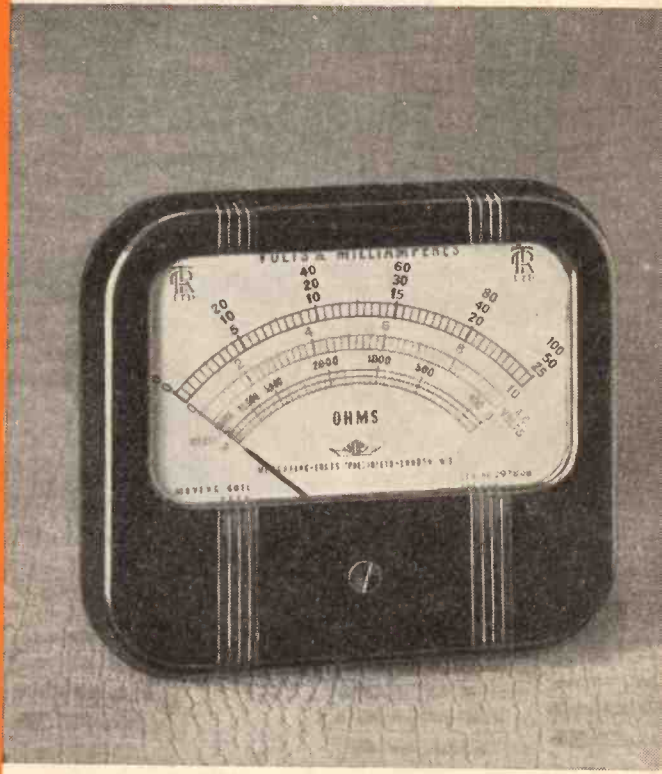
SHORT WAVE NEWS

Vol. I.
No. 4.
APRIL, 1946.

In this Issue :



The M.I.P. Series "35" Foundation Instrument.

A SHORT WAVE PRESS PUBLICATION.

1/3

microphone was used originally, but results were later found to be equally good with a moving-coil type and matching transformer, and both inputs are shown in Fig. 1 as alternatives.

This same type of valve is used as the gram. amplifier, but in this case it is strapped on the valve-holder to form a triode, of medium-high impedance, as no other triode seems quite as good for our purpose. These valves feed into the mixer stage, a low impedance triode valve, with two half-megohm potentiometers regulating the input at will. This smooth system of fading is quickly replacing the noisy switching methods which, we hope, will not have survived the war. Between this valve and the phase inverter is the bass-cut control. It is a well-established fact that the bass represents a large proportion of the output power, and tends to overload the speaker and output valves before the upper register. As a result, if the response is limited below 350 cps., more power is available for the top before intermodulation distortion becomes noticeable.

The paraphase stage is quite conventional, and requires little explanation. It is sufficient to state that the stage gives no gain at all, but the input voltage is faithfully copied, without distortion, in the output, which is applied to Marconi-Osram type KT33C valves. Exactly double the amount of bias recommended for a single valve is used in this stage, which operates in the same manner as battery "QPP." It should be noted here that it is essential for best results that the output transformer should be correctly designed to operate under Q.P.P. conditions. A suitable output or modulation transformer can be supplied by Messrs. Partridge Transformers, Ltd., but it is essential when ordering to give full details, including the number and impedances of the speakers to be used, the type of modulation and valves concerned, etc.

In the power section, the rectifiers are operated in parallel, as no single rectifier is available which will give the necessary current output. An extremely efficient double smoothing filter is provided using two chokes and three large capacitors. The choke L1 should be 10 or 15 henries, capable of passing 150 mA., while L2 is rated at 20-30 henries 60 mA. The valve heaters are connected in series with R22 across the mains. It is important that V4 be connected at the low potential end of the chain, as the cathode of this valve is "floating," and undesirable hum might otherwise be introduced.

LAYOUT & CONSTRUCTION. An examination of Fig. 1 will show that the chassis is isolated from the mains, and that

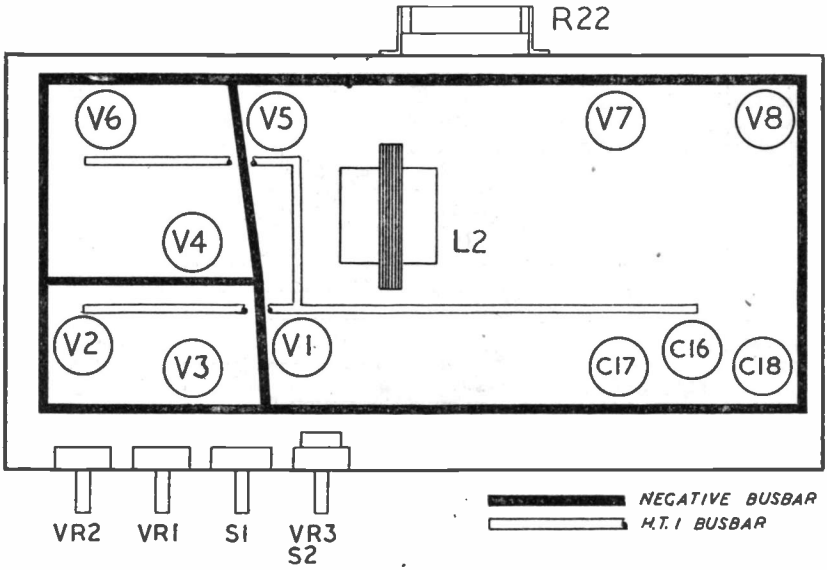
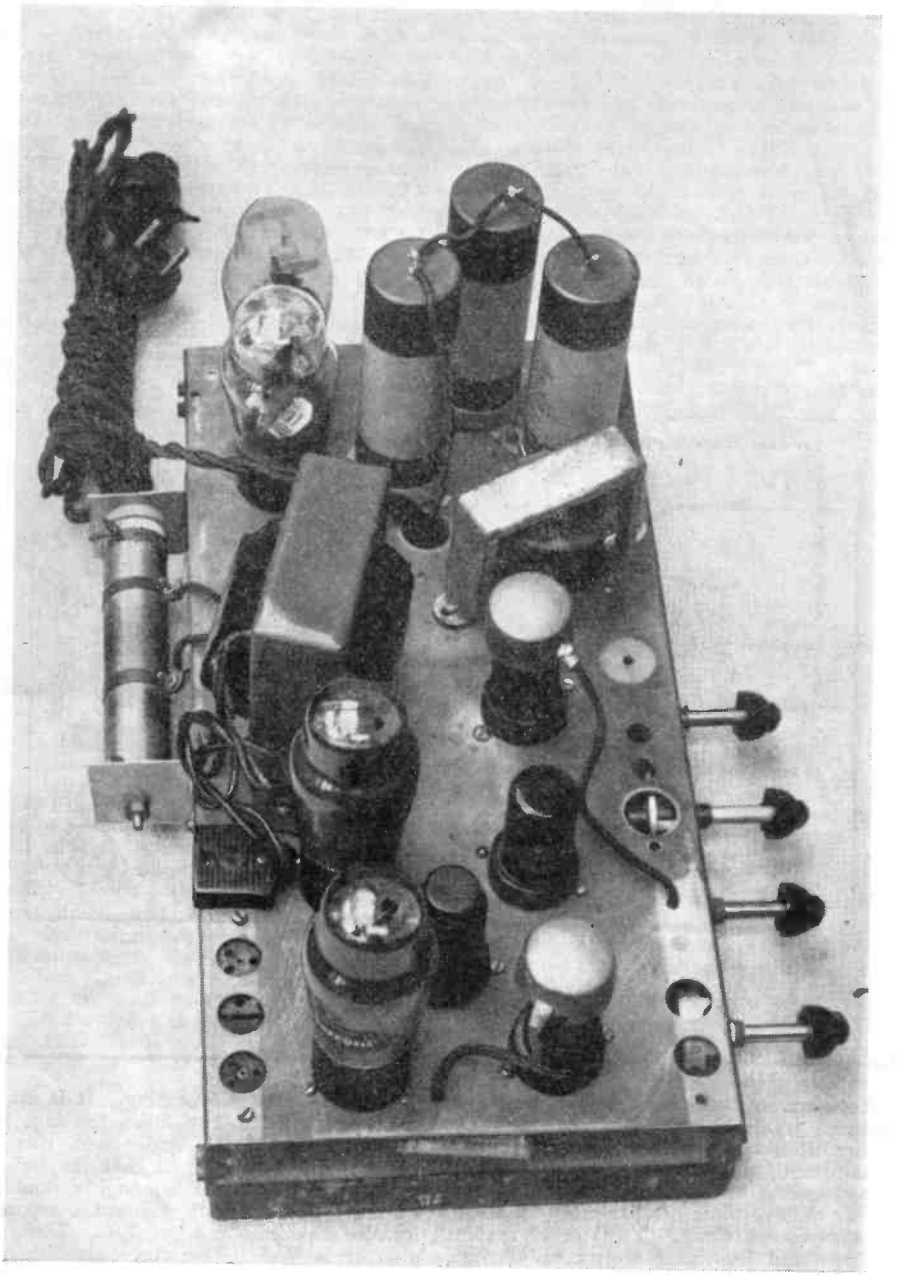


Fig. 2. Sub-chassis layout to match Fig. 3.



The original model.

all connections which would normally go to chassis are taken to a busbar. This of course is to minimise the risk of shock, and Fig. 2 demonstrates the most convenient manner of running the wire round and across the chassis. No. 14 swg is quite suitable for the purpose, and should be of tinned copper. A similar method is used for the main H.T. lead, and this may be of 18 swg wire covered with 2 mm. systoflex. Fig. 3 shows the top of chassis arrangement. All grid leads longer than 1½ inches should be screened. Valves 1, 2 and 3 should preferably be of the metal American type, with the screen—pin 1—connected to chassis. When completed and tested, the instrument should have a flat screening plate of copper or aluminium screwed to the base to form a complete box, thus preventing the live wires in the input side from picking up grid hum.

May I express the wish that some old-timer will design, in the near future, a suitable 25-watt 58-Mcs. transmitter, for A.C./D.C. mains, to work in co-operation with this amplifier? It seems quite a novel possibility, for there must be many amateurs, like myself, who are limited to D.C. mains, who would find a real saving in constructing such a transmitter, both in outlay and in running costs. THERE IS AVAILABLE 100 VOLTS — NOW WASTED—ACROSS R22, ENOUGH TO HEAT UP TWO MORE OUTPUT VALVES AND TWO MORE RECTIFIERS. HOW ABOUT IT?

Any communications addressed to me, via The Editor, will be answered if return postage is included, but no alterations in design can be undertaken.

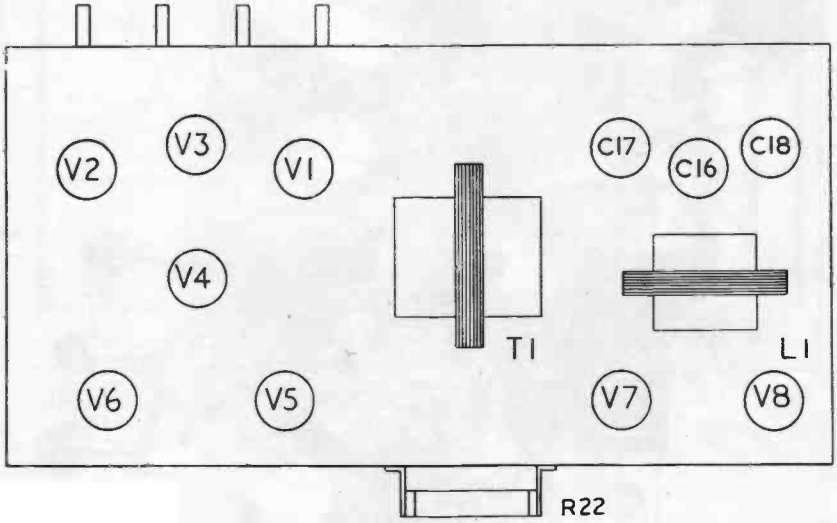


Fig. 3. Suggested above-chassis layout.

Raymart. A well-thought-out item is the ceramic octal valveholder marketed by Messrs. Radiomart, of 44 Holloway Head, Birmingham, 1. The RMX ceramic base is glazed on the top surfaces, so that foreign matter adheres less readily and they can be easily kept clean. Two metal eyelets are provided for fixing screws, to obviate any risk of cracking under undue pressure. The one-piece sockets and tags are silvered to minimise contact resistance, and are firmly held, yet self-locating. It is impossible for solder to run down the tags into the sockets. On the under side, ribs are formed in the ceramic so that the leakage path between sockets is roughly doubled. In short, a very well designed component for the moderate cost of 1/6. The type number is VA8. The range also includes English and American 4, 5 and 7 pin models, the Mazda octal base, and a 9 pin loctal for the EF50 and like valves.

Club News of the Month.

BRITISH SHORT WAVE LEAGUE

The rapidly rising membership of this society has called for a major re-organisation. The former secretary of the League, A. Chas. Cheffins, now "demobbed" has resumed his duties and readers should note that the new Headquarters is at 17, Bedford Road, Alexandra Park, London, N.22. The Editorial office remains at 53, Madeley Road, Ealing, London, W.5, which has acted as Headquarters for the past 4 years.

Birmingham Chapter (The Birmingham and District Short Wave Society):

We have to hand the advance dates of all meetings for this year, which are all to be held at the "Hope and Anchor" Hotel, Edmund Street, commencing at 7.45 p.m. The dates are:—May 6th, June 3rd, July 1st, September 2nd, October 7th, November 4th and December 2nd. The August meeting is to be decided at a later date.

Morse classes have been started at meetings, and the society has made good progress during its comparatively short life. Readers in the district are cordially invited to any of the functions.

Secretary: G. Hodgkiss, BSWL 1938, 30 Towyn Road, Moseley, Birmingham, 13.

Liverpool Chapter (Liverpool and District Short Wave Club):

The membership of the club is now taking a very healthy upward trend, and the club is reputed to have the best facilities in the district to offer members. Recent meetings have featured UHF equipment, and a receiver demonstration by B. G. Meadon. Meetings are held every Wednesday at St. Barnabas Hall, Penny Lane, commencing at 8 p.m.

Secretary: T. W. Carney, G4QC, 9 Gladville Road, Aigburth, Liverpool, 17.

London Chapter:

Meeting nights have now been changed to Fridays. Future features will be:—April 19th: "Oscilloscopes"—a talk and demonstration by A. H. Burkill; April 26th: "Quiz Night"; May 3rd: "Radar"—a talk by 2AOY; May 10th, "Receiver Troubles"—an open discussion conducted by T. Vallard.

Readers wishing to attend these meetings are invited to contact the secretary.

Secretary: N. Stevens, BSWL 1039, 53 Madeley Road, Ealing, W.5.

MAIDENHEAD AMATEUR RADIO CLUB

The first meeting of this club was held on January 25th of this year. At present the club has no permanent HQ, but holds monthly meetings at the "Toc H" hut behind the Technical Institute in Marlow Road.

The Chairman is J. James, G2MG; the Hon. Treasurer, K. Bushell; and the Hon. Secretary, J. F. Squires, 2DBF. It was decided at the last meeting to build a club receiver in unit form, and, later on, a club transmitter. The proceeds of a junk sale, held on the last meeting, are to go to the building of the club RX.

As the club is a new one, support from local readers will be greatly appreciated.

Secretary: J. F. Squires, 2DBF, "Crendon," Lock Lane, Cox Green, Maidenhead, Berks.

STOCKPORT RADIO SOCIETY

The above society was re-formed in December, 1945, and holds meetings every Monday night at 7.45 p.m., at the Textile Hall, Chestergate, Stockport.

A comprehensive series of lectures has been arranged and these are given on the second and fourth Mondays of each month. General discussion meetings are held on the first and third Mondays.

Membership is now around 50, and the ranks are fast increasing. The annual subscription is £1 and Junior members (under 21 years of age) 5/- per annum.

A hearty welcome is extended to anyone in Stockport to attend any of the meetings, and if further particulars are required, the secretary will be only too pleased to help.

Secretary: G. Wood, 121 Garners Lane, Davenport, Stockport.

WHITEFIELD & DISTRICT RADIO SOCIETY

At a meeting held on February 27th, at the Stand Grammar School, Higher Lane, Whitefield, the above society was formed, the object of the society being to foster a practical interest in all branches of amateur radio.

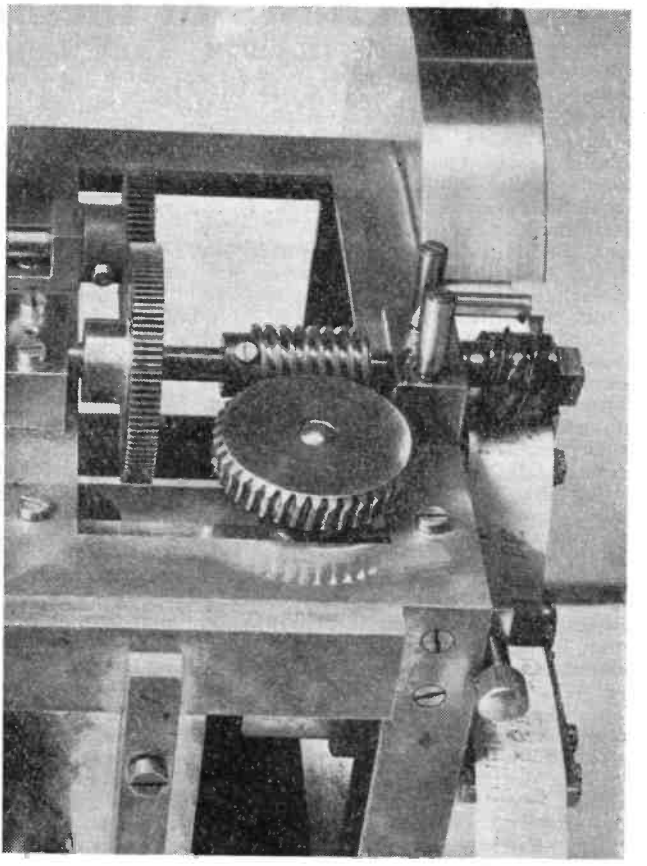
The following officials were elected:—Chairman: R. Lawton, of 10 Dalton Avenue, Whitefield; Hon. Secretary: R. Purcell, of 28 Stanley Street, Prestwich.

Meetings were held on Monday, March 18th, and Monday, April 1st. Details of further meetings may be obtained from the secretary. All local radio transmitters and constructors, and in fact, anyone interested in amateur radio, are invited to attend the society's meetings which will all be held at the Stand Grammar School.

Secretary: R. Purcell, 28 Stanley Street, Prestwich, Manchester.

The "Daily Express" Hellschreiber.

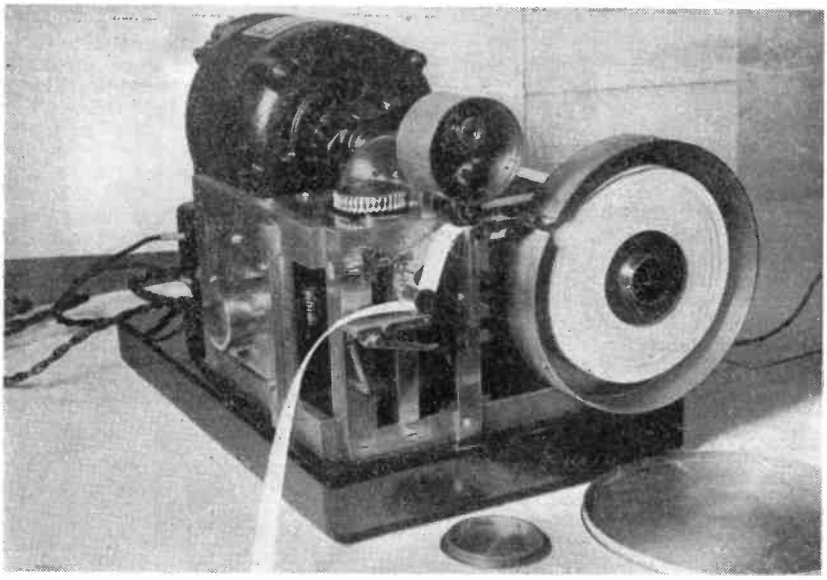
A Short Description of an interesting High-Speed Recorder.



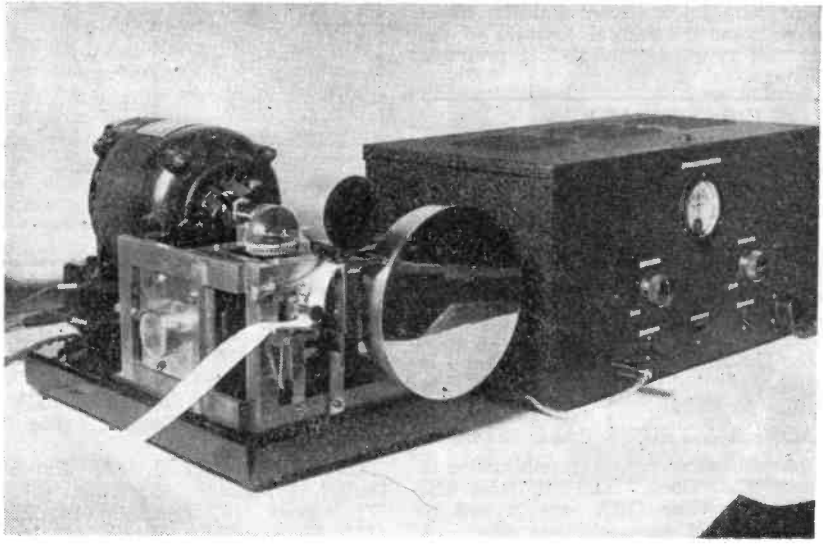
Close-up of Inker and Tape.

THE Hellschreiber radioprinter apparatus is an instrument by means of which Roman character letters can be recorded directly on to paper tape, thus dispensing with the necessity of transcribing morse characters recorded in the more normal way by perforations or an inked trace. It has been described as being to wireless communication what the teleprinter is to land line communication. As will be gathered from its name, the apparatus is of German origin and was originally exclusively used by Germany. During the war, the Germans had quite an extensive Hellschreiber system for transmitting news and instructions to newspapers and agents in their occupied countries. The enemy little guessed that these "secret" transmissions were being "tapped" in this country. We are indebted to the "DAILY EXPRESS" for permission to describe a Hellschreiber receiver which they operated in their radio news monitoring station during the war and upon which many of the enemy's secret communications were received.

The fundamental principle of this printer is that a revolving thread or coarse screw —which is so arranged that it carries a thin film of ink—is so constructed that if it is held against a moving tape it makes a verticle line during the course of one revolution. If on the other hand its contact with the tape is intermittent, then a series of small short lines are made. Thus by a combination of long and short lines, the various letters of the alphabet can be built up.



The complete Inking mechanism.



The Inker with its associated Amplifier.

(THE "DAILY EXPRESS" HELLSCHREIBER—Cont. from page 105).

Most of the features of the apparatus can be seen from the accompanying photos. The rotating thread or "Scroll" as it is termed, rotates against a felt pad impregnated with ink in the smaller of the two metal drums. The supply of paper tape is contained in the larger drum and a relay operated striker device so arranged that the paper can be intermittently brought into contact with the revolving screw as it passes beneath it.

The transmitter and receiver have to be fairly accurately synchronised. The effect of bad synchronisation is to make the letters drift off the edge of the paper tape. By using a Scroll with a double thread and so printing two lines of type, this difficulty can be allowed for because if the lower line moves off the tape, the upper one moves down the tape and vice versa, so that the message is never lost.

The transmitter is modulated by a special keying unit actuated by perforated tape. Synchronisation between transmitter and receiver can be arranged by fitting electrical governors to D.C. motors or by using small synchronous motors working from the A.C. mains. The signals received from the transmitter are rectified by the receiver and used to actuate the relay which presses the paper tape against the Scroll.

Our photos show a Hellschreiber Printing Unit with its amplifier and the close-ups show some mechanical features of the printer and type of "script" it produces on the tape.

VHF CALIBRATION AID

The B.B.C. is now relaying the Home Service on a frequency of 90.3 Mcs. daily from 1900-2230 ,until further notice. This is a Frequency Modulated transmission.

UNDER CONSTRUCTION

The R.C.A. and Mackay American radio firms are to build two powerful radio stations in the International Zone of Tangier. These will be used for relay work with the U.S.S.R. and the Middle East. It is anticipated that the stations will take two years to build.

RADIO AMATEUR'S CALL BOOK

All hams licenced since the publication of the last "Call Book" and all hams who have changed their QRA, are invited to contact the publishers who are now preparing the first post-war edition. Address all communications to:—Radio Amateur's Call Book Magazine, 608 South Dearborn Street, Chicago, Illinois, U.S.A.

RADIO AMATEURS' EXAMINATION

The G.P.O. announces that these examinations will be held annually in the future, or more frequently if there is sufficient demand for them; it is possible that a further examination may be held before the end of the present year. Intending candidates who may experience difficulty in finding a suitable examination centre should write to the Superintendent, City and Guilds of London Institute, Department of Technology, 31, Brechin Road, London, S.W.7, who will also supply particulars of the "Radio Amateurs' Examination" on demand.

RADIO TERMS ILLUSTRATED

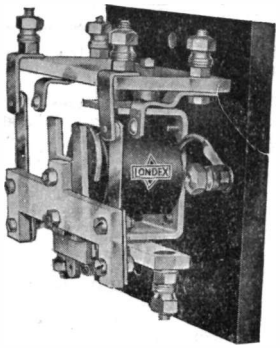
Input

Answer to Crossword No. 3

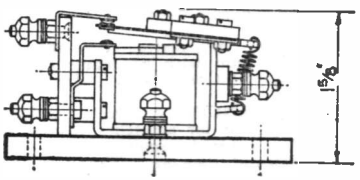
Across: (1) Trend. (6) Trade. (9) Adaptor. (10) Paper. (11) Image. (13) Ops. (15) Lathe. (16 and 18) R.E.M.E. (21) Confirmations. (25) CE. (26) ET. (29) Delta. (30) Dry. (32) Units. (33) Level. (34) Impel. (35) Emitron. (36) Tuned. (37) Great.

Down: (1) Typical. (2) Expect. (3) Darker. (4) Radio. (5) Atlas. (6) Triple. (7) Adapts. (8) Everest. (14) Plumber. (17) Exide. (18) Metre. (22 and 20) Modulat-ion. (23 and 19) Insulat-ing. (24, 31 and 12 across) Eleven-year-cycle. (25) Called. (27) Tubing. (28) Ripple. (30) Drain.

Component Review.



The Londex Relay

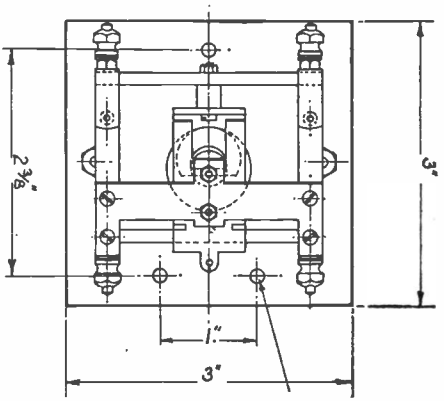


Side Elevation

LONDEX LTD.

ONE item of equipment which deserves consideration when planning the new station is an aerial change-over switch. On the higher frequencies which have been allocated to us, directional aerial arrays will become more popular, and such arrays should be used with the receiver as well as with the transmitter, if the full benefit from them is to be obtained.

Messrs. Londex Ltd., have placed on the market a relay which is eminently suitable for this purpose. The accompanying illustrations show the appearance and dimensions. The insulating material carrying the contacts is of polystyrene, the contacts themselves are very heavy and of pure silver, while the solenoid can be supplied for any normal A.C. or D.C. voltage to suit any requirement. We have examined one of these relays, and can recommend them in every way. The price is 50/- for the unmounted type, which we consider reasonable for a piece of equipment of this quality.



Plan Dimensions

MEASURING INSTRUMENTS (PULLIN) LTD.

Our cover illustration this month shows one of the foundation instruments manufactured by this well-known firm. Five standard types are available in this "35" series, with full scale deflections of 50 uA., 100 uA., 250 uA., 500 uA., and 1 mA. The moulded cases are made in several colours, Black, White, Cream, Red and Light or Dark Green. Three scales are provided, one in Black—with 50 divisions—for all voltage and current readings except low A.C. volts, a special scale in Red for 10 v. A.C. full scale, and a Green scale calibrated in Ohms. It will thus be seen that these instruments are ideal as the basis of a multi-range meter, such as the B.S.W.L. Meter described in our February issue. Messrs. M. I. P. have themselves designed an A.C./D.C. test set around these movements, and blueprints and all components except a case are obtainable from their authorized distributors. We are ourselves building one, and a description will be given in our next issue.

All instruments are fitted with spring mounted jewel bearings to absorb shock, and thus avoid damage to the pivots and jewels when carrying around. A "knife-edged" pointer is provided for accurate reading, and the top scale has a length of 3½ inches. For use on A.C. an external rectifier is necessary, the Westinghouse metal-oxide instrument type being recommended by the makers. The price of the 1 mA. movement is 89/-.

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.

QSL CARDS, Short Wave Listeners' and Full Call. Samples Free. Send S.A.E. to G6MN, Worksop, Notts.

WANTED. Circuit of the Eddystone "All World Two." State cost to H. Biggs, 13 Brindley Road, Paddington, London, W.2.

FOR SALE. Portable Gramophone, Columbia. Perfect condition, £6 10 0. D. Small, 24 The Paddocks, Wembley Park, Mddx., or phone ARNold 6040.

S.O.S. 10 or 20 metre crystal required URGENTLY by ham with no mains. Any frequency:—G4AK, "Greenoaks," Doddinghurst, Essex.

RADIO INSURANCE. A special policy prepared by an amateur for amateurs. Radio equipment can be covered against ALL RISKS excluding accidental damage. The cost is only 10/- per £100. Public Liability indemnity up to £1,000 is included without additional premium. For full details write:—P. L. Gibbard, 5 Bird-in-Hand Court, 76 Cheapside, London, E.C.3.

DUPLICATING and typing to requirements at reasonable rates. . Club secretaries—let me duplicate your news-sheets! Send for tariff of rates to: H. Lister, 19 New Street, Pocklington, York.

100 kcs. CRYSTAL for disposal. Accuracy .01 per cent. In unused condition. Best offer secures: B. Taylor, 10 Orchard Lane, Pilgrims Hatch, Brentwood, Essex.

VHF FANS, Turning, brazing, and all types of metal working. Send your requirements for quotation to: J. C. Wrankmore, 241 Kilburn High Road, London, N.W.6.

WANTED. 50 mA. Moving Iron Meter. Send price, etc to: Box 1003.

WANTED to complete volumes—"QST" for January, February, June, July, August, 1942; October, November and December, 1943.—Box 1001.

WANTED. Berne Alphabetical lists or similar publications. Would exchange for 0-30 mA. MC meter.—BSWL 593, 18 Grange Road, Ramsgate, Kent .

STEEL CHASSIS, crystalline finished. 15½ in. x 8 in. x 2½ in.—7/6; 11 in. x 7 in. x 2½ in.—7/-; Panels, 17 in. x 9 in.—5/6; 12 in. x 8 in. 5/-. Post extra. Prompt despatch: J.H.B., 18 Marion Road, Norwich, Norfolk.

WANTED. Old copies of Radio Magazines. Any quantity—W. H. Forway, Elizabeth Villa, Coventry Corner, Hockley, Essex.

CHARGERS. Several reconditioned modern Chargers for Radio and Car Batteries, indispensable to mobile hams, Standard model fitted voltage and current meters, up to 25 volts output maximum 6 amps. £9. Various models up to 75 volts at 12 amps. available. **COMMUNICATION RECEIVERS,** a large number of re-conditioned models including 5 and 6 waveband models, special 90-150 m/cs. multi-stage 14 valve superhets, rotary transformers, portable AC/DC Amplifiers 12 watt 170/-. Modulator equipment. Send for our catalogue. UNITED ELECTRONICS, Ltd., 156, North End Rd., West Kensington, London, W.14.

DON'T MISS THIS: Amplifiers and components at pre-war prices. All new goods by leading makers. Clever bulk buying and low profits enable us to make this astounding offer.

1946 De Witt **30 watt amplifier** chassis with all valves, heavily built on a 12in. x 8in. x 3in. grey cellulose chassis, two outputs, 15 and 2.5 ohms, superb reproduction with the new De Witt HiFidelity Bass and Treble Uplift circuit for A.C. mains **10 guineas** complete.

Components. Mains Transformers, 350v. 120ma., 5 and 6.3v. secondaries, **29/6** each. 12Hy. 120ma. chokes, **10/6** each. 25 watt push-pull output transformers, massive job, **19/6** push-pull Driver transformers, **8/6.** Octal. 5 and 7 pin CM valve-holders, super quality **6d.** each.

3-gang condensers with 2 speed SM drive and pointers **8/6** each. 2-gang with trimmers **7/3.** 4 valve TRF chassis **5/-** each. 5 valve ditto with mains transformer cut out. 12in. x 8in. x 3in., cadmium plated **9/6.**

CONDENSERS—8mfd. 450V.Wkg. **2/3.** 25mfd. 25V.Wkg. **1/3.** .5mfd. **1/-.** .3mfd. **10d.** .1mfd. **6d.** .005mfd. **5d.** Trimmers **5d.** each. Volume controls .5meg. less switch **2/6** each. Twin tag strips **3d.** each. Twin socket strips, A. & E., Gram. or Plain **5d.** each. Coloured Plastic 2mm. Sleeving, Red, Blue or Green, **2d.** yard.

Resistances ½ watt 56,000 ohms., 27,000 ohms., 680 ohms., **3d.** each. .2 amp. mains droppers, **2/11** ea. Distributor and Plug Suppressors **1/3** ea. Black control knobs, very superior, **10d.** each. Loudspeakers 8in. PM less trans. **18/11.** Many other lines. Send cash with order to:—

BRITISH RADIO CO.,

106 LOZELLS ROAD, HANDSWORTH, BIRMINGHAM, 19.

London: Printed in Gt. Britain by Chas. Pearson & Son, Ltd., 53-55, Mansell St., London, E.1, for the Proprietors, The Short Wave Press, 57 Maida Vale, Paddington, London, W.9. Obtainable through W. H. Smith & Son, Ltd., Tele-Radio (1943) Ltd., or the Publishers.—April, 1946.

SHORT WAVE NEWS

Vol. I. No. 4. Annual Subscription, 1/6/-. April, 1946.

Editor : ARTHUR C. GEE, G2UK. *Asst. Editor :* W. NORMAN STEVENS

Advertisement & Business Manager : C. W. C. OVERLAND, 2ATV.

EDITORIAL

Radio Amateurs' Examination

WE have now received the syllabus of the City and Guilds Examination for Radio Amateurs. The Institute's examination will consist of a single written paper of three hours' duration, and will be a pass examination, a certificate being awarded to successful candidates. Briefly, the syllabus covers the following subjects:—

Elementary theory of electricity and magnetism; Elementary treatment of Radio Principles, including AC circuits and radio propagation; Thermionic valves and circuits; Radio Receivers, including the principles of the TRF, Superheterodyne, and Super-regenerative receivers; Low-power transmitters, including oscillator circuits, frequency multipliers, methods of modulation; Simple types of receiving and transmitting aerials; Frequency and other measurements; Licence conditions.

Exemptions from the technical and/or morse examinations are granted to certain categories of Service personel. The list of Officers and other ranks exempt from these examinations is far too lengthy to reproduce here, but we would be pleased to advise any reader if he qualifies for any exemption.

Our cover

As readers will have noticed, our cover undergoes a change of colour each month! We are experimenting in order to discover the colour most suitable for the magazine, and would greatly appreciate the opinions of our readers. Let us know what colour(s) you like best, and why. Our final choice for the permanent colour will be decided by your suggestions.

Subscriptions

Many letters have been received, expressing disappointment at failing to obtain copies of the magazine. With the current restrictions on paper supplies, we offer the advice that the only certain way to obtain your copy each month is to book it, i.e. to take out an annual subscription.

Special Broadcast

We are informed by the British Short-Wave League that a special dedictory programme is to be radiated from Radio Ankara (TAP), Turkey, on Sunday, April 14th, at 2130 GMT. The frequency is 9465 kcs. (31.7m.). The League's Signal Survey Section is to collate all reports from members, to obtain a comprehensive survey of TAP's signals throughout this country, and, possibly, other countries. Readers of this magazine, not members of the B.S.W.L., are invited to co-operate also, and should send their reports to Box A3, BSWL, 53 Madeley Road, Ealing, London, W.5.

To Club Secretaries

Attention is drawn to a modification in our "Notices" below. It will be observed that the closing date for copy has been amended to the 15th of each month, thus allowing an extra 10 days on our original date.

"Ici Brazzaville"

Broadcast band fans will be interested to hear that the next issue of Short Wave News will carry a descriptive article on this famous station. This will be followed in later issues by further station descriptions, including TFJ, Reykjavik, Iceland.

W.N.S.

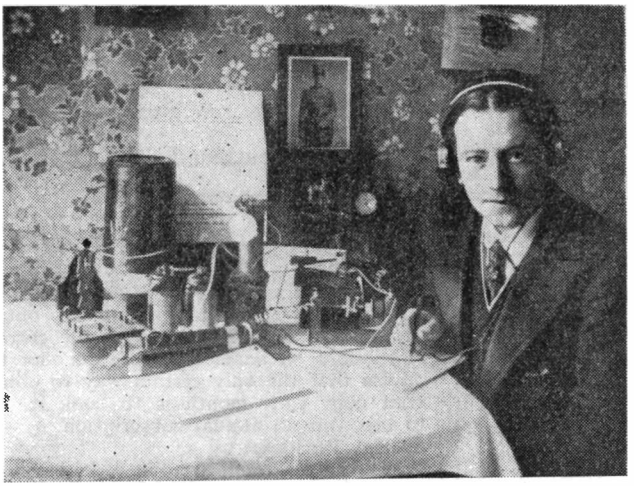
NOTICES

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.



Around the Shacks.

No. 3: G2HF

The Shack in 1912—

THIS month we introduce Cecil Andrew, A.M.Br.I.R.E., A.M.I.B.E., G2HF, of 9, Fore Street, Wellington, Somerset. Mr. Andrew is the Hon. Secretary of the Wellington & District Scientific Society, and is, in the true sense of the word, an "Old Timer," having been actively engaged in radio experimenting since 1907. We feel that, in this case, it would be preferable to let Mr. Andrew tell his own story of his experiences . . . . .

"Perhaps it is advisable for the new recruit to radio to have his attention drawn to the past history of the subject, in order to appreciate the great work accomplished by the pioneers over the last 30 or 40 years. The writer remembers the early days when Marconi, Sir Oliver Lodge, Sir Ambrose Fleming, and others, now no longer with us, were conducting the great experiments which laid the foundation of our present knowledge of radio.

"In 1907, whilst still at school, I well remember my first attempts, with a friend, to cover the distance of a few yards with home made apparatus—a Marconi-filings coherer, relay and spark coil, and huge condensers a foot or more in size! A massive network aerial system was erected on top of the house, causing much misgivings to the neighbours who did not appreciate the uncanny mystery. Following this, long nights were spent listening to the time signals, weather and press messages, on primitive gear, from Paris, Poldhu, Cleethorpes, and some of the first ships to be fitted with spark transmitters, then exceedingly flatly tuned! The photograph above shows the home made receiver in 1912, with the huge jam-jar for a tuning coil, the long tubular fixed condenser in the foreground, and low resistance phones with a step-up transformer made from a spark coil. The writer listened in those days with perhaps more delight to the morse signals than he does in his modern station, shown on opposite page, where a QSO with the Antipodes is a common achievement. From those very early days followed various improvements such as electrolytic detectors, magnetic detectors, and experiments were conducted to find the best combination of crystals and the best type of 'jigger' to use for tuning. If readers could see some of the early photographs of amateur apparatus in the possession of the writer it would certainly cause a great deal of amusement!

"In 1914 there came the inaugural meeting of the Wireless Society of London, now known as the Radio Society of Great Britain, which caused quite a stir. Soon after this came the issue of the first experimental and transmitting licences, and I well remember the great difficulty that was necessary in convincing the Post Office of those days before the granting of a licence. Since those days there has been a veritable cavalcade of improvements, and the coming and going of many designs and apparatus, culminating in the present day when we are on the eve of tremendous developments, and what appears to be astronomical increases in transmitting licences. Let those who now take up the torch from the pioneers and 'old timers,'

—and in 1946

ever remember the great privilege and responsibility resting upon them to carry forward the great amateur movement in the true 'ham spirit.' Let them never deign to tarnish the great name and legacy left them by that great band of experimenters who will ever be remembered for their self-sacrificing endeavours in the cause of science."

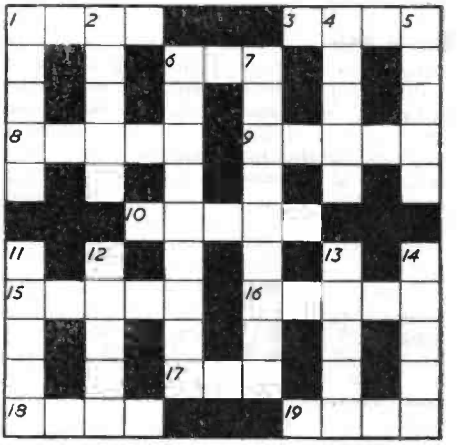
RADIO CROSSWORD No. 4

Across:

1. Keep this out of the RX.
2. These from the sun have a direct bearing on 6 across.
6. —O sphere! thou heavenly medium! (But it's all gas).
8. You really need a pointer for these.
9. Sometimes stands on top of the RX.
10. In radio it's often "hot," too.
15. Perhaps best described as the opposite to 12 down.
16. Italian pioneer.
17. Mathematical abbreviation, much used in radio calculations.
18. This might make all the difference between "sigs vy fb" and "no sigs."
19. This effect is a well-known phenomena in S.W. coils.

Down:

1. Valve type.
2. This coupling is often a nuisance.
4. See 14 down.
5. Makes a very strong chassis.
6. "I also turn," said the high-grade ceramic (feeling stand-offish!).
7. Positively opposite.



11. Station ones are useful to the DXer.
12. . . . and it comes out here!
13. What you do to the switch.
14 with 4 down. You'll find this (and more) in a transformer (one word).

On the Ham Bands.

Conducted by "CQ"

FROM the U.S.A. comes the news that W's are to be permitted the use of the 80 metre band as from April 1st, the frequency range being 3,700 kcs. - 4,000 kcs. The same source expresses the opinion that 14 and 7 Mcs. will not be open until the end of the year. In this country, we note that some ex-AA's are now on the air, using their old AA calls with the addition of the G prefix. At the time of going to press, we hear that the "top band" (1.7 Mcs.) is due for release in the very near future. The 10 metre band has now been extended to 28,000 kcs. - 30,000 kcs., instead of only to 29,000 kcs.

● **Reports**

This article is being penned after having perused the first batch of reports to reach your scribe from readers. It is apparant that some form of standardisation will have to be followed. Will contributors to this section please keep logs for different bands on separate sheets of paper, sub-dividing these into 'phone and CW sections. And please, let me have your opinions on conditions and send in all the news that may prove interesting. Reports of QSL's received will also be interesting. Remember —six years of inactivity has altered the ham radio situation quite a lot!

● **28 Mcs.**

Owing to the rapidly changing character of this band at the moment, the news published in this feature is liable to be somewhat out of date, to wit—last month's reference to the inactivity on 10! The local G's in my district have been getting plenty of opportunities to work DX, and from what I can gather they have been taking full advantage of the excellent conditions prevailing over the last month.

With the appearance of the giant sun-spot group in February the band suddenly awoke, bringing W's, VE's, PY's and ZS's, roaring through the speaker. On one occasion, W's were being heard at good strength right up to 2130 GMT, and during this session the YL-operated HK3AB was logged at good strength. From the listening carried out on 10, the following general schedule has been worked out:—1100-1400 GMT: PY, LU and ZS; 1230-1800: W; 1400-1700: VE.

Locals, chewing the rag, can be heard on ground wave in this district as late as 0100. Semi-locals, such as SV, SU, and YR, are heard throughout the late morning and early afternoon. It appears that the band is really settled for the Spring, and we are all expecting great things, but owing to the quixotic nature of 28 Mcs. we are not making any promises!

Probably the best signal heard has been W4HVT, operating fixed-portable in PY7. Others of note have been PK4DA, ZS5CK, ZS5BZ, ZS2AL, and VQ3TO. (Is this the pre-war 3TOM?—Ed.) Incidentally the receiving equipment at your scribes QRA consists of a 1-v-2 receiver and a half-wave doublet aerial.

W. Rawlings, BSWL 657, in Hanover reports G6CU, operating in Cocos Islands (ZC2) heard on 'phone between 1100-1300. he also mentions KA1JM and LU9AX.

Quite a deal of interest has been caused by the appearance of YR5B, who is using ICW, and says QSL via HB9AG. W7's have been scarce here, the only one heard being W7HRY operating at sea! Has anyone any data on W7 calls heard? A good catch was VP2AT, St. John's, Antigua, heard RST559x at 1300.

XACD is located in Athens, and any reports and/or QSL's can be sent to me for forwarding. G4AK and G8RC also require reports, these too can be mailed via your scribe.

Reports are still wanted for 28 Mcs., and I would appreciate readers' logs, notes on peak reception times, and other items of general interest.

● **14 Mcs.**

Conditions of late have been really good, especially during the early and late evenings. Latin Americans are providing some fine signals, and start coming through around 1900, being well heard until about 0100 when they begin to fade out. The PY's and LU's are becoming as numerous as the W's are on 28 Mcs.

We are pleased to note the reappearance of a pre-war friend, TI2RC of Costa Rica. His full QRA is P.O. Box 1065, San Jose. Operating on CW he provided some good dx QSO's for numerous Europeans, first. when operating portable, using the call TI5RC and later as 2RC.

Apart from one or two evenings, conditions on this band have been most favourable. Several Dellinger fade-outs have been experienced, in each case followd by a period of exceptionally good DX conditions. The PY and LU calls logged here,

both on CW and phone, are much too numerous to list. Uruguay has been heard through CX1FY (P.O. Box 37, Montevideo) and CX2CO, around 2230-2330. BSWL 2160, in Hanover, reports that 2CO has an input of 450 watts. That elusive country, Paraguay, is now well represented, both on phone and CW. The best ones appear to be ZP2AC on CW and ZP6AB on phone and CW.

Moving further West to Chile, great activity is noted. BSWL 657 reports CE3CB, CI, AM, and 4AD, all on CW, and CE1BE on phone. Venezuela can be heard almost any night, YV5AE, ABY, ABX, ACV, and AG all being very strong phone stations. From Colombian Republic HK3AO and HK1AB have been heard here.

South East Asia

Whilst tuning around the 14 Mcs. band one day at 1600 GMT a QSO was heard between VU3AZ and HS1QC, and though they both complained of the shortage of DX, they were received here 100 per cent. During the QSO, HS1QC remarked that when he was in Singapore recently he met PK1RI, the well-known Batavia ham; who is now using the call VS1RI. That appears to clear up one of the current mysteries! Apparently 1QC is another of the globe-trotting fraternity, as he mentioned he hopes to be back home in VS7 before long! Other Asiatics heard during the same afternoon were VS1FB, VS1RI, and VS2UF.

VS1FB says he hopes to be back in G soon, and requests that QSL's be sent via RSGB. Guam comes on the scene this month in the form of KB6RF, with reliable signals almost every day. The call looks a bit fishy, but perhaps we are getting a little too sceptical these days! Anyway, I suppose that someone has to be issued with a suffix that can be announced phonetically as "Radio Frequency"! The final Asiatic logged was PK3MR, putting in a fine signal at 1600.

Those home-made calls

Moving nearer home, we are still confronted with our quota of phonies—R5M, AB1CD, to mention just two . . . I think the less said the better! By the way, QSL's for LI3JU (Libya) can be sent to me. I will redirect them. As my friend HB9DI says "It is better that too many do not know the QRA of ham you shouldn't know"!

Space demands this month necessitate the omission of notes on the lower frequency bands, but I would say that they appear to be much the same as in previous months. Please continue listening, and if you hear any details of interest just drop a line to "CQ." As a final note may I thank those readers who have so kindly sent in reports and trust they will keep up the good work.

Stop Press

Have just received a letter from a reader in Bermuda, J. Mann, BSWL 1359. He sends in a log of G calls heard on the 28 Mcs. band, which will undoubtedly be interesting to those concerned. The list consists of:—G2AK, 2CA, 2LT, 3BW, 5LJ, 5PW, 6CL, 6DP, 6GO, 6VX, 8DD, 8RL, and GM8MN. On CW G8MX was logged.

SAFETY FIRST! Do not use a screwdriver to "prod the works." Where probing is necessary, as when checking for dry joints, use ebonite rod or similar insulating material. When working on mains receivers it is a good idea to stand on a rubber mat or a duckboard. Make certain that test-prods are well insulated, and always keep one hand well away from the chassis or any earthed object, as this will prevent a shock up the arms and across the heart. Next time you see a service engineer with one hand in his pocket you will know the reason why!

When using a multi-range meter for voltage or current readings, if in doubt always first use the highest range setting, and then come down if necessary. When taking resistance readings, always see that the circuit is "dead," i.e., that no current is flowing, and make sure that no alternative path is shunted across the component to be measured. A resistor may be in parallel with a leaking capacitor! When measuring high value capacitors for leakage, it is always wise to discharge the component before connecting the prods. These precautions will avoid damaging what is not only a delicate, but also an expensive, instrument.

A.P. SOUND

It is reported that SU1MW, Cairo, has been hearing at good strength, for short periods, the 41.5 Mcs. transmissions from the Alexandra Palace station. The receiver is an AR77.

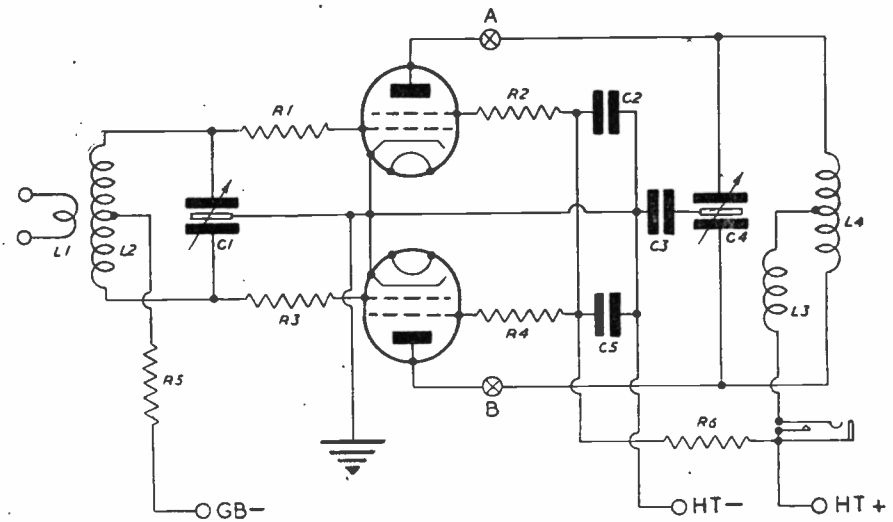
100 WATTS on TEN.

Some notes on a Push-Pull P.A. using 807's, By G2UK

HEREWITH the push-pull P.A. promised last month. As these notes are intended for those who have already held transmitting licences, it is felt that it is unnecessary to do more than comment on the circuit and component layout, as these readers will presumably have the necessary knowledge to adapt the design to their own requirements. The only really important feature to observe is that the 807's require adequate screening and the grid and anode tuned circuits should be kept well spaced or properly screened from each other. In the layout shown, no trouble whatsoever was experienced from parasitic oscillation, no doubt because the screening is thorough and the components are well spaced. Provided care is taken in positioning the coils and capacitors and in screening the 807's, there is no reason why the tubes should be mounted horizontally, except that this position enables the anode and grid leads to be kept really short. They can be mounted vertically if preferred. The screening cans and partition were made up specially for the job by 2ATV in the magazine's workshop, but ordinary screening cans will do just as well.

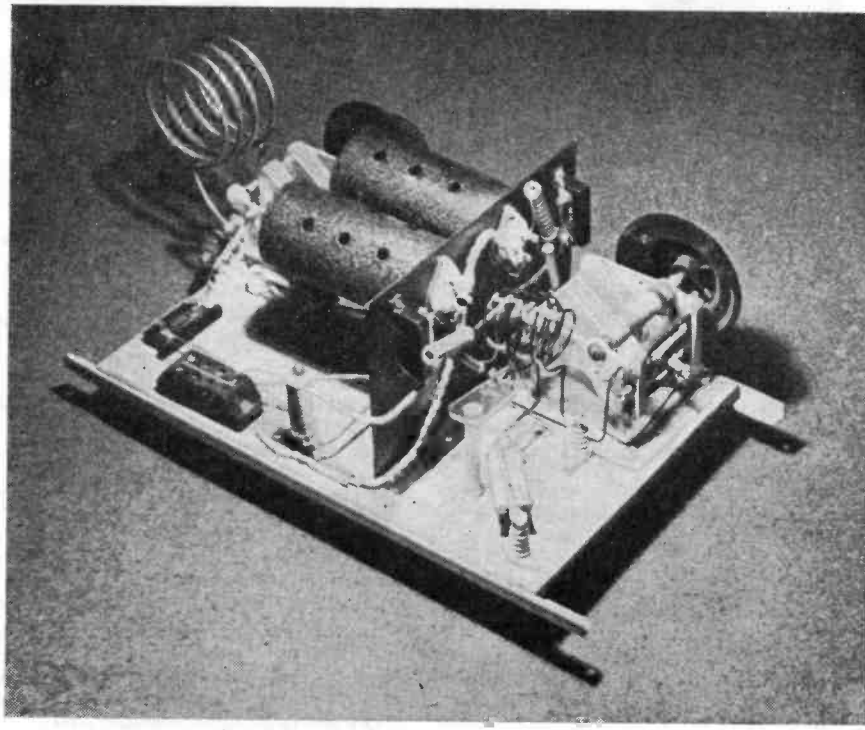
If trouble is experienced from parasitic oscillations, try two small chokes in series with the anode leads at A and B. Ten turns of No. 20 S.W.G. tinned copper wire on a ¼ inch former an inch long should prove satisfactory. No such chokes were necessary in the job shown, but they are mentioned as they may help some to chase the odd illusive "bug" out of a pair of 807's which refuse to behave themselves.

The grid coil, L2, is made up from 14 S.W.G. enamelled aerial wire and is fixed



Component Values

R1	...	100, 2 Watt	C2	...	.002 uF.
R2	...	2,500, 5 Watt	C3	...	.002 uF.
R3	...	100, 2 Watt	C4	...	.0001 uF.
R4	...	2,500, 5 Watt	C5	...	.002 uF.
R5	...	25,000, 5 Watt	L1, 2, 4	...	see text
R6	...	10,000, 10 Watt	L3	...	RFC
C1	...	.0001 uF.	Valves	...	807



View of the P.A. Stage

directly to the tuning capacitor. The anode coil, L4, is made up of 3/16th inch copper tubing, spaced as shown and is also mounted directly on the tuning capacitor. Both coils need centre tapping for the G.B. and H.T. connections respectively. By mounting a small stand off insulator beneath the centre of the coils and taking a stiff wire connection from the centre of the coils to the insulator terminals added support to the coils is provided.

The P.A. needs link coupling to the preceding stage. Two turns of 14 S.W.G. enamelled wire 2 inches diameter positioned round the centre of the grid coil and supported from a stand off insulator as shown are sufficient.

Readers will remember that in last month's article the question of providing 28 Mcs. drive for such a P.A. was discussed and a tritet C.O. followed by a F.D. stage was suggested. Yes, we are sorry for the error. Line 4, second paragraph, second column, page 71, should of course have read, "3.5 or 7 Mcs. crystals." In actual practice, there are several arrangements which will give enough drive. A 3.5 Mcs. crystal with 14 Mcs. coil in the tritet anode circuit and the second stage acting as a F.D. will give enough drive to the P.A. Even a 7 Mcs. crystal with a 28 Mcs. coil in the tritet anode directly coupled to the P.A. without using the second stage at all gave enough drive to run the 807's at about 60 watts and if the second stage is run as a buffer amplifier, 100 watts is quite easily obtained. One point about the tritet. Make sure the 28 Mcs. harmonic is selected. An absorption wave meter is invaluable in this direction. And don't put more than 250 volts on the circuit shown or the crystal may be fractured. The P.A. stage can take anything from 500 to 750 volts H.T. with about 45 volts grid bias.

Readers will no doubt have their own views on aerial arrangements. At 2UK, link coupling to an aerial coupling unit is used and various aerial arrangements are being tried out.

SUNSPOTS and SHORT WAVE DISTURBANCES.

AN unusually large group of sunspots appeared during the early part of February last. Even though we are now passing through a "minimum" in the cycle of sunspot activity, the radio activity of last February's isolated group was so intense that considerable disturbance was caused to short wave radio communication. This apparently held up the work of the UNO conference sufficiently to merit mention in the daily press, and when, at the same time, Professor E. V. Appleton confirmed that the "hissing phenomen" is of solar origin, sunspots became front page news for a day or so.

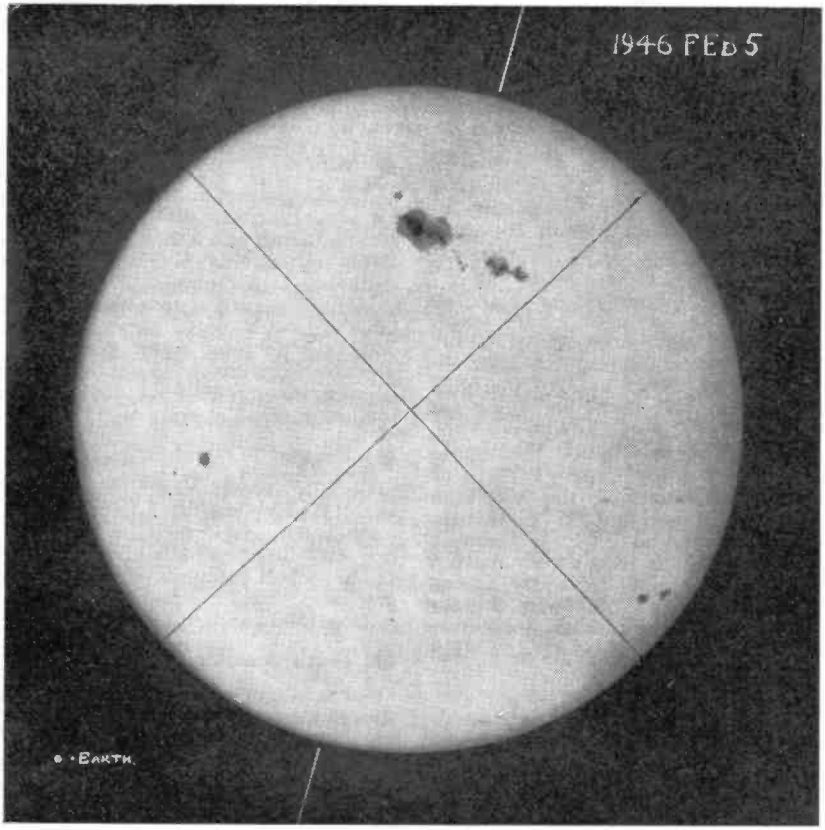
The observation of sunspots was first made over a hundred years ago by a chemist in Dessau named Schwabe. It should be noted that he was a chemist and not an astronomer, i.e., he was an "amateur" observer. In our own time, sunspots maxima have occured in 1905, 1917, 1928 and 1939. Besides this periodicity in the prevalence of sunspots, each group as a whole appears to move across the face of the sun due to the rotation of the sun itself. As the sun takes approximately twenty-six days to effect one complete rotation, each group of sunspots is visible for thirteen days only.

Scientists now regard sunspots as "cavities" or "vorteces" in the surface layers of the sun, produced by the whirling solar gases. Out of this vortex are propelled a stream of tiny "particles" of matter, together with a tremendous eruption of energy in the form of radiation of various wavelengths.

The greater part of the energy which we receive from the sun comes to us in the form of visible light, heat, and ultra-violet light radiations. Travelling across space, these rays cover the 93 million miles from the sun to the earth at the rate of 186 thousand miles per second. The light and heat rays reach the earth's surface, but most of the ultra-violet light is absorbed by the rarefied gases of the outer atmosphere, which become electrified and act as a barrier to radio waves originating from the earth turning them back in the way that is familiar to every short-wave enthusiast. This layer of charged gases is known, of course, as the Ionosphere, and the daily and seasonal variation in the ionosphere will be well known to most readers. It will be obvious that any sudden burst of radiations from the sun (such as from a group of sunspots) will produce an immediate change in the ionosphere, thus affecting radio communications.

The particles emitted by the sunspots are "shot out" with tremendous velocity, reaching the earth only if the sunspot group is facing us. These particles travel slower than the rays, hence arriving at the earth's surface some time after the effects of the rays have been noted—approximately 25 hours later. They completely neutralise the ionosphere thereby producing disruption of short-wave communications, often in the nature of a complete "blackout" of signals. Thus we may get a double disturbing effect due to sunspot activity; the first due to the ultra-violet light's action on the ionosphere; the second due to the arrival of the "particles" of matter. (These particles, by the way, are responsible for the appearance of the Aurora Borealis.)

The first type of disturbance is termed a "Sudden Ionospheric Disturbance," sometimes referred to as the "Dellinger Effect." Signals fade out suddenly and are lost for several hours, only those passing through the sunlit hemisphere are affected, the lower frequency signals being affected most. The second type of disturbance is called an "Ionospheric Storm," and produces longer fade outs lasting possibly for several days, the higher frequencies being the most seriously affected. Waves passing near the magnetic poles are particularly affected.



(By Courtesy of the Royal Observatory, Greenwich)

The photograph of the Giant Sunspot Group shown above was taken at the Royal Observatory, Greenwich, on February 5th. The short white lines indicate the position of the Sun's axis of rotation which causes the spots to move across the disc from left to right in about a fortnight. The thin dark lines are the images of spider threads in the telescope used as fiducial marks for position measurements. The group is the largest as yet photographed at Greenwich, i.e. since 1875. Maximum area reached nearly 1/200th of the Sun's hemisphere, or more than 110 times the cross sectional area of the Earth.

NEW CALL AREAS

Canada: VE call areas have been modified to provide three new districts. The 1st, 2nd and 3rd districts are unchanged, and the new areas are as follows: VE4—Province of Manitoba; VE5—P. of Saskatchewan; VE6—P. of Alberta; VE7—British Colombia; VE8A-L—Yukon; VE8M-Z—North West Territories.

U.S.A. A reshuffle of certain districts is taking place. States affected are Arizona, Kentucky, Nevada, Utah, Michigan (the W9 section), New Jersey (W3 section), New York (W8 section), and Pennsylvania (W8 section).

In addition a new district (W0) has been created. This will comprise of certain States hitherto part of the 9th district. The States in the W0 district are Colorado, Iowa, Kansas, Minnestoa, Missouri, Nebraska, North and South Dakota. Existing stations with W9 calls in these States will use present calls until licence renewal.

Around the Broadcast Bands.

Monthly survey by "Monitor"

All times are given in G.M.T.

MY hopes of a deluge of letters in answer to last month's request were somewhat disappointed by the result! Come on readers, you can do better than that surely!

Conditions

The past month has been a very erratic month for short wave reception, I found. This was doubtless due to Old Man Sol and his spots! I would not say that conditions were very bad, and I was interested to note that the UHF end of the spectrum opened up with a vengeance. Your scribe logged GSK on 26100 kcs., WLWS on 21650 kcs., a harmonic of the NBC-RCA New York stations, and W/T stations RAN, RZS, VER1 and WQP, all between 28-24 Mcs. Good dx was also noted on the 28 Mcs. ham band, especially around the 3rd-18th February. However, by the 23rd the UHF spectrum seemed to have reverted to a dormant state. That's short wave temperament!

Oceania

The Aussies have altered their schedules again, the 1515-1545 programme for the British Isles now being radiated over VLC8 (7280 kcs.), VLG (9580 kcs.) and VLA3 (9680 kcs.) General signal strength has been poorer than usual, over all three stations. Incidentally, the QRA given over the air is:—"Radio Australia," 375, Collins Street, Melbourne.

C. G. Tilly (Bristol) reports VLC5, 9540 kcs., with R7 signals in the North America service.

Wellington, New Zealand, ZLT7 was logged with very weak signal strength at 0930 on 6715 kcs. by A. H. Bower (Hull). Nice work!

Asia

Chungking logged on 6150 kcs. with Chinese programme, closing down at 1555 with call letters, XGOY, repeated twice. R7 Q4. A. Bower reports hearing ZBW, Hong Kong, on 9525 kcs. between 1100-1330. VUD1O, Delhi, heard with news at 1200 on 17830 kcs., R7. The English news from TAP, Ankara, on 9465 kcs., is well heard at 1750. The sister station TAQ has been heard with native music on 15195 kcs. at 0800.

Africa.

"Radio Clube do Angola," CR6RC, at Loanda, heard on 9470 kcs. at R6 with severe fading and QRM. Closes down at 2030, preceded by 4 chimes and National Anthem. Listed power 250 watts (Tilly).

FZI, Brazzaville, has been logged on 6015 kcs. with North American beam. At 2300 signals were very poor (Q3 R5).

"Radio Omdurman," Sudan, has recently been heard by Tilly at 1910 on its old frequency of 9220 kcs. Signals R5.

Europe

C. Tilly reports Vienna on about 30.5m. at 2215 giving call as "Radio Wien." My station list gives the frequency as 9832 kcs. (Is listed as 9810 kcs.—Ed.)

The A.F.N. stations on 8565 and 6080 kcs. now relay the Frankfurt medium wave station (McLean).

North America

Santa Clara's COHI has been heard, though strength was poor, at 0015 on 6450 kcs. Mentions R.H.C. Cadena Azul frequently. Tilly reports COKG, 8955 kcs., R6 at 0040.

The Dominican Republic has been well represented with HI1R, 6420 kcs; HI2T, 6480 kcs.; HIT, 6630 kcs.; and HI1G, 6145 kcs. The new station at Santiago de los Caballeros, mentioned last month on 7000 kcs., has still not been completely identified. The call is H19—, and is either HI9B on a new frequency or else an entirely new transmitter. It closed down at 2320. Much confusion is caused by HI2A, Santiago, which uses a different frequency almost every week! Was last heard on 6785 kcs. by Roger Legge (Washington, D.C.) and myself. Tilly, however, reports it on 7215 kcs., So what? The station uses various slogans, including "Broadcasting Nacional," "La Voz de Re-Eleccion," etc.

TGNA, Guatemala, has now moved to 6255 kcs. (Legge). TGX1, Guatemala City, has also moved—to 6190 kcs.

Haiti has been well in evidence lately. HH3W is very strong on 10105 kcs. at 0000 with its multi-lingual call in French, English and Spanish. Belongs to the CBS Latin American Network. HH2S, 5950 kcs.,

heard at R6 at 0200 with rumba music, but suffered from severe inter-station and W/T QRM. HHCM on 6170 kcs. fair signal at 0230, giving call as "National Broadcasting Company." All the above stations are located at Port-au-Prince.

The Mexico City station XEWW still received on 9500 kcs. with call every quarter-hour. R7 at 0015 (Tilly).

Surinam well heard over PZX, Paramaribo, on 5750 kcs. Heard with recorded dance music at 0050 (Tilly). Verifies with card giving QRA as "Radio Dienst Suriname, Paramaribo" (Hayes). (The correct call of this station now appears to be PZH5—Ed.)

The West Coast Americans are still coming in. KCBA was logged at 0200 on 6170 kcs. Tilly reports KWIX, 7230 kcs., KNBI, 9490 kcs., and KCBR, 9700 kcs.

South America

I have noticed improved reception of LRS, Buenos Aires, on 9360 kcs. Heard at 2215 with R7 signals. The call, preceeded by 4 ascending chimes, is given as "LR4 Buenos Aires y LRS y LRS1, Radio Splendide de la Republica Argentina." LRX, "El Mundo" is heard intermittently with weak signals on 9660 kcs. Tilly reports reliable signals from LRY1, the 6000 kcs. channel of Radio Belgrano.

Tilly reports the best station from Colombian Republic to be HJCD, but I regret to say they have a habit of not announcing their call-sign. I recently listened to a selection of records from the "Mikado" for 2 hours solidly without hearing any station announcements. You have been warned!!

Have you heard Bogota on 9690 kcs.? This station belongs to the Radiodifusora Nacional de Colombia group and has caused much confusion as regards its call letters. In the past I have recorded it as HJCT, and then HJZB. However, as stated in the March issue, the real call is HJCAB, which departs from the usual 4-letter calls of the Colombians. This may be explained by the fact that it is an experimental transmitter, operating, incidentally, with a power of 2½ kW. Personally I don't quite see why it is "experimental" as it seems to be on the air regularly and suffers less "breakdown" than the average Latin American!!

I am still hearing HCJB, Quito, on 15095 kcs. in its U.S.A. Beam broadcast in the evenings. Heard in French at 2120 at R5. Weak signals have been noted from Quito's HC1BF on 7160 kcs. Slogan is "Radio Comercial" and sometimes reference is made to "Banca Nacional." Logged at 0350, with much QRM.

While listening to WOOW on 11870 kcs. one evening, I noticed quite a strong heterodyne whistle. Somewhat puzzled, I waited for the sign off of WOOW at 2300 and retuned to the offending station. This turned out to be ZPA3, located at Asuncion, giving call as "ZP3 y ZPA3, Radio Teleco." Gives news (Informacines ESSO) at 2305. Signal was Q3 R5, and is listed as on 11865 kcs., with a power of 1 kW.

Acknowledgements

Your scribe wishes to thank the following readers for information submitted and incorporated in this article:—C. G. Tilly, BSWL 319 (Bristol); R. C. Legge, BSWL 1830 (Washington, D.C.); A. H. Bower (Hull); D. L. McLean (Yeovil); H. E. Edinboro (Lincoln); B. Hayes, BSWL 1690 (Bletchley).

Station QRA's

Each month it is hoped to include a few QRA's of stations for the benefit of readers wishing to send reports. This month's selection is given below:—

YSPB:	La Voz de Cuscatlan Calle Ruben Dario 46 San Salvador Salvador
HI2A:	La Voz de Reeleccion Cafe del Yaque Santiago de los Caballeros Dominican Republic
HI2T:	La Voz de Yuna J. A. Trujillo M Monsenor Nouel Dominican Republic
HIL:	J. C. Pellicer Apartado 623 Trujillo City Dominican Republic
HP5A:	Cadena Panamena de Radiodiffusion Apartado 954 Panama City Republic of Panama
YNQ:	La Voz de la Victoria Apartado 338 Managua Nicaragua
CXA19:	Difusora El Espectador A.V.D.A. 18 De Julio 1393 Montevideo
CKLO, etc.:	Canadian Broadcasting Corporation P.O.Box 189 Montreal

Resonant Lines.

By Centre Tap

DOES the availability of good amplifiers at reasonable prices account for the popularity of their use for boosting reception on simple short-wave receivers? Since my return to Civvy Street I have already run into a few of these combinations pumping out terrific DX signals which could have been scarcely audible in the single valvers feeding the amplifiers. I am still wondering if this vogue is due to (a) that amplifiers and kits have long been fairly easily available, (b) the ease of construction and flexibility of small receivers, or (c) the scarcity of good components for building the bigger short-wavers. Now that I am able to get around the shops a bit, I can see that gear is much more readily obtainable than I thought, despite the many other shortages.

Reading Through.

Talking of hefty signals leaves me wondering to what extent Service sets have influenced me in requiring stronger signals than those which satisfied me in pre-war days. I suppose too, I have become more tolerant of background noises and mush, as long as it does not exceed a reasonable signal/noise ratio. I can still remember my surprise at discovering how after a little practice one became so expert at hearing only the required signal. This was particularly so with CW where often the feeblest signals had to be read through an almost deafening crash of noise and interference.

Not So Dozey.

It is queer how during long spells of listening watch one can doze off amidst all the spluttering QRN and chirpings from transmissions almost dead on top of your frequency, but as soon as your call-sign comes up, even if nearly lost in the din, you immediately become alert. Apparently it is not so difficult to become like a watch-dog and sleep with one eye and an ear open.

Am I Wrong?

With an appetite demanding more and more signals, I am beginning to wonder why so few short-wave listeners who are restricted to battery sets, take advantage of QPP or Class B amplification. Maybe it is just my still rather limited experience giving me a false perspective on this, but there is no doubt of their neglect in the widening circle I am now re-contacting. If it is not generally so there will be, no doubt, a storm of protest, and I shall have to do the rounds with longer strides.

Spotted Fever.

The sunspots are still front page news and almost daily the popular press carry articles attributing all sorts of things ranging from plant growth to revolutions, to their presence. I really must remember to see what my pet astrologer has to say about it next Sunday!

The practical minded short wave fan has a much more precise interest in them, but even the idea of blaming them for all sorts of disorders is far from new. We find them recorded by the ancient Chinese, and Galileo, with the primitive telescope then available, charted them in 1610, concluding they travelled with the sun. The sun is not a rigid body, and it's parts do not rotate at a constant speed, being faster near the poles than near the equator. A sunspot is a whirling cloud of gases gushing up from the interior and the "spot" effect is due to their being darker than the surrounding gases. They may measure up to 100,000 miles across, and when seen on the edge of the sun appear to be shooting upwards for hundreds of thousands of miles.

Many theories have been put forward and observers are still trying to penetrate the mystery of the atomic particles they bombard us with, which cause the magnetic storms, disturbing not only radio communications but also land and submarine cables. Maybe we shall learn more about them in a few years—after all, this is only an incidental outbreak. They reach their maximum in regular cycles of about 11 years, the next of which is due in 1950.

Palindromic.

Why is radiolocation called Radar? Wise-Guy says it means *Ra*dio *D*etection *a*nd *R*anging, but the Dumb Blonde thinks it must be because when reflected back it still spells the same. Anyway, I hear the American scientists succeeded in making contact with the Moon by Radar on January 10th, the UHF echoes being detected some 2½ seconds later. The Dumb Blonde says she won't believe this until they get a veri!

Centre Tap

BROADCASTING STATION LIST.

Part 2: 15120 kcs. - 11765 kcs.

THIS list has been compiled by the Signal Survey Section of the British Short-Wave League, and contains only stations that are operating on regular or irregular broadcasting schedules. Stations not in use, channels not in use at the time of going to press, and stations under construction are not included.

Frequency	*Call*	*Location*	*Slogan*	*Power (watts)*
15120 ...	——	Athlone, Eire	Radio Eirrean	1500
	SP19	Warsaw, Poland		5000
	CSW4	Lisbon, Portugal	Emissora National	10000
	HVJ	Vatican City	Radio Vaticano	25000
15110 ...	GWG	Daventry, England		
15095 ...	HCJB	Quito, Ecuador	The Voice of the Andes	1000
15070 ...	GWC	Daventry, England		
14690 ...	PSF	Rio de Janeiro, Brazil		12000
14560 ...	WRNX	New York, U.S.A.		50000
14275 ...	——	Nova Lisboa, Angola		
14000 ...	XGOH	Laiyang, China	Hunan Provincial Broadcasting Station	900
13655 ...	——	Moscow, U.S.S.R.	Radio Centre, Moscow	
13610 ...	RKC/ RKB4	Moscow, U.S.S.R.	Radio Centre, Moscow	
13390 ...	——	Moscow, U.S.S.R.	Radio Centre, Moscow	
13330 ...	——	Omdurman, Sudan	Sudan Broadcasting Service	250
13190 ...	RFL	Kharbarovsk, U.S.S.R.		
13110 ...	RGO	Moscow, U.S.S.R.	Radio Centre, Moscow	
13050 ...	WNRI	New York, U.S.A.		50000
13020 ...	RRRE	Moscow, U.S.S.R.	Radio Centre, Moscow	
	KNBI	Dixon, Calif.		50000
12455 ...	HCJB	Quito, Ecuador	The Voice of the Andes	7000
12440 ...	XGOP	Kuking, China	Kwangtung Provincial Broadcasting Station	200
12400 ...	——	Parede, Portugal	Radio Clube Portugesa	
12270 ...	——	Punta Arenas, Chile	Radio Ejercito	
12260 ...	RW96	Moscow, U.S.S.R.	Radio Centre, Moscow	
12235 ...	TFJ	Reykyavik, Iceland		7000
12230 ...	——	Moscow, U.S.S.R.	Radio Centre, Moscow	
12220 ...	XLPA	Yuanling, China		
12190 ...	LSN3	Hurlingham, Argentine		
12170 ...	RW98	Moscow, U.S.S.R.	Radio Centre, Moscow	
12127 ...	FIQA	Tananarive, Madagascar		
12120 ...	THA1	Algiers, Algeria	Radio France	12000
12115 ...	ZNR	Aden, Arabia		500
	——	Moscow, U.S.S.R.	Radio Centre, Moscow	
12110 ...	HI3X	Trujillo City	Radiodifusoras Oficiales	250
12095 ...	GRF	Daventry, England		
12080 ...	PST	Rio de Janeiro, Brazil		12000
	——	Moscow, U.S.S.R.	Radio Centre, Moscow	
12060 ...	RRRE	Moscow, U.S.S.R.	Radio Centre, Moscow	
12040 ...	GRV	Daventry, England		
12000 ...	CE1180	Santiago, Chile	Radio Societie Nacional de Agricultura	1000
	CSW	Lisbon, Portugal	Emissora Nacional	10000
11970 ...	FZI	Brazzaville, F.E.A.	Radio Brazzaville	6000
11955 ...	GVY	Daventry, England		
11945 ...	ZPA5	Encarnacion, Paraguay	Radio Encarnacion	2500

Frequency	*Call-sign*	*Location*	*Slogan*	*Power (watts)*
11930 ...	GVX	Daventry, England		
11918 ...	XGOY	Chungking, China	The Voice of China	35000
11900 ...	VLG9	Melbourne, Australia		10000
	CKEX	Sackville, Canada	Radio Canada	50000
	CXA1O	Montevideo, Uruaguay	Radio Electrica	10000
	KWIX	San Francisco, Calif.		50000
11893 ...	WRCA	New York, U.S.A.		50000
	WNBI	New York, U.S.A.		50000
11890 ...	KNBA	Dixon, Calif.		50000
	KWIX	San Francisco, Calif.		50000
11885 ...	TPB7	Paris, France		
	——	Komsomolsk, U.S.S.R.		50000
11880 ...	LRR	Rosario, Argentine	Radio Ovidio Lagos	10000
	VLR3	Melbourne, Australia		2000
11878 ...	RWG	Moscow, U.S.S.R.	Radio Centre, Moscow	
11870 ...	VLC3	Shepparton, Australia		50000
	VUD9	Delhi, India	All India Radio	7500
	WOOW	New York, U.S.A.		50000
	WNBI	New York, U.S.A.		50000
11865 ...	ZPA3	Asuncion, Paraguay	Radio Teleco	1000
11860 ...	GSE	Daventry, England		
11857 ...	——	Tunis, Tunisia		700
11850 ...	CE1185	Santiago, Chile	Radio El Mercurio	3500
	HI3X	Trujillo City, Dom Rep.		
11847.5 ...	WGEA	Schenectady, U.S.A.		50000
	——	Paris, France		
11845 ...	TPB	Paris, France		
11840 ...	VLG4	Melbourne, Australia		10000
	VLC7	Shepparton, Australia		50000
	OLR4A	Prague, Czechoslovakia		30000
11835 ...	CR7BF	Lourenco Marques	Radio Clube de Mozambique	10000
	CXA19	Montevideo, Uruguay	El Espectador	5000
11830 ...	VLW3	Perth, Australia		2000
	VUD6	Delhi, India	All India Radio	10000
	WCRC	New York, U.S.A.		50000
	RW96	Moscow, U.S.S.R.	Radio Centre, Moscow	100000
11826.5 ...	WCRC	New York, U.S.A.		50000
11820 ...	GSN	Daventry, England		
	XEBR	Hermasillo, Mexico	Radiodifusora de Sonora	150
11810 ...	ZOJ	Colombo, Ceylon	South East Asia Command	7500
	WLWL1	Cincinnati, Ohio		75000
11800 ...	GWH	Daventry, England		
11790 ...	VUD5	Delhi, India	All India Radio	100000
	KNBA	San Francisco, Calif.		50000
	WRUS	Boston, Mass.		50000
11780 ...	OIX3	Lahti, Finland		15000
	HP5G	Panama City, Panama	Radio Panamericana	800
	RW96	Moscow, U.S.S.R.	Radio Centre, Moscow	100000
11778 ...	——	Saigon, Indo-China	Radio Saigon	12000
11770 ...	GVU	Daventry, England		
	KCBA	Delano, Calif.		50000
	VLA4	Sydney, Australia		
11765 ...	——	Algiers, Algeria	The Voice of America in North Africa	50000
	ZYB8	Sao Paulo, Brazil	Radiodifusora Sao Paulo	5000

From Our Mailbag.

The Editors do not necessarily agree with the views expressed by contributors.

Dear Sirs,

May I give my opinions of some features in the February issue? The series "My Favourite Receiver" is quite good, so long as it is restricted to simple sets. I have always held that a small receiver is all that is wanted. "Receiver Types" is written in a way that I can understand, and more of this sort please. Don't get too technical. The "SWN Frequency Meter" is a step in the right direction. I like the practical diagram on page 39, and though most will be able to build the meter from the theoretical circuit, I find I like it when a resistor looks like a resistor! The "B.S.W.L. Multi-Range Meter" looks good, too, and well arranged. I have one criticism though. It is no good telling one about engraving letters or stamping letters on metal as the average man just hasn't those things, and he would most certainly use strips of paper with, say "Adjust" typed or written on.

I would like to see in future issues good instructional articles on TX's, not too big, and with coils that can be home-wound; Simple receivers for the UHF ham bands; and details of aerials (dipole) with simple rotary beams.

It only remains for me to wish you success in your venture.

Yours sincerely,
C. Green G3QC (Harpenden)

(We cannot agree with the opinion that the average constructor is incapable of using letter punches and a hammer!—Ed.)

* * *

Dear Sir,

I have recently become interested in SW radio and have found your publication of great help in exploring the bands. I would, however, suggest that with regard to the Broadcast Band news, the information be placed under a time-of-day heading. Further, would it be possible to publish, either in the Short Wave News in section, or separately, a series of maps showing plainly all important short wave stations?

J. L. Davis (Birmingham)

(Considerable experience with such data as Broadcast Band news has shown that the method used by "Monitor" is the most practical. Regarding the suggested series of maps, this is, unfortunately, impossible at present.—Ed.)

Dear Sirs,

Some of our short-wave interested readers have expressed interest for correspondence with foreign enthusiasts preferably British. If any of your readers are interested in such correspondence perhaps they would send me their names and addresses so that I can forward them to the enthusiasts concerned.

vy 73,
O. L. Johansen,
Editor Populær Radio
(Pilestrade 35, Copenhagen K, Denmark)

* * *

Dear Sir,

I have just read Short Wave News No. 2 and was greatly impressed by the wide range of topics undertaken by such a new publication. "My Favourite Receiver" is very interesting as it gives an idea of sets that have proved successful. The Component Review is very good as it shows what quality to expect in components.

Yours faithfully,
I. T. Evans (Birmingham)

* * *

Dear Mr. Editor,

May I request you give us a few circuits for mains operated receivers. I would very much like to make the 0-v-1, described in the January issue, but for mains operation. As a newcomer to radio, I would like to see as much constructional material as possible. Best wishes.

Yours truly,
G. A. Evans (Middlesborough)

EXTENSION OF AMATEUR BANDS

Amateurs are now authorised to use the following bands in this country:—

1.8 - 2 Mcs.: Maximum power 10 watts. The band is subject to withdrawal at short notice should there be serious interference with other services.

28 - 30 Mcs.: Maximum power 100 watts, or 25 watts where licence to radiate has been held for less than 12 months .

58.5 - 60 Mcs.: Maximum power 25 watts.

A 15 Watt AC/DC Amplifier or Modulator.

Described by P. B. Stearn

AMONG the many limitations attached to the use of D.C. mains, the most serious is the restriction of H.T. voltage when using electronic equipment; the maximum power output obtainable from a single "Class A" output pentode is slightly less than 5 watts. Unless an amateur transmitter is constructed on A.C.-only lines, and run from a rotary converter —which is expensive and wasteful—the P.A. stage must be restricted to an output of 25 watts. However, finding the need during the war for a powerful quality amplifier, capable of heavy outdoor work if required, I designed and constructed a simplified multi-stage instrument, giving a quality output of 15 watts, or 30 with a small add-on unit. As the quality is A.1. I am passing on the circuit to my fellow amateurs, for with a different output transformer the amplifier is suitable for modulating a 25 watt transmitter.

THE CIRCUIT. The principle of using one pre-amplifier stage only is courting poor quality, for the tremendous amount of stage gain necessary from one high impedance triode is normally accomplished only by overloading the input, or by the use of high ratio transformers, all too often of minute dimensions. The hurdy-gurdy effect is all too familiar these days, after six years of war and component shortages. In the model under review, an effort has been made to eliminate the common causes of distortion, by spreading the gain over two stages for each input, with faders instead of switches to select either mic or gram, and electronic phase inversion to feed the push-pull output stage. International octal valves are used, and may be either American types or their British counterparts.

Before dealing with some of the constructional details, a more minute examination of the circuit may be desirable. V1, the microphone amplifier, is a straight R.F. pentode operating as an A.F. amplifier, giving a greater stage gain than a normal high impedence triode, with a proportional decrease in harmonic content. A crystal

VALVE LINE-UP

V1 & V2	V3 & V4	V5 & V6	V7 & V8
6J7, Z63, etc.	6J5, 6C5, L63, etc.	KT33C, etc.	25Z4, U31, 25V5, etc.

RESISTORS

R1	...	2 megohms	R2	...	2 megohms	R3	...	500,000-ohms
R4	...	3,000-ohms	R5	...	1 megohm	R6	...	200,000-ohms
R7	...	2,000-ohms	R8	...	50,000-ohms	R9	...	800-ohms
R10	...	500,000-ohms	R11	...	500,000-ohms	R12	...	50,000-ohms
R13	...	500,000-ohms	R14	...	1,000-ohms	R15	...	100,000-ohms
R16	...	100,000-ohms	R17	...	50,000-ohms	R18	...	50,000-ohms
R19	...	50-ohms	R20	...	50-ohms	R21	...	180-ohms
R22	...	365-ohms 0.3A.	R23	...	50-ohms wire wound	VR1	...	500,000-ohms
VR2	...	500,000-ohms	VR3	...	50,000-ohms			

CAPACITORS

C1	...	0.1 uF 350v.	C2	...	50 uF 50v.	C3	...	50 uF 50v.
C4	...	0.01 uF Mica	C5	...	0.01 uF Mica	C6	...	25 uF 25v.
C7	...	0.002 uF Mica	C8	...	2 uF 350v.	C9	...	0.02 uF Mica
C10	...	0.001 uF Mica	C11	...	0.01 uF Mica	C12	...	0.01 uF Mica
C13	...	50 uF 50v.	C14	...	0.02 uF	C15	...	0.02 uF
C16	...	16 uF 350v.	C17	...	16 uF 350v.	C18	...	16 uF 450v.
C19	...	0.1 uF 500v.	C20	...	0.05 uF 1,000v.			

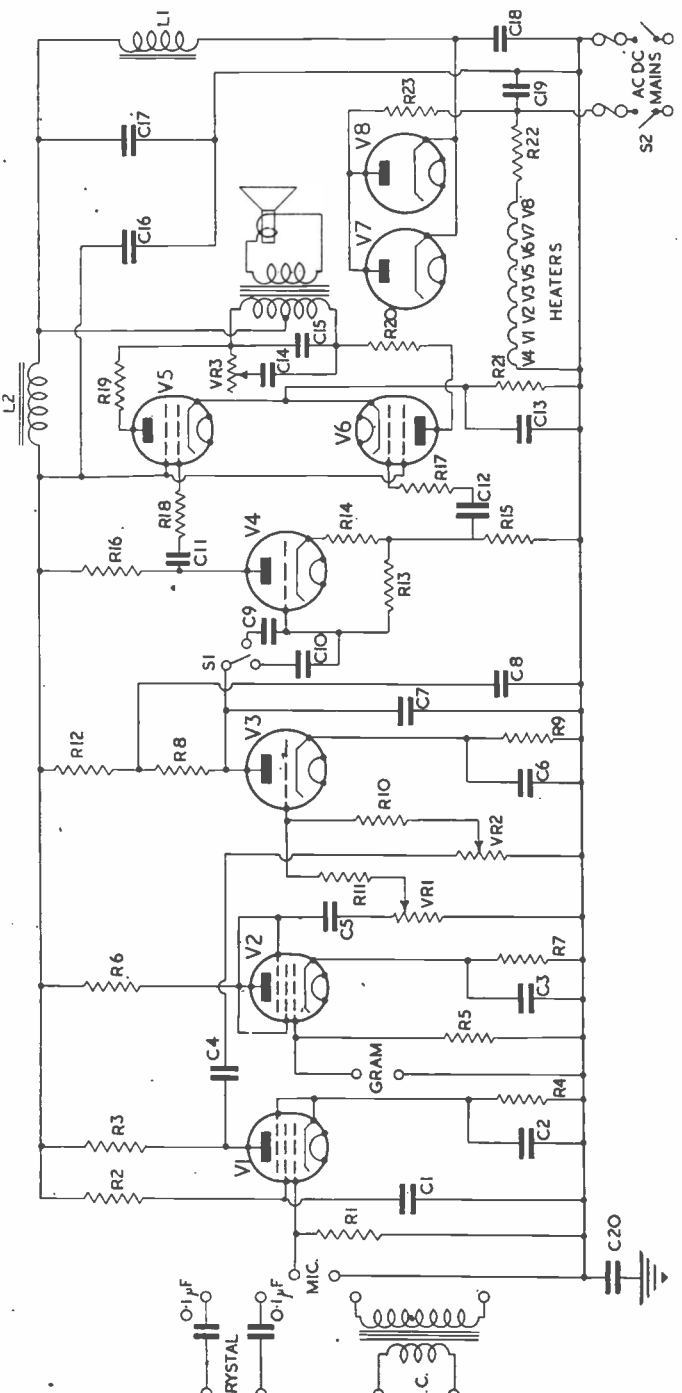


Fig. 1. Theoretical circuit of the amplifier.