

# SHORT WAVE NEWS

Vol. I.  
No. 10.  
OCTOBER, 1946

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ON THE HAM BANDS.  
SHORT WAVE  
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# Short Wave News

Vol I No 10

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October 1946

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## EDITORIAL

**T**HE International Short Wave League is launched! For some time, letters have been received expressing the wish that *Short Wave News* should sponsor a society for the short wave enthusiast. We have carefully weighed up the idea, considering the need for such a society, the snags that are liable to be met, and the facilities that would be required by the members. The conclusions reached are, first, that there is room for a progressive society, and that now, with the approach of the DX season, is the most favourable time to venture on such a project.

The objects of the I.S.W.L. are simple, but embracing, as will be seen from the leaflet enclosed in this issue. The I.S.W.L. will cater for every class of short wave enthusiast, be he constructor, listener or transmitter. Entry into the I.S.W.L. is not hampered by any unnecessary restrictions, and there will be no varying classes of membership.

For the present, membership fees are purely nominal and are intended simply to cover cost of certificates, postage, address plates and so forth. Membership identification numbers will consist of the letters "I.S.W.L." followed by the prefix for locality coupled to an individual number, e.g., ISWL/VK234 would indicate a member in Australia.

Until such time as the membership justifies the publication of a separate League journal, which would of course entail an increase in subscription, it is proposed to

publish news of League activities in the pages of *Short Wave News*.

The facilities to be offered to members, such as stationery, competitions, query services, formation of local "chapters," QSL Bureau, and so forth, are now under consideration, and will be put into effect at the earliest possible moment.

We should be pleased to receive offers from readers who would be prepared to act in an official capacity as Representatives, Departmental Managers, and the like, with some details as to their experience in such matters.

We should appreciate it, too, if those reading this Editorial, would pass on the good news to such of their friends as are, unfortunately, unable to obtain a copy of this issue. The League depends, obviously, upon the support and co-operation given by its members. It is, therefore, up to YOU!

The First Annual devoted entirely to the Short Wave Listener will be published by us next month. Containing a wealth of useful, and vital, information for the DX listener, the first edition will consist of 80 pages, printed on heavy paper, and bound in a durable cover. The only book of its type and accuracy available in this country, it will be modestly priced at 2/6, and will be obtainable from local booksellers, or in cases of difficulty, at 2/9, post free, from ourselves. The highest possible degree of accuracy is maintained throughout the book, which includes some dozen tables, and this has only been made possible by the careful checking of all the information at our disposal. We advise readers to book their copy as early as possible in order to avoid any possible disappointment.

W.N.S.

## NOTICES

THE EDITORS invite original contributions on short wave radio subjects. All material used will be paid for. Articles should be clearly written, preferably typewritten, and photographs should be clear and sharp. Diagrams need not be large or perfectly drawn, as our draughtsman will redraw in most cases, but relevant information should be included. All MSS must be accompanied by a stamped addressed envelope for reply or return. Each item must bear the sender's name and address.

CLUB SECRETARIES are invited to submit details of activities for insertion in our monthly club notes, which must arrive at this office by the 15th of each month.

COMPONENT REVIEW. Manufacturers, publishers, etc., are invited to submit samples or information of new products for review in this section.

ALL CORRESPONDENCE should be addressed to "Short Wave News," 57 Maida Vale, Paddington, London, W.9. Telephone CUN. 6579.

# V.H.F NEWS

## THE MONTH'S NEWS

G5BY hits the headlines again this month. On August 22nd, he worked F8RSN, I1FA, HB9CD, HB9J, I1IRA, HB9BZ, I1KS, I1MH and I1TH, all between 1806 G.M.T. and 2127 G.M.T. The HB9 contacts are amongst the first G-HB contacts to be made on "five metres," but who made the actual *FIRST* contact is a little uncertain at the moment, as other stations worked HB that evening. For instance, G8JV, West Bridgford, Notts., worked HB9CD at 2005 G.M.T., whilst G5BY's first HB was also HB9CD, whom he worked at 2018 G.M.T. We are getting a check from Switzerland on these contacts.

2XC on the same evening worked I1FA, F3JB, I1MH, I1IRA, I1DA, I1HV, I1KS and I1WW. He also worked G5MQ of Liverpool, giving him his best G-DX to date—a distance of 190 miles. G8JV also worked I1HV, after his HB9CD contact, and he heard I1IRA, I1KS and F3JB. He heard I1XA on August 28th.

Other stations who came in for the DX on the 22nd, were 5BD, who worked I1FA, I1KS, I1IRA and I1DA; and 5LL who worked I1HV, I1KS and I1DA. OK2MV was heard by BRS3179 between 2050 and 2130 G.M.T.

5LL has received a report card from a PA station on the reception of his signals and 5MA has had a report card from OK2UA.

## THE MONTH'S CONDITIONS

*Tropospheric Propagation* 2XC reports: "Conditions generally and activity have been much below normal . . ." "G6DH has continued to be a fairly consistent signal here and in general is receivable at some strength under all atmospheric conditions except continuous rain. The first 'miss,' during August was on August 17th, on the morning sked., with a vigorous depression off the Straits of Dover, and a northerly gale blowing. The weather cleared in the evening and 6DH was S4 at 1730 . . ." "The opening days of September, were some of the worst of this summer for weather and the 5 metre log bears witness to this: QSO's became few and far between . . ." "Some of the best

days were August 22nd and 23rd and September 9th, 10th and 12th. The first two enabled me to contact G5MQ in Liverpool (190 miles)."

G8JV confirms September 12th as being easily the best evening, when 5TX (Isle of Wight) was heard at S8 many times between 2000 and 2200 G.M.T. He also mentions that September 10th was a good evening when 5BD's and 5LL's signals were 12 to 15 db. above normal.

Tropospheric conditions then, appear to have been best on August 22nd-23rd, and September 9th-12th. Now for the Temperature Inversions during this period.

Inversions were recorded on all the days under review August 14th to September 12th, but on August 17th, there were none until the evening, when one was recorded at 9000 ft. However, on the days previous to August 20th, whilst inversions were recorded daily, they were infrequent during the course of the day, mild and at a low altitude. On August 20th, one of 7 degrees occurred at 9000 ft. at 1800 G.M.T. On the 22nd, 23rd and 24th, 26th and 27th, numerous inversions were recorded each day, varying in height throughout the day from 3000 to 12000 ft. These inversions were usually of the order of 2-3 degrees, though on August 23rd and 25th, inversions of 6 degrees were recorded. On August 28th, 29th, 30th, 31st, September 1st, 3rd, 6th, 7th, 8th and 9th; there were only slight inversions of less than 2 degrees. On September 9th, there was an inversion of 9 degrees at midnight at 8000 ft., on the 10th, an inversion morning and evening around 6000 ft., and on the 11th inversions all day around 6000 ft. Thus the days with the most marked inversion effects were August 20th, 23rd, 25th, September 9th, 10th and 11th—which correlates quite nicely with the days given above. Thanks once again to 2XC for supplying most of the data used in the above analysis.

*Ionospheric Propagation.* All other spasms of Sporadic E propagation were completely overshadowed by the marked activity of August 22nd. This happened to coincide with a large sunspot, but as 2XC remarks, as no relationship between Sporadic E and sunspots has been recognised yet, this was probably coincidental. 8JV reports hearing I1XA and two other unidentifiable Italian stations on August 28th. Apart from this, no other reports of Sporadic E propagation are to hand.

## COMMENT

Several readers have pointed out that the present inter-G record held by G5BY and

G8U2 has been reported as over a distance of 256 miles, whilst the distance from Thurleston to Sutton-in-Ashfield is considerably short of this figure. As one says, "I don't wish to in anyway under-rate this achievement, but as all records are made to be broken, I think we should have it as near correct as possible." Our measurements made on the "Geographia" New Map of England and Wales on a scale of approximately ten miles to the inch, suggest this record is certainly not more than 230 miles.

8JV has replaced the 9001 R.F. valve in his converter by a 6AG5 and is of the impression that a much better signal/noise ratio has resulted. Commenting on our editorial last month, he says:—"Congrats on your editorial—it is very much to the point (even on 60 Mc., though it does not matter so much there) and I hope it may strike home at some of the "T55 at 500 volts, 49 mils. gentry." He reports having worked G51G of Cambridge—a new station to him, and we believe a new station on the band.

BRS3179 (Tadworth) has heard 122 different G's and 9 Continentals on 60 Mcs. He is using a Denco superhet, the line-up being 956, 955, EF11, L61 and 6V6. He remarks that it is badly out of alignment. One wonders what it will do when it is working properly! Both G5MA and 2MR have regular skeds. in the evenings with G6YU. These contacts are most regular in spite of the paths being from the London area to Coventry. 2XC and 6DH maintain regular skeds.—often several times a day—over the Portsmouth-Clacton route; 6DH also maintains a regular sked. with 2MV, south of London and 5BD and

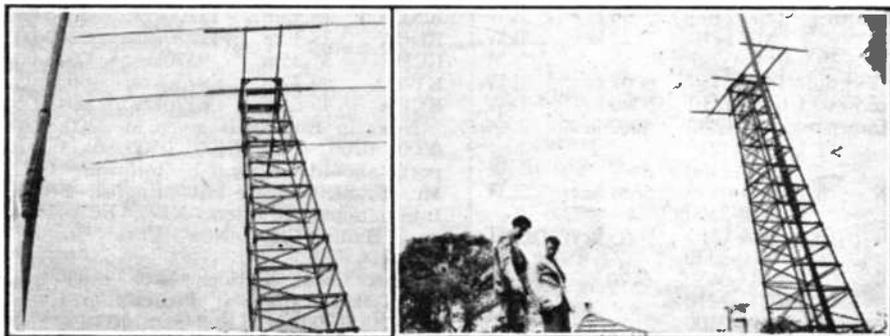
5LL in Mablethorpe, Lincs., maintain a regular sked. with 8JV in Nottingham.

We have been asked several times recently why "five" is showing such good results now, when pre-war it was regarded as a purely local band. In actual fact, good DX contacts were being made before the war, but the number of well equipped stations was very limited. A month before war broke out, G6XM reported hearing I1FS, I1SS and I1BE. G6DH's and G5MQ's signals were reported heard in Italy and CS3VA, a commercial 56 Mcs. station located in Lisbon was heard by several stations in this country. There is no doubt that the initial frequency allocation limiting amateur transmitting to 28 and 60 Mcs., stimulated interest in the latter band, particularly in regard to the construction of good receivers.

**Our Illustrations.**

Our photos are of G6DH's new rotary beam, which carries both 5 metre and 10 metre elements. Details are briefly as follows:—5 metre elements 0.15 wavelength spacing at right angles to and about nine inches above the 10 metre elements. Made of ¼ inch brass tube with centres telescopic on brass rod.

10 metre elements 0.1 wavelength spacing of ¼ inch copper tubing, with telescopic rod ends for tuning. Both aeri-als fed by balanced twin 70 ohm polyethylene insulated cables. Delta matched up top (7½ inch for 5 and 15 inch for 10). The cables pass up the centre of the one inch diameter steel tube used for rotating the beam and thus do not get tangled up during rotation.



# Around the Broadcast Bands

Monthly survey by "MONITOR"  
All times are given in G.M.T.

**R** EPORTS, QSLs received and any news would be greatly appreciated for this feature. We want many more letters from readers to swell our mailbag. Please address all correspondence to S.W.N. offices with "Broadcast Band News" marked in left-hand corner of your envelope. Let us know how conditions are at your QTH also type of aerial and RX in use. Your scribe will be putting up a  $\frac{1}{2}$  Wave Windom to a 35 ft. pole shortly under limited space. RX at my QTH is a S20.

## ● Asia.

**Ceylon.** Sidney Pearce (Berkhamstead) logged "Radio SEAC" Colombo with their transmissions to British Isles at 1730-1930 with terrific signals on Sundays. Frequency is 15120 kcs. (19.84m.) Heard between 1300-1600 on 11820 kcs. (25.38m.) (M. F. Williams, New Jersey, U.S.A.). At your scribes QTH 1730 transmission to Brit. Is. has been received at R9 with very good quality.

**China.** Pearce reports XGOY Chungking at 1500 on 11913 kcs. (25.21m.) with news in English. Using this frequency instead of its 9635 kcs. channel. A. Levi (Belfast) sends in schedule of XGOY transmissions as stated in September issue of SWN.

## ● Africa.

Murdoch B. Riley (Wellington, N.Z.) sends in the following schedules of SABC stations:

Call	Time	Freq.	Power
Unknown	1530-2100	3450 kcs.	5kW.
ZRG	0815-1210	9523 kcs.	5kW.
ZRH	0445-0630		
	1400-1530	6007 kcs.	5kW.
Unknown	0815-1210	10540 kcs.	1kW.
Unknown	0445-0630	4382 kcs.	200w.
	0815-1210		
ZRK	0445-0630	5884 kcs.	5kW.
	1530-2100		
ZRL	0815-1210	9608 kcs.	5kW.
	1400-1530		
ZRD	0445-0630	6170 kcs.	500w.
	0815-1210		
	1400-2100		
ZTD	0445-0630	4878 kcs.	500w.
	0815-1210		
	1400-2100		

Your scribe has QSL's from ZTJ (30.27m.) and ZRK (49.22m.) DX from this part of the world has been very scarce of late, and no reports of S. Africans have been received recently. Have not logged one at my QTH for 6 months now. ZTJ was last in the log here R6 Q4 around 1800. Reports, by the way, on all SABC stations should be sent to: S.A.B.C., P.O. Box 4559, Johannesburg, S.A.

## ● North America.

Your scribe heard WRUW Boston, 15350 kcs (19.55m.) with broadcast of Atomic Bomb Test at 2130-2215. Signals were R8. Also WLWR Cincinnati on 15250 kcs. (19.70m.) at 2200 closing and asking for reports. Latin American programme. R5. Power used is 75 kW.

T. Wilson has heard KGEA San Francisco on 9775 kcs. (30.68m.) at 0530 to close at 0600. Signals R9. (Please state times in G.M.T. O.M., it helps a lot!)

C. S. S. Lyon reports good signals from the following West Coasters:

KCBR 17770 kcs. News in English on the hour for Pacific and Far East.

KWID 17760 kcs. United Network and AFRS programmes.

KCBF 17855 kcs. Takes UN and AFRS programme. All heard around 2200.

West Coast American station Schedule omitted from last month's issue due to limited space, from A. W. Gilbert:

Call sign	W/L	Freq.	GMT.
KCBF	16.85m.	17800kcs.	2200-0030
KWID	16.89m.	17760kcs.	2200-0015
KNBI	19.56m.	15340kcs.	2200-0600
KNBA	25.45m.	11790kcs.	2200-0600
KCBA	25.49m.	11770kcs.	2200-0030
KCBF	31.35m.	9570kcs.	0045-0600
KWID	30.77m.	9750kcs.	0030-0500
KCBA	48.62m.	6170kcs.	0045-0600

News in English is given at 2200, 2300, 0000, 0200, 0300, 0400, 0500, 0555. Reports should be sent to following QRA: Mr. Frank W. Nesbitt, English Section, International Division, NBC, RCA Building, Radio City, New York 20, N.Y. U.S.A.

West Coast stations have been heard with good signals at Pearce's QTH over KGEI 15130 kcs. (19.83m.), KGEX 15210 kcs. (19.72m.), KNBX 15250 kcs. (19.67m.) KWID 15290 kcs. (16.62m.), KCBR 15330 kcs. (19.57m.) WLWO Cincinnati, Ohio

operated by the Crosley Corporation heard with strong signals around 2300 on 11790 kcs. (25.45m.) and reported by J. W. Hughes.

Canada. Pearce reports CKCS 15320 kcs. (19.58m.) with very strong signals when in parallel with CKNC from 1830, also CKLX on 15090 kcs. (19.88m.) at 1830. Williams logged CBFW Montreal on 6090 kcs. (49.20m.) between 1100-0400. CKCS heard evenings by M. Forrest with FB signals.

Hawaii. KHRO Honolulu on 17800 kcs. (16.85m.) heard by Pearce with AFRS programme.

● South America.

Argentina. Williams reports LRR Rosario, Buenos Aires from 1700-2300 on 11883 kcs. (21.23m.)

Suriname. Station at Paramaribo heard operating on 14950 kcs. (20.00m.) between 2100-2230 (Williams).

● Europe.

Holland. J. Hebborn (London) and A. W. Mann (Middlesborough) send in schedule of PJC "The Happy Station" at Eindhoven, the programmes of which are produced and presented by Eddie Startz. They also BC at the following times "Radio Nederland" programmes daily from the "Home Service," as follows: 17775 kcs (16.88m.) 15 and 6 mc. Bands at 1300-1535 to Far East. 11, 9, 6 Mc. Bands at 1900-2045 to South Africa, and at 0100-0245 to the West Indies.

The transmission from 1900-0100 are re-broadcasts of the afternoon programmes up to and including the "Press Review."

Bulgaria. "Radio Sofia" now operates on 7670 kcs (39.10m.) and 9350 kcs. (32.09m.) News in English is given at 2030.

Iceland. TFJ 12235 kcs (24.55m.) broadcasts Sundays only at 1400-1430 according to letter received by A. T. Cushen, New Zealand.

Spain. M. F. Williams sends in a list of Spanish Stations heard in the 7 Mc. Band as follows:

Freq. Kcs.	Location	Time
7006	Valladolid	1900-2030
7035	Mediterraneo de Valencia	1800-2200
7050	Malaga	1900-2300
7100	Cuenca	1800-2300
7130	Alicante	1800-1900
7140	Alicante	1800-2200
7410	Seu Madrid	1900-2300

and on 9365 kcs. Arganda 1700-2200, 2330-0200.

COUNTRY PANEL.

No. 6: MEXICO

- XEWW: Mexico City. "La Voz de la America Latina." 15160 kcs.\* and 9500 kcs. 10000watts.
- XDA: Chapultepec. "Radio Mex." 14525 kcs. 20000 watts.
- XEHH: Mexico City. "Sal de Uvas Picot." 11880 kcs.
- XEBR: Hermosillo. "Radiodifusora de Sonora." 11820 kcs. 150 watts.
- XENN: † Mexico City. "Radio Mundial." 11780 kcs. 500 watts.
- XDY: Chapultepec. "Radio Mex." 9925 kcs. 20000watts.
- XEQQ: Mexico City. "La Cadena Azul." 9680 kcs. 1000 watts.
- XEBT: Mexico City. "Radio Pan Americana." 9625 kcs. and 6000 kcs.\* 10000 watts.
- XERQ: Mexico City. "Radio Continental." 9615 kcs. 500 watts.
- XEYU: Mexico City. "Radio Universidad Nacional." 9606 kcs. 250 watts.
- XETT: Mexico City. "La Hora Exacta." 9555 kcs. 500 watts.
- XEFT: Vera Cruz. "La Voz de Vera Cruz." 9550 kcs. 250 watts.
- XERE: † Villahermosa. 9515 kcs. 125 watts.
- XECC: Puebla. "Impulsoras del Progreso." 6185 kcs. 50 watts.
- XEXA: Mexico City. "Radio Gobernacion." 6175 kcs. 1000 watts.
- XEDQ: Guadalajara. 6155 kcs. 500 watts.
- XEBF:\* Jalapa. "La Amiga del Hogar." 6090 kcs. 250 watts.
- XETW: Tampica. "La Voz de Tampica." 6045 kcs. 100 watts.
- XEKW: Morelia. "El Eco de Michoacan." 6030 kcs. 500 watts.
- XEUW: Vera Cruz. "El Eco de Sotavento des de Vera Cruz." 6020 kcs. 250 watts.
- XEOI: Mexico City. "Radio Mil." 6010 kcs. 2500 watts.
- XEJG: Guadalajara. 4820 kcs. 200 watts.

\* Not in operation at present.

† Station under construction.

● **QSL's Received.**

Verifications received by our readers over the past month.

Your scribe has had cards from VLR, KRHO, VLG10 and HH2S.

Lionel LeBreton from VLC2, VLC6, CHTA, CKNC, TAP, JCKW.

T. B. Williamson from XEBT (super card depicting Aerial and Mexico with red call letters XEB-XEBT), XEQQ (picture postcard showing Mexican Indian), ZPA3 (letter veri. Sending out cards later). Singapore (sends plain card like ZOY QSL).

A Cushen in New Zealand has been fortunate in securing cards from ZOH, XEBT, OAX6E, CE1190, OAX2A CXA19, WLXJ, WLWS, WNRX, WNRA, WNRI, VLC9.

Sidney Pearce from VLH4, COBQ, KGEX, CHNC, KRHO, KCBA, KCBF.

J. W. Hughes from SUV, SUS, KCBF, FZI, OTC, YV1RX, CKLX, ZFY, VLG8, HCJB, VQ7LO, TAP, CXA19, HP5G.

A. Levi in Belfast from Radio Andorra, Belgrade, FZI, CHOL, CHTA, CKLO, OTC, PCJ, Prague, Radio Maroc, Radio SEAC, SBO, SDB2, HET, VLG7, VLH4, VONH, VUD4, HVJ, XGOY and ZFY. (Nice work O.M.)

● **Australasia.**

Latest schedules received from Radio Australia, effective as from July 4th are as follows:

Lyndhurst VLG stations (10kW.):

VLG	31.32m.	9580kcs.
VLG3	25.62m.	11710kcs.
VLG4	25.35m.	11840kcs.
VLG5	25.25m.	11880kcs.
VLG6	19.69m.	15230kcs.
VLG10	25.51m.	11760kcs.

Shepparton VLA stations (100kW.):

VLA	41.21m.	7280kcs.
VLA3	30.99m.	9690kcs.
VLA4	25.49m.	11770kcs.
VLA6	19.74m.	15200kcs.
VLA9	13.84m.	21680kcs.

Shepparton Stations VLC (50kW.):

VLC2	30.99m.	9683kcs.
VLC4	19.59m.	15320kcs.
VLC5	31.45m.	9540kcs.
VLC6	31.20m.	9615kcs.
VLC7	25.35m.	11840kcs.
VLC8	41.21m.	7280kcs.
VLC9	16.82m.	17840kcs.
VLC10	13.84m.	21680kcs.
VLC11	19.72m.	15210kcs.

Reports on any of these stations should be addressed to: "Radio Australia" Box 780H, GPO Melbourne C.1, Victoria, Australia.

To stations VLH, VLQ and VLR report to: Box 1686 GPO Melbourne. A special note received recently states that "Radio Australia" conducts all external short-wave transmissions.

M. F. Williams reports VLA4 with programme for Great Britain at 0700 also VLH5 15240 kcs. (19.69m.) on Saturdays between 0500 and 0730. Latest schedule of transmissions directed to Brit. Is. is as follows:

0700-0815	VLB3	11770kcs. (25.49m.)
	VLA9	21860kcs. (13.84m.)
1500-1600	VLB8	11760kcs. (25.51m.)
	VLG9	11870kcs. (25.25m.)
	VLC6	9615kcs. (31.20m.)
	VLB2	9683kcs. (30.99m.)
	VLG9 and VLC6	carry programme till 1545 only.

2130-2230 VLA4 now replaces VLA3 with night service. Terrific signal at your scribe's QTH.

Reports on "Radio Australia" may now be sent direct or to: Australia House, Australia Information Bureau, London.

U.S.A. readers may send to: Rockefeller Building, New York City, N.Y.

● **QRA List.**

Here are some more addresses for the "wallpaper" collector:—

KCBF. The United Network, "Voice of America," Department of State (O.I.C.), International Broadcasting Division, 111 Sutter St., San Francisco, California, U.S.A.

SUS, SUV2. Marconi Radio Telegraph Co. of Egypt, P.O. Box 795, Cairo.

HH2S. Societe Haitiene de Radiofusion, P.O. Box B81, Port-au-Prince, Haiti, F.W.I.

(Your scribe has just received a very plain QSL card from them after a wait of 10 years for a verie from Haiti. Hi!!)

● **Acknowledgments.**

Firstly to my very competent assistant "Bobbie" for her help in type-writing my article this month while your scribe was indisposed. My 73 also 88 to you!

A. Levi (Belfast), A. Cushen (Invercargill, N.Z.), T. B. Williamson (BSWL 1635 Angmering-on-Sea), Lionel LeBreton (Dorchester), Sidney Pearce (BSWL 336 Berkhamstead), J. W. Hughes (Rochdale), M. F. Williams (Newark, New Jersey U.S.A.), J. Hebborn (London), A. W. Mann (Middlesborough), Leslie Singer (London), T. Wilson (BSWL 2410 Kirkconnel), A. W. Gilbert (Fordingbridge), Murdoch B. Riley (Wellington N.Z.)

# Frequency Multiplication in Amateur Transmitters

**Editorial Note.**—The writer of this article, Dr. S. O'Hagen, G2CR, will be remembered as the author of the article on Crystal Oscillators which appeared in our June number. A further article has been promised dealing with Power Amplifiers, and we commend these particularly to those of our readers who are studying for the Radio Amateurs' Examination.

**C**RYSTAL oscillators are the most satisfactory source of constant-frequency drive for radio transmitters, but crystals are difficult to manufacture and to operate for frequencies higher than 7 Mcs. Even 7 Mcs. crystals are noticeably more fragile than those designed to operate on 3.5 and 1.7 Mcs. Since crystals are single-frequency devices, it is then convenient to have most, if not all, of the station's crystals operating on the lower frequency bands, and to work the higher bands by using one or more frequency-multiplying stages between the crystal oscillator and the final amplifier. This reasoning is still largely true when a Franklin oscillator or an E.C.O. is used as a variable frequency drive, for all these self-controlled oscillators work more satisfactorily at low frequencies, and the use of at least one doubler stage eliminates much trouble due to feedback of energy from the final or aerial to the frequency controlling circuit.

Frequency-multipliers, as used in orthodox transmitters, consist of valve amplifiers with the anode circuit tuned to two, three or four times the frequency of the grid circuit. Such an amplifier requires no neutralising, since its anode and grid are not tuned to the same frequency. How is it that it generates harmonics?

It is well-known that in a speech amplifier, excessive grid swing and grid bias cause harmonic distortion—that is, they produce elements of "high order" harmonics. Increasing the bias and the drive still further, increases the proportion of harmonics to the fundamental still further. The same applies to R.F. amplifiers, and in fact, the output of a normal class-C amplifier has an extremely distorted wave-shape, with an appreciable proportion of harmonic energy which requires the use of a fairly high-Q tuned "tank" circuit to smooth it out and eliminate the unwanted harmonics. If such an amplifier had its anode tuned to twice the resonant frequency of the grid circuit, it would give appreciable power output at the second

harmonic. Thus the main difference between amplifiers and frequency multipliers is in their operation rather than in their circuit details, although there are certain modifications of the amplifier circuit permissible in the doubler which may be introduced to increase efficiency.

## Frequency Multiplier Circuits.

Fig. 1. shows the simplest frequency multiplying circuit: a triode is driven at frequency " $f$ " kcs. and has its output circuit tuned to " $2 \times f$ " kcs. No neutralising is used. Bias is by grid-leak and cathode resistor, to keep anode current down with no excitation and to provide a very high bias voltage in operation.

Fig. 2 differs from the circuit of Fig. 1 in two respects. A pentode is used in place of the triode and the cathode resistor bypass capacitor is reduced below the orthodox value to 100  $\mu$ F. Pentodes and beam-tetrodes require much less driving power than triodes, which is most advantageous in a stage to be driven by a low power crystal or self controlled oscillator.

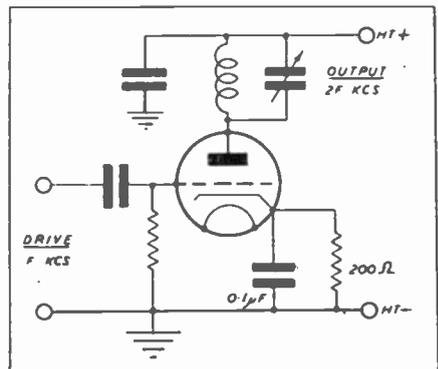


Fig. 1.—Simple Triode Doubler

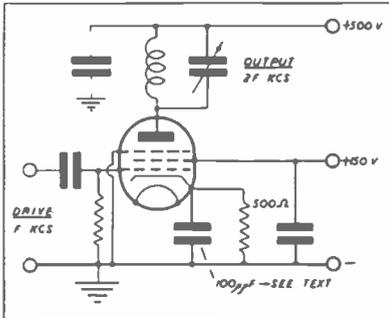


Fig. 2.—Regenerative Pentode Multiplier.

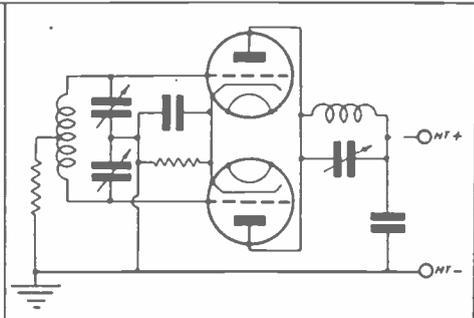


Fig. 3.—Push Push Doubler.

The reduction of the bypass capacitor to 100  $\mu$ F. causes feedback at output frequency which increases output and efficiency. At higher frequencies it is apt to self oscillate and great care must be used to ensure that the output is, in fact, on the required frequency and no other. Increasing the size of the bypass capacitor decreases the regeneration and the circuit should never be used with the doubler actually self-oscillating. A beam tetrode could be used in this circuit, but its extreme sensitivity makes it an efficient multiplier even without regeneration and little is gained by regeneration which then only increases the chance of trouble.

A triode amplifier with neutralisation may be used as a doubler merely by increasing drive and grid bias and tuning the anode to the next higher amateur band. The feed-back through the neutralising capacitor does not then cancel any of the drive, but gives a minor degree of regeneration. It is useful in a medium power two-band transmitter where the same circuit is used as a buffer on one band and a doubler on the next higher band. Of course, a fully screened R.F. pentode or beam tetrode, such as the RK25 or 807 can be used as buffer or doubler in the same way without neutralisation and have the advantage of being more sensitive for driving.

A push-pull amplifier cannot be used as a doubler or quadrupler because even harmonics are cancelled in its output, though it could be used as a tripler, if such were required in amateur practice. A modification, known as the push-push doubler is shown in Fig. 3. Here the grids are driven in push-pull and the anodes are connected in parallel. This results in the output circuit receiving a flick impulse from one valve once every half cycle at the fundamental frequency, or once every one cycle

at the second harmonic. This helps to give high efficiency and output since the configuration of the circuit helps the harmonic generation caused by distortion in the two valves. Twin triodes such as the 6N7, 6A6, or 53 and twin beam tetrodes such as the 815 or the new Mullard QVO4-20 are excellent for this use. Two separate valves may, of course, be used.

At very high frequencies (60 Mcs.) the capacity to earth of the two anodes in parallel may be so high as to preclude an adequate L/C ratio in the tank circuit. In these circumstances, the modification shown in Fig. 4 is of value. Fig. 4a shows the actual circuit in which it will be seen that a series tuned circuit is connected between the anodes and earth and that the H.T. supply is fed through an R.F. choke to a tap on the coil. At first sight it would seem that such a circuit would have zero impedance at resonance and thus give no output, but the effect of the anode-earth capacitance of the valves is to convert the effective circuit to that shown in Fig. 4b, which it will be seen is a form of split stator capacitor tuned circuit, with the valves connected across one arm and the other arm "floating." At high frequencies, this use of the valves inter-electrode capacity results in a highly efficient circuit and such small valves as the 53, 6A6 or 6N7 will give as much as 8 watts of R.F. on 60 Mcs.

### Valves for Frequency Multiplication

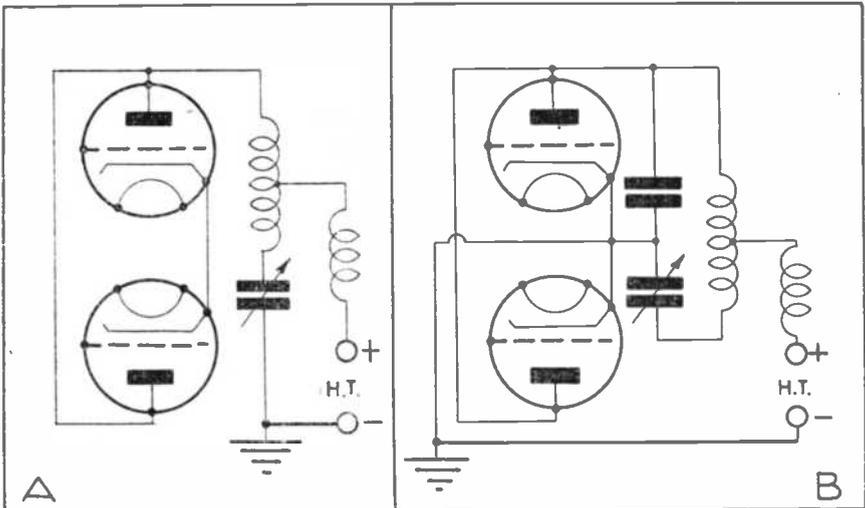
Frequency multiplication is a more rigorous application of a valve than normal class-C operation, and more attention should be paid to choice of valve and operating conditions than is usually the case in amateur circles. The factors that limit a valve's performance are anode dissipation, peak anode and grid current, and

anode voltage. For maximum valve life, none of these maxima must be exceeded, and as will be shown, this implies that input to and output from a multiplier will both be less than for the same valve used as a straight amplifier.

Normal transmitting valve ratings are for class-C amplifier service and assume that the valve will give one pulse of anode current lasting about one-third of a cycle for each complete cycle of operating frequency. The pulse normally swings from zero to anode current saturation value. Now, when the valve is used as a doubler, the pulse, for the same anode efficiency must still swing from zero to saturation and back to zero again in one third of a cycle (120 degrees) but since it gives a pulse only once every alternate cycle of output frequency, the average anode current, as read by a moving coil meter, will be only one half of that for amplifier operation, and since the efficiency, under these conditions will still be of the order of 70 per cent., the anode dissipation will be only half the rated value for the valve, and the output will be about half the expected output for the valve used as a amplifier. To operate under these conditions requires a very considerable amount of driving power if a triode is used, and it is more usual to work with less bias than this so that anode current flows over about 180 degrees at the output frequency.

Under these conditions the amount of drive required is only about twice that required for straight amplification whilst the output is increased by 50 per cent. Because of the originally lowered anode input, the lowering of the efficiency and increase of the input power does not cause overloading of the anode. In any case, the grid bias required for doubler operation greatly exceeds that needed for class-C amplification, and unless very high voltage output, it will be difficult to drive a low- $\mu$  valve to any reasonable output or efficiency. Further, should the bias fail, such a valve would destroy itself by drawing excessive anode current. The use of high- $\mu$ , preferably zero-bias types, is excellent practice since the lower impedance of the grid circuit reduces grid current losses and even in the absence of bias and drive, the anode current will not rise to dangerous values. Such valves as the Taylor TZ 20 or its British equivalent, the Mullard TZ 05/20, the Osram LS5B and the dual triodes designed for class-B audio work, (53, 6A6, 6N7, etc.) make excellent doublers and the 46 dual-grid triode, with its grids strapped together gives good results.

Pentodes and beam tetrodes, both A.F. and R.F. types make excellent frequency multipliers. Because of their low drive requirements it is practical to run them at very high bias and efficiency, but care must



(A) Modification of Fig. 3 for 56 Mcs. and above.

Fig. 4.

(B) Actual Electrical Equivalent of Fig. 4 (A).

be taken not to allow the screen current to rise above its rated value or the valve will be destroyed quite quickly. Neither pentodes nor tetrodes should be allowed to run with the anode circuit tuned but unloaded for more than a few seconds. Neither should the control grid current be allowed to exceed the rating for the valve. Neglect of these points has destroyed very many 6L6's and 807's. It is always wise to operate the screen grid at as low a voltage as will permit sufficient output. If this is done it is convenient to run the anode at maximum voltage and the valve will tend to be self-protecting in case of bias failure. It is, however, always wise to include enough cathode bias on any pentode or tetrode to prevent the anode current from rising excessively—a 200 to 500 ohms resistor will usually suffice.

Fig. 5 shows a selection of valve types commonly used as doublers, with their ratings for this service. These figures are not the same as the normally published ones for Class-C amplifier conditions. They show the relatively low grid current of the beam tetrodes, and thus the ease of driving them from low power oscillators. It would thus be good practice to follow a very low power oscillator with a beam tetrode doubler which would give an appreciable power gain. Thereafter, triodes or tetrodes or pentodes could be used as desired for further doubling or amplifying in the certain knowledge that the crystal stage will not be overloaded.

Bias for doubler stages is best provided by grid leak with enough battery or cathode bias to ensure that the anode current is not excessive if the drive fails. With the zero bias triodes (6A6, etc., 46, TZ 20) no fixed bias is needed. In each case the grid leak should be three or four times the value recommended for amplifier operation of the same valve. Alternatively it may be calculated as below:—

$$\frac{1000 \times \text{Bias Volts}}{\text{Grid Current (mA.)}} = \text{Grid leak resistance (ohms)}$$

### Tuning Frequency Multipliers.

Generally speaking, the procedure is the same as for an amplifier. First adjust the driving stage to give about 30 per cent. more than the rated grid current for the doubler valve with no H.T. on the latter. Then apply anode voltage and swing the anode tuning capacitor observing the reading of the anode current meter. Resonance is shown by a sharp dip in anode current to a value of about 10 or 20 mA. At this point a neon lamp or loop lamp coupled to the doubler tank will

show the presence of R.F. output. Now an absorption wavemeter becomes essential, since if a frequency multiplier is working at all efficiently there may not be much difference in output on the second, third or fourth harmonic, and even the fifth may be mistaken for the fourth unless the absorption wavemeter is used. Listening to the signal on the receiver is not enough—the field strength will be so intense that the readings will be grossly misleading. The wave meter need consist only of a coil and capacitor tuneable over the band or bands required, and fairly rigidly constructed. It may be calibrated either from a transmitter already known to be "in the band," or from a self oscillating "straight" receiver. When coupled to a tank circuit that is showing output "in the band," and the wavemeter is tuned through the output frequency, the loop lamp or neon will flicker and the anode current of the valve will also show a sharp flicker. This should of course occur at the correct setting of the wavemeter scale.

The depth of the anode current dip is a rough indication of the efficiency of a doubler, but it is always more marked at lower frequencies and with triodes than pentodes or tetrodes. (Note that a pentode or beam-tetrode must never be allowed to run unloaded for more than a few seconds or the excessive screen current will damage the tube).

The final operation is to couple the load until the doubler draws its rated anode current, i.e., half the value for the valve used as an amplifier. At this stage a refinement is to vary the excitation and bias in either direction to obtain maximum output, taking care not to exceed rated grid or screen currents.

Tuning multipliers for harmonics higher than the second follows similar lines, but in general the output will be lower and the drive power and grid bias will have to be increased. The output of the tripler may be expected to be a third of the output of an amplifier and of a quadrupler, one quarter of that output—that is, a quadrupler will not give more than half the power that the same valve would give when doubling. For that reason, it is more usual to use two stages of doubling rather than a single stage of quadrupling, when the set is to be used on four times the crystal frequency. An exception is in the case of a tetrode or pentode P.A. stage that requires only a minimum of drive: in this case the output of a 6L6 or 6V6 may be enough even on the 4th harmonic to provide adequate drive for the final amplifier. (Continued on page 269)

Valve	Anode volts	Anode current	Grid bias	Grid current	Screen volts	Screen current	Output watts	Anode diss. max.	Type
RK34 56, 6A6, 6N7	300 v.	40 mA.	-100 v.	20 mA.	—	—	8	10 w.	Twin triodes
TZ 20	750 v.	42 mA.	-120 v.	28 mA.	—	—	22	20 w.	Zero bias triode
809	1000 v.	65 mA.	-215 v.	25 mA.	—	—	37	30 w.	Triode
RK25	500 v.	30 mA.	-220 v.	4 mA.	200 v.	38 mA.	11	10 w.	R.F. pentode
6V6 7C5	300 v.	30 mA.	-135 v.	2.5 mA.	200 v.	7.5 mA.	6	12 w.	A.F. beam tetrode
6L6	400 v.	45 mA.	-105 v.	3.5 mA.	200 v.	10 mA.	10	22 w.	A.F. beam tetrode
807	750 v.	50 mA.	-150 v.	3 mA.	250 v.	8 mA.	25	30 w.	R.F. beam tetrode
RK20A	1250 v.	45 mA.	-300 v.	11.5 mA.	300 v.	36 mA.	42	40 w.	R.F. pentode
46	400 v.	30 mA.	-75 v.	6 mA.	—	—	5	10 w.	Double grid triode

Fig. 5.—SELECTION OF VALVE TYPES FOR USE AS FREQUENCY MULTIPLIERS.

# Resonant Lines

**R**ECENTLY I was looking at the gear for sale in the windows of a "surplus goods" store, where a couple of youths barely more than school age were weighing up the possibilities of using some 110v. mains transformers which were offered at an attractive price. One suggested that two of them connected in series with the mains would be suitable for use on 220v. A.C. using the secondary of one to give the required output voltages. At first sight this might seem readily possible, but it must be remembered that the primary current of a transformer is dependent on its secondary load. Used in this manner the load would obviously not be the same and the transformer taking the load would not receive the current required. Theoretically the arrangement would work satisfactorily if the load on each transformer was similar, but any variation in either would immediately affect the other one, so such an arrangement can hardly be considered practical however attractive it might seem at first glance.

## Services Gear.

From this you will gather that I am keeping an interested eye on the W.D. surplus "Bargain market." So far I have seen very little of Army or Naval equipment and nothing at all yet of the famous No. 19 set or its accessories, apart from a few moving coil mike inserts. This is remarkable as nearly two million of them were made during the War. Primarily designed for use in Armoured Fighting Vehicles, it became fitted to almost everything on wheels and was extensively used even in aircraft and small ships. No other set approached anywhere near it in numbers. Even the 38 set, the walkie-talkie used so extensively by the Infantry, Commandos and Home Guard, wasn't produced on anything like this scale, indeed it is doubtful if their total greatly exceeded three hundred thousand.

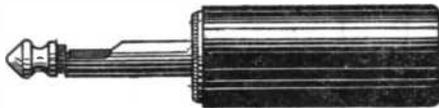
## Threatened Babel

What will happen to all those surplus No. 19 sets? Discounting a few hundreds of the earliest type which were quickly obsolete, a large number smashed in action and training, their number must vastly ex-

ceed the figure needed for peace time Service requirements. Possibly they will never appear as complete installations. There would certainly be pandemonium let loose if many were jobbed off and allowed to fall into irresponsible hands. Maybe they will appear one day, after being rendered unserviceable, for the sake of the parts, all of which would be highly useful to intelligent experimenters. For those not familiar with the 19 set I would mention it comprises two separate trans/receivers (2 to 8 Mcs. and VHF) both of which can be used at the same time, or either used to re-transmit what is being received on the other, plus an inter-com. amplifier which can also be used to amplify reception or mike. A lovely little bag of tricks—15 valves—and nearly two million of them delivered to the Services!

## Ideas Unlimited.

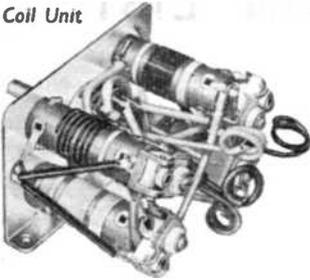
I have always been interested in constructors ideas for gadgets, and as an avid reader of them over many years I must admit I have never yet found one which I could put to any use, but it's great fun reading about them. Unfortunately so many of them lack originality, although the idea is usually original as far as the person suggesting it is concerned. Indeed they invariably claim that the idea came to them suddenly while soaking in the bath! Even so, such ideas as making capacitors from disused razor blades, screening cans from shaving soap tins, and using matchstalks to rib coil formers, have long grey beards and should be left peacefully in their pensioned retirement.



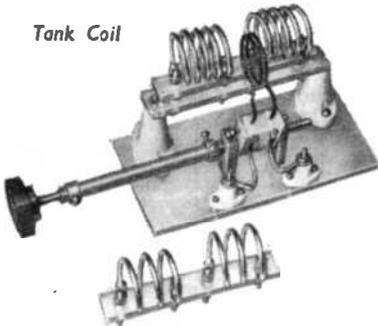
However, here is an idea, not original inasmuch as I have seen it used in the Forces, but I have never seen it in amateur use or print. Part of the stem of a normal plug is cut away as in the illustration. The insulated sleeve is, of course, left intact. The circuit is broken simply by a half turn of the plug, and the need for withdrawal or even partial withdrawal, is obviated.

*Bence Yap*

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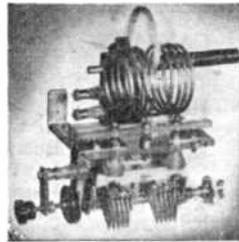
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Part 8 : 6115 kcs. - 6015 kcs.

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Frequency	Call	Location	Slogan	Power (watts)	
6155	...	EQB	Teheran, Iran	Radio Teheran	14000
		CS2WD	Lisbon, Portugal	Radio Renascenca	500
		XGOY	Chungking, China	The Voice of China	35000
		XEDQ	Guadalajara, Mexico		500
		CE615	Santiago, Chile	Radio Cooperativa	
		YSPB	San Salvador, El Salvador	Vitalicia	5000
6150	...	---	Belgrade, Yugoslavia	La Voz de Cuscatlan	350
		VLR2	Melbourne, Australia	Radio Belgrade	10000
		VUB2	Bombay, India		2000
		CKRO	Winnipeg, Canada	All India Radio	10000
		TIRH	San Jose, Costa Rica		2000
		HIIG	Trujillo City, Dom. Rep.	Radio El Mundo	1000
6145	...	HJDE	Medellin, Colombia	Radio la Opinion	150
6140	...	OQ2AA	Leopoldville, Bel. Congo	La Voz de Antioquia	5000
		---	Moscow, U.S.S.R.	Radio Leo	50
		OAX8C	Iquitos, Peru	Radio Centre, Moscow	
		FIQA	Tananarive, Madagascar	Radio Central	300
6135	...	CP30	Santa Cruz, Bolivia	Radio Tananarive	1200
		---	Rome, Italy	Radio Florida	250
		---	Jaffa, Palestine	A.F.R.S.	1000
6130	...	CHNX	Halifax, Canada	Sharq al Adna	7500
		COCD	Havana, Cuba		500
		RW96	Moscow, U.S.S.R.	La Voz del Aire	1000
		XEUZ	Mexico City, Mexico	Radio Centre, Moscow	
		OAX7A	Cuzco, Peru		1000
6125	...	MTCY	Hsingking, Manchukuo	Radio Cuzco	100
6122	...	HP5H	Panama City, Panama		20000
6120	...	WOOC	New York, U.S.A.	La Voz del Pueblo	500
		LRX1	Buenos Aires, Argentine		50000
6110	...	OIX1	Helsinki, Finland	Radio El Mundo	6000
		GSL	Daventry, England		10000
		HJFK	Pereira, Colombia	50000/100000	
6105	...	PRE9	Fortaleza, Brazil	La Voz Amiga	2500
6100	...	VUD7	Delhi, India	Ceara Radio Club	5000
		---	Warsaw, Poland	All India Radio	100000
6095	...	ZRJ	Johannesburg, S. Africa		10000
		ZYB7	Sao Paulo, Brazil	Radiodifusora Sao Paulo	1000
		JZH	Tokio, Japan		5000
6090	...	XRRA	Peiping, China		10000
		LRV1	Buenos Aires, Argentine	Radio Belgrano	25000
		ZNS2	Nassau, Bahamas		600
		CBFW	Montreal, Canada		200

SHORT WAVE NEWS

Frequency	Call-sign	Location	Slogan	Power (watts)
	—	Luxembourg, Luxembourg	Radio Luxembourg	
6085	... ZAA	Moscow, U.S.S.R.	Radio Centre, Moscow	
	VUM2	Tirana, Albania	Radio Tirana	3000
6080	... —	Madras, India	All India Radio	10000
	CKFX	Umtali, S. Rhodesia		
	WLWK	Vancouver, Canada		100
	—	Cincinnati, U.S.A.		50000
6075	... CXA3	Munich, Germany	A.F.N. Frankfurt	5000
6070	... RW79	Montevideo, Uruguay	Radio Ariel	2500
	GRR	Petrovavlovsk, U.S.S.R.		
	CFRX	Daventry, England		50000/100000
6067	... —	Toronto, Canada		1000
6065	... TIWS	Tetuan, Sp. Morocco	Radio Tetuan	1500
	VU7MC	Puntarenas, Costa Rica	Ecos del Pacifico	5000
	SBO	Akashvani, India		
	—	Motala, Sweden		12000
	—	Berlin, Germany	Berliner Rundfunk	
6060	... VQ7LO	Lille, France	Radio Lille	
	KNBI	Nairobi, Kenya		1500
	RW100	Dixon, Calif., U.S.A.		50000
	WCBN	Moscow, U.S.S.R.	Radio Centre, Moscow	
6055	... CXA14	New York, U.S.A.		50000
	HJFA	Colonia, Uruguay	Radio Electrica	1000
6050	... XGOW	Pereira, Colombia	La Voz de Pereira	750
	GSA	Hankow, China		
	OAX6A	Daventry, England		50000/100000
	—	Arequipa, Peru	Radio Arequipa	250
6045	... XETW	Moscow, U.S.S.R.	Radio Centre, Moscow	
6040	... —	Tampico, Mexico	La Voz de Tampica	100
	COBF	Algiers, Algeria	Voice of America in North Africa	50000
	OAX6B	Havana, Cuba	Radio Libertad	1000
6035	... XYZ	Arequipa, Peru	Radio Landa	200
	CXA30	Rangoon, Burma	Radio Rangoon	7500
6030	... RW96	Montevideo, Uruguay	Radio Nacional	1000
	HP5B	Moscow, U.S.S.R.	Radio Centre, Moscow	
	CFVP	Panama City, Panama	Radio Miramar	250
	XEKW	Calgary, Canada	Voice of the Prairies	100
	OLR2B	Morelia, Mexico	El Eco de Michoacan	500
	IRF	Prague, Czechoslovakia		30000
6025	... HI1J	Rome, Italy	La Voce dell Italia	20000
	CP37	San Pedro de Macoris, Dominican Rep.		250
	—	Oruro, Bolivia	Radio Oruro	250
	—	Brazzaville, F.E.A.		500
	—	Algiers, Algeria	Voice of America in North Africa	50000
6020	... XEUW	Vera Cruz, Mexico	El Eco de Sotavento des de Vera Cruz	250
	CP41	Kiev, U.S.S.R.		40000
	HJCX	Sucre, Bolivia	Radio Charcas	250
6015	... XUPA	Bogota, Colombia	La Voz de Colombia	750
	PRA8	Tai-Poi, Formosa		
	JLR	Recife, Brazil	Radio Club Pernambuco	5000
	XEOI	Tokio, Japan		2000
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We are happy to announce that we can supply the following items from stock. May we suggest that you let us have your orders promptly, as supplies are still limited.

### SPECIAL RECEIVING VARIABLE CONDENSERS.

Two gang, ceramic insulation, .0005 mfd. These condensers are of a special type with low minimum capacity 11/6 each.

Three gang, ceramic insulation, .00035 mfd. (3/4 in. spindle) 7/6 each.

### SPECIAL AIR-SPACED TRIMMING CONDENSERS.

Ceramic insulation, with silver plated vanes, one-hole fixing 2/3 each.

### MOVING COIL METERS.

Limited number of first grade meters, 0-500 micro-amps. 2 1/2 in. dial 30/-.

Radio-frequency thermo-ammeters 0-5 amps. 30/-

Radio-frequency thermo-ammeters 0-3 amps. 30/-.

### AERIAL RODS.

(We regret that these can be supplied to callers only, but special arrangements can be made for delivery of quantities).

5 ft. tapered rod, cadmium plated on steel, with screw base. Ideal for 58 mcs., car aeriels, etc. 2/-.

### SMOOTHING CONDENSERS. (Electrolytics).

8 mfd. 350 v. wkg., 3/9; 8 mfd. 500 v. wkg., 4/-; 4 mfd. 350 v. wkg., 2/9.

### CHASSIS.

Steel, zinc plated and finished in grey crackled enamel. First grade quality.

17 x 10 x 2 ins. 11/6; 14 x 8 x 3 ins. 9/6; 12 x 6 x 2 1/2 ins. 7/6

Radiocraft Power Equipment, Valves and all Amateur and Constructor's Gear.

Mail Order Dept., to deal with your postal enquiries and orders.

**OPEN ALL DAY SATURDAY**

# Short Wave Listening By G3AKA

## No. 3 of a series

**RELATIVE RECEPTION:** As the signal strength scales rely upon the discretion of the listener to form his own interpretations, except where a signal strength meter is used, it will be obvious that no two R9's will mean exactly the same thing! One persons R9 is another's R5! Sad, but true. In practice, then, to inform an operator that his station was R9 is, to all practical purposes, tantamount to stating merely that "your signals were received." If, however, you can add that a neighbouring station was received, at the same time, at R6, then the R9 begins to bear some significance. It is only in these comparative reports that the signal strength scales will show their true worth. When writing to a station in, say, Buenos Aires, a list of other Beunos Aires or Argentine stations heard the same day, with their respective signal strengths, would undoubtedly prove to be of really practical value to the station concerned.

**GENERAL NOTES:** This space is available for any afterthoughts, ideas, and sudden inspirations that may occur to the reporter! Comments on the entertainment value of the transmissions, general summing up and so forth come under this category.

We agree that the report outlined in the past few pages is of a most comprehensive nature but if the "Short Wave News" reporting blanks are used the process will be considerably simplified. Apart from the fact that such a report will be of material value to the recipient, the reporter himself will gain invaluable knowledge about reception conditions by adopting such a course. The listener who simply hears a station and sends out a scrappy report in an automatic fashion surely does not get

the maximum enjoyment from his listening! He is in the same category as the person who wires up a receiver without knowing why certain leads are connected to certain other terminals. In other words—he misses half the fun! Even if it means sending out fewer reports, it is always advisable to take a little more trouble over them, not only from the recipient's point of view, but from the listener's angle also.

Another very important, or rather essential, point to note when sending reports is to be perfectly honest in one's details. Be candid, even though it may hurt! By stating that a distorted carrier is "good quality" or that an R4 signal is "R9 plus," apart from being hopelessly misleading to the operator, it does not help the listening fraternities' interests. Other reports will be received by the station on the same transmissions, in most cases, and a suspicious report will undoubtedly meet its just fate! Say exactly how the station is being received, and do not at all costs attempt to flatter. Above all, make sure you know the reporting codes. This may sound rather a superfluous statement, but are YOU sure you know exactly what QSA3, T7 and R5 are, without reference?

As a final note, perhaps we should mention the inevitable uncertainty of QSL collecting. There are instances where a station will not reply to any report, even if on the lines of that already discussed. There is no way of guaranteeing a reply, but providing the listener adopts some form of useful reporting he will find his report/reply ratio will be appreciably more favourable than if a haphazard policy was used. Besides benefiting himself, he will also be justifying his existence as a short wave listener!

## INTRODUCING . . .

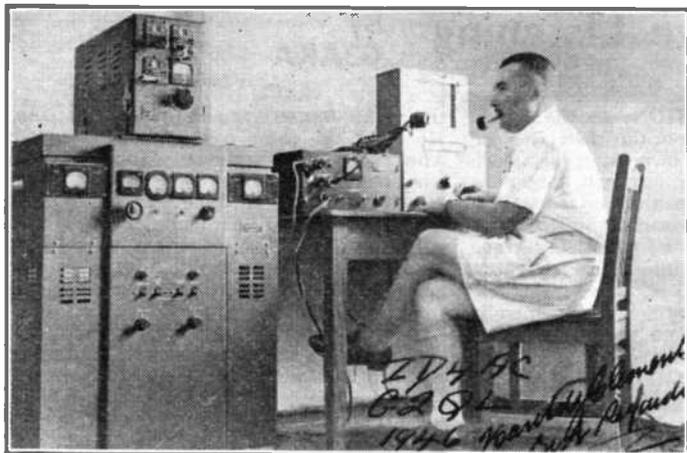
### More S.W.N. Correspondents

**Reuben Sokolovsky**, the Official Short Wave News Correspondent for the Near East. Reuben is the President of the Amateur Radio Society of Palestine, and the Palestine Representative of the B.S.W.L. (Photo on right).

**Otakar Halas**, OK2RR, now the Short Wave News Czechoslovakian Correspondent.

**Capt. Peter Keller**, XADZ, is now our Correspondent for the C.M.F. Area. XADZ is C.M.F. Representative of the B.S.W.L. and has recently "landed himself" the additional job of running the XA QSL Bureau.





## On The Ham Bands

Conducted by  
"CQ"

*ZD4AC believes in comfortable operating! We like the set-up, though we are not so sure about the climate.*

**F**IRSTLY, I would like to take this opportunity of thanking all those readers who have contributed such fine data for this feature. It really is gratifying—thanks, and please keep it up! Secondly, I would like to outline more clearly the future policy of "On the Ham Bands."

Long lists of calls heard are always appreciated, but we will give preferential treatment to more comprehensive data, such as frequencies, QRA's, and "meaty" news items. We have been asked by several readers to start a "calls heard" page, giving readers' full logs in alphabetical order. Frankly, we feel that this would be merely a waste of valuable space, as we see no useful purpose would be served. Such lists are mainly of interest to the reader concerned, and we do not intend to waste space on "self-glorification"!! Readers comments on this subject would be greatly appreciated, so please let us know how you all feel about it all.

### ● 28 Mcs.

Not a lot of DX has been heard on this band during the past month, although several readers have managed to pull in some notable signals. It has been mostly a month of short-skip again, with D4's, I's and XA's predominating. The most consistent DX station seems to be ZS1T, who can usually be heard around 1600-1800. He uses about 80 watts with a 3-element rotary beam 20 ft. from the ground.

D. L. McLean (Yeovil) reports hearing OQ5BL, (1700), SV1EC, VQ2FR (1720), QRA :-P.O. Box 111, Mufulira.), W9KZT/

PY1 (1850), ZS1A, ZS1AX, ZS1BV, ZS1T, ZS5BE (all between 1600-1700), and ZB2A (1800, on 28080 kcs.). Quite a few W's were logged, with W1, 2, 3, etc., coming in between 2120-2220 and the W4's around 1700. Incidentally, this reader uses a Sky Champion (S20) and various aerials, a 33ft. vertical, a 33ft. inverted L, a 66ft. inverted L and a 33ft. dipole.

A. R. Poulston, with the B.A.O.R., is using a services type CR100/2 receiver (eleven valves) and a 50ft. aerial, and despite heavy local QRM has heard some useful DX, including SU1HF (Q3 R3 at 1620), VS9AP (Q3 R4, 1620), VU2WP, ZS5G, ZS1CN, ZS1AX, ZS1T and others. He heard a number of VQ calls, but heavy QRM prevented the logging of complete calls.

A most impressive list of calls comes from our good friend R. G. Cousens (Wendnesbury)—about 80 real DX stations! The best are VS7pw (RST 579 at 1815), ZC6fp (569 at 1745), ZE1jj (5 3/7 9 at 1430), PY2oe (1630), XZ2AB (Q5 R7 at 1230), VQ3EDD (Q5 R6/8, 1650), HC1FG (Q5 R6/9, 1900), XZ2YT (Q5 R7, 1735), VQ4ASP (Q4 R3/7, 1230), VS9AP (Q5 R5, 1800), VQ3AA (Q3 R4/6, 1740), XZ2RK (Q4 R6, 1200), KA1ABA (Q5 R5/7, 1420), VQ2FR (Q5 R5/9, 1730), VU2LR (Q5 R5/7, 1245), VU2CQ (Q5 R7, 1230), VQ3EDD (Q4 R4/7, 1400), XZ2DN (Q5 R8, 1700), CE1AH (Q4 R5, 1800), PY1FO (Q5 R6, 1230), LU3AQ (Q5 R5/7, 1940), PY2QK (Q5 R7, 1750), KP4AZ (Q5 R5/9, 1900), VE3BBH (Q5 R5/8, 1640), and numerous ZS's. Nice work, O.M.!

● 14 Mcs.

The 'phone log from J. G. Watkinson contains some fine DX. Perhaps the best items are KH6AR (R7/8 from 0810-0900), VP5RS (Kingston, Q3 R7 at 2320), VS7PW (Q3 R6 at 1730), VU2BY (Agra, Q4 R7 at 2000), W3GZT/J9 (Okinawa, Q4 R8 at 1950), W5KBF/J5 (Q4 R7 at 1655), PK6AW (Biak, Dutch New Guinea, Q4 R7 at 1555), PK1AM (Batavia, at 1600), ET3Y (Addis Ababa, Q3 R5 around 1500), XU1YY and XU1YK (both Q3/4 R5 around 1430-1530). Also VU2AD, VS2BF, T12EV, ZB1A and many VK's. Mr. Watkinson says that VS1AA is the new call of VS2BA.

Another good 'phone log comes from M. Preston (London, S.W.17.), who has heard CR9AG (Q3 R7 at 1730), W6OCA/J3 (Q4 R8 at 2100), PK4HB, AC4YN, OB4SV (said to be in Sarawak), XZ2's DN, AB and YT (around 1930), VS7ES, K6ACP (Q5 R9 at 0815), KA1AK (Q3 R7, 1800), VP6Z1, ZS6EQ, ZS1T, ZE1JD, CR4HT (Q5 R9 at 0005), VQ2FR (Q4 R8, 1700), OQ5BL (Q4, R9, 1800), W2LFI/FF8 (Q5 R9, 0230), ZC4NX, G5KW (operating in the Dodecanese), YN1LB, CP1UU, CP5EA, VP3LF, HP1CM, HP2HP, etc.

D. L. McLean sets out his report in alphabetical order of call-sign and we wish other contributors would do the same, as it makes for easier reference both for us and for readers. The best stations, all 'phone, are CR4HT, EL4A (0620, 14345 kcs., Robertsfeld, Liberia), HK3AB (P.O. Box 1728, Bogota), HK3BI (P.O. Box 1047, Bogota), KH6CT (0700), KP4BP (C.A.A., Box 14, Naval Air Station, San Juan), OX1AD (2210, 14340 kcs.), OX1AD (1300, 14340 kcs. QRA:—ACS Squad, APO 858, c/o Postmaster, New York), PK1AL (Semarang, 1250), TG9RC (c/o Pan American Airlines, Guatemala City), T12EV (Ernest Venegas, Electric Co., San Jose), VE2SF/VO6, VP5EM (2220), W2MMO/Marine, W6OCA/J3 (14345 kcs.; 2220. QRA:—B. Coy., 58 Signal Batt., APO 713, c/o Postmaster, San Francisco), W9CAC/TF (QRA:—136 ACS Squad, APO 610, U.S. Army), YI2CX, ZP5AA (2230). 18 VK's are listed, and many W5, 6, 7, etc. The latter were mostly heard between 0630-0730. Thanks for all the fine data, O.M.

This month we have another colossal log from R. G. Cousens! Wading through the long columns, we pick out some of the

better items:—KF6sjj (RST 559 at 0730), VQ2gw (569, 1800), KH6bm (589, 0640), VE8ay (589, 0630), K6sdm (569, 0700), KL7cu (0630), VK7lj (0720), K6plz (0700), KL7ad (579, 0700), VU2pr (1715), VU2lr (1700), KA1abf (1620), VS1bx (1610), VE7aiv, VE7aeg (0630), XU1yy (0655), ZL's lar, 2fa, 2go, 2cu, 3is, 3jd, 3gu, 4gs and 4ga, J51lq (568, 0620), ZS6dw (569, 1820), and many VK's. On 'phone AC3SS (Q5 R7, 1820), VS1BZ (58, 1825), KA1ABA (46, 1840), VS1BD, VS1BV, VS1BF, XE1CQ (56, 0630), VS2BF (58, 1845).

A. R. Poulston reports ZL1mr (467, 0815), VK6AW (34, 1730, in New Guinea), J9AAG (33, 1650), YI2XG (44, 1710), W3gzt/J9 (588, 1700), J9ABF (34, 1630), VS1BZ (33, 1720), etc.

Martin Harrison (Darlington) includes in his log, KH6AR, KH6CT, K6CGK, W6QWE/KH6, G5KW in Rhodes, KP4CE, VE8MK, VU2AB, VU2WJ, XE1AC, XE1CQ, W2MMO/Marine, HK3BI, HK1AL, OX1AS, OX1WB, OX2MJ, OA4M, OA4T, etc.

Stan Garner of Burnham has been listening between 0530-0630 and reports the following:—20 ZL's (the best being ZL2fa:—46 Winter Street, Gisborne), 20 VK's, including VK7jt, KH6kt, W2cz/KL7, PK6tc, ZC4nx, W6vkv/16 (c/o U.S. Army, Asmara, eritria), J9AAR (1800), etc.

● VS4JH

If you have not yet heard this "rare 'un" from Labuan Island, then you've "had it"! The operator, Sgt. Johnny Hunt, is now on his way back to G. From a letter received, we pick out the most interesting items of Johnny's career of ham radio in the Pacific.

He started up on 14 Mcs. in August, 1945, and asks if he might be credited with being the first pirate in the Pacific area! After a while, he was signing as VS5JH and was operating from Darwin. Around Xmas, Johnny says, "things got hot" and was forced to QRT owing to strong opposition from the powers-that-be. However, in February of this year, an official licence came through and activity was concentrated on 28 Mcs. CW, using a power of 20 watts. On this rig 50 countries were worked. In April the rig was rebuilt, and the power stepped up to 100 watts. The first CQ on 14 Mcs. brought forth a QSO with a G. Johnny says that he QSL'd 100 per cent. both to contacts and to SWL reports, from all of his stations—VK9AB, VS3JH, VS4JH, and VS5JH.

● Italy Calling

Capt. Peter Keller, our Official Correspondent for the C.M.F. Area, sends in some interesting facts and news from XADZ. The station officially went on the air at 1900 on July 27th, a very inopportune time, as it happened, owing to the sunspot activity and "blackouts" of that time. During the first week-end on the air, only G stations could be heard, with the exception of a few W's and ZC1AR,—but strangely enough the stations prize DX catch took place within an hour of the station opening! This was KA1ABA in Manila, reports being QSA4 R4 both ways. The first week of operation was marred by heavy static and fading, several R9 contacts just fizzling out to R2-3. During the first 41 hours of operation, 76 'phone contacts were made, with 15 countries, 90 per cent. of which were 100 per cent. QSO's. It is interesting to note that during this period 11 CQ's were sent of which only 4 failed to bring forth a QSO. Only 5 incoming CQ's were answered without success. Peter says he feels this rather proves his opinion that it is far better to listen and plan rather than to call CQ indiscriminately. To which we agree. The output at XADZ averages about 55 watts, and any listeners reports will be appreciated and acknowledged.

To start off with, Martin asks about VE2BV who he hears on 7 Mcs. regularly around 1000 G.M.T. Well, it IS possible—it all depends on the power he uses, but on the other hand he may well be a phoney. Why not drop him a line, O.M.? His QRA is F. W. George, 4122 Catherine Street W., Westmount 6, Quebec.

Another doubtful call is VQ1ANA on 14 Mcs. This time we feel you are right, O.M., when you say it must be someone with a "perverted sense of humour." Anyone have any suggestions? Finally, we offer YP1AA to our readers for their comments!

J. G. Watkinson asks about FG3FT, heard in QSO with EL4A. D. L. McLean gives the call as FG3FP, and the QRA as c/o Pan American Airlines, Dakar. Is this W2LFI with a new call? Another station we need data on is YI1CX, heard on 14 Mcs.

● QSL's Received

D. L. McLean: (Pre-war reports) I1RM, KC4USA, W1OXDA. (Post-war reports) 7 Mcs.: HB9BB, LX1BO, LX1RB. 14 Mcs.: CE3CT, CO8MP, D4ADN, EA9AI, F3YI, HB9AG, HB9BR, LA3AA, LU1JC, LU5CK, PA0JQ, PY2AY, Y13R, XACP, XAEF. 28 Mcs.: ZB1E, ZB2A, ZD4AC, W5QH, XAAP, XACD.

● QRA Section

Martin Harrison (it's that man again!) points out that SWL's cannot yet get copies of the Call Book, we should not drop the QRA section. As we are in possession of the latest Call Book, we are prepared to list those QRA's that readers specifically request, in addition to any topical QRA's not in the Call Book. So, let us hear what QRA's you need, and we will do the rest!

● Apologies, O.M's

We regret that owing to the recent disruption of the mail, due to the floods, some readers logs went astray! So, if your log or news does not appear in this issue—don't blame us!

● Readers Report Wanted Corner

G3AKA: 3505 kcs. CW: c/o "S.W.N."  
 G2ATV: 3538 kcs. CW: c/o "S.W.N."  
 G6MN: 59610 kcs.: "Castlemount,"  
 Worksoop, Notts.  
 G3AAU: 14184 kcs. CW: c/o 40 The Butts,  
 Chippenham, Wilts.  
 G2BLA: 68 Gracefield Road, Streatham,  
 London, S.W.15.



Another rare card received by G6DH.

● Query Corner

Martin Harrison says "why not publish queries about doubtful stations?" Thus we are prompted to inaugurate a new section of "Ham Bands." In this section we intend to publish readers "queer" calls, together with any relevant data, and any light we, or any readers, can shed on the matter. Naturally, we need the co-operation of as many readers as possible to make this section what it can be—a really useful medium for sorting out our doubtful "catches."

# Converting the Class D No. 1 Wavemeter

**L**AST month the Class D No. 1 Mark 2\* Wavemeter was described in our *Component Review*. Below, we give details of the simple alterations needed to convert this instrument to run off A.C. supplies.

Comparatively few purchasers will find it convenient to provide a 6 volt D.C. supply, but many will already have an A.C. source of the same voltage, supplying valve heaters in the RX, or where this is absent or unsatisfactory a 6 volt transformer can be purchased at little cost. This source is the only "extra" needed. Note that a bell transformer is definitely not suitable; we tried one as a matter of interest. Using the highest—8 volt—winding, we found that the actual voltage on load was 5, while the load—only 7 watts—was sufficient to make the component uncomfortably hot.

Fig. 1 shows that part of the circuit concerned, before and after alteration. The

component notations given are as in the theoretical circuit in the booklet provided, in order to avoid any confusion. The supply lead is retained, as there is little room available to mount the transformer on the chassis.

C3A, C2A, L1A, R8A and R8B are no longer required. The vibrator also is not needed, and should be removed from the holder, the wiring to the latter can be left connected. Some additional connections have to be made. A lead is taken from the "dead" side of the on-off switch, S2A, to that heater socket of the valve which was connected to the choke L1A. Next a lead is taken from one of the terminals on the vibrator transformer marked "6"—it does not matter which one—to the soldering tag, on the chassis nearby, to which one side of the supply lead is soldered. This completes the conversion. On our model we could find no trace of any hum, the beat notes obtained being T9x.

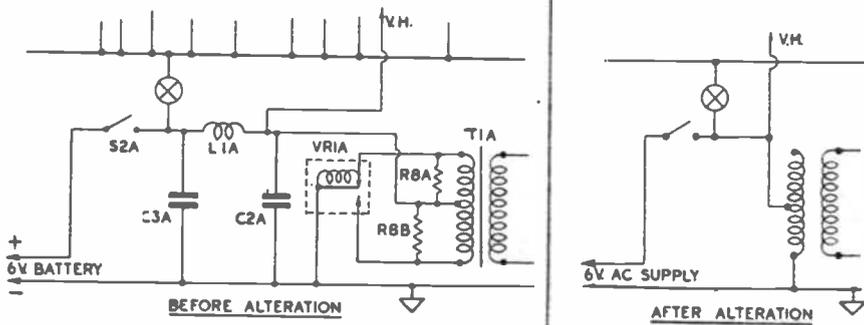


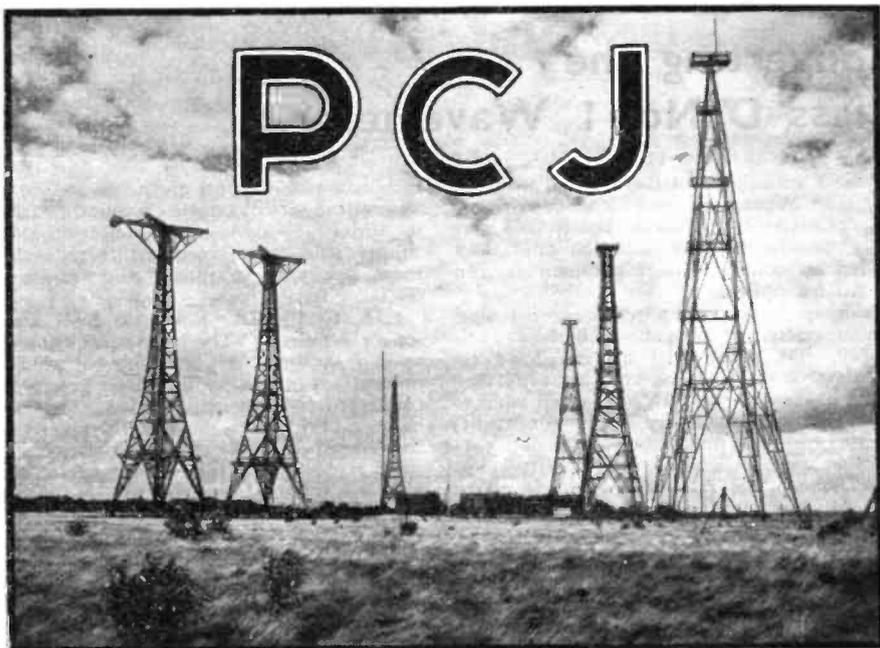
Fig. 1.

## FREQUENCY MULTIPLICATION—Continued from page 258

A very successful exciter unit for multi-band work will result from the use of double-triodes of the 6A6 or 6N7 type as a series of simple triode doublers, with links coupled to each tuned circuit to draw off a watt or two of power in which ever band is desired. The triode sections not in use, when not driven, draw only a small anode current and it is immaterial whether or not their circuits are broken.

In general, it is more satisfactory to use an over-size valve in a multiplier stage

than to use a smaller valve at its limiting rating. Over running a valve in a multiplier stage invariably results in short valve life and unstable operation. Bear in mind that the power level can always be raised quickly in the final or penultimate stage by using beam tetrodes, and there is little to be gained even in high power transmitters by using high power doubler stages. An 807 as a buffer amplifier will give enough output to drive even a triode amplifier to a full kilowatt.



## STATION DESCRIPTION No. 5.

**T**HIS month we have great pleasure in taking our readers for a brief visit to the famous "Happy Station," PCJ. The transmitter is situated at Huizen, and is the outcome of many experiments at the Philips' works at Eindhoven. These experiments started as early as 1926, when the first short wave transmitter was constructed in the Philips' Laboratories. This station had the honour to be the very first short-wave broadcaster in Europe. Huizen, near the shores of the Zuider Zee, was chosen as the site for the aerial systems, and the Netherlands World Service (radiated especially to the Netherlands East and West Indies, South Africa and America) was broadcast from there from since 1937.

In May, 1940, the 9590 kcs. aerial was partially destroyed, but in such a way that repairs proved possible. During the occupation, the station was used for broadcasting Nazi propaganda, but soon after the liberation, Netherlands experimental transmissions started again.

The transmitter has ten stages, with an output of 30 kW, and a cooling-tower is used to keep the water-temperature of the cooling system at a constant low level.

### Aerials.

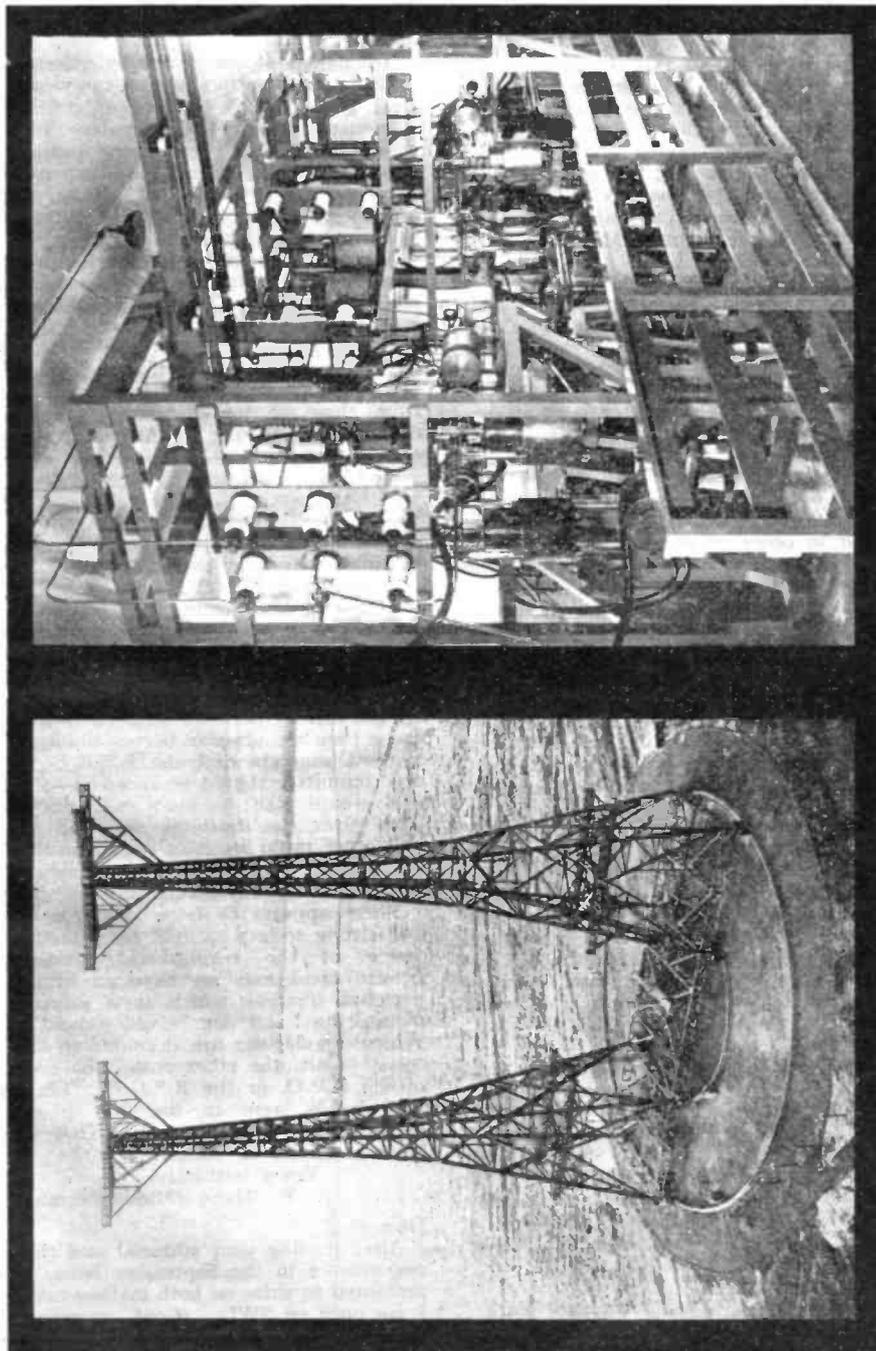
The two aerials in use are both of the directional type. The first consists of a

system of 8 sets of 3 vertical doublets, which are fed in phase, thus having the result of concentrating the energy. This beam is supported by two fixed masts and is oriented towards the East Indies. The second aerial is of unique construction, and, indeed, is the only one of this type in the world. The aerial is supported by a pair of 200 ft. wooden masts, fixed together on one undercarriage. This is fitted with 8 sets of two wheels, so that the whole structure can revolve upon two circular rails by means of two electric motors. In cases of need two or three men can do the job. One day in 1944, the station engineers loosened the brakes and a fresh breeze did the rest!

This revolving aerial consists of four sets of three vertical dipoles and as many reflector dipoles for 9590 kcs. One quarter-wavelength behind this system, there is a similar one acting as reflector, which is fed with a tension 90 degrees ahead in phase as compared with the aerial itself. The feeder is connected with the aerial in a flexible way and is led over the rails by means of a bridge.

### Studios.

The studios from where the programmes emanate are situated at Hilversum, about 20 miles S.E. of Amsterdam, where the



medium-wave broadcasts are also prepared and radiated.

**The Occupation.**

What happened to PCJ during the war? Eddie Startz, the popular announcer on the English sessions, says that in a programme such as the "Happy Station," there is no use in "crying over spilt milk." Eddie says "After all: we are free again and that is all that matters!" However, he tells us of some incidents worth mentioning. On the night of May 10th, 1940, the chief engineer broke the news that Holland was at war with Germany, and for four days and nights PCJ gave the latest reports of the one-sided battles. Then came a great explosion—PCJ was blown up, rather than let it fall into the hands of the enemy. The pride of Huizen, PCJ's rotating aerial lay tangled and twisted along the ground. After 12 years of good-will programmes, the "Happy Station" was no more.

The war went on, and the Gestapo moved in. PCJ was rebuilt by forced labour in order to pump the German propaganda overseas. Around this time Eddie Startz "disappeared," though how he squirmed through the Gestapo's net is "a story for some other time!" Shortly before the invasion in 1944, a storm put the rotating beam mechanism out of action, and through clever sabotage, the engineers fixed the mechanism so that for the remainder of the war all Nazi broadcasts were directed to the North and South Poles—where, Eddie says, the polar bears enjoyed excellent reception!!

When the enemy finally moved out, they pillaged and looted everything of value, including PCJ's wonderful file of gramophone records, and then—blew the station up again. However, the undaunted engineers got to work again and rebuilt the station in record time, so that the "Happy Station" is once again taking its place among the greatest of short wave broadcasters.

**Schedule.**

"Happy Station" programmes are radiated at the following times:—Sundays and Wednesdays: 1530-1700 GMT (15220 kcs, 11730 kcs. and 6250 kcs.); 2100-2230 and 0300-0430 GMT (11730, 9590 and 6250 kcs.). Tuesdays: 0800-0930 GMT (11730, 9590 and 6250 kcs.) Reports are always welcomed, and should be addressed to Radio Station PCJ, P.O. Box 150, Hilversum.

**Illustrations**

(At heading): The "Antenna Park"; On the following page (Left): The famous rotating beam aerial; (Right): Final Amplifying Stage.

# From our Mailbag

*The Editors do not necessarily endorse the opinions expressed by their correspondents.*

Dear Sirs,

In reply to G3AGQ, amateur radio is now regarded as licensed for radio communication as distinct from experimental purposes. In the face of pre-war QRM, increased power is now permitted—will these conditions help to reduce QRM?

If the regulations called for revision, it would have been fairer to rate the maximum power at ten watts, and, in addition, to make the conditions of licence such that only the genuine experimenter would have stood the chance of having his application considered. This may cause some howls from those of the fraternity whose only desire is to yell over the Atlantic for hours, but it would have been at least real amateur radio!

As things are, we once again copy America. The R.S.G.B. were also concerned about post-war congestion, and it is noteworthy that there is nothing in the new regulations which might effect its pre-war transmitting members.

I remember several pre-war amateurs who relied simply on text book reading and practical AA experience, and who used to put out first class signals. The "Baby Broadcasters" are still with us simply because they are pre-war licence holders! H. Barnett suggests that the R.S.G.B. advisory committee should be replaced—I agree, and would like to know who they are, what their qualifications are, and also if any other radio societies were consulted or represented. In my opinion a society represents its own members only.

There appears to be a need for a new and strong society to fight for a further revision of the regulations. Under the present conditions we have an **attack** on personal liberties which is a mixture of dictatorship and the "old school tie." Whilst regulations are desirable in the interest of all, the ether is not the property of the G.P.O. or the R.S.G.B. The amateur bands were in the first place for experiment and experimenters. They should have remained as such!

Yours faithfully,

A. W. Mann (Middlesborough).

Dear O.M's,

After reading your editorial and the correspondence in the September issue, I feel prompted to write on both matters although I am only an SWL. (Cont. on page 275)

The cover illustration is, of course, of our good friend Eddie Startz.

# WORLD NEWS

## U.S.A.

Both the United States Senate and the House have recently passed a Bill providing for the encouragement of some private overseas broadcasts from the U.S.A. in addition to the State Department programmes.

Station WRUL will henceforth broadcast up to six hours per day of its own programmes, the remaining 18 hours being Government broadcasts. Mr. Walter S. Lemon, President of the World Wide Broadcasting Foundation, states that the W.W.B.F. will be able to resume its valuable educational programmes so popular before the war. The Foundation was established in 1935 as a non-profit educational institution, using the medium of radio, and is supported by voluntary contributions. The programmes, known as the World Radio University, consisted of courses of instruction in the sciences, arts, literature, languages, etc. Prior to the outbreak of hostilities, these courses were subscribed to by thousands of regular listener students in thirty-one different countries. These courses will soon be resumed, with the co-operation of leading American Universities. This will cost £750,000 a year.

(G. Calkins—S.W.N. Correspondent.)

## Czechoslovakia.

There are three classes of amateur licences, Class A—100 watts on all bands; Class B—50 watts maximum, 60, 28 and 1.8 Mcs.; Class C—5 watts maximum, 60 and 1.8 Mcs. bands. Other bands up to 22000 Mcs. have been allocated.

The Czechoslovakian Short Wave League now has 30 Chapters and Clubs in operation. At present there are 39 licenced OK1's and 52 OK2's. No OK3 licences have been issued yet.

(O. Halas, OK2RR—S.W.N. Correspondent.)

## France.

At the request of many listeners, the time of the daily English programme from "Radiodiffusion Francais" has been altered to 2100-2200 GMT (on 648 and 9560 kcs).

The Winter Programmes begin on October 1st, with new features, and the station is already organising a competition for their listeners, the first prize of which will be a free holiday in Paris! Readers fortunate enough to be in Paris during the holiday season are invited to visit the station, where arrangements will be made to send a personal message home over the microphone.

Comments, and reports, on the programmes are cordially invited. Address is Radiodiffusion Francais, Section Grande-Bretagne, 118 Champs Elysees, Paris 8.

(Jaques Legris, Assistant Director.)

## Sudan.

We reproduce below a letter received from the Sudan Government Posts and Telegraphs:—

Dear Sirs,

Our broadcasting service only forms an incidental part of the normal commercial activities of this Department. No special broadcast transmitters are employed and use is made of ordinary commercial W/T R/T transmitters for broadcasting, at times when they are not required for the disposal of commercial traffic. The transmitters in use on the Broadcast Service are:—

- (1) Marconi Type T12M, operating on 572.5 kcs., and having an aerial power of 0.8 kW.
- (2) S.T.C. Co. Transmitter Type H.S.I. operating on 13320 kcs., and having a power of 0.25 kW.
- (3) S.T.C. Co. Type ES4 Transmitter, operating on 9220 kcs., with a power of 0.35 kW.

In the immediate five-year post-war period, we hope to improve the technical facilities provided for broadcasting in the Sudan and we have the following projects very much in mind:—

(1) To provide a small air-conditioned Broadcasting House in Khartoum, fitted with modern studio equipment.

(2) To install a short-wave 7½ kW. Broadcasting station in the Khartoum area for serving the outer fringe of the Sudan.

(3) To install a 20 or 25 kW. medium-wave Broadcasting station some 50 miles south of Khartoum to serve the inner zone which will not be covered by the short-wave station. (Incidentally, the programmes will be sent from the Khartoum studios to the MW station over a land-line carrier telephony circuit).

Yours sincerely,

J. Hudson-Davies,

Acting Director and Chief Engineer.

## Palestine.

Dear Sirs,

With reference to the paragraph in your July issue, page 183, entitled "Markers for 14 Mcs.," ZNP now no longer transmits on 14270 kcs., our new frequency being 13370 kcs. Generally we QTU 0700-2300 G.M.T.

I hope this information may be of some use to your readers calibrating receivers for 13-14 Mcs.

Yours faithfully,

J. M. Borwick,

(Cable & Wireless Ltd., Jerusalem).



## Component Review

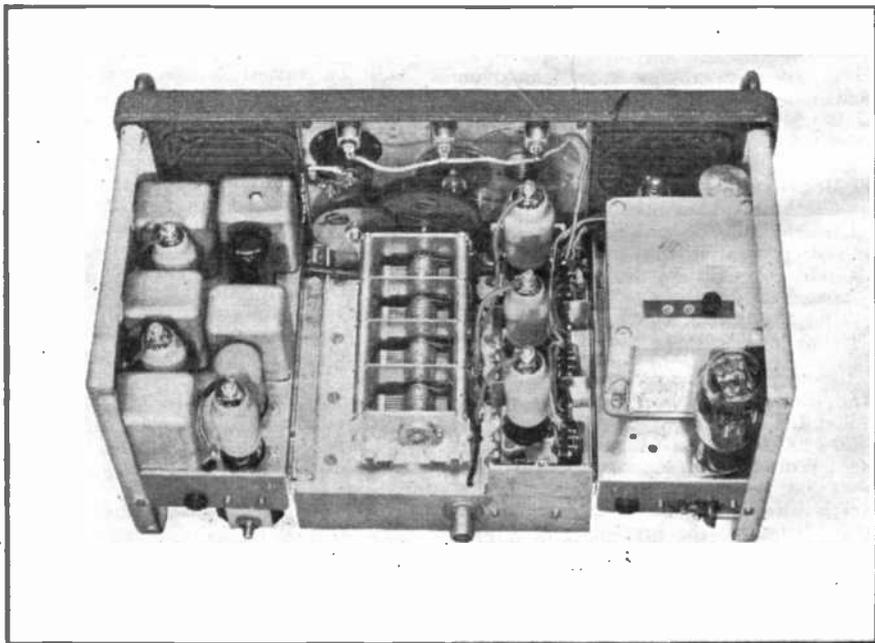
### The Eddystone "504" Communication Receiver

**W**E recently had an opportunity of testing out the new Eddystone "504" Receiver; the first post-war British Communications receiver to appear on the market.

The receiver has two R.F. stages, F.C., two 450 kcs. I.F. stages with crystal filter, combined A.V.C., detector and first audio amplifier output valve and built in power pack with valve rectifier, noise limiter and B.F.O. Output is 3000 milli-watts, with external speaker. Speaker and phone jacks are provided. Tuning range is 600 kcs. to 30,000 kcs. in five ranges. Size: 16 $\frac{3}{4}$  inches

by 10 $\frac{1}{4}$  inches by nine inches. Power consumption 65 watts from 110 volts or 200/240 volts 40-60 cycle A.C.

The receiver is very attractive in appearance, being finished in battleship grey, with a blue control panel and chromium fittings. The tuning dial is clear and well engraved, with a fine pointer enabling the scales to be read with accuracy. A small circular vernier dial is fitted coaxially with the main pointer shaft, which makes accurate readings of any station position on the scale quite easy and serves as a band spread dial on the amateur bands. The tuning



dial is beautifully smooth and has that "feel" about it which in pre-war days one came to associate with the highest class American communication receivers. It is entirely free from backlash, is noiseless and has a reduction of 140 to 1, with an effective scale length of 36 inches per band. The two large knobs shown are for tuning and wave change respectively, the band in use being shown by a rotating label dial appearing in the left hand window above the tuning scale. The right hand window is for the "S" meter which is calibrated from S1-S9, each "S" unit representing a carrier level change of 6db. The calibration is continued above S9 in db's. The other eight controls include crystal switch, volume and RF gain, standby switch, BFO, etc.

On test, the first thing one becomes vaurally conscious of is the terrific gain of the receiver. Sensitivity is officially given

as 2 microvolts, and this would appear to be no exaggeration. Even on 28 Mcs., where many commercial communication receivers begin to fail, this receiver showed excellent sensitivity and gave one that impression of being very much "alive." Selectivity likewise was very satisfactory, even on the 14 Mcs. band during the first week of its opening! The official figure for the receiver's selectivity is given as 30 db down at 5 kcs. off resonance.

This receiver is designed as a general coverage communications receiver, and it fulfills all requirements in this direction. It is built on "Service equipment pattern," being really solidly constructed and easy to service. For the short wave listener, this receiver will be hard to beat and with existing prices, the £48 10s. (plus P.T.) asked for this receiver seems very reasonable.

(MAILBAG—Contd. from page 272)

Why do the powers-that-be allow the use of so much power to 'phones? I have heard inter-G QSO's on 7 Mcs. when the operators boasted how they pushed up the power and thereby blotted out some poor 10 watt individual who was causing slight QRM! All these fellows seem to be possessors of communications receivers, so why the need for all the "juice"?

My mind goes back to 1924, when I was using an O-v-O Reinartz RX (dull emitter valve!) and an indoor aerial—no slow motion or bandspread—there was a real pleasure in listening in those days. On the old 90 and 45 metre bands I used to hear Australia, New Zealand, South America, etc., so why the need for over 50 watts nowadays with the improvements in RX design? In those days it was Miles per Watt, now it appears to be Miles per KILOWATT! Selfishness sums it up.

Re. AA licences, surely it was better for a fellow to experiment with a TX under AA conditions, and by combining theory with practice get to know how to use his gear, than to mug up a lot of theory for an exam. and have NO practical knowledge? By all means have an exam. and an annual morse test, but retain the old AA licence.

Yours faithfully,  
Arthur W. Tonkyn (Truro).

Slade Radio's advance programme is:—  
October 25th: "Telearchics," a discussion night held jointly with the Model Aero Club.  
November 22nd: Annual General Meeting.

## New Clubs

### Kingston.

It is proposed to reform the Kingston and District Amateur Radio Society. Will any readers in the neighbourhood please contact Mr. J. Hughes, 12 Hillingdon, Ashford, Middlesex, for further details.

### Bournemouth.

A new club has been formed in Bournemouth, with J. F. Squires, G2DBF, as the Hon. Secretary. Meetings are held on the 2nd and last Tuesday in each month at the Lodge Room of the Branksome Arms Hotel, Commercial Road, Bournemouth. The membership is about 40, of which 15 hold transmitting licences. A "hamfest" dance is to be held in the early part of November, tickets being 5/- (including refreshments). The club has made considerable progress; a leading local citizen has promised the club £150 to help towards the club room, Messrs. Aish and Co. are providing a shield for a competition to be held during the winter, and the local Chamber of Commerce has co-operated by supplying club members with free QSL cards! Further particulars may be obtained from the Hon. Secretary, 80 Victoria Road.

### Dublin.

The Practical Amateur Radio Constructors Club held its first general meeting on July 5th. and meetings have been held every Friday since that date. The club is seeking a club room, and a well stocked library is already available. Readers in the Dublin area are invited to contact Mr. T. Keogh, 8 New Ireland Road, Rialto, Dublin.

## SMALL ADVERTISEMENTS

Readers' small advertisements will be accepted at 3d. per word, minimum charge 3/-. Trade advertisements will be accepted at 6d. per word; minimum charge 6/-. If a Box Number is required, an additional charge of 1/6. will be made. Terms: Cash with order. All copy must be in hand by the 10th of the month for insertion in the following month's issue.

**REPORT PADS:** 50 sheets printed report forms for the DX listener! Complete instructions, as illustrated on cover. Specimen form on page 237 of this issue. Indispensable to the QSL collector. Price 2/6, post free, from "Short Wave News," 57 Maida Vale, Paddington, London, W.9.

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**RADIO DEVELOPMENT COMPANY (GW&NP).** Send S.A.E. for details of our Variable Frequency Oscillator Unit, which supplies the perfect answer to the QRM problem. Self-powered complete unit, accurately calibrated, at an extremely low price; easily fitted to existing transmitter replacing crystal, or will form perfect nucleus of new equipment. Our workshops are equipped to manufacture all types of electronic apparatus to precision standards at competitive rates. Let us have your requirements. We specialise in repair and re-alignment of communication receivers. Raymart stockists, 18 Dalton St., Cardiff.

**EAST ANGLIAN HAMS.** All components for receivers and transmitters, crystals, test gear valves. Authorised distributors for Hamrad, Raymart, Eddystone, Labgear. No lists yet but all enquiries dealt with promptly, send stamped addressed envelope. Newson, G3GY ex-G2GF, 28 Market Place, North Walsham, Norfolk. Telephone 219.

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Output Transformers—Multiratio for Power, Pentode, Class B or Push-Pull, 7/- Pentode heavy duty 9/6. Push-Pull heavy duty Tapped Sec. 2, 4, 7½ and 15 ohms. For use with PX 4's 22/6, or with 6L6's 35/-.

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Electrolytics, 500 v. Working—8 mfd. 2/10, 8 x 8 mfd. 5/6, 16 mfd. 4/9.

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Speakers—Special offer of 8in. P.M. with transformer 32/6.

Line cord—3 amp. 190 ohms per yard, 2 way 1/4, 3 way 1/7.

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# International Short Wave League



Sponsored by "SHORT WAVE NEWS"

## ● OBJECTS

To bring together the short wave enthusiasts of the world, regardless of race, creed or politics, to their mutual benefit.

To foster and promote international goodwill through the medium of short wave radio interest.

To provide facilities which will enable enthusiasts to carry out their hobby to the greatest advantage to themselves and their fellow enthusiasts.

## ● CONDITIONS OF MEMBERSHIP

The only condition of membership is a genuine interest in some aspect of short wave radio, and the will to further the objects of the League to the best of one's ability. Each member will be allotted an identification number.

## ● MEMBERSHIP FEES

A nominal charge of 1/- (One Shilling) per annum will be made in order to cover enrolment costs, membership certificate, etc.

## ● LEAGUE NEWS

The latest activities of the I.S.W.L. will be reported exclusively in the "Short Wave News."

## ● LEAGUE SUPPLIES

It is intended to supply members of the I.S.W.L. with the following stationery at the earliest opportunity.

Members' headed notepaper and envelopes.  
Rubber stamps of League emblem.  
Log Books. Badges. SWL/QSL cards.  
Stick-on labels. Mint foreign stamps.

## ● COMPETITIONS

The Monitoring Department of the I.S.W.L. will organise DX contests, S.L.P.'s, etc.

## ● CHAPTERS

Every possible assistance will be given to Secretaries in the formation of local I.S.W.L. Chapters.

## ● QUERY SERVICES

These will be set up at the earliest opportunity.

## ● REPRESENTATIVES

Applications are invited for positions as I.S.W.L. Representatives IN ALL PARTS OF THE WORLD AND IN EVERY PART OF THIS COUNTRY.

## ● QSL BUREAU

A QSL bureau will be organised for the benefit of I.S.W.L. members.

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Reporter \_\_\_\_\_ QRA \_\_\_\_\_  
QRA PREFIX REPORT

DATE	CMT	S.W.V. QRA R	QSB 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