

BRITAIN'S LEADING RADIO JOURNAL

Popular Wireless

No. 655,
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1934.

AND TELEVISION TIMES

THE CHILDREN'S
RADIO XMAS

* *
SPECIAL-SHORT-
WAVE SECTION

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LATEST B.B.C.
NEWS

Etc., Etc.

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How to Build

A ONE VALVE SET

for

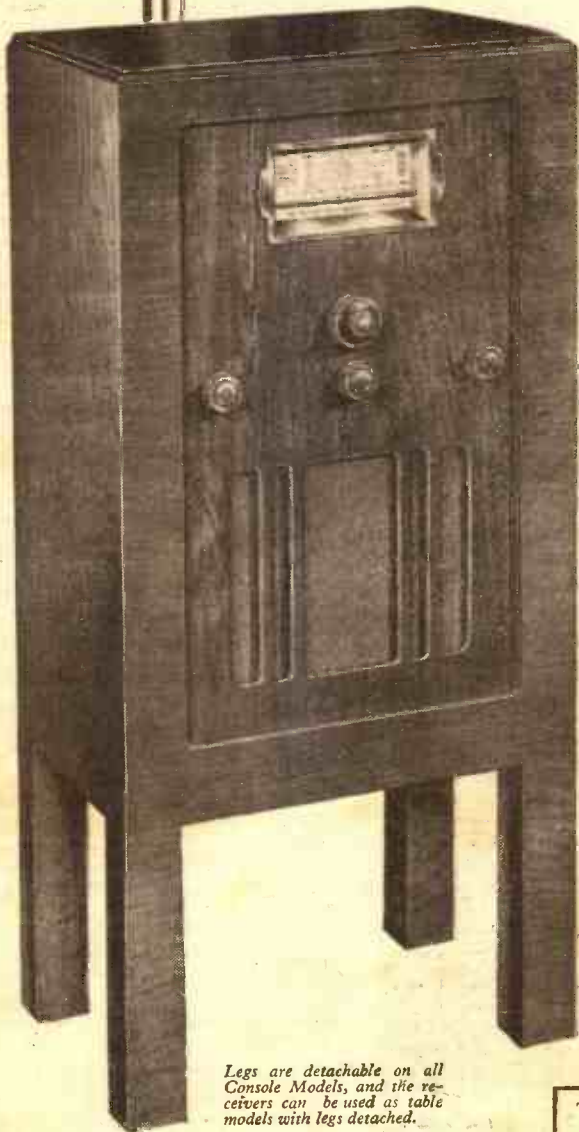


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P.W. 22/12/34.



MANAGING EDITOR: N. EDWARDS.

TECHNICAL EDITOR: G.V. DOWDING ASSOC. I.E.E.

**IN THE VAN
THE FUTURE
HYPNOTISM AGAIN
RADIO 'TATERS**

RADIO NOTES & NEWS

**BLUE ENOUGH!
"AHOY, SISTER!"
NO THRILL?
A WAR MEMORY**

Resurrection of 5 X X.

GOOD old Daventry National is supposed to be dead, but he won't lie down. He's been testing away on 1,500 metres recently, much to the astonishment of listeners who heard the announcement: "Droitwich and Daventry National testing."

When I up and asked why the old chap was trotting out again, after we had supposed he had closed for ever, they told me there had been complaints that he had been heard better in certain districts than Droitwich was proving to be. So out go the engineers to make some comparative and cold-blooded measurements. Thorough chaps, these engineers! Always in the van!

Arresting Developments.

SCOTLAND YARD is still pushing ahead with wireless devices to outwit the lightfingered. Not long ago they had Constable Thistlethwaite up from Bradford to demonstrate his apparatus, which is designed for mobile communication between patrols and H.Q. It consists of a set in a side-car, and was tried out secretly.

Meanwhile, a rather amusing situation threatens in Newcastle, where the City Police Station is being accused of causing interference with broadcast reception.

The Star Turn.

MAY I pay a belated tribute to that series of tip-top talks to which Sir James Jeans treated us in his "Tour Through Time and Space"?

Sir James is one of a noble company of what I call "Broadcasting Sirs," all of the first rank as regards quality of broadcasting. Sir Oliver Lodge is the doyen of the company, and others indubitably qualified as natural peers of the microphone are Sir Walford Davies and Sir William Bragg.

As for Sir James Jeans, he received an amusing compliment on a bus the other day. His name, in large letters on the newspaper article I was reading, caught the bus conductor's eye, and when he took my penny fare he touched the name, nodded knowingly at me and said: "Star turn, that boy!"

A.D. Umpteen.

DESCRIBING the home life of our descendants in a far-distant futuristic England, a distinguished writer in the "Daily Sketch" says there will then be no waste of time in answering the front-door bell.

"A picture of the caller will be flashed upon the television screen by day or night. If he is welcome a touch of a button will unlock the door and admit him. If he is not wanted a loudspeaker will reply: 'Not at home' or 'No hawkers, canvassers and circulars.'"

Presumably the unwanted visitor or disgruntled hawkler will have one supreme satisfaction left—he will be able to pull the

ON OTHER PAGES

	Page
How to Make a One-Valve Set	535
The "P.W." Listeners' Service	537
The Children's Radio Xmas	544
On the Short Waves	545

most horrible faces in return, sure that the television screen inside will reproduce every grimace to the householder!

German Progress.

SEVERAL correspondents have remarked of late upon the enormous punch developed by Muhlacker (Cologne) on 455.9 metres. This may be due to his new

RECEIVING THE LOCAL



There are some advantages in living close to a powerful transmitter. Here is Mr. Eric Oliver, of Sowerby Bridge, Yorkshire, who can receive the North Regional programmes on a small crystal set worn in the lapel of his coat.

aerial, which is of the anti-near-fading type and was supposed to be in working order by December.

The Germans decided not long ago to open a new station in the Silesia (Saxony) border country—close to Reichenbach is a probable site. It will start up in the spring. I hear that the new Deutschlandsender will be a little later than was anticipated, the original site having been declared unsuitable.

The Cable's Rival.

EIGHT hundred feet above the sea level, at Ballygomartin (yes, that's the place, Bally-go-martin), the engineers of the P.O. are erecting an ultra-short-wave station. This is to give another link between Belfast and the telephone system of Great Britain, and headway is already being made on the site at Portpatrick, where the complementary station will be located.

Ever since those reduced phone charges came into force the cables from Belfast have been overloaded, and it takes an awful lot of money and time to get a new cable made and laid. But if the new stations prove up to expectations when tested they may be providing a satisfactory short-wave bridge before Christmas!

The Christmas Broadcast.

I HEAR that the King's Christmas Day broadcast to the Empire is creating great interest everywhere, and that lots of Americans, too, are looking forward to it. They want to compare the Royal microphone manner with that of their President, who is certainly one of the world's best at the microphone.

Incidentally, I understand that the B.B.C. is on its toes this year to make the occasion a memorable one. Somebody deserves to be congratulated again for this all-together-once-a-year idea of the Christmas Party of Empire. It's good, and does British radio credit among the nations.

Sending Out Sleep.

"MR. HAROLD FOLLIS, of First Avenue, Muswell Hill, has been sent to sleep by wireless. So have lots of other people, but this is different," remarked a leading newspaper in describing a recent interesting experiment.

It was carried out in co-operation with the Anglo-American Radio and Television Society, and consisted in the hypnotising of Mr. Follis, while he was travelling in a car,

(Continued on next page.)

THE "PORTABLE SET" THAT COSTS YOU NOTHING

by means of a short-wave broadcast from an Essex amateur station.

The getting of personal magnetism over the air in this way certainly opens up interesting possibilities, and we shall doubtless hear more of the subject.

A Practical Test.

FED up with all this talkie-talkie about wireless interfering with agricultural success, the chief engineer of station W O R (Newark) has persuaded the local College of Agriculture to stage a scientific show-up.



He is going to start a powerful new transmitter, and close around it they will plant acres and acres of "taters," etc., to watch. When this radio-treated crop

comes up it will be compared with crops not so treated, and we shall eventually get some tabulated information on the old question of the effect of wireless on farms and market gardens.

Not a Sou!

EVER on the look-out for cheaper radio, I was delighted to read (in the "North Mail and Newcastle Chronicle") that "There's a wonderful portable wireless set, Reception clear and true. That not by science can be installed, And it doesn't cost a sou..."

Promptly investigating this promising statement, I read on, only to find that "HOPE is the name of the wireless set, And it's tuned in your secret soul."

Knew there was a snag in it somewhere!

On the Home Front.

SOME of the letters you fellows send me contain such nice, homely touches that I am tempted to reciprocate by telling you of my domestic doings. The latest is that I have just had new curtains fitted to my room, Arieline having decided to make it a Symphony in Blue.



After I had tactfully expressed admiration of the effect I switched the set on, thinking

somebody might be playing "Symphony in Blue" or other appropriate melody. What I heard was a lugubrious phone conversation preceding "Miss Otis Regrets." That was "blue" enough!

"The Service This Evening..."

THAT smoothly continuous broadcasting is not achieved easily is evident from a recollection of Stuart Hibberd's—he is the Chief Announcer, as you know.

One Sunday evening the preacher arrived for a studio service in good time, but there was no choir. At 7.55 Mr. Hibberd decided to use gramophone records instead of the

singers—but then he found the records were all locked up!

So he got the control room to give him a line to Birmingham, where they were broadcasting a suitable service, and all the service preliminaries were obtained from the distant church in that way. At the right moment the Birmingham pulpit was faded out and the London preacher began. While he was preaching Mr. Hibberd secured a suitable gramophone record for the closing music, so at the end of the address that was switched in and another broadcast was carried through without a hitch. Good work, don't you think?

Where's Jack?

HERE'S a queer coincidence reported by a woman in Staffordshire who had been hesitating a long time about buying a wireless set. Ultimately she

FORTHCOMING TALKS

The popular series, "Conversations in the Train," is being revived on January 5th. It will consist of typical talks in the form of conversations between passengers on the train, and many views will be expressed and all sorts of topics will be dealt with.

A series of 20-minute talks given by a number of young men, and perhaps women, in their late twenties, will commence next month. The idea is to give young people an opportunity of expounding their philosophy of life and their outlook on the world and the future.

The coming sports talks show an interesting change of angle. Since all games give employment as well as amusement, the talks next year will be divided between the actual player and those who look after his needs.

The series will include talks by a billiard marker, a racehorse trainer, a pit manager of a team of racing cars and the trainer of a First Division football team. In addition there will be eye-witness accounts of the chief matches in the third round of the Football Association Cup ties.

ordered one, and the first time she switched on she happened to be tuned to the News Bulletin.

The very first item she heard was the announcement that the boat of her brother, who is in the Navy, had arrived in a home port, though she had thought him to be in the West Indies.

(The long arm of coincidence might further have arranged that just at that moment there was a loud "Ahoy, sister!" a crush of a diddy-bag at the door and Jack himself in the doorway—but fact isn't often as obliging as fiction!)

Getting a Kick.

"HONESTLY, I never get a thrill out of my wireless now. Do you?" asks a Bournemouth reader. And, as luck would have it, his question arrived on the very day I had been listening to Mr. George Allison.

Not being a regular visitor to Highbury, I ought not to get all dithery about football; but on this occasion I switched on just as G. F. A. described a throw-in, and somebody "swung a low pass (Square 2)," and "Young Bastin's got it," and "By Jove, a marvellous tackle," and "They're running in," and "He's going to shoot," and "Terrific save," and "Up again," and "Yes"—"No" — "Oh! he's got a—"

"Gooooo.AAAAAALLLLLL!" affirmed umpteen thousand hoarse citizens.

And several million prickles up and down my back promptly testified to the fact that I do sometimes get a thrill from radio.

The Professional Touch.

"ALTHOUGH I have proved the soundness of his judgment, I do not like the look of 'P.W.'s music critic," says H. J., referring to the photograph of the gentleman in question which appeared in our November 10th issue.



"And if you will notice what my profession is, you will see why!" concludes H. J.

So I turned to the front of his letter again, and the reason for his resentment was plain—he is a hairdresser. Very cutting!

An Echo of the Emden.

THE death of Mr. Farrant, once superintendent of the Eastern Telegraph Co.'s station at Cocos Island, reminds me of the end of the German raider Emden. She thought she would destroy the cable and wireless stations at Cocos one fine morning, but her faked funnel failed to disguise her, and Mr. Farrant had warnings of her appearance sent out by wireless and cable.

Two boats and an armoured launch from the raider soon put the defenceless island out of action; but before they returned to the Emden she gave a convulsive start and headed for the horizon—she had seen H.M.A.S. Sydney coming! So the Englishmen and the stranded German crews stood together on Cocos and watched a sea-fight to the death—an hour of unforgettable drama, ending in the Emden's total destruction.

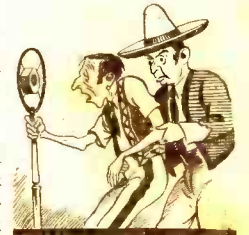
The Admiralty later gave Mr. Farrant a medal in recognition of his timely warning that the enemy was in sight.

Mexican Rough Stuff.

THERE is a queer story going round about a radio hunger strike at one of the Mexican City stations.

It is said that the strikers, desperately desirous of collecting three months' pay overdue, refused all food and broadcast continuously for seventy-two hours.

As one collapsed from exhaustion and under-nourishment, another took his place at the mike and told listeners how hungry he was! And so they went on!



What the Mexican audience thought of it, nobody knows. But it must have been a startling change from lunch-time music.

ARIEL.

How to Make A ONE VALVE SET

Economy in construction and low running costs are combined with long-range reception in this compact single-stage receiver.

Designed and Described by the "P.W." RESEARCH DEPARTMENT.

THAT there are many constructors who appreciate the value of a good one-valve set is very obvious from our correspondence. As a matter of fact, some hundreds are already waiting to build the instrument which forms the subject of this article.

They are readers who have written specifically asking for such a set. Some are

The one-valve receiver is devoid of complications. It is a normal detector arrangement using the best modern components. There is a high-efficiency screened coil for power and selectivity and differential reaction.

Only four controls figure on the front panel. These are the tuning control, reaction adjustment and wavechange and on-off switches.

On the baseboard there is a preset condenser for providing an initial adjustment to suit individual local conditions. Once set, this adjustment seldom, if ever, needs to be touched again.

All Standard Parts.

The components required are few in number and readily obtainable.

Despite the attractive-looking condenser dial the panel preparation is a simple matter, it only being necessary to drill holes of correct sizes in the positions marked on the diagram.

If you do not run to large drills the condenser and switch holes can be reamed to the right sizes with the aid of a reamer or with the tang of a file.

The positioning of the components on the baseboard is not a critical affair, although you will be well advised to adhere closely to the design as shown by the photos and wiring diagram.

A very wide, open scale is provided with the condenser, and the action of the slow-motion drive is particularly smooth. On the right is an end view of the receiver which clearly depicts its neat and compact nature. Wide variation of the selectivity provided by the set is achieved by the preset condenser near the coil unit.

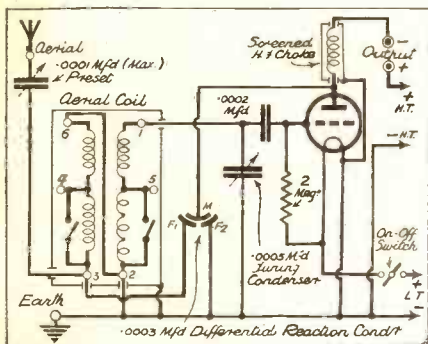
Use the wire mentioned in the list of components for the wiring, and keep the leads as short and tidy as possible. Be careful that those leads which pass through the apertures in the screen of the coil are not pulled too tightly against the edges of the holes, or the insulation might be damaged.

Twin flex is recommended for the battery leads, the red lead in each case being the positive and the black the negative. The lengths of these leads can

be varied to suit the positions chosen for the batteries. The best place for these is immediately behind the little set.

You will want a two-volt accumulator for the L.T., but this can be one of the inexpensive types having a capacity of ten to twenty ampere hours actual.

Sixty volts will serve for the H.T., and a battery of only the standard or ordinary



The circuit of this small set is somewhat different from conventional practice in that the aerial winding of the coil unit is also used for reaction purposes.

wanting to build it for the reason that they desire to listen with telephone receivers, either because they are hard of hearing or because they want to explore Europe's ether without disturbing others in the house.

Then there is another large proportion who want to be able to receive two programmes simultaneously in the same household, using a set with loudspeaker in one room and the one-valver with telephones in another room.

Again there are bedtime listeners whose apparent ambition it is to listen to the late dance music last thing at night, wearing headphones as they lie in bed.

In addition to all these who are going to build this little set for themselves, we expect there is a large number who will spend a few hours of their Christmas holiday on it and present it to a relation or friend as a gift.

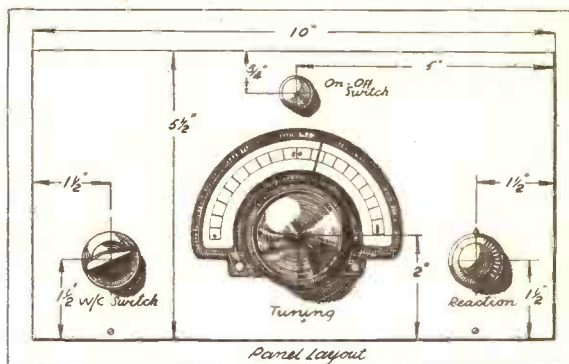
And it is hard to think of a better present. A one-valve battery set such as this will give trouble-free service for years with only a modest cost for upkeep.

Very Cheap to Run.

Both H.T. and L.T. current consumptions are extremely low, and the set is easy to install and operate. Given a fairly good outdoor aerial, or a good indoor one, it will provide a surprising number of programmes.

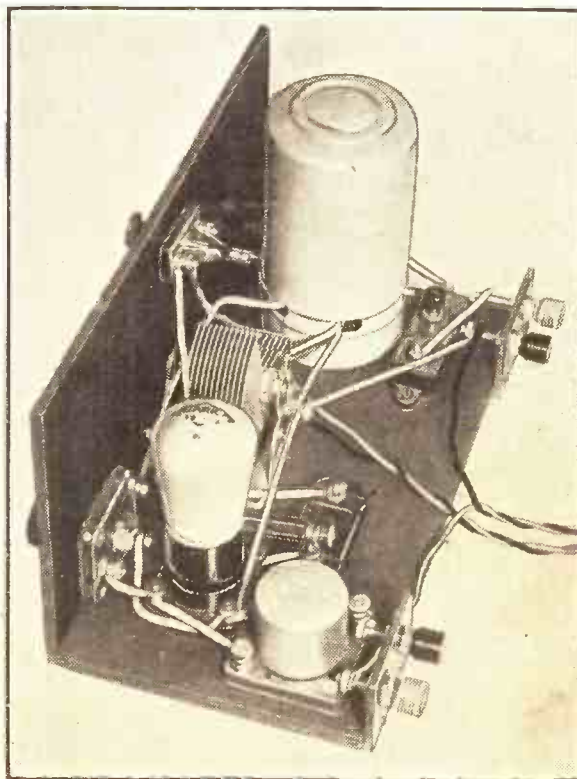
Next week we are describing the construction of a simple one-valve amplifier which is particularly suitable for use with this one-valve set. With the amplifier connected to it you can work a loudspeaker at good volume.

Or the amplifier can be employed with practically any other set.



Here the particularly pleasing layout of the panel is shown.

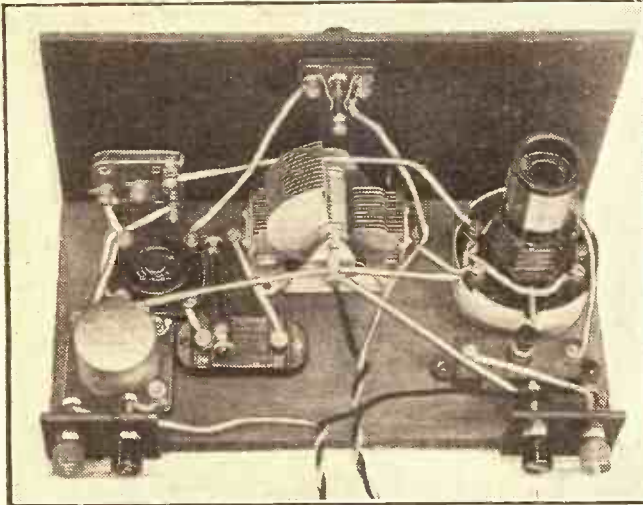
capacity will be needed. But there is this to remember: If you are going to build the one-valve amplifier and use this with the
(Continued on next page.)



HOW TO MAKE A ONE-VALVE SET

(Continued from previous page.)

set you will want 120 volts H.T., for there will be a small power valve to serve as well as the detector.



This photograph of the receiver will serve as a useful guide to the run of the wires. Make sure that the lead from the top right-hand terminal on the reaction condenser clears the moving vanes of the tuning condenser.

A detector-type valve, as indicated in the accompanying table, will be required.

The telephone receivers should be of the high-resistance type. Most of them are, but now and then one comes across a pair having the low resistance of 120 or so ohms. Such would not be suitable for this set unless an output transformer to provide matching were used.

Getting the Stations.

With the aerial and earth, telephone receivers and batteries all connected up, the set can be tested.

First of all turn the reaction to minimum, set the wavechange switch for medium waves and tune in the local station—that is, if

Recommended Components

- 1 Colvern K.T.F. screened coil.
- 1 Formo '0005-mfd. tuning condenser, type S.U.S.
- 1 Benjamin "Vibrolder" 4-pin valve holder.
- 1 Dubilier '0002-mfd. fixed condenser, type 610.
- 1 Graham Farish 2-meg. "Ohmite" grid leak.
- 1 Graham Farish screened H.F. choke, type H.M.S.
- 1 Polar '0003-mfd. differential reaction condenser.
- 1 Formo '0001-mfd. preset condenser.
- 1 Bulgin 2-pt. push-pull on/off switch, type S.22.
- 4 Clix indicating terminals.
- 1 Peto-Scott panel, 10 in. x 5½ in.
- 2 Peto-Scott terminal strips, 2 in. x 1½ in.
- 1 Baseboard, 10 in. x 5 in.
- 1 Coil B.R.G. "Quikon" connecting wire.
- Screws, flex, etc.

The simple nature of the set will at once be apparent when it is realised that there are only nine different components to place in position on the panel and baseboard. Actually, the receiver can easily be completed in an evening. It should be noted that the two battery leads in the diagram on the right are lengths of rubber-covered flex.

you are more or less close to one of the medium-wave Regionals.

Now screw the little knob of the preset condenser as far as it will go in a clockwise direction. Screw it right down, but don't use force when you meet with resistance.

This is the adjustment for greatest power, but some will need to ease off the adjustment in order to increase the selectivity.

Your best adjustment is to have this preset condenser adjusted to as close as possible to its maximum capacity, i.e. screwed right down.

As we have indicated, in cases there will be no need to adjust away from this condition in order to increase the selectivity. But those in the "swamp areas" of powerful stations will need to do so to a greater or lesser extent.

By the way, when checking over the wiring and connections to the set, make sure that you have the metal can of the coil earthed. The earth connection is obtained by taking a four-or-five-inch length of bare wire, connect-

Batteries and Valves

BATTERIES: H.T. 60 volts Ever Ready; L.T. 2 volts Exide.

VALVES: Cossor 210H.F., Hivac H.210, Mareoni H.L.2, Mazda H.L.2, Mul-lard P.M.1H.L., Osram H.L.2, "362" H.L.2, Triotron A.214, Tungstram H.R.210.

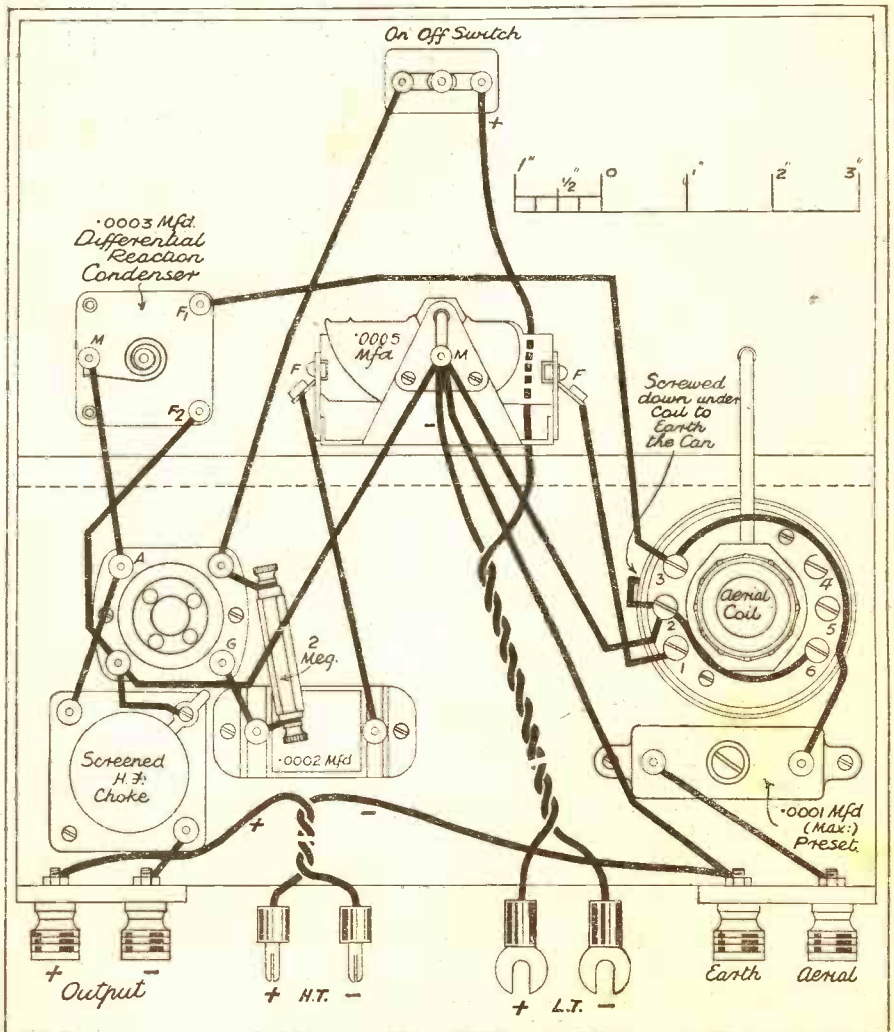
ing it to No. 2 terminal on the coil and then bending it so that it lies on the baseboard with the coil pressing down on it.

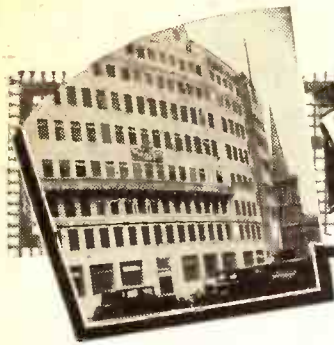
This, in effect, joins the can of the coil to the earth terminal of the set, because No. 2 terminal on the coil goes to that point via the moving-vanes terminal of the tuning condenser.

Dozens of Programmes.

The performances possible with this set depend largely upon the use of the reaction control. If you handle the reaction intelligently and with care you will surprise yourself at the number of stations you will be able to hear.

The most sensitive condition of the set results when it is just off oscillating. You mustn't let the set oscillate unduly, or you will cause interference to neighbouring listeners. The skilled operator is able to tune the set, turning the tuning dial slowly with one hand, keeping the set "breathing" just off oscillation by manipulating the reaction control delicately.





P.W.'s LISTENERS' SERVICE

The most comprehensive weekly Guide to modern receivers



THE LATEST CHRISTMAS-GIFT IDEA

CHRISTMAS time is present time. It can be, and alas! often is for many of us, the time of the year when justifiable "white lying" really comes into its own. If a doting aunt sends you a necktie which, on account of its atrocious colour scheme, you tuck away into some secluded spot at the very earliest opportunity, would you have the heart, in acknowledging the "charming gift," to say exactly what you think of it? We trow not.

Gramophone records for your friends with radiograms make ideal gifts on account of the fact that they are reasonably inexpensive, and yet they are sure to please. At least, they are sure to please providing you do not commit the cardinal sin of sending a "hot" dance record to a friend whose musical tastes never descend below grand opera.

Quite a Brain-wave.

If that happens, then you can be sure that when you get the letter thanking you, it is hardly likely to be a strictly truthful account of the "joy" that your gift has brought to the recipient.

Enterprising H.M.V. have been giving quite a lot of thought to this matter of obviating "white lying" too, or so it would seem, and with that originality which is characteristic of the organisation they have at last evolved a novel scheme to do away with the difficulty in so far as gramophone-record gifts are concerned.

If you want to give a friend a present of one or more gramophone records this Christmas, then all you have to do is to go into the nearest H.M.V. record stockist and buy a certificate which enables the recipient to exchange it for records to the value of the certificate.

A Christmas card is provided with the certificate which explains the scheme to the person to whom it is sent. All that the recipient then has to do is to take the "record cheque" to his local H.M.V. dealer, where it will be exchanged for records up to its value.

We are of the opinion that H.M.V. are deserving of every credit for this innovation, and we are confident that the scheme will be enthusiastically received by our readers. It does simplify matters a lot, doesn't it?

YULETIDE ACTIVITY



Putting the finishing touches to Ferranti radiograms for delivery in time for Christmas.

A FINE SUPERHET BY COSSOR

ORDINARILY, there is nothing particularly startling in an all-electric superhet at 12 guineas. There may be in a few months' time if the present strong rumours of price increases materialise, but, as things are at present, there must be upwards of a dozen different models at prices around this figure. But the news that Cossor are marketing such a set in this particular price class is startling.



Nosmo King, the "mystery" man of broadcast fame, agrees that the only mystery about the Cossor "535" is how the makers can turn out such a remarkable design for as little as 12 guineas.

It is startling simply because, with the reputation which Messrs. Cossor hold for high quality and only the finest workmanship, it is a safe conjecture that this receiver sets a new low-price, high-performance record.

That is the initial impression of an all-electric superhet by Cossor at only 12 guineas. But it is an impression which is adequately confirmed by a consideration of the specification of the set in question.

A Real Bargain.

The Model "535"—as this set is called—is a five-valve (including rectifier) superhet for A.C. mains operation with all the very latest refinements. The circuit is based on the popular and "seasoned" arrangement of pentagrid frequency changer, H.F. screened-pentode I.F. amplifier, double-diode second detector and high-slope power-pentode output.

A compensated circuit is incorporated to eliminate fading from all the worth-while stations, and the provision of a neon visual-tuning indicator ensures distortionless reception.

Manual controls are provided for the control of volume and the regulation of tone, and the speaker incorporated is of the mains-energised moving-coil type.

Without a doubt this set is one of the bargains of the season at only 12 guineas. For those who prefer it the set can also be purchased over an extended period. The terms are 40s. deposit and twelve monthly payments of 20s.

"BROTHER, CAN YOU SPARE A DIME?"

AT this festive season of the year there are many calls upon the pocket for charitable appeals, but surely none is more deserving of support than that which has just been launched by the Radio Manufacturers' Association, in conjunction with a prominent daily newspaper, in an attempt to equip every hospital in this country with radio.

Mr. Philip Inman, the Chairman of the Appeals Committee and Managing Governor of Charing Cross Hospital, in a message to "P.W." readers, writes:

"There is no one who makes an intelligent and enjoyable use of his own wireless set who does not wish to share his pleasure with his friends. Unfortunately he cannot take his set into hospital wards, where thousands of suffering men, women and children are spending lonely days without the solace which wireless can bring.

Lend a Hand If You Can.

"We can all, however, send the great gift of wireless into the hospitals by subscribing to the fund which the 'News Chronicle,' in conjunction with an influential council of radio manufacturers, has opened in a gallant attempt to equip every hospital bed with a pair of headphones, and to replace all the obsolete apparatus which was installed in some of the hospitals many years ago.

"It costs £1 to equip a bed, and each of the headphones will on an average minister to 26 patients every year. The doctors want wireless because it helps to heal; the nurses want it and the patients want it. Let all those who appreciate wireless, as readers of 'P.W.' do, see that they get it."

For this attempt to succeed the sum of £150,000 is required, of which £5,000 has been collected in the first few days of the appeal.

The Radio Manufacturers' Association is represented on the Appeals Committee by Messrs. W. W. Barnham (Ediswan), E. Milward Ellis (Eyc), E. J. Rosen (Ultra) and G. Wilding Cole (Kolster-Brandes).

Contributions to this very deserving cause should be sent to Philip Inman, Room 254, Shell Mex House, Strand, London, W.C.2.

TO ENSURE FIDELITY



This new apparatus in the H.M.V. factories is used for testing the low-frequency gain of radio receivers.

A NEW SET FOR CHRISTMAS?

THE LEVEL OF COMMERCIAL RECEIVER PRICES MAY NOW BE SAID TO HAVE REACHED ROCK BOTTOM, AND THERE ARE STRONG GROUNDS FOR THINKING THAT NEXT YEAR WILL SEE INCREASES ALL ROUND. WHY NOT, THEN, TAKE ADVANTAGE OF THE PRESENT LOW-COST FACILITIES AND BUY YOUR NEW SET IN TIME FOR CHRISTMAS?

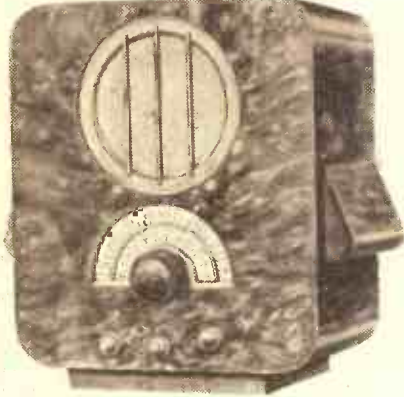
WHEN you have finished buying presents for everybody else you may or may not have any spare cash left. Probably not! But that need not stop you from purchasing a present for yourself.

With all the present buying and other Christmas outlays more or less concluded, you will have a period of moderate freedom from abnormal financial demands in front of you.

Surely this is, then, just the very time to take advantage of the wonderful hire-purchase offers that are being made. You can obtain the finest radio receivers for a matter of but a few shillings a week.

And there is this most important point to remember. Once you have concluded the initial arrangement to obtain a set in accordance with this plan, you immediately have the use of the set and rising prices will not affect you.

Yes, it is now almost certain that prices will go up. There are numerous secret negotiations in progress in the radio industry. You see, prices to-day are cut right down to the bone, and only extremely thin profits are obtained by many manufacturers.



A most attractive proposition in the Ekco range—the new Model ADT95 transportable at 15 guineas.

Undoubtedly, a modern radio set constitutes the best value for money existing in the shops to-day. If the price of practically any make of set were increased a pound or two, it would still be cheap.

With their moving-coil loudspeakers and other up-to-the-minute developments and refinements the instruments on sale this season are almost in advance of their time. At any rate, they are bang up to date and so advanced technically that here again there is no need for delayed action.

It is almost certain that there will be only detail improvements in sets during the next few years. The average set of to-day will not be a back number the moment you have finished paying the instalments.

Now is the Time to Buy.

So, whether or not you avail yourself of the pleasant and easy "bit-by-bit" system of paying for a radio set, now is the time to buy. Particularly in order that you can enjoy the benefits of your present during the Christmas holiday. If there are lots of other folk in the house you will gain the added advantage of being able to share your delight.

But although, for the most part, the 1934-35 sets are first-class pieces of apparatus, worth every penny of their prices, it must be admitted that some are distinctly better than others to say the least of it.

From any list of twenty different makes there are three or four which stand out head and shoulders above the others. The difficulty that confronts the listener is to know which are these outstanding instruments.

Our Triple Test was devised for the sole and only reason of helping listeners to make their choice. It has been running for ten weeks now, and we have received ample proof that the feature is popular.

The Triple Test is quite a simple and straightforward scheme. First of all we select a number of representative sets, and from these is chosen the set of the week, as it were, the set which forms the subject of the current Triple Test. This Triple Test is the most informative and complete guide for listeners desirous of buying new sets that has yet been devised.



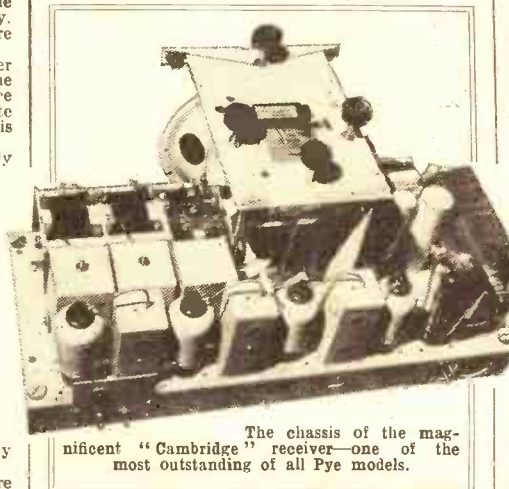
As the name suggests, it comprises three things. There is first of all a straightforward technical test conducted in our set-testing laboratory. This is elaborately equipped with screened cabinets, artificial and calibrated transmitters to duplicate any broadcasting condition, measuring instruments and so on.

PREVIOUS TESTS IN THIS SERIES.

The H.M.V. Fluid-Light Autoradiogram (Model 570).....	September 29th issue
The Ekco Model A.C.85.....	October 6th issue
The Clarke's Atlas Model 7-5-8.....	October 13th issue
The G.E.C. Superhet A.V.C.5.....	October 20th issue
The Telsen Model 3435/MV.....	November 3rd issue
The Kolster-Brandes Model 381.....	November 10th issue
The Ferranti "Arcadia".....	November 17th issue
The Ampion Radiolux.....	November 24th issue
The H.M.V. Superhet Portable Fluid-Light Six.....	December 1st issue
The Philco Model A.D.C. 1263.....	December 15th issue

Then the set is handed over to our music critic, who carefully listens to it and writes a report as to its tonal qualities.

Finally, an ordinary listener is chosen at random and asked to handle the set and give his unbiased opinion



The chassis of the magnificent "Cambridge" receiver—one of the most outstanding of all Pye models.

of it while it is operating under normal conditions. Then the three reports are published for the interest and guidance of all listeners.

There is a considerable amount of work to be done, much more than may be apparent, but this we do not mind at all so long as we are able to develop and maintain the pre-eminent service for listeners.

The wide range of sets we have been able to cover with Triple Tests by discriminate selection can be seen by glancing at the complete list which is printed above.

Available back numbers are obtainable for 4d. post free from the Back Number Dept., Amalgamated Press, Ltd., Bear Alley, Farringdon Street, London, E.C.4.

"I FOUND IT EXCEEDINGLY GOOD"

—Our music critic on the "Hyvoltstar" table-model radiogramophone.

AN amusing receiver is the "Hyvoltstar" for it takes out of the air a most wide variety of entertainment, besides providing gramophone music whenever desired. The set has a motor, turntable and pick-up incorporated in the design. Perhaps not all the programmes it will receive on radio are ideal to listen to from the musical or quality point of view, because the short waves are not programmes for the musician, though I must admit to a certain fascination in listening to American orchestras and soloists, and they certainly came over well.

But, naturally—and interested as I was in such things—I was more concerned during my test of the receiver in the receptive powers it possessed for local, high-quality programmes. And here I found it exceedingly good. The high notes—controllable by a knob—were adequate for most purposes, the violin, and even the difficult piano, being brought out in a lifelike manner.

At the other end of the scale the bass instruments came through very well; in fact, the bass end of the register is unusually well catered for. Plenty of power is available for those who want it, and the organ, double bass and tuba are enjoyably rendered. Naturally, it is too much to expect perfection, and one gets the usual lack of vitality when one goes below about "low E"—nearly two octaves below "middle" C; but that is the case in most receivers, except those of the most expensive and elaborate kind. Many do not reproduce properly as far down as that—somewhere about 80 cycles, I believe—and the fact that the "Hyvoltstar" set is enjoyable so low is indeed a pleasant surprise.

I say that advisedly, for one is so used to finding poor reproduction below just over an octave below "middle" C that when one finds a set of smallish dimensions that goes down farther, one is apt to experience surprise.



... The Regentone feature of "Flood-lit Sound-Reflector" radio—which consists of a cabinet specially designed to eliminate box resonance and other undesirable effects—is achieving tremendous popularity among the listening public.

... A praiseworthy attempt is to be made by the Radio Manufacturers' Association to equip every hospital in this country with radio, and that the amount needed for this commendable effort, which is to be raised by public subscription, is £150,000.

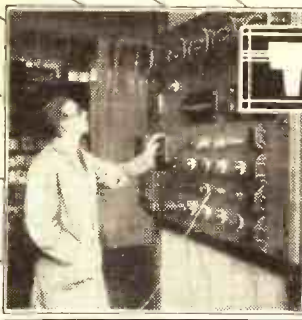
... A rumour is current around the radio trade that Messrs. Ferranti are negotiating for the purchase of still another factory at Newton Heath, Manchester, in order to cope with the ever-increasing demand for their products.

... The recent very successful "First Annual Santa Claus Convention," which was convened by Kolster-Brandes to receive, among other things, a report on "The Effect of Belisha Beacons on Reindeer Traffic," was really for the purpose of presenting a deputation from Dr. Barnardo's Homes with wireless sets.

... A three-valve battery receiver, with variable-mu H.F. pentode, pentode detector and quiescent push-pull output valves, is shortly to be placed on the market by Milnes Radio Co., Ltd., and that the speaker to be incorporated is to be of the permanent-magnet moving-coil type.

... Two new radiograms, one for A.C. and one for universal mains operation, have just been released by Aerodyne Radio Ltd.

TECHNICAL TESTS



NUMBER ELEVEN :

THE "HYVOLTSTAR" ALL-WAVE UNIVERSAL TABLE-MODEL RADIOGRAM

IT is an old saying that familiarity breeds contempt. And never was this more true than of certain aspects of radio reception.

A year or so ago a set that would receive all the worth-while European stations on the loud-speaker was looked upon rather as a marvel: almost, one might say, as the exception. To-day it is the set that will *not* receive all the available European broadcasting stations that is looked upon as the exception!

That is one of the results of the enormous strides that have been made in technical progress of recent years, but, so far as the listening public is concerned, we believe it to be true to say that the reception of European programmes is no longer the be-all and end-all of broadcast entertainment. At least, distance does not lend quite the enchantment that it used to do, simply because European reception has become so very commonplace.

Present-Day Requirements.

Obviously, we all like to be able to unfetter ourselves from the local stations now and again, and we should certainly reject any set that did not permit of that. But how many listeners these days, we wonder, spend their radio evenings in tuning from one station to another, and then to another, and so on throughout the tuning range? How many ordinary listeners attach any real importance to the actual number of distant stations that a particular design will receive? Very few, we imagine.

And yet that used to be the supreme performance test of any receiver!

To-day we are much more concerned with such aspects as quality of reproduction, selectivity, and whether or not the design in which we are interested has a visual-tuning indicator or perhaps a static-suppressor scheme. Numbers of stations are usually afterthoughts, and properly so, for there can be no real enjoyment of broadcast entertainment if the station from which it is coming is heterodyned. We all know only too well that a fair number of them are!

A Tremendous Thrill.

But even though familiarity may have made us perhaps a little *blasé* over European reception, there is still a tremendous thrill to be gained from the reception of extra-European stations. We refer, of course, to the enormous possibilities of short-wave reception which, so far as present-day commercial designs are concerned, is practically an untapped field.

There are one or two broadcast receivers with which the reception of short-wave stations is possible, but they are the exception rather than the rule.

Such a set is the "Hyvoltstar" universal superhet, which is the subject of our Triple Test this week. And a most fascinating design it is, too.

In the first case, we believe it is the only table-model radiogramophone at present available. We are open to correction upon this point, but, so far as our own market survey is

concerned, this "Hyvoltstar" table-model radiogram stands alone.

The idea of a table-model radiogram seems such an obvious one that one is apt to wonder why it has never been thought of before. Perhaps it is that manufacturers have not considered the idea of sufficient importance to go into production, but in this respect we disagree.

We believe that there are large numbers of listeners who are debarred from possessing a radiogram on account of domestic space considerations, and this design of the Universal High Voltage Radio Co. is likely to overcome that difficulty. There is often a shelf available where a full-size radiogram would be out of the

something *really* thrilling. Perhaps a half hour with New York, perhaps a taste of the Antipodes, perhaps—well, perhaps *anything!* For with short waves you never know what you are going to hear next. It is a band of wavelengths which is constantly full of surprises, and it is limited only by the atmospheric conditions at the time of reception. There is a great thrill about it all.

Much as we are inclined to crack up the advantages of being able to listen to the short waves, it is only fair to point out that it is very different from ordinary broadcast reception. You may get fading, you may even get *nothing*, but it is that element of chance which provides the fascination, and in any case New York is usually a certainty these days under almost any conditions.

So there is something very definitely to be gained from a set that will receive short waves in addition to the medium and long waves, and that is why we are inclined to be unstinting in our praise of the "Hyvoltstar" design.

Free From Mains Hum.

In general principles the circuit of this set follows convention so far as the superhet side of it is concerned. There is the usual heptode frequency changer, followed by a variable- μ I.F. amplifier, but the second detector and the A.V.C. rectifier are both rectifiers of the metal oxide type.

On the L.F. side the second detector is followed by a straightforward triode L.F. amplifier, which is in turn coupled by a transformer to the output pentode valve. Tone control is provided in the output circuit of this valve.

The set is designed for universal mains operation—that is to say, it can be used on either A.C. or D.C. mains without adjustment other than that of voltage—and in operation the effect of the mains is negligible. Even on short waves the absence of hum was most noticeable, and it is usually apt to be very much more pronounced below about 50 metres.

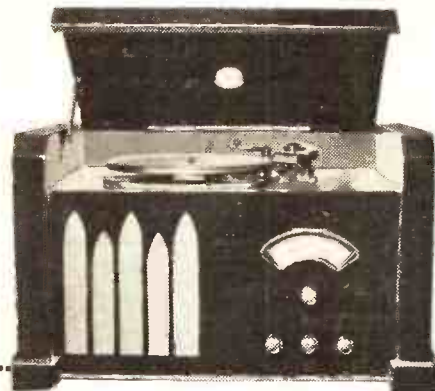
Skilful Design.

Incidentally, while on the subject of mains and voltages, it is, we feel, desirable to draw attention to the fact that the gramophone motor incorporated *may* require adjustment before it can be used satisfactorily. It is therefore desirable, before using the set as a radiogram, to lift off the turntable and to make whatever simple adjustments that may be necessary to the voltage-range panel underneath.

In our practical tests of the "Hyvoltstar" there was ample evidence to show that this receiver is the product of a skilful designer. On all three wavebands the sensitivity of the set was certainly up to standard for the number of stages incorporated, and selectivity was, if anything, just slightly above the average.

We experienced no difficulty at all in tuning in rather more than 45 stations—45 *good* stations—on the medium waveband alone, and as a result of tests made with our standard wave-

(Continued on next page.)



TECHNICAL SPECIFICATION

GENERAL DESCRIPTION.—Five-valve table-model radiogramophone for universal mains operation, with facilities for short-wave reception. Range covered is from 19 to 2,000 metres.

CIRCUIT ARRANGEMENT.—Heptode frequency changer, variable- μ pentode I.F. amplifier, second detector and A.V.C. rectifier (both "Westectors"), triode L.F. amplifier and pentode output valve. L.F. amplifier is transformer coupled to the output valve, and the tone control arrangements are included in the anode circuit of this last valve. On the medium and long waves the heptode is preceded by an inductively coupled band-pass filter.

CONTROLS.—Four in number, consisting of one main tuning, one tone, one combined volume control and on-off switch and one

wavechange switch. The illuminated dial is calibrated in wavelengths for the three bands covered (19-52 metres on short waves). The gramophone motor is provided with an automatic stop.

SPECIAL FEATURES.—(1) Inclusion of facilities for short-wave reception; (2) universal mains operation; (3) inclusion of gramophone motor and pick-up; (4) provision for connection of external speaker; (5) single-dial control; and (6) selectivity.

MAKERS.—The Universal High Voltage Radio Ltd., 28, Southampton Street, Strand, London, W.C.2.

CASH PRICE AND HIRE - PURCHASE TERMS.—24 guineas, or £2 6s. 3d. deposit and eleven monthly payments of £2 6s. 3d.

question, and think of the money that is saved on cabinet work alone.

But, as we have previously indicated, the cabinet shape is not the only unusual aspect of this all-electric design. We enthusiastically commend the inclusion of short-wave-reception facilities simply because to be able to tune in not just Europe, but practically the whole wide world, is a feature that will instantly appeal to all those listeners for whom there is a thrill in distant reception.

Ordinarily, if the locals are radiating programmes which do not particularly appeal to you, and if the best of the continentals are "scrapping" with their neighbours for position in the ether, there is nothing for it but to resort to gramophone records.

With this set one simple movement of the wavechange switch enables you to leave all the home troubles behind and to reach out for

AN AUTHOR TRIES THE "HYVOLTSTAR"

For number eleven of our series of man-in-the-street tests we are fortunate this week in having been able to obtain at a moment's notice the services of an author. The critical views of our chance-chosen critic make interesting reading.

"YOU want me to come along to-night—now?" asked Mr. Ralph N. Thompson, of 33, Keswick Avenue, London, S.W.19. I explained to him that, owing to unforeseen circumstances, we had no other critic to test the set; and he would certainly make a good one and give us a completely unbiased opinion if he came straight away without even time to think about it beforehand.

Mr. Thompson is an author and publisher's reader by profession, and I judged that the very novelty of the suggestion that he should test a wireless set and say what he thought of it would appeal to him. It did.

"A Big Advantage."

"Just wait while I phone my home," he said "and I'll come with you right away." And so it was that the professional critic of manuscripts unexpectedly found himself being introduced to a radio set of whose very existence he had been unaware a few hours before.

He looked at it very interestedly. "Oh, it's a table-model gramophone-and-wireless!" he observed. "First one of that kind I've ever seen. I thought they were always in the big cabinets when there was a gramophone combined with the wireless."

Before switching it on he asked a number of questions about the set. And he was specially interested when he learned that it could be used on either D.C. or A.C. mains without the slightest change.

"I live in Wimbledon," he told me, "and if I moved to a district where the mains are D.C. I should have to spend quite a bit on altering my present set to suit them. There's a big advantage in having a set which works just as well with one kind of mains as with the other."

Another point that interested him greatly was the threefold tuning scale, with wavelengths marked in three colours. The medium and long wavelengths he was accustomed to, but it struck him as a great asset to have short waves as well for those who like to receive from other continents.

"Although Europe's quite enough for me, I can understand how fascinating it must be to many people to pick up America or Australia," he said.

It soon became apparent why he himself was so content with Europe. For upon tuning in a German station he listened critically for several minutes to a talk, and then said: "I can understand every word of that just as well as if I were over in Germany again."

Every Announcement Perfectly Clear.

The German announcer was reading a short story at the time, and as an author and translator Mr. Thompson was able to criticise the reception in a way that very few listeners to foreign stations are qualified to do. It was an unexpectedly severe test for any set to stand up to, but the "Hyvoltstar" came through it with flying colours.

There was more, however, to follow. To my surprise, the dial was next turned to a Spanish station, and my companion listened with equal ease and skill to that language! He proved, in fact, to be an accomplished linguist, perfectly at home with half the tongues of Europe! And I noticed that he did not have to concentrate or strain to listen to these foreign announcers any more than to the B.B.C.'s.

After subjecting the set to a very gruelling run round the main European stations, Mr. Thompson made three important observations about the set.

Its tone, he considered, was very good indeed,

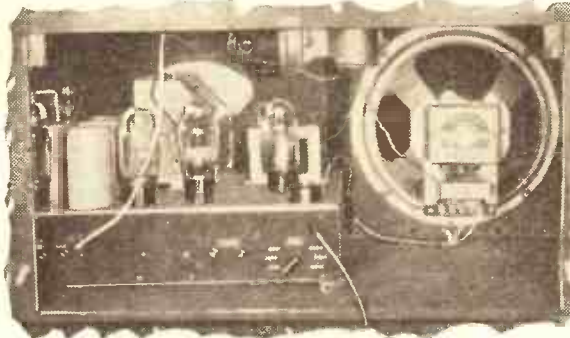
the understandability of speech and easy control of top and bottom notes being particularly noteworthy.

And another point he noticed was the excellence of the automatic volume control, there being not a trace of fading.

By good luck it happened that the piece they were playing in the London concert—Ravel's "Bolero"—was first played at the Queen's Hall when my companion happened to be a member of the audience there. He had noticed it then particularly, since it had received a tremendous ovation and had greatly impressed him.

So when he assured me that the rendering by wireless conveyed the genuine Queen's Hall atmosphere I felt that this was indeed a compliment which would have unusual weight.

P. R. B.



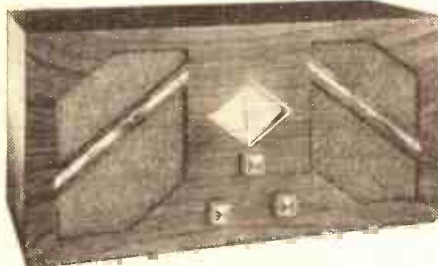
Here is an interior view of the "Hyvoltstar" table-model radiogram, the set with which our chance-chosen critic—Mr. Thompson, of Wimbledon—was so very impressed.

DO YOU "OPERATE" YOUR SET CORRECTLY?

STRANGE though it may seem, there certainly is an art in handling the controls of a receiver. But, unlike most arts, it is quite possible to attain it with practice if one sets about it in the right way.

It is a real treat to watch some people tuning in stations and adjusting their volume and tone. Others seem to grab hold of the knobs with their whole fist, to be very clumsy and to make all their adjustments with jerks.

Needless to say, there is no question as to which gets the most out of his receiver. There is a correct setting for each control for



Compare the simple controls of this modern Burgoyne receiver with those of the "antique" shown on the right above! But even with modern sets there is a right and a wrong way of setting about the operation of tuning.

all wavelengths, volume and tone, and unless the various knobs are turned slowly and steadily it becomes very difficult to be sure of stopping exactly at the right spot.

As a matter of fact, it is in a steady and evenly progressive movement that the art of tuning and set adjustment lies. With

TECHNICAL TESTS:

THE "HYVOLTSTAR" ALL-WAVE UNIVERSAL TABLE-MODEL RADIOGRAM

(Continued from previous page.)

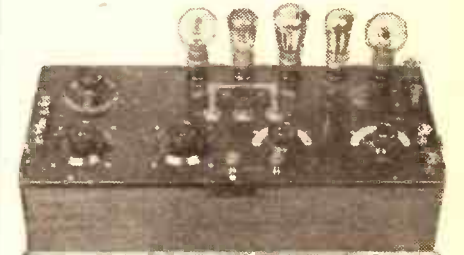
meter we are glad to be able to say that the wavelength calibration of the dial is surprisingly accurate.

We were particularly impressed with the selectivity of the set on long waves, where so many of the present-day sets are apt to fall short of the mark. Station separation here was exceptionally good, and we congratulate the designers.

On short waves it is easily possible in the early evening to tune in some of the more powerful American stations, and the task would be even simpler with a bigger reduction ratio in the tuning condenser control. But any alteration to the present design in this respect would tend to make the tuning on medium and long waves a very tedious business.

The quality of reproduction is undoubtedly good, both on radio and records; but with the particular model submitted to us there was just the slightest trace of overloading distortion when the set was being worked at its maximum volume. But that is hardly likely to affect the ordinary listener, because the maximum volume given by the set is greatly in excess of what would generally be required for comfortable domestic listening.

this type of movement you can hear when the desired adjustment is reached and note when you are just past it. Then it is a simple matter to come back the tiny fraction that will ensure the proper setting.



Both hands and both feet were really required to operate this old-stager! And yet, in its day, it earned for R.I. the same high reputation as do their present-day products.

Even with visual-tuning devices it is necessary to go just beyond the correct tuning position to make sure it has been reached.

Controls should be held between the tips of the thumb and the first two fingers. The other two fingers should be closed up against the second finger to steady the movements.

Keep Receiver Steady.

When operating a stiff switch, always rest one hand on the receiver if it is a table model. This enables a much steadier movement to be applied to the switch.

Finally, quite apart from the less effective adjustments obtained when controls are swung rapidly backwards and forwards, there is the fact that such movements cause the moving parts to come up against the stops with force. This may result in damage to the component if continually practised, and in some cases, such as the tuning control, cause calibration to be upset.

A. S. C.

THE B.B.C. by LOOKER-ON A SURVEY

We are publishing from time to time articles forming a series on **British Broadcasting**. This is the second article, and deals with the relationship between the programme and administrative staffs of the B.B.C.

AS most people know, the B.B.C.—under the Director-General and the Board of Governors—is divided between the sway of two Controllers. The Divisions are known respectively as P.—Programmes and A.—Administration, the latter covering everything except programme output, including the Engineering Branch.

A good deal of humour and criticism has been expended over the fact that the positions of the Controllers are held by gentlemen who previously had reached high rank in their respective Services. P. is directed by a colonel. A.—the senior Division—appropriately by the senior Service in an admiral. Such criticism entirely misses relevant points at issue.

Those Exaggerated Reports.

It is not every senior officer of the Services who uses barrack-square methods in business, and there is in reality not the slightest truth in rumours assiduously spread that heel-clicking and “sirring” are enforced upon the staff, any more than there is in the equally silly story that an old school tie must be worn ostentatiously by those who would join the Corporation.

In a large organisation a modicum of discipline is a *sine qua non*. And public schools have been known to produce intelligent offspring in spite of themselves. Such ink-slinging is beneath contempt, though it may afford some small satisfaction to a few.

The Organisation problem boils down to this: It is imposing. It makes beautiful charts. It is a matter of pride to the Corporation hierarchy, who quote its existence and form approvingly in public speeches.

But does it make the best machinery for purveying programmes to the public who pay for their licences? That is the only question.

Theory and Practice.

The answer is that, while it works, it could work a good deal better. Its theory is far better than its practice. When the two Divisions were formed it was announced that the main object of the split was to save P. trouble at the expense of A.

Programmes—the artistic creators were not to be hampered by the trivialities of routine, the boresomeness of bookings, the responsibilities of finance and organisation. They were to create and not worry, asking for what they needed from A. And A. would do the rest—in reason.

And the catch lies in the last two words. For the interpreters of “in reason” would be A. And to A. all the members of P. must be a trifle suspect, having been stupid enough to let themselves be branded as

“artists” instead of demanding to be acknowledged as hard workers. Which they should be.

For the day-to-day business of creating the raw material of broadcast programmes is not an art, but a craft, and a dull craft at that. It calls for more for industry, zeal and application to detail than for the finer artistic inspirations. Without the latter it can do at a pinch. Without the former it cannot. A., therefore, is inclined to observe with a sceptical eye the demands of P. for money, for studios, for new staff.

Is it necessary? they ask. Can you justify? They do not say automatically. How can we help quickest? Which is their proper function in an ideal state of affairs. Proper, because if P. are not trusted only to demand the reasonable, then the staff of P. is not the right staff. And it is a basic

They aren't necessary. Which would be unfair, but more than likely in a wicked world. So A. is inclined to question a little severely if only to maintain its own *raison d'être*.

But then, is P. faultless? Are the good, kind, clever creators oppressed and thwarted by the harsh, wicked administrators? Not altogether. The organisation of P. itself is a curiosity.

Its Programme Board—the ultimate court of appeal in programme matters not of the highest policy import—consists of the Controller, the Directors of Talks, Religion, Entertainment, Empire and Foreign Services, and Presentation. Which looks reasonably comprehensive.

The Direct Contact.

Unfortunately, of these, only the Directors of Talks and Religion are in direct contact with programmes as programmes. The Presentation Director is not only the compiler of programme material submitted by the departments, with peculiar responsibility for the announcers.

The Director of Entertainment represents not merely himself, but Variety, Music, Drama, Outside Broadcasts and the Children's Hour!

That any single department can keep sufficiently in touch with what comprises roughly 70 per cent of broadcast programme items is too obviously absurd to need enlargement. Yet in theory it does so. And all these departments are in effect in a minority of one on a board in which the influences of Talks and Religion may at any moment be swung against them, with the vast advantage to be gained by personal representation on subjects of programme policy which may vitally concern their work.

Lack of Acceleration.

Why, then, is the magic circle kept so small? Because—and this is vital to the whole present issue of broadcasting in Great Britain—the B.B.C. prefers that things should run with as little fuss as possible, even though this may slow up progress.

It is a merciful, a gentlemanly, a pleasant point of view. It has the great justification that it works. But it retards development; and in some cases it has proved fatal to those men who had it in them to become great broadcasting personalities: to the people who wanted to “upset the apple-cart” at intervals for the greater good of the vehicle—perhaps by turning it into a motor-van.

The brakes on the Organisation as it stands are excellent. What it lacks is speedy acceleration.

IN CHARGE OF PROGRAMMES



Colonel Dawnay is the B.B.C.'s Programme Controller, and has everyone who is concerned with production under his supervision.

fault in the organisation that though it is properly difficult to get into [the B.B.C., when the people who do get into the Corporation settle down, there is a great danger of their getting into a rut. And that is not good.

Besides, there is another thing. If A. works as it was originally designed it should, everything will run so smoothly that people might say, Why all those people in A.? They are rubber stamps. Merely robots.

THE Report of the Television Committee is now drafted and agreed, and it remains only to decide the date of publication. The fact that the B.B.C. has recently added a producer to the Television Department in the person of Mr. Whitworth, of Manchester, means a good deal. It can be taken that this would not have happened or been publicly announced unless the B.B.C. had a shrewd idea that television was going to be handed back to them. The part of the Selsdon Committee that visited Germany came back with much more enthusiasm than did the part which went to the United States.

Sickness in the B.B.C.

B.B.C. staff are sustaining a wave of illness. Mr. Whitley (the Chairman), Col. Dawney (Programme Controller) and Captain Graves (Empire and Foreign Director) are all on the sick list.

Sir John Reith Withdraws.

The new B.B.C. organisation has now reached a state of such completion as to make it possible for Sir John Reith greatly to curtail the personal contacts he has had to maintain in the past twelve years. He is now hardly ever seen by the staff or department chiefs.

His dealings, so far as broadcasting is concerned, are with his two Controllers, his Governors, his Chief Engineer, the Postmaster-General, the Prime Minister and officers of the Royal Household. This new freedom gives him a much better chance to specialise in high policy, entirely free from the distractions of petty routine or administration.

B.B.C. and Foreign Office.

The Foreign Office is getting to use the B.B.C. more and more. This comes about from the disposal of the numerous requests to consular and diplomatic officials abroad to help solve artistic, musical or broadcasting problems. A case in point is the occasional demand for concerts of British music in foreign centres. All this work is now handed over to the B.B.C., which deals with it automatically.

No one should quarrel with this readiness of the B.B.C. to be useful so long as it does not lead to undue dependence on Foreign Office views in programme matters at home. Now that the B.B.C. have no Foreign Correspondent of their own there is a danger of this happening.

More Staff for Provinces.

The enlargement of staffs at Regional headquarters outside London is to continue next year. There is now at each headquarters the nucleus of the creative and administrative machinery modelled on that of London. This will be expanded as opportunity permits during 1935. There is, accordingly, the prospect of a good many more jobs in the B.B.C. Most of them will be advertised, the B.B.C. having accepted the report of the expert committee

which examined its personnel methods last year.

The Christmas Proms.

Even those who hold the opinion that the B.B.C. is prone to give listeners orchestral music in doses that are somewhat too large for easy assimilation will not look unkindly at the short season of "Christmas Proms" which Sir Henry Wood is to direct at Queen's Hall in the New Year.



Two very popular broadcasters—The Houston Sisters.

Every week night at 8 p.m. from Monday, December 31st, to Saturday, January 12th, these concerts will be given, as they have

will look forward to a supply of holiday music at a time when the usual sources are running less abundantly.

"Do You Remember?"

The story of the formation and work of the famous Co-optimists, whose entertainments were among London's leading theatrical attractions for some years after the war, would make an interesting item in the broadcast programmes, and it may well be that Davy Burnaby will make some reference to it in the Midland Regional feature entitled "Do You Remember?" in which he is taking part on Thursday, December 27th.

Mr. Burnaby will be playing in the pantomime "Aladdin" at the Prince of Wales Theatre, Birmingham at the time, and his appearance in the studio is by arrangement with Emile Littler, who is presenting and producing the pantomime. With Burnaby in the studio will be Alma Vane, Alfred Butler, Michael North and Gerald Martin to assist in reviving some memories of the Co-optimists.

A Year's Weather.

I had quite forgotten until I was reminded the other day that Jack Cowper, the popular, senior announcer at Midland Regional and a former member of the B.B.C. headquarters staff, was at one time a weather forecaster in the Meteorological Office of the Air Ministry in London.

As a matter of fact, he spent three years in Kingsway, after service, following the war, with the North Russian Expeditionary Force, during which he had a

winter at Murmansk, which is within the Arctic Circle. He has also experienced tropical weather in Brazil, so that, what with one thing and another, he has a fair idea, as an expert, of the various samples of climate that can be "dished up" on the face of this earth.

It is a happy notion that he should be allowed to give a survey of the year's weather in the Midlands in a talk on Saturday, December 29th. What with the abnormally dry summer (if it was so, and not that we think it was), the fogs of November and the earliest snow in Birmingham for twenty-five years, Mr. Cowper will have plenty of material upon which to base his talk. You can depend upon him to find other meteorological records for 1934 that none but the experts have the faintest idea even exist.

One-Man Pantomime.

The one-man band disappeared long ago; at any rate I have not seen one since my boyhood days. But who will care now that our old friend Stainless Stephen has decided to present as a Christmas Eve gift to National listeners a short and snappy one-man pantomime?

Stainless will play all the characters himself—Cinderella, the Ugly Sisters, the Fairy Godmother, Sinbad, Friday and Crusoe.

O. H. M.

THE TELEVISION COMMITTEE'S REPORT

Latest News From the B.B.C.

been for the last few years. Of their general popularity there is not the slightest doubt, mainly, perhaps, because they follow the usual formula of the summer "Proms."

Monday will be mainly Wagner night; Wednesday Bach-Handel; Thursday, mainly British; Friday, Beethoven; Saturday, a mixed bag. Charles Woodhouse will, of course, lead the orchestra, and many of the well-known promenade artists are appearing.

Apart from broadcasting, concert-goers

WOULD YOU CHANGE?

One of the series of talks in the new Talks schedule is entitled "Would You Change?" This series commences on January 7th. What is life like as a window cleaner or as a waitress at a tea-shop? What problems of housekeeping do you find if you have to travel from one end of the world to the other with small children in order to follow your husband's work?

In this series varied people come to the microphone to describe their daily lives and will give extracts from old letters and old diaries to build up pictures of their everyday life of the past years. This series of talks should be as fruitful of interest as the series "How I Keep House," which has yielded many interesting stories.



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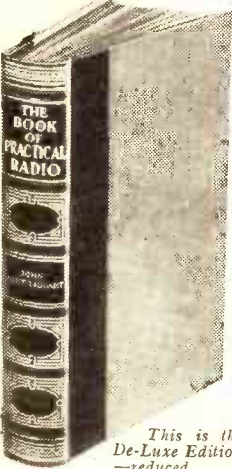
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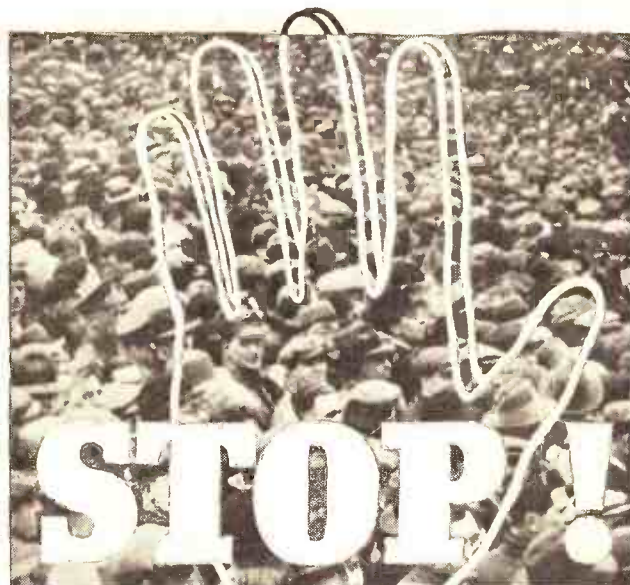
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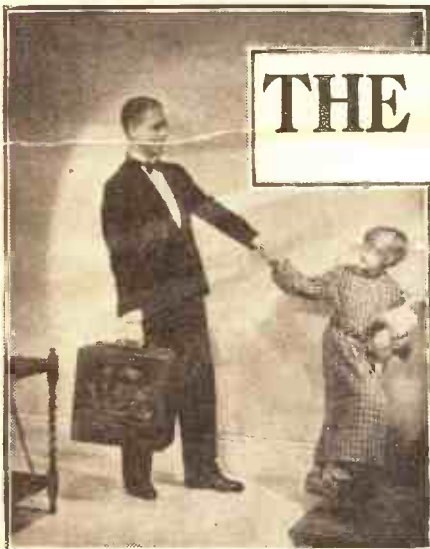
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THE CHILDREN'S RADIO XMAS

Special efforts have been made this year to ensure that the kiddies get their fair share of seasonable radio fare. Here are some details of the children's programmes from the various British stations.

By K. D. ROGERS.



"Come on, daddy; let's listen to the children's concert from Swansea."

CHRISTMAS is a children's festival, and next week millions and millions of kiddies over large parts of the world will excitedly rejoice at all the good things that the season brings. Holidays, presents, games, parties and wonderful delicacies to eat—to say nothing of that giant meal in which so many indulge on Christmas Day.

Thirteen years ago was born, as far as this country is concerned, yet another means of providing enjoyment—radio; and though it did not for a little time really take its place in the British children's Christmas, it was inevitable it should do so ere very long.

So in this year of grace we find that the children are exceedingly well catered for in the Christmas-week broadcasting programmes. And the young folk will react to them with boundless enthusiasm.

One need not tell parent readers of POPULAR WIRELESS what boons radio and the gramophone are where the kiddies are concerned. The Children's Hour, and many children's dance and other records, would not be missed by many juvenile enthusiasts for all the toffee in the world.

Plenty of Fun Next Week.

And this Christmas the youngsters are coming well into their own on the radio—so look out, daddies, and see that all is shipshape before the holiday begins; it won't do to disappoint those young hopefuls, you know. If you can't produce the Buggins Family on the National during the Children's Hour on Christmas Eve, you will lose whatever prestige you possess with your offspring.

Make sure all batteries are up to scratch, that valves are healthy and that the aerial will not blow down—and then make a note of the following items and details. It won't do to miss them. And mother and father will enjoy many of the programmes as much as will the youngsters.

Let's deal with the National and London Region items first, some of which we have mentioned briefly a couple of weeks ago. One of the biggest efforts is the John Watt-Max Kester Christmas Day Party. Plenty of good fun in that, with dances, Punch and Judy, carols, games, perhaps a ghost story and a fairy tale or two, and Henry Hall and his band.

The full details are not even now, at the time of writing, available, so I cannot go into the matter with any great certainty. But you can rest assured that John Watt will see that the "show goes over" in no uncertain fashion.

The Buggins on December 24th we have mentioned, and the Children's Hour on this day can be regarded as a dead cert. of 100 per cent enjoyment.

"Mac" (Derek McCulloch) is working very hard this Christmas for adults and children. He is providing Humperdinck's famous "Hansel and Gretel" opera, adapted for the children, on December 29th.

Then a little later in the month—there is not much left, is there?—to finish up the year, the Children's Hour officials are working on a revue of the year, containing the highlights of the Children's Hours of 1934. Thousands of letters from children all over the world telling which programmes they liked most are being perused in an endeavour to decide which were the best.

In the Regions.

So much for the arrangements for the National transmitters and the London Region—what of the Midland, North, West and Scottish?

The Midland Region is by no means neglecting her kiddies next week. The fun starts on Monday, Christmas Eve, by specially appealing and seasonable fare in the Children's Hour—including sleigh-bells playing musical selections.

Boxing Day, too, is full of fun for the juniors, for Robert Tredinnick is looking after a special pantomime—"Aladdin"—which will be broadcast in the Children's Hour. By the way, grown-ups are invited to listen, too—so you need not give up your set to the younger generation.

Further north, the week is ushered in for the children by a special hour on Christmas Eve. I bet it will send them all to bed more eagerly expectant than ever of the

visit of the gentleman with the red hood and long beard.

On the day of days there is to be a Surprise Party for North Region kiddies, so don't forget it and allow them to miss this exciting treat.

The West Region children have not so many special affairs next week, but they certainly do go "nap" when they have their Christmas Eve Party at 5.15 p.m. It is followed by a children's concert relayed from the Town Hill Council School, Swansea.

A Noteworthy Broadcast.

This concert is particularly noteworthy in that all the performers have made their names, including the school choir which sang before the Duke of Kent in October.

Scotland, as is to be expected, is taking things a little more calmly. The New Year is the Scottish big festival, and so Christmas is not quite such a time of excitement as we Sassenachs make it. But you will find the Yuletide flavour in the children's fare from the Scottish Region during the week.

And what a week it is to be! Your radio is going to be well used this year, and so is the gramophone, if I am any judge of the likes of the juniors (to say nothing of some of the grown-up children). I wish I could listen to all the good things that are to be offered from the various B.B.C. stations.

As a matter of fact, K.D.R. junior & Co. will commandeer the radiogram a good part of the time, and I shall be regaled with records of Harry Hemsley, Henry Hall and Stanley Holloway, mixed with the Uncles and Aunts of the Big House.

And I shall enjoy it, as you would, too, for Christmas ever brings out the eternal child in all of us. So here's to a right Merry Christmas, and, in the immortal words of Tiny Tim, "God bless us all, everyone!"

CHOOSING HIS XMAS PRESENT



ON THE SHORT WAVES

Conducted by W.L.S.

I REFERRED last week to a letter from P. J. L., a reader in Ontario. He raises some queries about accumulator charging which don't come strictly under the heading of Short Waves, but are worth mentioning. Has anyone any practical experience of charging his accumulators from a wind generator? Very few, I'm afraid. But why not try it, all you people in the more open parts of the country?

Good short-wave locations and wind generators surely go together. P. J. L.'s will charge a 2-volt cell and packs up when two of them are put on!

While we're all cosmopolitan let's mention A. W., from South Africa. He reports that W 8 X K and W 3 X A L both come over at R7 or thereabouts in the early mornings, or even up to 8 o'clock. I presume he is referring to the 49-metre station in both cases.

Reception from U.S.A.

This remark prompted me to leave my bed somewhat earlier than usual a few mornings back, and from 6 to 8 a.m. I heard nearly a dozen Americans. True, there were almost as many to be heard on the broadcast (medium-wave) receiver, but the short-wavers were less troubled by fading and interference than the others.

Still from South Africa, E. T. K. (Cape Town) raises a query about connecting the single-valve to a 240-volt A.C. broadcast set. I rather think he will find the answer in the course of my rambblings in the December 1st issue ("The Mighty Atom"). In any case, I certainly suggest that he runs the short-waver from batteries and just connects its output into the L.F. side of the broadcast set.

More Stations on a Single-Valve!

A little while ago "Hippo" (Rhodesia) remarked about some of the wonderful noises heard down there from 15- and 16-valve short-wave sets. E. T. K. has actually had a 12-valve short-wave set going, but has sold it and stuck to the good old "single." He swears that he gets more stations on that than he ever did on the twelve!

P. J. B. (Calcutta) comes out with the glad news that the Empire Station is now putting up a better show against the rival concerns of Zeesen, Pontoise & Co. than he was a month ago. He thinks that the other stations have become slightly weaker, while Daventry has more or less stayed where it was in strength. He finds Daventry's quality better than that of any other short-wave station he has heard.

The words "B.E.C. quality," among amateur transmitters, stand for perfection. Let's hope we never have cause to drop that phrase.

Well, so much for the Outposts of Empire (and Hippodrome as well, as Kenneth Western would say). Let us deal with domestic problems.

S. N. B. (West Kensington) heard an American just above Bound Brook on 49.18

Points from the POST-BAG

metres, and wants identification. It might have been either Philadelphia, W 3 X A U, or Cincinnati, W 8 X A L. They both work on 49.5.

If the announcements were in English with the characteristic twang it *must* have been one of these two, unless it was the Canadian V E 9 G W, Bowmanville, on 49.22. Take your choice, S. N. B.

Pittsburg, W 8 X K, is listed as 48.86

AN ENERGETIC SOCIETY



Members of the West Middlesex and East Bucks Branch of the A.A.R. and T.S. participating in tests with G 2 Y H at Grays, Essex.

metres. As to relays of Rome via Bound Brook, I don't know.

R. B. (Birmingham) is a newcomer to short waves, and is "stuck fast" in one or two particular places. He is using 3-in. coils with 8 turns grid and 6 reaction, which, I suppose, means that he can't get below about 31 metres. Try another pair with 5 turns grid and 4 reaction, R. B., and you will have some more ether to explore—a whole heap of it.

Regarding the L.T. switch, which I haven't been showing in my baseboard layouts, I intended readers to fix up one externally, between one of the L.T. terminals and the appropriate lead to the battery. It might easily be mounted on the terminal strip at the rear, up alongside the L.T. positive terminal.

Don't try to dive in among the wiring of the set and interrupt it somewhere, as you might easily choose the wrong place (this you appear to have done in one case).

R. D. E. (Standon) is an old friend whom I rather thought had deserted me. However, he's back, and fairly bursting with news. He is the proud possessor of 308 Q S L's and verifications from over 40 countries. An interesting one is from Bolivian CP 7, La Paz, who works on 19 metres and hasn't appeared in any lists that I've seen.

A Twenty-Five Watt Transmitter.

Others include T G F (Guatemala) and V L Z, Sydney, on 37 metres. R. D. E. reports C M 6 X S (Cuba) as working both on 20 and 36 metres with 25 watts only. A terrific list of stations follows, concluding with the remark that he uses 10 valves.

After the way I've been making fun of these super multi-valvers, I should be interested to know what kind of receiver R. D. E. gets his 10 into. Perhaps you'd like to tell readers about it, R. D. E.?

W. L. (no relation!), of Teddington, is another one-valve enthusiast, who followed it up (*after getting it going really well on its own*) with another valve. He, quite rightly, says that these circuits can't help working well, on account of their simplicity. An interesting point he makes is that, although his baseboard is 1 in. thick, with the foil underneath, still he notices a beneficial effect when he mounts such parts as the grid condenser up in the air.

Using Loose-Coupling.

He also advocates loose coupling (very loose!) by taking the aerial direct to earth and twisting a piece of insulated flex from the aerial terminal round the wire. I must

say that I prefer straightforward inductive coupling with a small untuned coil. Almost any degree of coupling can be obtained, and the operation of the set isn't interfered with in the slightest degree.

B. C. F. (Folkestone) remarked upon the steady improvement in conditions *above* 30 metres, while most wavelengths below that appear to be "the silly same all the time." Yes, that's rather what I am finding lately.

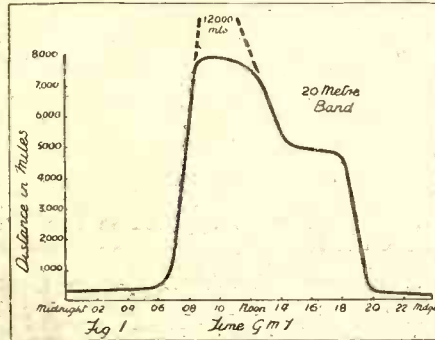
ON THE SHORT WAVES—Page 2.

HALF the secret of success on short waves rests in knowing the correct times and wavelengths on which to listen, so that you don't spend hours listening, say, on 19 metres when any experienced short-wave man could tell you that you won't hear a thing.

The two diagrams on this page are rough graphs drawn as a result of three or four weeks' listening on the two amateur bands, 20 and 40 metres. They apply, fairly roughly, to the short-wave broadcast bands as well, and might even be taken to represent the prevailing conditions on 19 and 49 metres.

On Twenty Metres.

Note that "20" has a good big peak in the morning period, and remains quite interesting until about 6 p.m., when a sudden fade-out occurs. After this you needn't look for anything else until 6 o'clock next morning. This curve, of course, only



The 20-metre band has a time-distance curve like this.

PLAN YOUR LISTENING

applies to this time of year; in the summer it is absolutely different.

Now, just because Australians can be heard on 20 metres in the morning (see those dotted lines going up to 12,000 miles), it doesn't mean that the morning is necessarily the best time. All the afternoon one can hear stations up to 5,000 miles, including the West Coast of America on one side and various parts of the Far East on the other. South Africa, too, may be heard after about 4.30 p.m.

Look at the 40-metre curve, and see how completely different it is. You have two distinct peaks, both of which could be extended up to 12,000 miles, because we frequently hear the Australians and New Zealanders in the morning as well as at night.

For Winter Listening.

You will note, at once, that "40" seems to be a more profitable kind of wavelength to work on in the winter, since, although there are two "dull" periods, added together they don't amount to anything like the 20-metre "blank." Let's start an imaginary day of 40-metre listening at noon.

During the afternoon stations in the Far East—as far out as the Philippine Islands—may be heard. By 4 p.m. Australians will start coming in, and the whole of Asia and Australia is there (on a good day) until something like 8 p.m. or even longer.

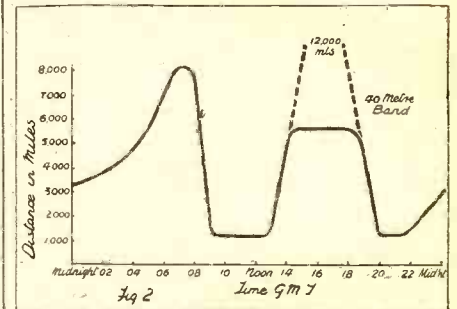
Soon after this, however, there is often a

more or less complete fade-out except for European stations, but by 10 p.m. the Americans start coming over, steadily improving (go back to the start of the curve) from midnight up to 6 or 7 a.m., at which hour the West Coast "Yanks" will probably be audible. Then comes the morning "dead spot," until we get round to 2 p.m. again.

A Suggested Time-Table.

If your short-waver covers all the broadcast bands from 16 to 49 metres, a sensible kind of time-table would be something like this: 3 p.m., 16-metre band; 5 p.m., transfer to 19 metres; as soon as that fades out (perhaps 6 p.m.), up to 25 metres, which should be lively till nearly 10 p.m.

Then move up to 31 metres, which is very interesting until well after 11 p.m.; and at midnight or thereabouts you can shift up to 49, which will keep you busy as long as you can remain awake—up to 8 the next morning if you're fit for it! During all this period you won't have wasted any time listening on a "dead band."



Forty metres is more generally reliable, for it gives a longer period of listening per day than does the 20-metre band.!

JUST as I write this I have received the tremendous news (unconfirmed) that American 6-metre broadcasting has actually been heard in this country, and also that a 7.5-metre experimental station in South America has been heard.

It seems absolutely incredible, but my source of information is usually reliable, and I am inclined to think that there is something in it. Whether this is good news or bad I can't yet decide.

We have all been assuming that the chief use of the ultra-short waves was going to be for short-distance transmissions, especially television. The great advantage, of course, was the tremendous amount of space available and the fact that two stations a few hundred miles apart could work on the same wave without causing interference with each other.

Ultra-Short Wave Interference.

Now, however, it looks rather as though we may suffer from interference on ultra-short waves from high-powered American broadcasters! But we must leave conjecture until some more definite news arrives.

F. W. (Saltash) sends me a cutting from the "West Australian Wireless News," part of which I will quote: "S.W. fans should keep in close touch with the new Government experimental station VK2XX. This station has been logged on the last two Sundays; signals are being received at great strength, being almost double that of the Sydney station VK2ME.

Although the exact broadcasting hours are not known, it is heard between 10 a.m.



and 3 p.m. It is expected that if tests are satisfactory this transmitter will replace that at Lyndhurst, VK3LR."

The paper doesn't definitely say so, but I imagine that these tests are being carried out on the 31-metre band. I shall be glad to hear from any readers who hear VK2XX, and will forward their reports to the proper quarter.

Another reader, J. F. (Forest Hill), calls my attention to the fact that "winter conditions" are now sufficiently advanced to allow of good reception of American amateur telephony on 75 metres. Not many short-wave folk seem to trouble about the 75-85-metre band, but it is one of the most interesting when atmospherics are not too bad.

J. F. also forwards a terrific list of American police stations. Some of them work on about 125 metres (which I suppose we can still call "short waves"). Others are just below 200 metres, but amid this welter of "semi-short-wave stations" are two call-signs—W2XCJ and W2XCI—

listed as 5 metres and 8.67 metres respectively.

Funny place, America! You see adverts. in their short-wave papers reading: "Buy this So-and-So Super-Screacher and intercept all police messages." Are they intended for pukka gangsters or just for lovers of thrills?

Personally, I happen to know the police wavelengths in use over here, but wild horses and superhets wouldn't drag them from me.

Talking of American papers, do you know what a "missing link" is? It is a "short-wave gadget" that "keeps your set awake after the family has gone to bed." No prizes offered for solution of this one.

New Bolivian Station.

A new Peruvian station, OA4B, is reported as working on 48 metres. He has been logged shortly after midnight by quite a number of readers.

A new Bolivian is also reported: CP7, on the 19-metre band. The old CP5, on 49 metres, does not seem to have been heard much lately.

Considerable confusion is being caused by short-wave stations that change their call-signs without due notice, and others that relay long-wave programmes under the call-sign of the long-wave station concerned, without giving their own. It is almost impossible at present to keep track of all the new call-signs appearing on the air; but half of them aren't new stations at all, but simply the old familiar ones "rehashed."

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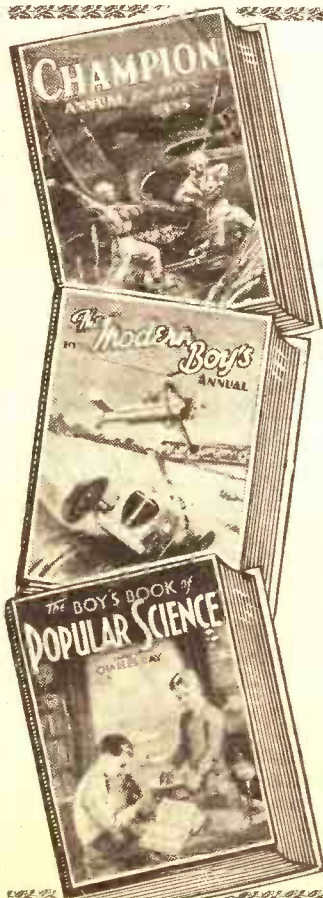
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TELEVISION

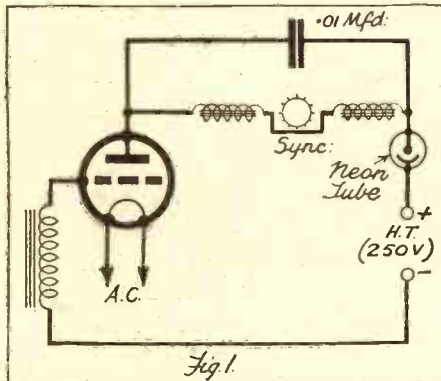
A SPECIAL PRACTICAL SERIES FOR ALL READERS

By L. H. THOMAS

The method of coupling the televiewer to the receiver is a most important factor in obtaining satisfactory results. This week Mr. Thomas describes various schemes and discusses the advantages and disadvantages of the different circuits.

ONE of the principal fascinations of television lies in the variety of problems that keep cropping up. None of them can be described as tremendously difficult, but one has to be a kind of "all-rounder" to keep up with them all.

The first thing one finds out is that the ear is a pretty bad critic. The reproduction that your ear has "passed as O.K." for so long proves to be deficient in some way or other when judged by that much better



This is the simplest possible way in which the viewer can be connected to the television receiver.

critic, the eye. And so you have to make a better radio receiver than you did before, and learn a good deal in the process.

Quite apart from receiver technique as such, you have to develop the televiewer itself into something reasonably free from snags, and you have to evolve a satisfactory method of coupling the said viewer to your receiver. This last problem is the principal theme of my notes this week.

Let us save trouble by regarding a "televiewer" as a piece of apparatus that contains all the things which are essential for television reception that are not found in the receiver itself. This is rather important, for this reason. If the sole function of your "viewer" were the conversion of electrical energy into pictures, the "coupling" problem would hardly exist.

Disadvantages of a Simple Scheme.

Your viewer, unfortunately, also has to perform the function of synchronising, if you want to receive steady pictures, and this is where one or two snags do appear.

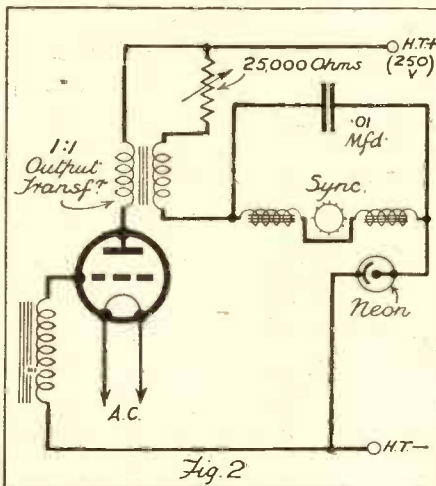
Fig. 1 shows the simplest possible scheme of connections, in which the neon tube and the synchronising coils are simply connected, in series, straight in the anode circuit of your last valve. It works, and is probably the arrangement that everybody starts off with. But it has disadvantages.

The most obvious of these is the lowering

of the actual anode voltage on the last valve by a considerable amount, since there is a big voltage drop across the neon tube. It may be compensated for by increasing the total H.T. voltage, but that is rather a clumsy method.

Next, there is the serious disadvantage that a negative image can only be "positived" by reversing something within the set itself—converting the detector from leaky grid to anode bend, reversing a transformer primary, etc. If you haven't a transformer-coupled stage anywhere in the set it may even be necessary to add another valve to put this right.

Again, it often happens that an unsatisfactory degree of modulation is obtained with this direct connection scheme; in other words, the power in the last stage may not be great enough, in comparison



Better results are obtained if the circuit shown above is used, which corrects many failings of the Fig. 1 scheme.

with the amount of D.C. flowing through the tube, to give good contrasts in the picture.

All these things are righted by changing to the simple scheme of Fig. 2. Here the last valve is equipped with a 1:1 output transformer, and the secondary is fed to the neon tube and synchronising coils, in series with a suitable voltage derived from the main H.T. supply.

The 25,000-ohm resistance permits of quite a fine control of illumination.

I have not shown a by-pass condenser across it, but a .01 (as across the synchronising coils) may prove to be an advantage. In my own case it doesn't happen to matter, because I only have a small amount of resistance in circuit, as a rule.

You may now vary the amount of D.C. passing through the neon tube to suit your own preference; the last valve has the full anode voltage; and a negative image is dealt with simply by reversing the leads to the secondary of the output transformer; all the three disadvantages of direct coupling are washed out!

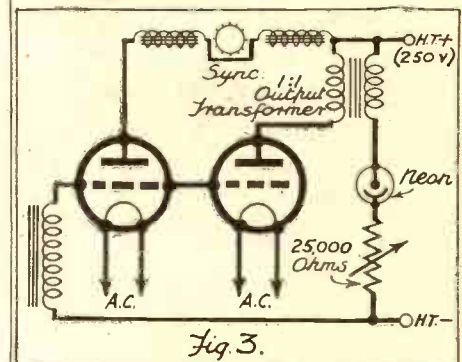
Fig. 3 shows rather an interesting extension of the idea. Two similar valves are used in the output stage, with their grids connected. One looks after the synchronising; the other after the pictures.

A Very Satisfactory Method.

The latter is equipped, once more, with the 1:1 output transformer; the "sync." however, is connected straight in the anode circuit of the other. This scheme, in practice, works extremely well, and is second only to the more luxurious arrangement of using an extra stage with a tuned transformer to look after synchronising alone.

I dealt with this in the December 8th issue, and don't propose to say any more about it here.

The ideal, of course, for synchronising purposes, would be a separate signal transmitted from a third station and received on a third receiver. But that is taking television away from the category of home amusements and putting it in that of laboratory experiments. Besides, the B.B.C. can't spare three separate channels.



An interesting modification of the Fig. 2 system, showing a separate output valve for the synchronising circuit.

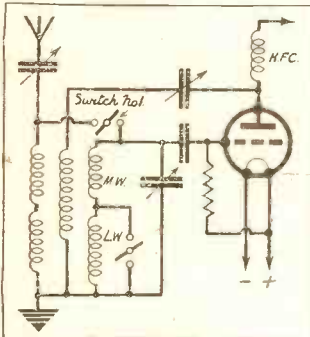
When the B.B.C. goes on to the "grid" system, instead of remaining on the Marylebone mains, we may expect a certain degree of success with 8-pole phonic wheels operated from the A.C. mains for synchronising purposes. Real synchronous motors don't seem out of the realms of possibility, although they are not the slightest use at the moment unless you happen to be lucky.

RECOMMENDED WRINKLES



INCREASING COIL RANGES.

WHILE experimenting with different tuning coils, I struck upon a novel, simple arrangement to increase the flexibility of dual-range coils, as you will see by sketch, by inserting switch between aerial and grid coil, which gives you: M.W., 250 to 550 metres; L.W., 1,000 to 2,000 metres. Close switch No. 1 and you have dropped down to approximately 200



In many cases coil wavelength ranges can be extended by means of the scheme shown.

metres by utilising aerial-coupling coil with long-wave switch open. This scheme will not work, of course, with all types of coils.

PRESERVING AERIAL ROPES.

GALVANISED stranded wire is often used for guy ropes, but it seems to rust up quickly and become unpleasant to handle. A good substitute is to use an old piece of copper aerial wire instead.

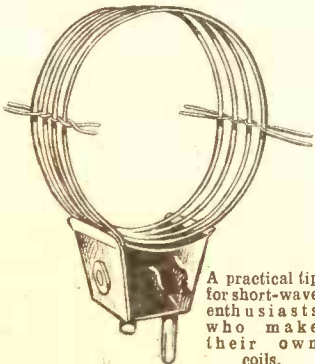
Generally speaking, however, ordinary rope seems to be preferred. When this is the case the ropes will last much longer if waterproofed.

The simplest method is to soak the rope in a hot solution of alum. This solution is made by dissolving about two pounds of alum in three parts of a bucket of hot water, then soaking the rope in this for a day or two and finally drying out.

A more effective way is to boil 124 parts of Castile soap in 1,200 parts of water, and 164 parts of alum also in 1,200 parts of water. Heat both solutions to about 195 degrees F., then pass the rope several times through the soap bath, then finally through the alum solution and hang up to dry.

S.-W. COIL RIGIDITY.

IT is sometimes found that the turns of self-supporting short-wave coils touch or vibrate. This can be remedied in the following manner:



Fasten the turns together by double pieces of string passed over and under alternate turns so that each turn has one string under it and one string over. The turns are kept apart by the crossing of the strings, as in the sketch.

A Q.P.P. TIP.

WHERE a 120-volt battery is used to supply a set having Q.P.P. output, the grid bias being taken from the negative end of the battery, it is found that the portion of the battery from which current is drawn loses voltage more rapidly than the grid-bias portion.

After a time the grid bias becomes too high for the reduced voltage, and this results in a falling off in quality, while the battery is still too good to throw away.

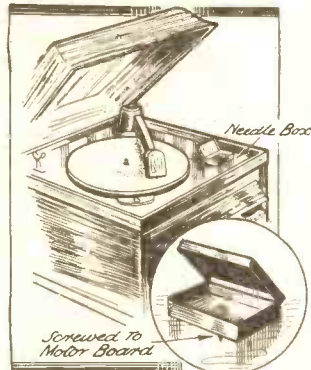
A remedy would be 11-volt tapplings at the negative end, but in most cases relief can be found by connecting the H.T. lead to L.T. instead of to L.T. This results in 2 volts being taken off the grid-bias voltage. Two volts may not seem much, but it often makes all the difference between "ragged" reproduction and full-blooded stuff. It is equal to a change in anode volts of about 20.

A NEEDLE HINT.

OFTEN, if needles are kept in their ordinary boxes, they spill out of them and find their way into the motor.

To overcome this difficulty (without using expensive needle-holders), make a hole in the bottom of the needle-box and screw it to the motor-board with a small screw.

By this method many different kinds of needles can be kept in their original boxes without spilling all over the gramophone.

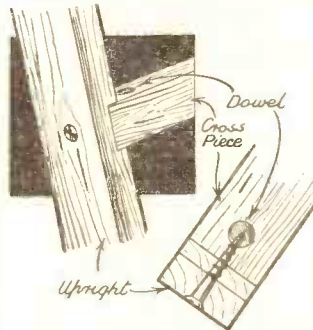


How to prevent needles from being accidentally spilled.

INSERTING SCREWS INTO END GRAIN.

THIS is a hint which may be of use to wireless constructors who build their own cabinets. Often when

a screw is driven into the end grain of a piece of wood it works loose, but the following hint will overcome this difficulty:



Screws in home-constructed cabinets will no longer work loose if this scheme is adopted.

Obtain a piece of dowel rod and bore a hole in the cross-piece in the path of the screw so that the dowel rod will fit exactly into it. Then glue the rod into the hole. The grain of the dowel is now at right angles to that of the cross-piece. The screw is then driven in so that it passes into the dowel, thereby ensuring a secure, firm hold.

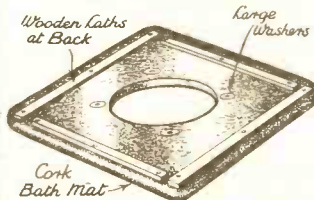
THE RADIO SCRAPBOOK.

HERE is my tip for the best and cheapest wireless encyclopedia: Get a sixpenny scrapbook from Woolworth's, cut out every other page, then as the various "Wrinkles" and notes appear in "P.W." cut them out and paste them in the scrapbook. If these are placed under their various sub-headings, in a very short time one has a reference book full of really practical tips and hints which will be found invaluable.

The cutting out of every other page prevents the scrapbook from getting too bulky. Diagrams and interesting articles can also be preserved in this way.

A NON-RESONANT BAFFLE.

A VERY efficient non-resonant loud-speaker baffle can very easily be made from a cork bath mat of suitable size, which can be bought reasonably cheap at most hardware stores.



Adapting a cork bath mat to form a non-resonant baffle.

ONE GUINEA FOR THE BEST WRINKLE!

Readers are invited to send a short description, with sketch, of any original and practical radio idea. Each week £1 is. will be paid for the best Wrinkle from a reader, and others published will be paid for at our usual rates.

Each hint must be on a separate piece of paper, written on one side of the page. Address your hints to the Technical Editor, "Popular Wireless," Tallis House, Tallis Street, E.C.4, marking the envelope "Recommended Wrinkles."

Will readers please note that the Editor cannot, in any circumstances, guarantee to return rejected Wrinkles, and that payment for published hints is not made until ten days after they appear.

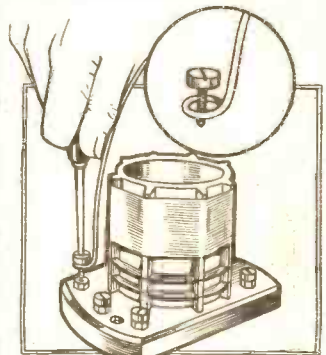
The best contribution in our last selection of Wrinkles, published on December 8th, was sent by R. P. Timms, 18, Vincent Avenue, Stratford-on-Avon, to whom a guinea has been awarded.

The mat is usually about 1 in. thick, which is a very suitable thickness for the job.

The drawing is self-explanatory, but in a few words the laths are to prevent the mat bending or warping, and if large-area washers are used when bolting the speaker on the cork, the bolt heads will not sink in.

FOR AWKWARD SCREWS.

WHEN wiring up a set whose small screws on iron-cored coils and other components are easily started by looping connecting wire and then inserting a screw through loop and lowering it to thread in component. Bend connecting wire, after screwing down tight, to the next component.



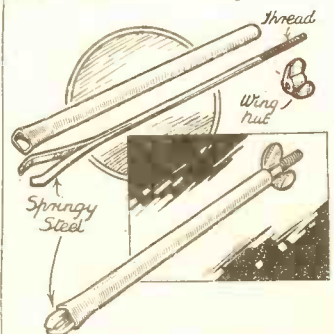
An efficient method of dealing with terminal screws situated in awkward places.

RENEWING OLD DIALS.

A SIMPLE and very effective way to renew dial markings which have gone dull through age or constant use and costs nothing: First of all get some partly dried white paint or enamel, place some on the end of the finger or piece of cloth, and rub over dial degrees with a little pressure. You will find the grooves fill up and the dial looks new and clear once more. This can be done without removing the dial.

A USEFUL CLAMP.

THE tool shown below is a piece of spring steel sawn with hacksaw and then bent. The end of tube is flattened a little to prevent the jaws turning. It will grip any nut or screw firmly, and can easily be released by loosening wing nut and exercising pressure with thumb and finger. It has proved very helpful to me in set building.



A useful gadget for set constructors.

RADIOTORIAL

The Editor will be pleased to consider articles and photographs dealing with all radio subjects, but cannot accept responsibility for manuscripts or photos. Every care will be taken to return MSS. not accepted for publication. A stamped, addressed envelope must be sent with every article.

All Editorial communications should be addressed to the Editor, POPULAR WIRELESS, Tallis House, Tallis Street, London, E.C.4.

All inquiries concerning advertising rates, etc., to be addressed to the Advertisement Offices, John Carpenter House, John Carpenter Street, London, E.C.4.
The constructional articles which appear from time to time in this journal are the outcome of research and experimental work carried out with a view to improving the technique of wireless reception. As much of the information given in the columns of this paper concerns the most recent developments in the radio world, some of the arrangements and specialities described may be the subjects of Letters Patent, and the amateur and the trader would be well advised to obtain permission of the patentees to use the patents before doing so.

QUESTIONS AND ANSWERS

MEASURING A MAINS-SET FILAMENT CURRENT.

P. A. G. E. (Barkingside).—"There is one matter on which I should appreciate your guidance. In making the D.C. set I have to wire the filaments in series with an adjustable resistance, and arrange this latter to give a current of exactly quarter of an amp.

"This is rather stressed in the directions, and it says it is important that an accurate ammeter should be used. Well, mine is not a true ammeter, but is one which has shunts to measure amps. (up to 5), or milliamps up to 50, or down to 5 milliamps.

"Is this kind accurate enough on the amps. range (with the shunt across its terminals) to

give a satisfactory indication of the current for a mains set? I have not used it on amps. before, as it has never been necessary, but I have the shunt for it.

"It seems quite accurate on both ranges of milliamps."

With the proper shunt fitted it is ideal for your purpose. In any case, the measurement of filament current is less critical than most of a milliammeter's duties, so you can use a properly shunted milliammeter to measure on the amps. range with every confidence.

USING A RECTIFIER VALVE.

W. A. (Carlisle).—"For the rectifier I want to use an indirectly-heated rectifying valve, but I am told that, owing to the time it takes to heat up when first switched on, there is a risk of damage to the other valves in the set.

"Is this a point worth considering when I have everything needed for the valve and would prefer to use that kind of rectification?"

Use the valve, by all means, if you find it more convenient to do so.

The lag in heating up would be no disadvantage—in fact, it works the other way round, since it prevents any excessive voltage build up while the other valves are warming up.

NEEDED RETRIMMING AFTER ADDITION OF PICK-UP.

J. E. (Westcliff-on-Sea).—"The pick-up is going perfectly now, but I struck one snag that you may like to pass on to other readers who are thinking of fitting pick-up terminals at the detector's grid wiring.

"This fault was not very noticeable at first, because when the new wiring was completed I naturally listened very carefully to records, and was quite satisfied when I found that the pick-up results were better than I had expected in volume and perfect in tone.

"But after I had got used to the novelty of that I went back to the radio side as the mainstay.

"And then I found the set seemed much less sensitive on foreigners than before.

"It was a few weeks before I discovered what was wrong—it needed retrimming! The detector stage had to be re-set to a lower trimmer capacity, which I suppose was owing to the switch wiring having added capacity to this stage.

"Anyway, the trouble disappeared completely after this trimmer had been readjusted, and it has shown no signs of recurrence, so now I am quite happy on 'radio' and on 'gramophone.'"

Your explanation is undoubtedly the correct one, and it is quite usual to find that a noticeable increase of capacity occurs on adding pick-up switch wiring to the detector stage.

The readjustment of the trimmer for this stage is the standard cure, so you should not experience any further difficulty.

HOW TO STOP MOTOR-BOATING.

E. N. (Carnforth).—"You have often
(Continued on next page.)

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RADIOTORIAL QUESTIONS AND ANSWERS

(Continued from previous page.)

printed articles and questions answered about the various cures for motor-boating on old sets—decoupling with resistance and condenser, extra smoothing, etc. But it is impossible to try all the various remedies on a troublesome set.

“So what I would like to know is which is the likeliest remedy to try first, which next, which after that, and so on.

“Perhaps it is too complicated with all the different sets about nowadays to lay down any rules. But if there is a right and wrong order I should very much like to know about it.

“You have given me so many good hints in the past that I know I shall get help from you if it is possible to get any.”

As you say, it is not easy to lay down rules when there are so many types of sets concerned and so many causes of motor-boating. But if you proceed along the lines indicated below you should find it fairly easy to get on the track of the fault quickly.

First consider whether the set is being worked under circumstances which in themselves predispose to motor-boating: the over-running of a mains unit, for example, or the running of the loudspeaker leads close to the aerial.

By providing a mains unit capable of supplying adequate smoothed current, or by spacing out the offending leads, a tendency to the trouble can often be

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Token No. 9 will be found on the last page of this issue of “Popular Wireless” and readers are advised to complete their Vouchers and send them in at the earliest opportunity.

DON'T MISS YOUR CHANCE

completely removed without any alteration to the set itself, or extra smoothing, etc. (Similarly, the use of a too-small H.T. battery is often a predisposing factor in motor-boating.)

Next, see that the output of the set is “filtered” by means of a choke-fed circuit. Or, if the loudspeaker is connected to a transformer that is directly in the plate circuit of the last valve, arrange this transformer in a choke-fed circuit.

Next in importance to isolating the L.F. component of the last valve from the H.T. supply is the question of the detector's H.T. Give this valve a separate H.T. lead if it now shares its H.T. supply source, and insert the usual extra smoothing and decoupling in this lead if it proves to be necessary.

In an S.G. type of receiver it may be necessary to decouple the anode circuit of the pre-detector valve in the usual way.

By this time only an obstinate case of motor-boating will still need attention, but should you strike such an obstinate case, remember that extra smoothing and decoupling will always succeed, though it may be necessary to apply the cure to the grid-bias circuits as well as to the H.T. supply leads.

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Bad cases of interference from electrical apparatus may need individual attention and suppression at source, but whenever the remedy is “two condensers across the mains and centre point earthed” this unit provides an efficient and handy solution.

★ NOTE:—‘Atmospherics’ are not mains noises.

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1935 EDDYSTONE SHORT WAVE MANUAL

THE B.B.C. XMAS PLANS
Further particulars of the Special Yuletide Programmes.

FROM Sunday, December 23rd, the programmes of the B.B.C. will be proclaiming the spirit of Christmas—peace, goodwill, jollity, everything that goes to maintain the age-old traditions of Yuletide in England.

Monday is Christmas Eve. There are lots of good things for those who will be free from the worries of last-minute shopping and present-buying, but I suppose that the evening, round about eight o'clock, will be early enough for most people to settle down and listen.

Entertainment Hour should, and no doubt will, because it always does, prove a big attraction, and this will be followed by a carol service given by the Wireless Singers and members of the Wireless Military Band, and relayed from St. Mary's Church, Whitechapel. This is a fine Christmas Eve feature that has been going on for years.

Starting in Good Time.

A Christmas morning service, relayed from St. George's Chapel, Windsor, will start most receiving sets working at 10.45 a.m., and this will be followed by a concert given by the Scottish Studio Orchestra, organ music by Sidney Torch from the Regal Cinema, Edmonton, and another concert by Joseph Muscant and the Troxy Grand Orchestra.

An interval of some minutes will divide these programmes from the most important broadcast of the day, which begins at 1.55 p.m. and goes on until just after three o'clock. Between those times the voice of the King, speaking at Sandringham, will be heard all over the Empire, as it has been on Christmas Day for the last two years.

Many weeks of planning and rehearsing will have gone into this very special broadcast. True, it will be framed somewhat on the lines of some previous Christmas Day programmes of relays from all over the British Isles and the Empire, but nothing so elaborate as this year's programme has ever been attempted.

It is built up on the principle of having several relays "on tap" at the same time, and "holding" them, silent from listeners, upon what is known as a "D.C." panel, from which, by the twist of a knob, they can be faded in and out of the transmission as required.

The ordinary "D.C." panels at Broadcasting House were inadequate for what was required this year, and so a new one was constructed with "unseen" channels, or incoming lines, and even then there will not be sufficient to cope with everything it is intended to pass on to listeners.

This device in "D.C." panels is just about the maximum that a single producer can manipulate, and even then he will have to work while seated on a special contrivance that moves on rollers to enable him to travel as quickly as possible from one end of the panel to the other. The human factor is generally pretty efficient at the B.B.C. I hope it will be at the very apex of its form for this Christmas Day broadcast.

Tango music, orchestral music, dance music, cinema organ music and band music will all have their places in the National programme before listeners are invited to join the B.B.C.'s Christmas Party at 7.30 p.m. For two hours the Variety Department at Broadcasting House is going to make whoopee on a grand scale.

For Dance Enthusiasts.

I doubt whether anybody knows quite what will happen, but there will, of course, be dance music, and plenty of the stuff that people called comedians call work.

Did you say you want to dance? You may be too tired to do any more, or perhaps too—no, I won't say it, because that can happen to the best of us. But if you do want to dance you can to music on some or other British wavelength from 9.45 p.m. onwards.

And now for Boxing Day and for "Mr. and Mrs. Bluebeard," founded upon Arthur Collins' Drury Lane pantomime of 1901-2, which has been adapted by Gordon McConnel, who will also produce it.

Dick Francis and Leonard Henry will be Mr. and Mrs. Bluebeard respectively, and, apart from the young wives, ageing wives, old wives, slaves, seamen, soldiers, fairies and tourists, the cast will also include the Revue Chorus and the B.B.C. Variety Orchestra.

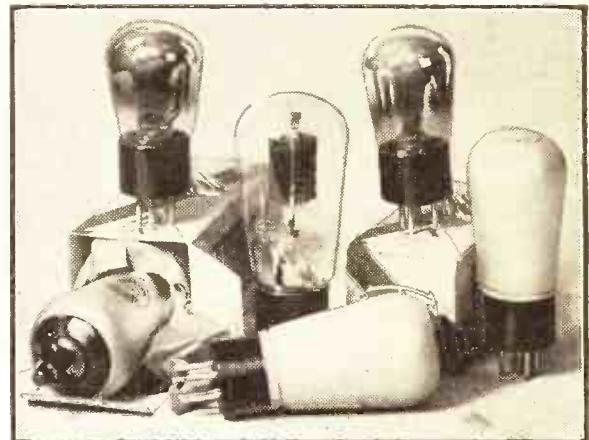
USEFUL STEEP-SLOPE VALVES
Details of some new Triotron Battery and Mains Types.

WE have received a selection of the latest Triotron valves for test in our Research Department. They comprise a variety of battery and mains valves of the high-efficiency type that should be ideal for home constructors.

For instance, there is the A214, a high-slope detector valve that is non-microphonic and has a slope of 2 milliamps per volt. It has an impedance of 10,000 ohms and an amplification factor of 20.

Then there is the YD2, a power valve of 4,500 ohms impedance with the same high slope as the detector just mentioned. It is a very useful valve indeed, being able to carry a grid input of some 10 volts or so.

Among the mains valves we should like to bring to your notice is the S434.N, a variable-mu H.F. pentode of steep slope that is ideal for one-stage H.F. receivers, and with it might conveniently be employed the A440.N, which is a particularly high-



A group of the latest Triotron valves.

efficiency detector. It has the very fine mutual conductance of 4 with an impedance of 30,000 ohms. This valve, together with the H.F. just mentioned, would make the main sections of a very fine three-valver.

For the output stage we would recommend either the P441.N, which is a pentode valve with an undistorted output of 3,800 milliwatts, or the pentode P440.N, which gives 2,000 milliwatts output. The former valve has a slope of 4, and therefore is particularly suitable with the other valves mentioned for the formation of a really hot three-valve receiver.

The latter pentode has a mutual conductance of 3.5, and naturally takes a somewhat smaller maximum grid input than the former. The P441.N requires 22 volts to load it fully, while the P440.N needs only 15.

Finally, to complete the set we should use the G470 rectifier, which would give the necessary anode current at 250 volts for the entire set.

O. H. M.

OUTSIDE THE SET

Two Valuable Items we have tested

Goltone Ribbon-Carpet Flexible.

MOST readers must have, at one time or another, wanted to run wiring across the room either for a speaker connection or for an electric lamp or fancy illuminations.

It is not easy to do this and keep the wires tidily concealed. Probably many run risks using unsuitably thin wire so that it shall not show.

But once again Messrs. Ward & Goldstone, of Frederick Road, Pendleton, Salford, Lancs., have come to the rescue. Some time ago we remember saying that this enterprising firm manufactured electrical conductors suitable for almost every conceivable purpose.

And they are clearly substantiating their claim to lead the market in this respect. The moment the need for a special conductor becomes apparent, an efficient one bearing the well-known name of "Goltone" appears as if by magic.

Their newest product is the Goltone Ribbon-Carpet Flexible, which solves once and for all the problem of taking wires across rooms so that they are hidden.

This special conductor consists of a flat ribbon of very tough rubber in which are buried two independently rubber-insulated wires.



The Goltone Ribbon Flexible is ideal for running under carpets or linoleum.

The ribbon is about $\frac{1}{2}$ in. wide and $\frac{1}{4}$ in. or so thick at the centre. But it tapers off to each side. It is quite flexible and the wires are stranded. Laid under a carpet or linoleum, it can be walked upon as often as you like without the slightest fear of any damage being occasioned to it.

In fact, it is so tough that even without the protection of carpeting above it we feel sure it could safely resist the attacks of the roughest boots.

The Graham Farish Pick-up.

IT often happens that an otherwise very good piece of apparatus fails because of some practical point in its application or operation.

For instance, a motor-car might be fitted with a magnificent and powerful engine and with first-class accessories, springing and so on. But if you could sit in it only in an uncomfortably cramped position you would not tend to think of it as a good vehicle to travel in, despite its indisputably good technical features.

This sort of thing frequently applies to radio. Consider the pick-up. However magnificent the performance which might be possible with a certain pick-up, you wouldn't regard it as favourably as you might otherwise do if you pricked your finger every time you changed the needle.

That is no far-fetched case for illustrative purposes. We have in the past met quite a few pick-ups which made needle-changing a tricky and slightly hazardous task. Perhaps because the arm would lift only a couple of inches and you had to juggle about fitting the needle in an almost upside-down position.

Or the pick-up head rotated only a comparatively few degrees, and the arm did not lift at all!

This is no matter of small importance, for it is necessary to enjoyable radiogram working that you should be able easily and quickly to change needles. If it is not possible to do this, then there is the standing temptation to use one needle for a longer period than you should, with consequent bad effects on the response of the pick-up and possible bad wear on the record.



The Graham Farish Pick-up gives excellent results and sells for the extremely moderate price of 14s. 6d.

It is because the new Graham Farish Pick-up enables needle-changing to be slickly carried out that we were at once attracted to it. The arm lifts up into a practically vertical position and stays there with the aid of a simple but effective clip device until it is

brought down again for the new needle to contact the record.

With a vital practical point of this nature in its favour the Graham Farish Pick-up could be forgiven for having quite a few faults, but in that it has not, and moreover, costs only 14s. 6d., it constitutes a decidedly attractive proposition.

It is also of good appearance, for it largely consists of a clean, pleasing bakelite moulding, the design being artistically flowing.

The arm swings smoothly, and the head is scientifically offset to ensure good tracking. The neat bakelite pillar is provided with convenient holes for fixing screws, and there is in this connection a point which will strongly commend itself to constructors. It is a further indication of the skilfully practical character of the whole design.

There is a niche at the bottom of the pillar so that the connecting leads can be carried along the top of the motor-board if desired. This will often make it much easier to mount the pick-up.

Direct sound from the Graham Farish Pick-up is low in intensity, and there are no noticeable resonances. The response is first rate. There is clean bass, and a full provision of crisp high notes. There is neither the squeaky scratchiness nor the smudging that mars the performance of all too many inexpensive pick-ups.

Graham Farish have produced yet another line which is bound to find its way into the homes of a vast number of constructors. If there is one criticism which can form a slight debit against a big credit entry it is that there is no stop fitted.

But we must not end on a discordant note of even a small dimension, for at 14s. 6d. this Graham Farish Pick-up really is a fine piece of work, and its response is every bit as good as, if not better than, some pick-ups costing considerably more money.

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Dear Sir,—Will you please accept my very best thanks for the "Book of Practical Radio," received to-day? As a reader of "P.W." I am grateful to you for producing this volume at such a price, and also to Mr. Scott-Taggart for so freely pouring forth his enormous experience of practical radio.

One sometimes wishes so much that S.T. were here to answer one's endless "constructing difficulties" and little troubles. As far as I can see from a brief glance at the new volume, a dip into its pages will be the very next best thing to having S.T. himself to talk to.

Along with the "Manual of Modern Radio," this year's volume makes up a radio library as complete as the "merely mechanical" person could possibly want!

Laurence Lindsay,
47, Queen's Road,
Bradford.

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Dear Sir,—I wish to offer my congratulations to Mr. J. Scott-Taggart for compiling such an instructive and useful book as "The Book of Practical Radio," and to you and your staff for producing the volume in such a magnificent style and at such a low price.

This book, together with "The Manual of Modern Radio," should find a place on the bookshelves of wireless enthusiasts all over the country.

Wishing your paper every success,
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Handcross, Sussex.

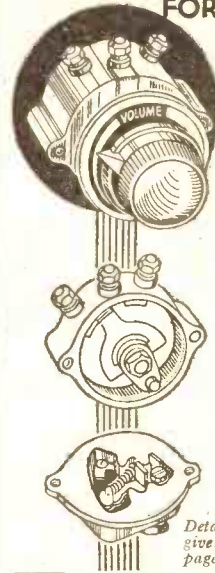
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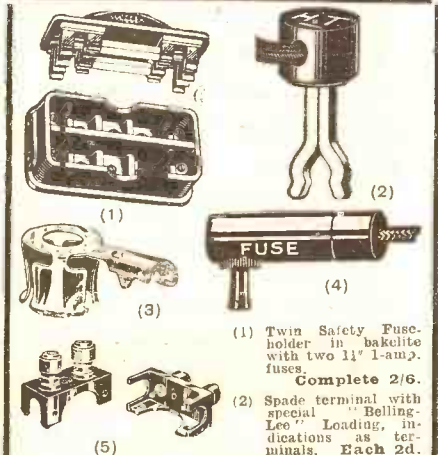
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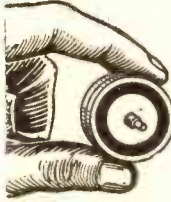
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"A MUSICAL TREAT"

Says our Broadcasting Critic concerning one of the recent programmes. He has a few words to say about some other items too in this weekly critique.

"THE Gypsy Baron" was a real musical treat. Divorced from its libretto, a résumé of which was given by a narrator without any superfluity, the delightful music of this comic opera could be continuously enjoyed for an hour. That is, if Shaw's "Village Wooing" wasn't able to tear you away from it. This was unfortunate clashing, if you like. Couldn't it have been avoided?

But to return to "The Gypsy Baron." All the soloists were in line voice. Bea Hutton as Sall (a gipsy maid) was superb. Never have I heard the famous "Zigeunerlied" sung better. In fact, all the music in the first act was first class. John Hendrik was prominent here, but it would be unfair to the Wireless Chorus to give him all the praise. These days the Wireless Chorus are no mean performers. One has watched their progress with tremendous interest. They were excellent in the Chorus marching song.

Shaw's "Village Wooing" has been hailed as the ideal radio play. A controversial point, I think. I suppose it all depends on how you define the word "ideal." Broadcasting is aural, not visual. It demands listening. "Village Wooing" was certainly most arresting to the listener interested in plays. The typically Shavian dialogue just made you listen. As in much of "St. Joan," you could listen easily. Here was no imposition: it was pleasurable listening. On these grounds, then, I might agree that "Village Wooing" approached the ideal.

I enjoyed "The Tail of the Herrin" from Fraserburgh because it was the real stuff—the spontaneous talk of real fishermen rather than the impressions of a one-time holiday-maker there written down and being read. It didn't matter a jot that we southerners couldn't catch a hundredth part of what was said. I did catch, however, that the skipper of The Mary Herd hoped to draw seven pounds—for nine weeks' work. I also caught the merry laugh that followed. Immediately I thought of George Blake's line of the previous week, "And still Scotland lives."

Two discussions—one might be called a drama—stood out prominently among the week's talks: the Parrish-Bartington conversation in "Is that the Law?" series, and the Julian Wylie-Mack Sennett argument, "Pantomimes v. Films," which is now such a tragically moving memory.

The former was a depressing and tragic story of mistaken identity, causing the victim untold misery, mental and physical, for which the law offers no compensation. The whole country will sympathise with Mr. Parrish, particularly as, after it all, he is neither bitter nor malicious.

We would all have the law altered. It seems to me that, as the law protects the majority, as Mr. Bartington said, it might conceivably, without any loss of dignity, make a concession in favour of that unfortunate minority which Mr. Bartington described as being very rare.

Julian Wylie, whose recent sudden death we all lament, was no stranger to the mike about this time of the year. I remember his pantomime talk last year. I was struck with the friendly nature of this talk. I had expected something of a dog-fight. That two such rival magnates of entertainment as these could be so mutually sympathetic was a revelation. The result was that, as they allowed each his say, we listeners who are clamouring for a greater number of these light topical talks felt completely satisfied with the enlightenment the discussion provided. I am sorry we shall never hear Julian Wylie again; it is a great loss to the microphone as well as the theatre.

Sorry to hear that Mons. E. M. Stéphan is ill, but glad to hear reassuring news of him from his deputy at the microphone. Perhaps M. Stéphan believes in the principle of one man, one job. I am convinced, however, that broadcasting French lessons isn't his only line. Personality counts for a good deal where broadcasting is concerned, and M. Stéphan has personality. He always sounds to me as if he possessed versatility as well.

The Bournemouth Municipal Orchestra seems to have lost none of its prestige under the new control. Richard Austin is continuing the good work already done there. He gave a really beautiful concert the other afternoon. The *pièce de résistance* of the programme, I thought, was Handel's Organ Concerto No. 2, performed by the orchestra, with Percy Whitlock at the organ. It is rare that we hear an orchestra with an organ; the innovation was welcome. Now, B.B.C., you've an orchestra and an organ. Can't you put them together sometimes? C. B.

CAN YOU RECOMMEND A SET?

Jottings of Interest to All

By Dr. J. H. T. ROBERTS, F. Inst. P.

WITH Christmas almost upon us, everybody's thoughts—or so it seems to me—turn in the direction of getting a radio set, or a new one if they already have one. I don't know how many people have asked me during the past few days if I will get them a set, or at any rate tell them what set to buy. I expect you have all had the same sort of experience at different times. If you have you know the delightfully vague specification. Generally the only thing specified at all is the price—"as little as possible." Still, you must admit there's a certain amount of sense in that.

A friend asked me only to-day to recommend a set for a present for a lady friend of his. The price was to be "as little as possible" (I seem to be getting used to that), and it didn't seem to matter much whether it was a mains or a battery set. I feebly suggested that it might be as well to know this, at any rate, and that crystallised his ideas on to a battery set. (I suspect that the train of reasoning was that a battery set got away from the extra trouble of deciding on mains voltages and horrid things like A.C. and D.C.)

What Stations Do You Want?

Next I inquired what sort of stations the set was to bring in, to which the reply was, "Oh, any old thing: just a couple." At any rate, he didn't say, "What stations have you got?" like the man at the railway booking office!

I forgot to say, also, that the set was to have no aerial or earth, but to be "one of those that you can carry about."

Now you're wondering what sort of a set I recommended. Well, I got out of it all right. I ought to—I've had enough practice. What set would you have suggested? I'm not going to tell you what I recommended, but it didn't answer to the "specification." And in case others may contemplate asking me similar questions, may I draw their attention to our Weekly Listeners' Service. They'll find good advice in those pages.

H.T. Coupling.

Many people think that a run-down H.T. battery only causes trouble because its voltage has fallen too low. This, it is true, will often account for a good deal—depending largely upon the type of circuit in which it is used. Some circuits are much more sensitive than others to variations in the value of the anode voltages applied to the various valves.

But quite apart from this obvious effect of the running down of the battery (I am referring particularly to an H.T. dry battery) there is the question of the internal resistance of the battery. As you probably know, the battery gradually dries up internally and also certain chemical changes take place in the ingredients, the effect of all of which is to increase the internal resistance.

When a battery is new and in good condition, its internal resistance is remarkably

low, but it may increase to very many times this value as the battery wears out.

Motor-Boating.

The anode circuits of all the valves pass through the H.T. battery, and therefore, if this has a considerable resistance, there will be a coupling set up between the different anode circuits, owing to this resistance. Fluctuations in the latter valves will be passed back to the earlier ones, and will produce added amplified fluctuations with the original ones. This state of affairs soon leads to howling or, in some conditions, to "motor-boating."

The Need for Decoupling.

The effect is got rid of by counteracting the coupling effect by "decoupling." A fairly large-capacity fixed condenser connected across the H.T. battery will often do the trick, whilst another method is to connect a resistance and condenser in the anode circuit of the detector valve. This may be followed, in bad cases, by a similar arrangement in the first low-frequency stage, the output stage being decoupled by means of choke output.

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So far as motor-boating is concerned, a well-known trick for curing this is to reverse one pair of leads to the L.F. transformer. This is so easy that it is a good plan to try it first before doing anything else. If it works you save yourself the trouble of trying the other methods.

Sets For All Waves.

Interest in short-wave reception is increasing rapidly, largely due to the great amount of good things that are now to be found in the short-wave region and to the simplicity of operation there. The question has for a long time been discussed whether sets should be fitted with all-wave coils or whether separate sets should be used for short and broadcast bands. At first sight it seems obvious that an all-wave set meets the case, but it is not really so simple as that, as you will see if you think about it for a moment.

In the first place there are many occasions when a dual set is not convenient for general use, and in the second place it is not quite so easy as you might think to design an all-wave coil system—that works. Where the all-wave arrangement is provided in commercial sets it is generally accomplished by means of two separate tuning circuits, one for each waveband. Although this accomplishes the desired result in a way, it is not, of course, what is meant by all-wave coils.

The same kind of controversy for a long time centred around the question of ganged or separate condensers. When ganged

condensers were first introduced they were "the last word," but some people are going back to separate tuning circuits with single condensers.

There are various reasons for this. Keen amateurs often prefer to have more knobs to twiddle and like to feel that every individual part of the circuit is under separate control—no bunching or lumping them together. They feel that by getting each circuit separately in tune with the incoming signal the circuit, as a whole, is more efficient than if a sort of "average" is struck in the shape of the ganged-condenser system.

Concentric Trimmer.

There is a good deal to be said for this, and, moreover, it depends upon whether you are an experimenter, in any sense, or merely a listener. I think it will be generally agreed that, for purely listening purposes, the ganged-condenser arrangement "has it." For experimental purposes the single condensers give you more latitude, and naturally the extra trouble in operating is not a trouble to a keen amateur.

The objection to the ganging system, that it sacrifices something in efficiency to "averaging," is not nowadays so material as it was a year or more ago, since gang condensers have been so much improved—not to mention coils.

Coil Inductance.

The concentric trimmer has made a great difference to the ease and accuracy of ganging. If the coils are up to scratch and the side trimmers properly adjusted I do not think there is very much in it as regards efficiency between the ganged and the single arrangement of condensers.

In these days, also, the uniformity of inductance of coils is so extraordinarily good that the problem of ganging is greatly simplified from that cause alone. In fact, with ganging made easy by the improvements in coils, and still easier by the refinements in trimming, I personally do not think there is any argument about a choice, even where efficiency is concerned. There certainly is not in connection with simplicity of operation.

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INDEX
TO ADVERTISERS

	PAGE
Amalgamated Press Gift Books for Boys	547
Belling & Lee, Ltd.	553
Book of Practical Radio	543
Bulgin, A. F. & Co., Ltd.	553
Cossor, A. C., Ltd.	Cover ii
Electradix Radios	554
General Electric Co., Ltd.	Cover iv
Heyberd, F. C. & Co.	552
London Radio Supply Co.	555
Mains Power Radio, Ltd.	554
Mason, E.	552
Pickett's Cabinet Works	554
Pifco, Ltd.	543
Player's Airman Tobacco	547
Stratton & Co., Ltd.	552
Telegraph Condenser Co., Ltd.	551
The 362 Valve Co.	547
Tungstram Electric Lamp Works (G.B.), Ltd.	543
Ward & Goldstone, Ltd.	547

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