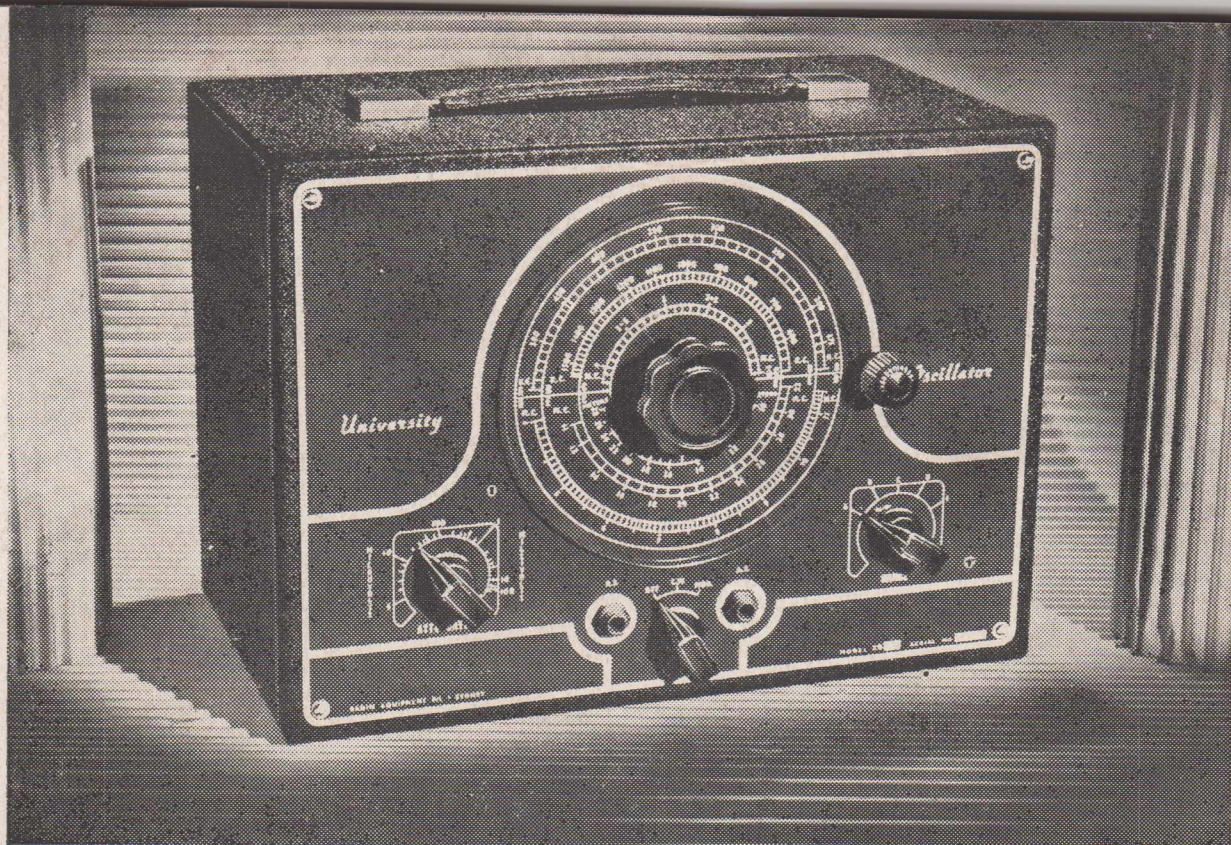


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The new oscillator has continuous band coverage from 160 kilocycles to 32 megacycles. The accuracy of calibration is plus or minus 1% and most important of all the attenuator has negligible effect of frequency on all bands and at all attenuator settings.

The attenuator is calibrated in microvolts and millivolts and the output is from approximately 5 microvolts to .1 of a volt.

This new improved attenuator is something that makes the oscillator outstanding in its class. It is a variable capacity piston attenuator with an approximately logarithmic scale calibrated directly in microvolts and millivolts.

A convenient switch located on the striking, dark red front panel has three settings:—

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- (2) Providing an unmodulated R.F. carrier wave and
- (3) Providing a modulated carrier wave modulated at 400 cycles.

The instrument is in a handy size of $11\frac{3}{4}$ " x $8\frac{1}{2}$ " x $7\frac{1}{2}$ " and has a total unpacked weight of $17\frac{1}{2}$ lbs. It is finished in black brocade and is fitted with a flat carrying handle. The panel is outstanding in the new "University" colour of dark red with clear nickel plated raised markings.

The instrument comes to you complete with valves and shielded output leads.

Available from all Australian distributors moderately priced at £17/15/- trade, plus 10% sales tax. Price a little higher in N.Z.

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