POPULAR WIRELESS, March 13th, 1937.

REGISTERED AT THE G.P.O. AS A NEWSPAPER.

NEW SHORT-WAVE FEATURE By LESLIE W. ORTON

Popular Wireless & Television Times

FULL CONSTRUCTIONAL DETAILS OF THE HI-POWER

EVERY WEDNESDAY PRICE 3D

No. 771.
Vol. XXXI.
March 13th, 1937.

Our cover photograph shows a broadcasting-studio scene from the recently completed Butcher-Hope Bell film "Rose of Tralee."

LATEST TELEVISION NEWS will be found in "Seen on the Air" and "Television Topics," two of the special features appearing each week.

POPULAR WIRELESS AND TELEVISION TIMES

Editor: G. V. Dowding Asst.-Editors: A. Johnson-Randall, A. S. Clark

S.W. FEAT
FOR TESTING
MORE TAX?

RADIO NOTES & NEWS

OVER THE FENCE
PROGRESS
THAT'S FLAT

Seen on the Screen

HOLLYWOOD occasionally puts radio in a conspicuous role on the screen, but in general we do not expect to find much of wireless interest when we have blinked our way through the blackness that leads to our favourite seat in the cinema. (Mine's a back sixpenny!)

When Grosvenor Sound Films release their new air-raid-on-London story, "Midnight Menace," there will, however, be a technical titbit that I shall try hard not to miss. I'm told that in this film the radio apparatus shown controlling bombers is a genuine straight-off-the-ice replica of the instrument used by the R.A.F. for controlling those wonderful "Queen Bee" planes which disport themselves so effortlessly and pilotlessly.

But you know how it is with a seat in the sixpennies—just as you glue your eye on to the screen the fat lady in front will rise and black out creation. "Let's go now, Bert. Got yer gloves?"

Each to All and All to Each

ALREADY 1937 has put amateur radio into the history books with as neat a feat as one could wish for.

Nutshelled, it amounts to this—that in each of the six continents a radio amateur spoke to and was answered by amateurs in every other continent. And the over-all, start-to-stop, "Go"-to-"Got-it" time was less than twenty-five minutes.

England was spokesman for Europe, Egypt for Africa, India for Asia, Australia for Australasia, U.S.A. for North and Colombia for South America.

I invite you to meditate further upon this miracle, for although twenty-five minutes is a reasonable time to wait for a cutie, and not bad time to intercommunicate with five other continents, it's mighty hard to find twenty-five minutes that are equally good for all-the-world working in Europe, Asia, Africa, North America, South America and Australasia.

Well, the amateurs have done it, and my correspondence course in old-world courtesy prompts me to remove the old sombrero in solemn salutation.

Frequency Fixation

ALTHOUGH there seems no prospect of the oft-desired regular radiation of low-frequency scales, to enable us to decide exactly where our loudspeakers and other apparatus fail us, it is wrong to suppose that standard frequencies are not transmitted. One audio- and one radio-frequency transmission go out regularly from the N.P.L. (National Physical Laboratory) at Teddington.

The audio-frequency transmission is a note of 1,000 cycles. It can be tuned-in on 758 metres, on the second Tuesday of every month, between 10.40 a.m. and noon.

The radio-frequency transmission of 1,780 kilocycles is sent out from 9 p.m. to 10 p.m. (G.M.T.) on the first Tuesdays of March, June, September and December. It takes the form of a continuous dash, from station G 5 H W. The transmission (equivalent to about 168·54 m.) is dead-on the frequency named, within one-millionth of error.

A CARROLL LEVIS DISCOVERY

"Carroll Levis and his Discoveries"—the "Amateur Hour" programme which has achieved considerable popularity with listeners is composed of new and unknown artists from every part of the country. Here is Jack Pearson, a Glasgow 'bus driver who took part in a recent programme. He imitates musical instruments and farmyard animals with amazing realism.

America Coming Closer?

WE old hands at radio, who have been picking up programmes from across the Atlantic ever since broadcasting began, should sometimes sit back and notice how many non-technical acquaintances are now able to tune-in America.

This tendency to draw closer is one that develops as the modern set develops; and it now gets aid from the transmission side, too. Canada's new radio schemes will help us to get her programmes more easily. In the U.S.A. there is a proposal to increase power in general, and to build super-stations with greater range than the present ones.

The Federal Communications Commission is considering a proposal for extended wavebands, and for twenty-five super stations bursting with wattage. They won't be intended for us. And they won't be working for a year or so, but I'll bet that by then there will be an S.T. halter designed with admirable exactitude to fit their necks.

Don't Kill the Goose . . .

DO you know what I heard the other day? A rumour that Mr. Neville ("Put-it-There") Chamberlain was going to consider the possibility of further Exchequer extracts from the pocket of John Listener.

Between us, we listeners now fork out

(*Continued overleaf.*)

NEXT WEEK: **THE EVERY-BAND TWO** NO WAVECHANGING—RECEIVES ALEXANDRA PALACE—ALSO SHORT, MEDIUM AND LONG WAVES

TELEVISION A NEW EXCUSE FOR PINK ELEPHANTS

a little matter of £4,000,000 per annum; and I suppose any good Chancellor would naturally cast a speculative eye on a group of guys who could perform a financial operation of that magnitude without a blink. But it should be remembered that aforesaid guys buy themselves radio sets in order *to help them forget their other taxes.*

Should the radio orange be squeezed until the Six Pips jump out? Is it politic to slay the lady gander whose ovarian produce is of the precious metal? 'Xchequer, stay away from mah door.

Over the Fence

A WELCOME hint of Spring in the air has already started off the amateur gardeners, and the usual crop of pointed comments will soon be under way.

Have you heard this one?

First neighbour: "If ever you get pains at the pit of the stomach, you ought to try that new medicine they keep mentioning in the Radio What's-his-name programmes."

Second neighbour: "Never listens to Radio What's-his-name myself, so I don't *need* no medicine for pains in the stummick!"

Nephew's Farewell

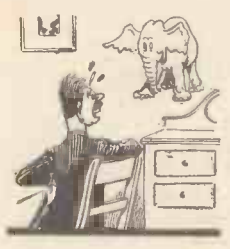
SO after all these years it is time to say final and absolutely irrevocable farewell to B.B.C. aunts and uncles.

For a long time they have been unwelcome in the Children's Hour, but somehow or another Derek MacCulloch used to snoop one in now and again, apparently without consequent utter demoralisation of the youthful audience. And what harm, I wonder, was wrought by an occasional aunt or uncle visiting the Children's Hour, except to make it relatively human? (Mark the "relatively"!)

But now, *exit* aunt, *exit* uncle; *enter* decorum, dignity, and the cold rigidity of Portland (Place) cement.

Television Without Any Apparatus!

SHED with me a sympathetic tear for a gentleman of Whitechapel who is receiving television programmes without any television apparatus whatever. He does not enjoy the programmes.



As soon as he sits down in the evenings for a quiet smoke-o, the blank wall in front of him becomes, to all intents and purposes, a front seat at the "flicks." Shadowy figures have their exits and their entrances, and each one in its turn plays many parts. The animal kingdom, too, is well represented, squirming and squiggling about in a manner that fascinates while it tires the unwilling observer.

Fortunately, the other people in the room can see nothing at all of these goings on, so they are inclined to be sceptical about them; but the gentleman of Whitechapel has a scientific explanation which satisfies him completely: "It's this new blankety-blank television, I tell ya'!"

Progress

I THINK I told you some time ago of the new North London flats which were equipped with television as one of the attractions. Well, I've been looking over the complete specification, and though I unreservedly hand it to the architects for their up-to-datery, I am saddened by the two-edged character of some aspects of this progress we are so proud of.

Television is there, with amenities like refrigeration, electrical timekeeping, water-softening, built-in loudspeakers, sound-proofing, and so forth. But also embodied in the design is a unique air-raid shelter, with emergency food storage and gas-defence equipment.

Man has become so scientific that he can "look in." The other side of the picture is worth remembering also, for science can give man "such a look."

"MIKE" SLIPS AND QUIPS

Announcer, getting a little mixed:
I can't quite get the gist of that—but I have an idea you have a pretty fair idea of the idea of it.

* * *

During sponsored programme:
It will do your tired feet good just to see these carpets.

* * *

Announcer giving cricket results:
Grimmett not out—a duck.

* * *

Australian cricket commentator:
Ward is fielding on the leg side, half-way between the batsman and the wicket.

* * *

Advertiser, during sponsored programme:
And, moreover, A——'s will supply you with a suit for Four Guineas, for which you usually pay Five and Six.

* * *

During the reading of a story:
Miss Rawson's two sons—er—Mrs. Rawson's two sons.

* * *

Uncle, talking to children in Children's Hour:
Your mummy and daddy will be pleased, I know; I'm a mummy and daddy myself.

Accidents Will Happen

PERHAPS I ought not to tell you about this—but there, accidents will happen.

And this accident was when a careless typist wrote to a lady who had been having a radio voice test. The typist mixed the letter up with one that should have gone to a salesman who had been pestering the station with offers of patent wallpaper, specially invented for use in studios.

The lady whose voice had been tested knew nothing of this, and was horrified to read: "Dear Madam,—It will be useless for you to call here again, since our recent test convinced us that our studio roof and walls are best left as they are. All the trouble we took with you was wasted, and we are sorry to have to add that for some hours after your visit there was an untidiness in the studio which was very inconvenient, and not readily explained away. Please regard this as our last word on the subject."

That's Flat

A RECENT decision of the Marylebone magistrate, Mr. Ivan Snell, may have encouraged the hope that flat-dwellers who plugged-in to a central radio receiver could receive their programmes free, gratis and buckshee, without any necessity to leave a ten-bob note on a post-office counter beforehand. On appeal, however, Lord Hewart dispelled all hopes of that kind.

Whether you pick up the programmes on your own receiver, or plug-in to get them from a communal instrument, you *must* take out a licence.

Well, I don't fancy flat-dwellers are going to grumble. Speaking as an ex-flat dweller, I affirm that the tribe is remarkably non-grumblesome. I know that my neighbours never grumbled, for I could lie abed and hear every word they said!

The War on Interference

SOME 10,000 complaints of interference with wireless were received by the Post Office in 1932, but four years later the number had risen to 40,000. And the bitterest letters, the loudest curses, and the most emphatic condemnations were hurled at the interference caused by electro-medical installations.

Post Office engineers have evolved, and are now testing, apparatus that promises an effective cure. It consists of chokes fitted to the source of interference so that this does not get back into the electric mains, and so travel to neighbouring houses; aided by metal screening of the whole room in which the electro-medical apparatus is working, to prevent direct radiation of the interference.

I wish the engineers success.

Deep Sea Dialogue

OTHER fishing ports are watching with interest—and maybe with some anxiety—an experiment now being tried out at Hull, Grimsby and Immingham. For a mere seven shillings, residents of those districts who are wives or relatives of fishermen, trawling on the deep, can be put through on their telephones for a three-minutes' chat with Young Ned, Boy Frank, or other storm-tossed mariner.

If the service is successful it will be extended to other ports having large numbers of radio-equipped craft. But approval of the scheme is by no means unanimous. As one skipper explained to the deck-hand: "If the 'ole woman can call me up every time she thinks of something she wants to say, wot the 'ell's the use of going to sea?"

ARIEL.

ROUND THE B.B.C.—No. 2

THE MUSIC LIBRARY AT BROADCASTING HOUSE

By

K. D. ROGERS

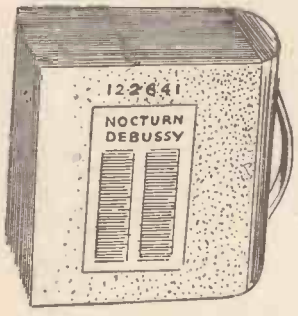
"P.W.'s" Special Contributor

TONS and tons of paper, millions of sheets of music. That is the B.B.C. music library, which in its 14 years of growth has developed into one of the finest in the world. It is certainly the biggest, save perhaps for that of the British Museum.

Yet in 1922 the foggy month of November, the present library consisted of a few pieces of orchestral music on the range of a disused kitchen on the seventh floor of Marconi House. To-day there is a staff of 33 working full time in the vast library which occupies the space of six large rooms in Broadcasting House.

That old kitchen was commandeered by the just-born B.B.C. as a store room, and was placed in charge of Mr. Frank Hook, an orchestral pianist and accompanist who had come to the B.B.C. to see if he could be of any use in a similar capacity.

Mr. Hook is still in charge of the library, though it has grown to contain 200,000 vocal scores, 22,000 orchestral works, each of which contains anything from 10 to 120 separate parts of music, and a score for the conductor.



★

"He lugged out a great big fat cloth-bound case of Debussy's "Nocturnes."

★

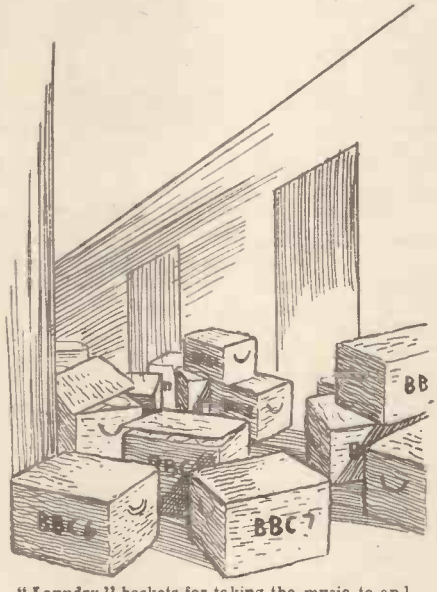
In addition there are separate libraries for the Regional orchestras, the second containing something like 5,000 works, and a triplicate library of about 1,000 items, to say nothing of the library of military band music and those of organ, solo pianoforte, violin and piano, 'cello and piano, and many other instrumental combinations.

My first introduction to the music library consisted in turning the corner of a corridor somewhere up near the roof of Broadcasting House, and stumbling over about half a dozen laundry baskets.

They Were Not Washing Baskets

Whatever are those doing here? I thought. Not the B.B.C. washing surely. Then I looked again. It was to do with the B.B.C., for each basket, empty, had on the sides the letters B.B.C. and a number, 6, 7, 8 and so forth.

I knocked at a door. "Come in," said a cheery voice, and in a moment I was in the hands of big, broad hearty Mr. Hook. "Yes," he said, in answer to my query, "those baskets belong to the B.B.C., and are used for taking the music to and from the Maida Vale studios. They go to and from them every day packed tight with music."



"Laundry" baskets for taking the music to and from Maida Vale.

He took me to another room. Piles of music were being done up into brown paper parcels, tied up securely, labelled and sealed. These were going off to the various Regional stations.

"We send something like 2,700 packets of music by post every year and about 1,100 by rail," said Mr. Hook, "but of course there are a tremendous number delivered by hand in London, music being returned to publishers, composers and so forth. We supply the Regional stations with practically all their music, so that the dispatch department is a very important one in our work. Now come into the main library."

We went into a room lined with great steel shelves, and in each avenue between the shelves were special steps enabling the staff to climb up and get out any particular piece of music wanted.

Mending Damaged Music

"Look at this book," said Mr. Hook. He lugged out a great big fat cloth-bound case of Debussy's "Nocturnes." "There's a set of parts for you, and the label on the front shows everything that is inside—how many violin parts, oboes, flutes, clarinets, and so forth."

As I walked round the library, rolls of music tape were to be seen on some of the shelves.

"Do you have much mending to do?" I said, pointing to them.

"Mending, I should think we do, we're always at it. It is deplorable how music gets damaged. But, on the other hand, it is wonderful what a lot of music can be saved by careful mending. Do you know the music here is examined and overhauled after every time it is used, even after rehearsals. Look at this."

Ready For Forthcoming Programmes

He took me into another room, which had shelves running down the whole length of the room with piles of music all labelled with various dates—Dec. 31, Jan. 4, Jan. 27, and so forth.

"What are those?" I asked.

"Music that has been got ready in covers for forthcoming programmes in London. This is what will happen to them. As soon as an orchestral, vocal, choral or any other concert is decided upon and put down in the programme, we are notified. We immediately get out the music and put it up in

(*Please turn to page* 21.)

"There on two shelves were twelve great vertical revolving files."

RANDOM RADIO REFLECTIONS

By Victor King

"SONGS YOU MIGHT NEVER HAVE HEARD" :: DECORATORS—'WARE LEAKY SWITCHES

DANNY MALONE, well-known radio and gramophone recording artist, as he appears singing the title song in the new film "Rose of Tralee."

I HAVE received the following letter from Mr. Bruce Sievier :

"I have just been reading your reference to 'Songs You Might Never Have Heard,' in which you seem to be referring to a certain announcement as in the category of being a 'racket"—as you proceed to say after your remarks: 'It reminds me of an interesting racket . . .'

"Now first and foremost I am responsible for the scripts of these programmes. I am also the originator of the idea.

"Two things I am not associated with are 'chiselling' and 'racketeering.'

"No remark has ever ever been made in the scripts of these broadcasts that has materially helped any song into the first three. That is not either wittingly nor yet intentionally.

"A song-writer came along and sang his own song. This was announced. The song did not get a large amount of votes because of it, i.e. this announcement.

"We mentioned that a dish-washer had written a lyric. We did not say which one. Do you know from what was said ? And if so, did the song get less or more votes because of it ?

Trying to be Fair

"You seem to pride yourself that you can spot things better than the average listener. You can, yet you seem to be able to put a construction upon these things you so cleverly spot that does not exist !

"This is both hurtful and annoying to someone who in all sincerity is trying his best to be as fair as possible without losing sight of the fact that he has to entertain the public—our success has, I believe, qualified us.

"I don't know how many people read your notes, but if it is ONE or a MILLION I do not feel that you are justified in your remarks."

Now let me clear up one point right away. Those words "It reminds me of an interesting racket" were originally preceded in my article by a chunk of copy that the editorial staff of POPULAR WIRELESS neatly cut out in order to make my notes fit the page tidily.

I was very annoyed about that, although I realised that as I wasn't on the spot at the time I was merely one more victim of a normal editorial expediency.

Anyway, I hope Mr. Sievier will accept my apologies (and mine, Editor).

The excised paragraph referred to song-plugging.

But I join issue with Mr. Sievier regarding the statement made in his fourth paragraph referring to a song writer who came along and sang his own song. He says that the song did not get many votes because of the announcement made to that effect.

Well, in my opinion, neither the song nor its singer merited a large number of votes. But, in any case, what about the Tin Pan Alley Trio. It had been announced that they were singing their own songs, and "McDougal, McNab and McKie" and "She's an Angel of the Great White Way" have consistently figured among the three songs obtaining the greatest number of votes.

That, I think, Mr. Sievier, completely neutralises your argument.

And what about this :

The names of the Tin Pan Alley Trio are well known in musical circles. A long article appeared about them in a radio journal some weeks ago (in January), and in this article it was stated that the Tin Pan Alley Trio comprises Messrs. Box, Cox and Roberts, that they are the authors of the above two songs and that they had achieved success with them in the "Songs You Might Never Have Heard" programme !

And I note that at the time of writing they are still achieving success with them, having again harmonised them into the two leading places !

Are They Anonymous ?

Now while Messrs. Box, Cox and Roberts continue so ably to sing in harmony these now familiar tunes on the air, I think other people's songs, mostly sung solo, will have to be *mighty* good to collect a sizable backing of votes.

Such constant and very skilful repetitions is almost certain to enable the "Angel" and "McNab" to march their way to success over other numbers, however good, introduced later in the series.

A much better plan would have been to have had a preliminary series with no repetitions and to have made the Tin Pan Alley Trio—who so quickly lost their anonymity and who form a very able bunch of harmonisers—stand aside from those two of their own songs which they got going with right at the very beginning.

My original reference ? That was to "someone not unknown to radio criticism," and if about one million listeners didn't at once call to mind the name of a certain popular journalist . . .

It would have been just as unfortunate if they had been wrong !

However, even if the construction and presentation of the feature has faults, I must say "Songs You Might Never Have Heard" makes first-class listening. So far I haven't missed one of these programmes, and I hope Mr. Sievier will follow on with something else equally attractive.

SHOCKS FOR THE PAPERHANGERS

DECORATORS are busily at work in my house. The other morning the foreman waylaid me with the information that the paperhangers were getting shocks every time their brushes slapped on to the walls. I wondered if one of my many extemporised "points" had sprung a leak !

I even had visions of Board of Trade officials descending upon me with summonses for contravening their wiring regulations. That would be a nice thing for a radio engineer of some small reputation, I thought. Exit reputation !

However, investigation revealed the fact that the leak came from one of the ordinary switch fittings.

By the way, this foreman surprised me by telling me that the brushes used by his paperhangers cost over two pounds each. Apparently hogs' bristles are used in them. And a special kind of wild hog that runs loose in Russia.

They collect the bristles from the trees and bushes the creatures have rubbed themselves against. Only the bristles from four- or five-year-old hogs are long enough. At the present moment there are plenty of young hogs, but not many of the older chaps have escaped the cooking-pot, and so there is a scarcity of bristles and prices may rise even higher. Would *you* expect to pay more than a couple of bob for a brush to splash paste on with ? I wouldn't, and if I were asked two or three pounds for one I'd give up the project and send for Mr. Brick the builder to do the job.

TELEVISION TOPICS—*Collected by A. S. Clark*

A weekly feature which will keep the reader au fait with all the latest news and developments in television science. It will appeal alike to the newcomer to television and the advanced experimenter.

"TELEFRAMES"
Items of general interest

AN enterprising dealer in S.W. London has installed a television receiver in his shop window. Someone who saw the set working one night reports that he was particularly interested to note the effect on the screen of his car's engine as he drew up outside the shop.

We have had no reports on how effective the receiver is during the afternoon session; or, indeed, whether it is set going during daylight.

We hope this enterprising dealer will not receive attention from the police for causing an obstruction by too many people gathering at a time to witness his demonstrations.

* * *

HOSPITAL TELEVISION

The General Electric Company has received many inquiries from hospitals about the possibility of relay systems of television throughout a building from one central receiver.

In the case of radio installations in hospitals, one receiver is provided with relay lines to earphones at the patients' bedsides, or in some cases (e.g. in convalescent wards) to a loudspeaker.

"Television distribution from a central point to a number of screens is quite feasible," said a G.E.C. technical expert. "It would be quite possible for a large hospital to have one screen in each ward, operated from a central point. It would be necessary, however, to have a cathode-ray tube and loudspeaker for each reception point, and a special mains unit to supply the necessary voltage.

"The only objection, so far, to the scheme is one of cost; but, with the increasing demand for television, it is likely that the price will shortly be within the reach of most big hospitals. Experimental work on this development is already being carried out in our laboratories.

"We have also received inquiries from owners of large blocks of luxury flats, and it is possible that in one new building extensions will be provided in every flat from a central point."

* * *

MAGNETIC FOCUSING

In the past the home television experimenter has concentrated almost entirely on cathode-ray tubes with electrostatic focusing by means of deflector plates. As there is a definite tendency now towards magnetic focusing in commercial receivers, the experimenter would do well to investigate this system more, for it has a number of advantages.

Since it makes the four deflectors in the tube unnecessary, and since these have to be very accurately positioned, there is every reason to hope that the wider adoption of magnetic focusing will result in cheaper tubes due to the simpler construction.

* * *

AN H.M.V. BROCHURE

We have received a copy of the four-page brochure which H.M.V. are sending out on application to prospective television set owners.

Excellently illustrated, and including many photographs of television stars, this brochure describes in a non-technical manner the two H.M.V. television instruments, and emphasises the attractive hire-purchase terms available. Attention is also drawn to the fact that the prices of the instruments include television aerial, free installation and maintenance for one year.

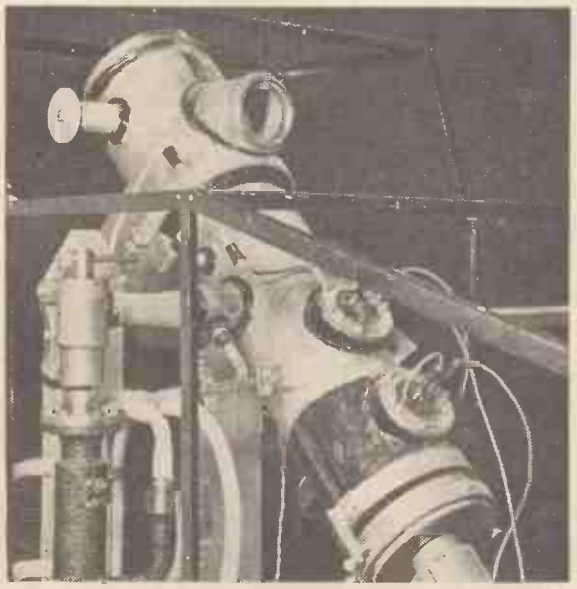
"LOOKING BACK"

A film showing Henry Hall and the B.B.C. Dance Orchestra in one of their first broadcasts six years ago will be seen in the evening television transmission on March 19th, when the band celebrates its sixth birthday in a special programme at Alexandra Palace entitled "Looking Back."

Viewers will not only see and hear the band playing some of its old favourites, but will be able to watch the cutting of the birthday cake. Henry Hall will recall scenes and sounds of the past, and will present the first television performance of Gershwin's "Rhapsody in Blue."

Among the guests will be vocalists who have appeared with the orchestra at different times since the beginning, including Elizabeth Scott, Vivienne Brooks, Bert Yarlett, and the Music Makers.

FOR PROJECTED TELEVISION



The business end of the new Lorenz-Rogowski television tube for projecting pictures. On the left is the pump for producing the vacuum, and at the top can be seen the object lens for focusing the picture. The tube is stated to employ a cold cathode, to have a variable colour interchangeable screen, and a new shutter control for the electron stream.

TWO NEW CONTROLS

THE user of a new television receiver will find that he has two fresh controls to deal with that he has not had on an ordinary receiver. They are Brightness and Contrast. We are, of course, neglecting the pre-set controls that must exist on every television receiver, and which once set do not normally require attention.

By correct use of these two controls the picture received can be set to the most effective appearance.

Analogous to a Volume Control

In one way, the contrast control also affects the brightness of the picture. This control is the equivalent of the volume control on sound reception, and alters the strength of the signals applied to the cathode-ray tube. When it is turned up the whites on the picture become brighter, and consequently the general appearance of the picture is brighter.

But it will not affect the depth of the blacks or the gradation in the dark parts of the picture. These, it will be found, can be altered by the brightness control.

Generally speaking, the brighter the picture the more the contrast control will need to be turned up. In view of this, it would probably be possible to gang these two controls over a small range, and this may possibly be adopted in the future as a means of simplifying operation.

The brightness control really alters the position on the characteristic curve of the tube at which it works, and the effect is very much like that of grid bias on an anode-bend detector.

Getting the Best Setting

If the brightness is insufficient, both blacks and near blacks will all assume the same shade of complete blackness. If it is too high, and especially if the contrast is turned down, the picture will be flat, like a print from a badly over-exposed negative.

Thus the brightness control is likely to spoil the picture when turned too far in either direction.

Probably the best setting of the brightness control for a given position of the contrast knob is so that the blackest parts of the picture are only just black.

However, it is impossible to be any more dogmatic about the settings than it is about the setting of a tone control on an ordinary receiver. It will always be largely a matter of opinion within certain limits.

TELEVISION TOPICS—*Continued*

THE "PICTURE PAGE" GIRL

MENTION of "Picture Page"—television's weekly magazine—always conjures up a vision of Joan Miller, the charming young Canadian actress who has appeared at her telephone switchboard in every one of the many editions already televised. Her part in the programme is to link up the items in such a way that there are no "awkward pauses," and those who know the high-speed conditions under which this very topical feature is carried out will realise that this is no easy matter. Perhaps a miniature mouse farm or an ant palace must be placed before the television camera, or it may be that a hockey team or a bevy of mannequins must be manœuvred into position, all within the space of a few seconds. Always imperturbable, Joan Miller "switches us through" when everybody is ready, and not before, maintaining a flow of easy conversation until the right moment arrives.

Joan began her acting career at the age of ten; one of her first regular tasks was teaching telephone girls elocution in Vancouver. In 1934, having won the first prize at the Canadian Dramatic Festival, she determined to try her luck in London. Very soon she was making regular appearances in the Empire broadcast programmes and at the Windmill Theatre. Her biggest stage part to date has been that of Louise Michel in "The Tiger," the Clemenceau play at the Embassy Theatre.

"Although I should like a big stage part," said Joan, in an interview, "I love my work in television, and I should always like to stay in 'Picture Page.'"

And viewers who see her on the television screen will know that she means it.

"Picture Page" is likely to go on for years, though its presentation may vary, but it will be the poorer should our Joan for any reason be missing.

TELEVISING MR. HORE-BELISHA

A scene in the studio at Alexandra Palace during the recent talk by the Minister of Transport on Britain's National Roads.

CHEAP AT THE PRICE

THE biggest feature of the recent price reductions in television receivers is really the fact that they are now available on weekly payments. This makes it possible for a large number of people who could not afford such a large sum in a lump to go in for television.

Suppose the terms work out at £1 a week. At first look it appears rather a lot of money. But consider it like this:

A Good Investment

For £1 you get the present six daily programmes. Each day's programme thus costs 3s. 4d. Twopence less than many pay for a seat at the cinema. And each day there are two hours of programme—getting on for as long as a film show.

Soon there will be longer hours of television each day, and for seven days a week. Then there will be more for less each day. So even if your pound was completely paid away each week you would not be doing so badly. But actually you are investing much of it, for when the television receiver is fully paid for, you still have an instrument that is worth many pounds.

In the above reasoning, television has been valued side by side with a form of entertainment now accepted as everyday. There are many who place the value of television very high because of its newness and novelty, to them it is even better value for money. But few query whether television is worth the money, the question, unfortunately, is can they afford it?

TELEVISION FOR BEGINNERS

G. Stevens reviews the general requirements in a receiver for the vision signals

IN case some of you have forgotten or have not been able to read all the articles in this series, this one will summarise what is required for the vision side of a complete receiver. The sound side, as we have already seen, is comparatively simple and can be adapted from an ordinary broadcast receiver with a short-wave attachment. For the vision receiver we can neglect for the moment the superhet, as that can be dealt with as a separate job, and consider a "straight" set for 6·67 metres wavelength (45 megacycles).

Stage By Stage

H. F. Stages. These amplify at the frequency of the incoming signal and may be as many in number as six. The reason for this number of stages is that the gain per stage is much lower than that of a corresponding broadcast receiver. The tuning may be done by ordinary coils of the short-wave type and pre-set condensers, but the tuning is usually artificially broadened by a resistance either in the coil itself or connected in the tuning circuit.

Detector. This can be an "anode bend" or plain diode detector. The latter is perhaps the best, although it has the usual disadvantage that there is no magnification in the valve, and with the low gain which we are compelled to use it is a pity to waste a valve. On the other hand the "detection characteristics" are a little better in a diode except on the very weakest signals.

Careful Wiring Needed

Video Frequency Amplifier. The frequency after the detector is low only by comparison with the radio signal, and the so-called L.F. stages in a vision receiver have to accommodate frequencies up to 2 megacycles. For this reason we distinguish these stages by the word "video." As much care must be used in wiring as in an ordinary R.F stage in a broadcast receiver. The number of video stages will depend on the number of H.F. stages because the polarity of the signal must be right for applying to the grid of the tube. Two stages of H.F., one diode and two of V.F., is an example of the correct number for an output signal of correct polarity.

Additional Valves

Extras. There are two extra stages which we have not met in ordinary valve working. These are (*a*) the D.C. component valve and (*b*) the synchronising valve.

(*a*) is another diode usually, which is fed from the last video stage and which alters the bias of the cathode-ray tube according to the mean value of the video frequency voltage in the output. This diode needs to be highly insulated from the rest of the receiver if the anode of the tube is earthed, and it is usually fitted with a special transformer for heating. Incidentally a Westector might do, and would save a lot of bother.

(*b*) The synchronising signal must be in the opposite phase to that of the vision signal, and another valve is therefore required to reverse the polarity so far as the tube and scanning circuit are concerned. In addition it is of great advantage to limit the synchronising pulse so that variations in signal strength do not affect the margins of the picture. This valve will also therefore smooth out the pulses and apply them to the time-base at a constant amplitude. In the output circuit of this valve is a filter to separate the picture pulses from the line pulses. This is particularly important in interlaced scanning, as it is easy to lose the interlacing if the synchronising is not exact. But more of this anon.

Little Effect On Design

So now you have the whole story as briefly as possible. How will the reduction of the transmission systems from one to two affect the receiver? Hardly at all. It will make a little difference to the scanning circuit and save a few components, but the receiver would have to have received both E.M.I. and Baird transmissions equally well and no alteration need be made to the layout or values of the components.

ON THE SHORT WAVES

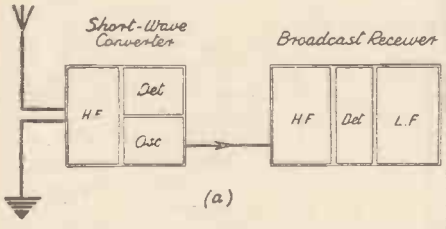
CONVERTER OR ADAPTOR ?

W. L. S. discusses the pros and cons of the two methods

FASHIONS change—even in short-wave radio. The set that was the reader's ideal a year ago is probably just a pain in the neck by now; and even *I* change my mind occasionally. But there's one thing on which I seem to have a pretty settled opinion—and that is that it's not worth your while to build a big short-wave receiver these days.

Most of the designs that I put forward from time to time are for quite small sets, or for adaptors or converters—those convenient means of turning an ordinary receiver into an effective short-waver.

I receive bricks for this policy, time and time again. People hint at the fact that I don't design a big superhet (*a*)



because I don't know how to, anyway; (*b*) because I'm too lazy; or (*c*) because it wouldn't bear comparison with ready-bought receivers of the same type.

As a matter of honest truth, there may be some slight foundation for statement (*b*) above, but the real reason is that I know no one would build it, even if I did design one. The last superhet I described in print was a peach, from my point of view. It worked splendidly, and those readers who built it were also pretty pleased with it.

A Solution to the Problem

But the *number* that built it—well, that was an eye-opener to me. So you go on telling me that I don't design big superhets because I don't know how; and I'll reply, with pardonable ferocity, that I don't do it because I know *you* would be afraid to build them. And so all is square.

But many of us want to *use* a big superhet for certain kinds of short-wave listening. A nice hotted-up two-valver is all very well in its way for real DX reception, but we don't all want to spend our lives chained to two dials and a pair of headphones. There are many occasions on which we should like to sit back and listen to something *without* having to concentrate particularly.

The solution of this problem, to my mind, is the use of a short-wave converter or adaptor. And the special question before the meeting at the moment is—which? I have attended a debate on this subject at one of the local radio societies, and I have never seen so many people getting hot under the collar outside a political meeting.

It boils down, once more, to the old question of superhet versus straight set, but in this case the straight set is not a "fiddly" two-valver but something that will give pretty good loudspeaker reproduction.

The diagrams show the two schemes in diagrammatic form—(*a*) the converter, using the whole of the broadcast receiver, with all its selectivity and A.V.C. and other refinements, and (b) the adaptor, using just the L.F. side of the broadcast set.

Obviously there is a certain wastage in the latter arrangement, but it has certain advantages, such as quietness of background. Some people, I know, laugh a nasty laugh, and say that a superhet is no noisier than a straight set. This *may* be perfectly true, but I can only judge by my own experience—which, after all, is what most folks judge things by—and I have never yet struck a superhet on which the signal mush ratio was *quite* as good as it can be made with a straight set.

THE TWO METHODS

Fig. (a) shows the scheme for a short-wave converter, in which the whole of the existing broadcast set is utilised. When an adaptor is used as in Fig. (b) the L.F. side of the broadcast set only is required.

There is a big consideration, which should be taken into account first of all. Do you want to receive C.W. signals? If you do, than I think the adaptor (straight set) method will probably be best for you. Next to a straight receiver, there is nothing so good for C.W. except a specially designed superhet of the "single-signal" type.

The converter (superhet arrangement) will probably give you better results on telephony, but if you want C.W. reception you will have to go to the trouble of building a separate oscillator to beat with the intermediate-frequency stages.

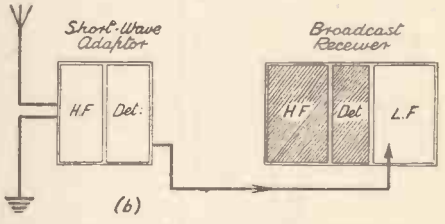
The improvement in telephony reception will be due to two things—first, the fact that a superhet naturally has more overall amplification behind it than the average straight set, and therefore doesn't need such critical handling; and second, the fact that you'll probably have A.V.C., which helps things enormously on short waves.

I'm assuming all along that your broadcast receiver is a good modern one—possibly a superhet in itself, which means that your complete short-waver will be a "double superhet."

Your adaptor will need to be carefully built, because any little faults such as hand-capacity and poor reaction control will remain, even with the best of broadcast receivers. Your converter, also, should be carefully built, but slight faults of that kind won't show up nearly as much. Reaction control naturally won't matter, because there isn't any! But I'm not going into the innumerable small points concerning the design of an adaptor or of a converter; I've stressed those often enough.

The Need for Selectivity

Please don't think that an ordinary single-valve receiver will make a good converter. As an adaptor it will probably be excellent, but I can't say that I think an awful lot of autodyne converters, except on the very short waves. It is well worth your while to make a three-stage converter (H.F., detector and oscillator) if you hope to get real *de luxe* results from your outfit. Such a converter may use only two valves (H.F., pentode and triode-hexode), and it may have three ganged tuned circuits or two.



I have tried both ways, and found them both definitely superior to anything that I could produce in the way of ordinary autodynes.

Such is the need for selectivity on short waves nowadays that I am using a receiver with two H.F. stages, frequency-changer, two I.F. stages, second detector, and one L.F. Even with this lot I feel a distinct need for a quartz-crystal filter circuit occasionally, especially on the crowded amateur bands.

This need for high selectivity is being simply forced on us by the tremendous number of new stations coming on the air. Just as our roads are being proved unsuitable for modern traffic conditions, so we are liable to find that our radio receivers have got to be more complex in design to meet the *radio* traffic requirements. The nearest that we can get, in my opinion, at present is to use a really good converter and a really good receiver—*or* a specially designed superhet. Half-measures won't do.

ON THE SHORT WAVES—Page 2.

POINTS from the POST-BAG

W. L. S. Replies to Correspondents

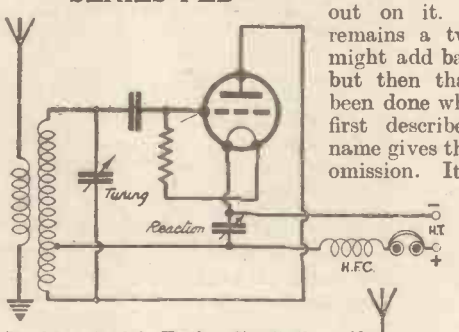
ODDLY enough, the majority vote in the postbag this week goes to queries about the "Simplex" Two—where readers can get particulars of it, and so forth. At about the time the letters were being written, it appeared—reprinted—in "P.W." So turn up the February 27th issue, and there you are.

Next in order come a batch of requests for more "dope" on the old Hartley circuit, which I described very sketchily a a few weeks ago. Here it is, on this page, in diagrammatic form. The first sketch shows the Hartley in series-fed form. The insulation of the grid condenser is the key to success of this arrangement, since the whole of the grid coil is at positive H.T. potential.

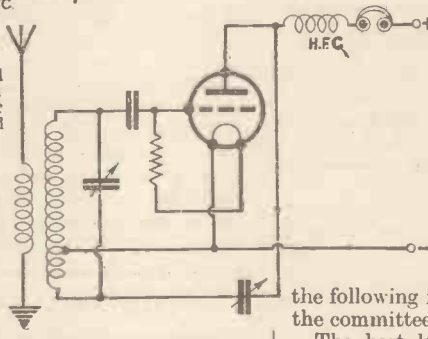
If the condenser leaks you will have H.T. on the grid; and obviously the grid leak must be taken to filament, as shown, and *not* connected across the condenser.

The chief advantage of the series-feed arrangement is that one side of the reaction condenser is at earth potential. The tuning condenser is live on both sides, and therefore has to be mounted back from the panel and controlled by an extension spindle if you hope for good results.

SERIES-FED



ANOTHER VERSION



In the series-fed Hartley Circuit the grid coil is at a positive H.T. potential, and in consequence a well-insulated grid condenser is essential. On the right is a parallel-fed version of the same circuit.

The other sketch shows the parallel-fed version of the circuit, with the reaction condenser between the anode and the end of the coil. If you ask for the advantage in using a Hartley circuit in preference to the more usual detector circuit with two separate coils, I'm stumped. To be quite candid, I can't imagine anyone wanting to use a Hartley for reception. Its one advantage is supposed to be that it's a very free oscillator—but who has difficulty in making any circuit oscillate, these days? The usual trouble is to stop 'em!

A Receiver for 5 Metres

E. D. (Mountain Ash) has a fair amount of useful apparatus about the place and wants to build himself an ultra-short-wave receiver. What type do I advise? My reply to that, in this year 1937, is "anything but a super-regenerator." The old super-regens. served their purpose when we were first playing around with 5 metres, but nowadays they can only be regarded as antiques.

If you want good reception on 5 metres, build the type of receiver that you would build for 20 metres, or 10 metres, "only more so," as the saying has it. A straight circuit, well laid out and carefully handled, will give results as good as those you would obtain from the best super-regen. in the world. With more and more crystal-controlled transmissions on the ultra-short waves, the straight set is coming into its own once more. The old frequency-modulated transmissions were responsible for the popularity of the super-regen.—it was the only thing that would decipher them.

H. L. D. (Portsmouth) has been at short-wave work for about six weeks without much luck, and is so disheartened that he feels like giving it up. He used a single-valve Reinartz circuit, which gave him lots of faint signals (mostly Morse), and then changed to my standard-baseboard two-valver and got nothing at all.

"Beyond my Comprehension"

It's very difficult to suggest what one can do in cases like this. A standard baseboard two-valver that gives "nothing at all" is beyond my comprehension—I mean to say, the L.T. must be left out, or something like that! It's obviously a really *bad* mistake or oversight in construction. More than that I can't say.

W. B. (Charlton) wants me to modernise the "Simplex" Two. Candidly, I don't think there's any modernisation that one can carry out on it. A two-valver remains a two-valver; one might add band-spreading—but then that might have been done when the set was first described. The very name gives the reason for its omission. It was considered to be the simplest possible set that would give really effective results. Personally, I still think it is.

N. H. T. (Barry) tells me that some keen short-wavers in that town have got together and had a batch of cards printed. They now dignify themselves with the title of "B. L. S." (Barry Listening Stations) and send out the most businesslike reports.

N. H. T. inquires whether V P 3 M R (Georgetown, British Guiana) is considered a "bag" nowadays. I don't think he is—I hear him pretty frequently, on the rare occasions when I stay up late. I do most of my DX work in the early mornings nowadays.

Finally, N. H. T. says he has just heard a broadcasting station some distance below the 10-metre band, playing gramophone records. He thinks the announcement was "W 9 X J L," but wasn't sure. Can anyone else check up on this? I have recently heard W 2 X B L on about 9·2 metres, and several others who didn't make any announcements at all.

A. W. (Banbury) recently mentioned the arrangement of his receiver—screened-grid detector, resistance-coupled triode, transformer-coupled pentode. Now C. S. D. (Harrow) wants a set of that kind; and as one hasn't been described in "P.W." to my knowledge, I think it would be best if A. W. would drop him a line. His full QRA is C. S. Davidson, "Windover," London Road, Harrow, Middlesex.

Short-Wave News

I HAVE just finished compiling the results of an interesting little test that I got some friends and acquaintances to carry out for me recently. On the principle of "handing on the baby" I kept out of it myself; on the night in question I deliberately, and with malice aforethought, went to the local cinema and forgot all about radio for at least three hours.

Six gentlemen, during that period, worked very hard on my behalf, listening on (a) the amateur 10-metre band; (b) the 19-metre broadcast band; and (c) the 31-metre broadcast band, allotting a fixed time of roughly one hour to each.

The Sets that were used

They all listened on each band at precisely the same times, and the receivers they used were as follows: (1) a single-valver, somewhat on the lines of the one I have often shown as a baseboard layout; (2) a "Simplex" Two, exactly as described in "P.W."; (3) an all-wave broadcast receiver of a well-known British make; (4) a home-built superhet, somewhat on the lines of the "Empire Super"; (5) a four-valve home-constructed set, using tuned H.F., detector and two L.F. stages; (6) an American single-signal superhet of the "communications" type.

One might expect an interesting batch of logs from these six people, and they certainly were. I can't possibly spread the results out in all their detail, but the following is a résumé of the findings of the committee.

The best log on the 10-metre amateur band came from the "Simplex" Two, with the single-valver a good second. These included C.W. transmissions as well as telephony. The best log on the 19-metre band, i.e. the one including the greatest proportion of actual announcements and identifications, came from the single-signal superhet, with the four-valve "home-brew" set next, and the single-valver third.

The best log on the 31-metre band came from the four-valve set, with the single-signal super next and "Simplex" third.

Best Broadcast Results

The highest total of *broadcast* stations went to the single-signal super. The highest total, including everything—amateur stations, 'phone or C.W., and broadcast stations—was sent in by the "Simplex" Two owner, who received at least thirty amateur transmissions that the big superhet didn't get.

Now, maybe this all means something; but we have the undoubted fact that the gentleman at the controls of the "Simplex" Two was the best operator and the best Morse reader of the bunch. All six live within a few miles, and I don't think there is any great difference between the qualities of their various locations. **W. L. S.**

"THIS IS HENRY HALL SPEAKING..."

"Sweet melodies, beautifully played, are more to him than the hottest of hot rhythm—if it is only hot rhythm."

MOLLY, MARIE and MARY take a walk in the Park during a break in rehearsals.

"GOOD evening, everybody. This is Henry Hall speaking. The B.B.C. Dance Orchestra are now going to play——"

Every listener knows that formula, that voice and the music that follows it. Yet many are often surprised to discover that for many months past Henry Hall and his boys pay only rare and fleeting visits to Broadcasting House. Their studio is at Maida Vale; No. 4 of five orchestral studios that have been ingeniously built beneath the low glass roof of what was formerly a vast skating rink.

Almost Their Home

It would be almost true to describe it as their home, too, for if they are not broadcasting they are busily rehearsing new numbers for many hours each day and night. And even if the whole band is not there, it is seldom that one or more of its twenty-one members are not taking advantage of the opportunity for individual practice. Bert Read, for instance, is not only a first-class rhythm-pianist; he is equally accomplished in classical works and likes nothing better than to vary his technique by practising "highbrow" music.

Imagine, if you can, an everyday scene in the studio just before and during a late afternoon transmission.

High on a wall a large electric clock points to 5.5 p.m., a red hand ceaselessly records the passing seconds. Saxophones, wood winds and brass instruments hang from their stands, violins sprawl across chairs. The first bandsman arrives; others come in twos and threes; the din of tuning up their instruments begins.

Five "Mikes" are Used

5.10, the clock says. Through swing doors comes Henry Hall. A word first with Jack Miles, who "balances" the band. Everything O.K.? Yes.

Then into the studio. A wave of his hand to the boys.

The warning lights on the wall wink three or four times.

5.15 says the clock. The red light burns. Henry Hall's baton comes down with a swish. The band's signature tune is on the air.

Now and again, as Henry Hall conducts he will glance back to the window of the silence room, holding up his thumbs and looking questioningly at Miles.

Thumbs up is the answer. All's well.

Altogether five microphones are in use. One for the drums, guitar and double bass; one for the piano; one for the brass and violins; a fourth for vocal numbers, the last for Henry Hall.

There on a lounge in the corner Dan Donovan will be reading through his next song; nearby, Molly, Marie and Mary, the Three Sisters (by agreement, but not in fact) knitting or watching the band, waiting for their turn to take over the vocal "mike."

They, by the way, are several inches shorter than Dan Donovan; if they follow him, the "mike," hanging from a balanced arm, has to be lowered till the middle of it is level with their noses. And that is a job for a steady hand—for a shake makes it roar like distant thunder.

Several times during a programme George Elrick, the drummer of the band, will sing with that attractive Scottish accent of his. They call him the man with a smile in his voice.

He is always smiling while he sings, and, rather as though he were burlesquing a naval salute, he places one hand flat over an ear. Otherwise he wouldn't be able to hear himself.

Dan Donovan, who is also a clever saxophonist, usually takes charge of the drums while George Elrick is singing.

There is, nowadays, an everlasting hunt for new numbers. And many of them suggest "effects," such as the sound of surf breaking lazily along some sandy shore, or, by contrast, the perky hoot of a tugboat. Henry Hall—in fact, the entire band—is quick to seize an opportunity for putting over something novel. All kinds of ingenious contraptions are improvised for effects, and as mention has been made of those palm-beach breakers, it may be of interest to add that their gentle murmuring—so reminiscent of sun and summer—is obtained by rolling several pounds of lead shot across the taut parchment of a drum—

Choosing new numbers generally is an onerous job. They must have music, rhythm and at least reasonably good lyrics, but above everything, for Henry Hall, music. He is first and foremost a musician.

Sweet melodies beautifully played are more to him than the hottest of hot rhythm—if it is only hot rhythm.

THE "THREE SISTERS" ARE A YEAR OLD

One of the most popular dance-band vocal teams in broadcasting, Molly, Marie and Mary, recently completed their first year with Henry Hall and the B.B.C. Dance Orchestra. They duly celebrated this great occasion by throwing a party, and Henry Hall himself—he is the "Guv'nor" to the girls—was there.

These three businesslike young women take their job very seriously, and each week of the past year has given them more and more work.

"We have so much to do now," Mary said to "P.W.", "including television and recording as well as broadcasting, that we have divided the trio into three "departments." Each of us has a definite responsibility. Molly looks after the orchestrations; Marie hunts up all the new numbers—we put over a new one each day—and I look after the business side. Marie also attends to our "fan mail," and, between us, we design our new clothes for television. Do you like this?"

"This" was one of the new costumes which the Three Sisters have just created for themselves. A smart outfit. Black jacket, closely cut, with a lace flower on the lapel. Check skirt.

Listeners may have noticed that the Sisters are doing quite a bit of solo work lately. Marie has been singing alone, and Mary's monologues have been accompanied by Molly at the piano.

MYSTERY SINGER AGAIN

The Mystery Singer, who first broadcast two or three years ago, is to return to the microphone on March 19th, when he will take part in John Watt's "Songs from the Shows" programme.

Listeners will also hear Jessie Mathews singing, from the studio, some of those lovely songs of her recent screen successes.

THE DIAL REVOLVES

Conducted by Leslie W. Orton

Stations to listen for on the ultra-short and short waves

TRY THEM ON YOUR PIANO.—This keyboard will help listeners to identify musical signatures. Check them on your piano. D F B, Nauen, for example, uses the notes D-C-G.

IF you tune to 26·5 metres during the late evening you will almost certainly make the acquaintance of one of the most popular stations of the moment—C O C X, at Havana, Cuba. Until recently this station operated irregularly upon various frequencies and was then almost unknown to the average listener. Since becoming anchored on 26·5 metres, however, the scene has changed and C O C X is now famed for the regularity with which it is received in this country—whether its fame will wane like that of so many other stations, only time can tell.

Excellent Reception

Less frequently heard Cuban stations include C O C H, C O C O (quite a chocolatey sound !), and C O C G on the 30-metre band, and C O C A just above 36 metres—all located in Havana.

By the way, the other morning, between 7 and 8 o'clock, I had a pleasant surprise when searching the short waves, for I tuned in a powerful signal on the 49-metre band, which turned out to be C O C D, Havana, relaying C M C D on the occasion of a DX programme.

European stations are, as usual, providing astonishingly good signals, and although the Empire and German stations are the more powerful, O X Y (Skamlebaek), O L R (Prague), 2 R O (Rome) and many others are coming in extremely well. H A T 4 at Budapest deserves particular mention, for it comes in at amazing strength on 32·88 metres.

Incidentally, QSL card hunters may be interested to know that the verification card from this station is well worth possessing. With a real photograph of the station stuck in the centre of a green frame, and the station call letters in bold red type, the whole affair is most attractive.

American Stations

At the present time the 49-metre band is alive with stations. W 8 X K, Pittsburgh, and W 3 X A L, Boundbrook, although at times still interfered with by code stations, are the best heard North American stations. From South America Y V 5 R C at Caracas and Y V 6 R V, Valencia, are the most powerful signals, although many other Latin-American broadcasters are coming in extremely well.

On the 30-metre band W 2 X A F, 1 X K and 3 X A U are coming in extremely well, and P R F 5, Rio de Janeiro, C O C H, Havana, and other Spanish-American stations add a spice of interest to this band.

Identification Signals

Two stations which I have personally not heard yet but which I understand are coming in well are H I 1 A and H H 3 W. The former is located in Santiago de los Caballores in the Dominican Republic, and operates upon approximately 48 metres. The latter is at Port-au-Prince, capital of the "Dark Republic." It operates on 31·25 metres and, so I understand, announcements are made in French.

Many stations employ interval signals consisting of chimes or combinations of notes as aids to identification. Probably South America contributes 70 per cent. of these ! When hearing an interval signal it is a good idea to check it—on a piano or piano-accordion—for it is of comparatively little help to know that a station employs the notes D-C-G (shall we say ?) for a signal. On the other hand, it is a decided help if one knows what the combination *sounds* like.

Below 10 Metres

Reception is extremely good on 5 metres at the present time, and just above this band the television station at Alexandra Palace has provided really excellent entertainment on the sound wave.

An American broadcaster, W 2 X E, at Wayne, N.J., has been heard relaying the Colombia Broadcasting System programme upon 8·42 metres between 5 and 6 p.m. Slightly higher up the waveband amateurs from all parts of the world are being heard on the 10-metre band.

One of the most powerful police stations heard recently emanates from the Boston Police Headquarters. Their station, W 1 A X O, has been heard well on this band—calling all cars !

A couple of stations worth searching for are W 2 J C Y at North Palham, N.Y., a new amateur station which operates on 10, 20 and 40 metres, and W 1 X H M, a post-office phone link at Springfield, which operates at the bottom of the 10-metre band.

On all bands reception is extremely good at the present time and a little patience will reward the searcher with many pleasant surprises.

SEEN ON THE AIR

News and Views on the Television Programmes by our special radio-screen correspondent

L. Marsland Gander

MONEY is the consideration uppermost in B.B.C. television policy just now.

I believe it is this question which is preventing the B.B.C. from immediately extending the hours of transmission.

The B.B.C. is anxious to secure another Government grant. It will be recalled that originally the Corporation and the Government each contributed £90,000 into a television pool. Of this amount the cost of the station at Alexandra Palace absorbed £110,000. The remainder has been steadily eaten up by maintenance and the cost of programmes.

Another Grant Wanted

Actually the Government merely handed back to the B.B.C. money which had been appropriated from licence revenue. Now the B.B.C. is anxious for another grant from the same source. But if it rushes ahead with further prodigal expenditure, increasing staff, extending hours and producing more and more expensive programmes to meet the demands of listeners, it will create the impression that it has ample funds for television.

Therefore, it is a tactical move to wait. But in the meantime viewers and the industry are growing impatient. Some decision must be taken soon.

Another interesting development is a sharp division of opinion in the theatre world as to the correct attitude towards television, whether the new art shall be regarded as a potential competitor or as an ally.

Mr. George Black has had a clause inserted in the contracts of artists performing for the General Theatres Corporation banning appearances on the television screen. But Mr. C. B. Cochran, on the other hand, has come out strongly as a believer in the publicity value of television. He is convinced that television cannot harm his shows but only bring more customers.

Recently I went to Alexandra Palace and saw the first Cochran show ever televised, "Round and Round," from the Trocadero. Eight of Mr. Cochran's dazzling young ladies took part, wore the most abbreviated costumes yet permitted by the B.B.C. and presented one of the snappiest shows yet broadcast.

Insufficient Room

The chief triumph in this show was scored by Mr. D. H. Munro, the producer, who had exactly one hour in which to rehearse it and translate it from a full length supper-time show into a potted version squeezed into the narrow confines of the television studio. Yet apart from the trifling incident when one girl stumbled slightly, there was no hitch and this was typical Cochran chorus work.

My impression grows with every visit that television cannot do itself full justice in these Alexandra Palace studios. They

(*Please turn to page* 20.)

INTERNATIONAL EXCHANGE

By ALAN HUNTER

It is, perhaps, not generally known that the majority of foreign broadcasts are carried out by way of a land-line link, the language difficulty being overcome by the country concerned having its own representative on the spot to give the commentary. This procedure will be adopted during the Coronation, when the foreign commentators along the route will send their word pictures by land-line link to their respective countries.

One of the most popular of the recent Continental broadcasts was the commentary on the wedding of Princess Juliana of Holland and Prince Bernhard. Here is a new photograph of Prince Bernhard, taken during his visit to the Philips works at Eindhoven. The cups, incidentally, are handleless and contain Dutch cocoa.

WHILE Utopians may have to wait a long time for the B.B.C.'s lately discarded motto—"Nation Shall Speak Peace Unto Nation"—to come true, we of a less optimistic turn of mind may content ourselves with the reflection that Nation is at least learning to *speak* unto Nation.

Paradoxically, this is happening more through the agency of land lines than broadcasting as such. For while wireless waves ignore frontiers, the Babylonian differences of tongues tend to nullify the potential virtue of eavesdropping.

It is a great pity. The modern set with efficient automatic gain control enables us to pick up and to hold foreigners with almost complete continuity. The more easily we can do this, the more vividly are we non-linguists brought up against the barrier of the unknown tongue.

Until language becomes international—if ever it does—we must content ourselves with listening to relays from foreign capitals, either by foreigners who speak our language or by B.B.C. reporters who have gone over specially to translate the scene into understandable terms.

A good example of this tendency was heard when Mr. S. J. de Lotbinière, Director of Outside Broadcasts, reported the Dutch Wedding. Land line brought his commentary to our broadcasting network—by one of those links that are slowly but surely spreading towards the reality of "International Exchange."

Many Foreign Commentators

During the forthcoming Coronation many foreign commentators will take up their stands along the route, their word pictures being sent by land line to the countries of their origin.

Were it not for the language barrier, the B.B.C.'s own extensive plans for broadcasting this historic event would provide more than enough material for the whole world. As it is, the international land-line routes will be fully booked by foreign commentators.

Of late we have heard some excellent land-line relays from Europe. On Sunday evenings the capitals of Europe have provided us with delightful half-hours of light music. On Friday evenings Mr. Moray McLaren has taken us equally far afield in his series "European Exchange."

No new lines have been necessary for these relays. Europe as a whole has now developed a first-class system of national music circuits, mainly to meet the needs of the various S.B. networks of each country.

This gradual perfection of national music circuits has facilitated the arrangement for international relays. It is a far cry from those early days when B.B.C. engineers had to spread themselves across Belgium when they first attempted to relay a musical programme from Liège and Cologne.

International relays by land line are easier than ever now, because whereas for some time only a skeleton network existed over most of Europe, duplicate lines are now available. To-day, therefore, it is possible for each country's S.B. system to be working at the same time a "through" signal is being conveyed between different countries.

Under these improved conditions it is not likely that the type of fault marring the "Night Falls in Budapest" relay will occur. At that time the music line was already in use for an S.B. in Austria and the line route from Budapest to England had to make a long detour. Duplication of music lines now obviates this sort of thing.

A music line earns the name only if it is capable of carrying a frequency gamut from 50 to 6,400 cycles. This is the minimum figure, for there are now many music lines capable of carrying up to 8,000 cycles.

Not all broadcast matter can be carried on proper music lines. The alternative is what foreign telephone engineers know as *amenagé* circuits—circuits, that is to say, specially arranged for music or speech intended for broadcasting.

Some Surprising Figures

The *amenagé* circuits are good for a gamut of frequencies between 50 and 5,000 cycles. Although noise level is apt to be higher, such circuits are infinitely better than ordinary land lines designed only for intelligible speech.

Probably the extent of international land-line relays between this country and the Continent will surprise the casual listener. In 1936 the B.B.C. took 132 relays from Europe by this means, 123 being entirely successful, 6 partially successful and only 3 complete failures. This total compares with 110 relays in 1935.

Of the 1936 relays, 30 were from Geneva—symptomatic, if you like, of international tension, 22 from Berlin and 18 from Paris. The rest embraced practically every country in Europe.

The list included: Beyreuth, Basle, Berlin, Brussels, Budapest, Copenhagen, Dublin, Garmisch, Geneva, Hendaye, Lausanne, Leipzig, Lintz, Malines, Morovska-Ostrava, Oslo, Paris, Prague, Rome, Salzburg, Seville, Strasbourg, Turin, Vienna, Warsaw and Zurich.

Such a list cannot help impressing anyone interested in the political implications of European exchange. When it is realised that about the same number of outgoing relays from the B.B.C. were taken by various countries in Europe, it may well be suggested that the land line—music or *amenagé*—is becoming a factor in the building up of true comity.

Links Made by Radio

St. Margaret's Bay is the point where the Post Office concentrates its energies in linking up these islands with the Continent. There are, at present, four music lines available, but by Coronation time there will be more.

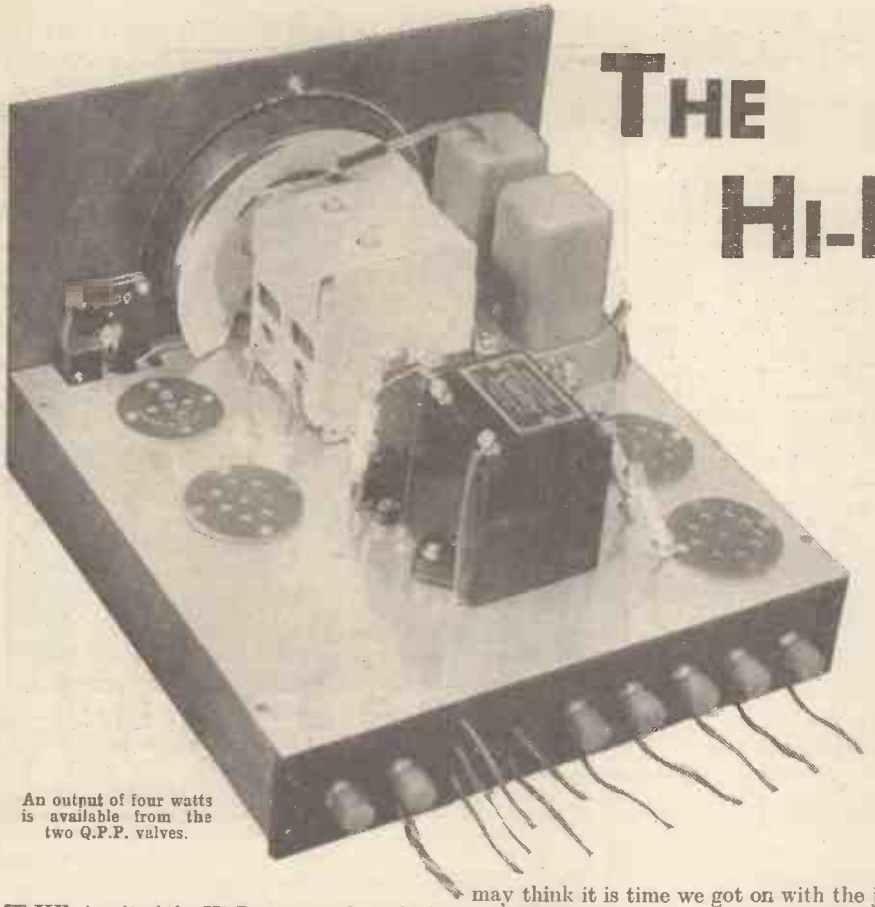
Where no special commentary is wanted, foreign countries will relay by radio pick-up from B.B.C. stations. Droitwich will be tuned-in by some countries, while more distant ones may resort to reception of the Daventry short-wave signals, which become useful to Europe beyond the skip distance.

When we turn from Continental to world relays we find that the radio link is developing almost as fast as land-line communication has done.

The United States, for example, regularly relays many of the Daventry short-wave programmes where they are of special interest to Americans. At Riverhead

(*Please turn to page* 19.)

THE HI-POWER



An output of four watts is available from the two Q.P.P. valves.

This special "P.W." receiver for battery users requiring a bigger output than is given by the normal set, was introduced last week. Here are the full constructional and operating details

Described by A. SMITH

THE circuit of the Hi-Power was described last week, so this week we will go straight on to the construction, followed by the operation.

A word or two about the general practical form of the receiver will no doubt be helpful to constructors. The baseboard is a piece of aluminium sheet of 18-gauge and measuring 10 × 10 in. It is supported at the sides by two $\frac{3}{8}$-in. wood runners, $9\frac{13}{16}$ in. long and 2 in. deep. These are mounted flush with the front edge of the baseboard. This leaves the back edge of the baseboard overhanging the runners by $\frac{3}{16}$ in. Fitted under this overhang to the back edge of the runners is a $\frac{3}{16}$ in. ebonite terminal strip 10 × 2 in. The front panel is fitted to the front edge of the runners.

The Question of Alternatives

It is obvious that if you do not use the main components given in our list, it will probably be necessary to alter the layout of the receiver. Whilst we do not suggest that this is so very critical, we never advise such alteration, as results may be adversely affected. Of course, such things as resistances and fixed condensers are not very important, and may be replaced by other makes if desired, provided they are of the correct value and approximately of the same physical dimensions. The components which are important are the coils and tuning condenser. If different makes are used here you will not be building the Hi-Power, so we shall not be responsible for the results.

The same applies to the Q.P.P. input transformer. The values of resistances used in this part of the circuit have been chosen to suit this transformer, so that substituting another make of transformer may necessitate different values for these resistances. Having advised you what not to do, you may think it is time we got on with the job of telling you what you may do! So we will now proceed with the actual construction.

The aluminium baseboard should be prepared first. All that you need do to this before mounting it on its runners is to drill the holes for the valve holders, and cut away the slot into which the reaction condenser fits.

The holes for the H.F. and detector valves (V1 and V2) are $1\frac{1}{4}$ in. in diameter, and their centres are 2 in. from the left-hand side of the baseboard (back towards you). The centre of the detector (V2) is two inches from the front of the baseboard and that of V1 $4\frac{3}{4}$ in. from same. The slot in front edge of the baseboard starts at $\frac{3}{4}$ in. from the left-hand side, and is $1\frac{3}{4}$ in. long and $\frac{3}{4}$ in. deep. This may be cut in with a pair of snips, then scratched deeply on both sides of baseboard between the ends of the two cuts. The piece can then be removed by bending up and down several times.

Finally, clean cut edges with a fine file. The centres of the holes for V3X and V3Y are $1\frac{1}{2}$ in. from the right-hand edge of the baseboard, V3Y being $1\frac{1}{2}$ in. from the back edge, and V3X 4 in. The diameter of the holes is $1\frac{5}{8}$ in. All holes for valve holders should preferably be cut by means of a centre cutter. Failing this, you may use a fretsaw, or drill $\frac{1}{8}$ in. holes close together round a circle of the correct diameter, the centre piece being knocked out with a hammer, and finally a round file should be used to clean the hole.

Mounting the Components

Having prepared the baseboard, mount the runners and the drilled terminal strip. Now drill the panel with the aid of the front of panel diagram, and cut the hole for the escutcheon of the condenser drive according to template supplied with the drive. Mount the panel components, including the escutcheon.

THE HI-POWER SHOPPING LIST

1 Polar 2-gang Midget tuning condenser, each section ·0005 mfd.
1 Polar semi-circular drive, for above.
1 Wearite 2-gang coil-unit, type P.I.C. and T.I.C.
1 Varley Q.P.P. input transformer, ratio 9/1.
2 Clix 9-pin chassis-mounting valve holders without terminals.
1 Clix 7-pin chassis-mounting valve holder without terminals.
1 Clix 4-pin chassis-mounting valve holder without terminals.
1 B.T.S. ·0005-mfd. solid dielectric reaction condenser.
1 Erie 50,000-ohm volume control, with double-pole on/off switch.
1 Dubilier 1-meg. 1-watt resistance.
1 Dubilier 250,000-ohm 1-watt resistance.
2 Dubilier 50,000-ohm 1-watt resistances.
1 Dubilier 30,000-ohm 1-watt resistance.
1 T.C.C. 2-mfd. fixed condenser, type 50.
2 T.C.C. ·1-mfd. tubular fixed condensers, type 250.
2 T.C.C. ·0001-mfd. fixed condensers, type 34.
1 Bulgin H.F. choke, type H.F.8.
1 Wood panel, 10″ × 7″ × $\frac{3}{16}$″ (Peto-Scott).
1 Aluminium baseboard, 10″ × 10″ × 18 gauge (Peto-Scott).
2 Wood runners, for above, $9\frac{13}{16}$″ × 2″ × $\frac{3}{8}$″ (Peto-Scott).
1 Ebonite terminal strip, 10″ × 2″ × $\frac{3}{16}$″ (Peto-Scott).
7 Clix terminals, type B.
2 Belling & Lee accumulator spades.
9 Belling & Lee wander plugs.
1 Belling & Lee wander fuse.
1 Coil "Quikon" connecting wire (Peto-Scott).
Screws, flex, etc. (Peto-Scott).

Mount the coil-unit on top of the baseboard, so that its spindle is $1\frac{5}{8}$ in. from left-hand side of baseboard (with the front towards you). Fit drive to tuning condenser and place on baseboard with spindle central. It is necessary to cut away the celluloid dial so that it does not foul the coil unit. With the condenser in position, mark positions of the fixing holes, drill same, and then mount condenser with $\frac{1}{4}$ in. × 6 B.A. screws and nuts. Now fit the remainder of the components on both sides of the baseboard. Those components,

(*Continued overleaf.*)

THE HI-POWER

(*Continued from previous page.*)

which are not fixed to the baseboard but which are supported by their wire-ends, will not, of course, be mounted until the wiring is done. Next fit the terminals to the terminal strip. The set is now ready for wiring.

The wiring is so straightforward that it is unnecessary to make any comments on this. As the fitting of the resistances comes under wiring, we would point out the necessity of putting the correct value resistance in each position, otherwise you might be wondering why the set does not work when put on test!

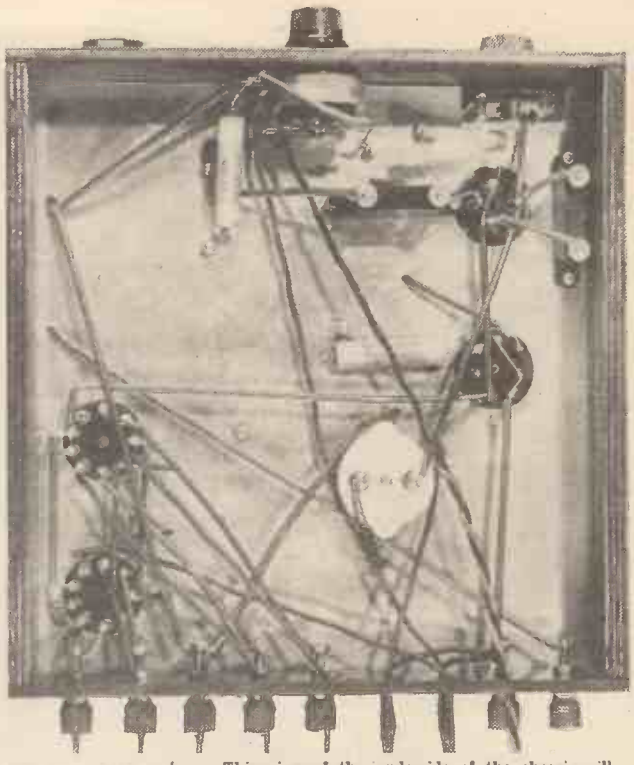
When the wiring has been completed and the valves inserted in their proper holders, the set may be connected to its batteries, aerial and earth, and loudspeaker. The connections of aerial and earth are obvious. The battery and loudspeaker connections are not so obvious, so we will explain these connections at some length. The L.T. and G.B. connections are quite straightforward, L.T. being connected in the usual way: G.B.+ to G.B.+ of G.B. battery, G.B.—1 to 9 volts negative, and G.B.—2 to 12 volts negative.

The H.T. connections need rather more care in connecting. H.T.—, of course, is connected to negative of the H.T. battery, H.T.+1 to approximately 72 volts positive, H.T.+2 to 150 volts positive. Now we come to the four H.T.+ leads marked H.T.+AX, H.T.+BX, H.T.+AY, and H.T.+BY. The first two supply the screen volts to each half of V3X, whilst the other two supply V3Y. You will find that each of the Q.P.240 valves is marked on the base with an "A" on one side and a "B" on the other. Above each of these letters on the glass is another letter, which may be P, Q, R, S, or T. This letter decides what voltage to apply to the screen of the particular half of the valve to which it refers.

We will give an example of this. If the valve in the V3X position has a P on the glass over the A on the base, then H.T.+AX will be connected to the voltage suggested for P (with 150 volts anode voltage) in the leaflet supplied with the valve. We think this should enable you to connect the four screen voltages correctly. It is because of the critical voltages required on the screens of the output valves that a mains unit cannot be used with this receiver. It is for use with H.T. batteries only. This is a point which should not be forgotten. The Ever-Ready Popular Power battery with special tappings is the only suitable battery available as far as we know.

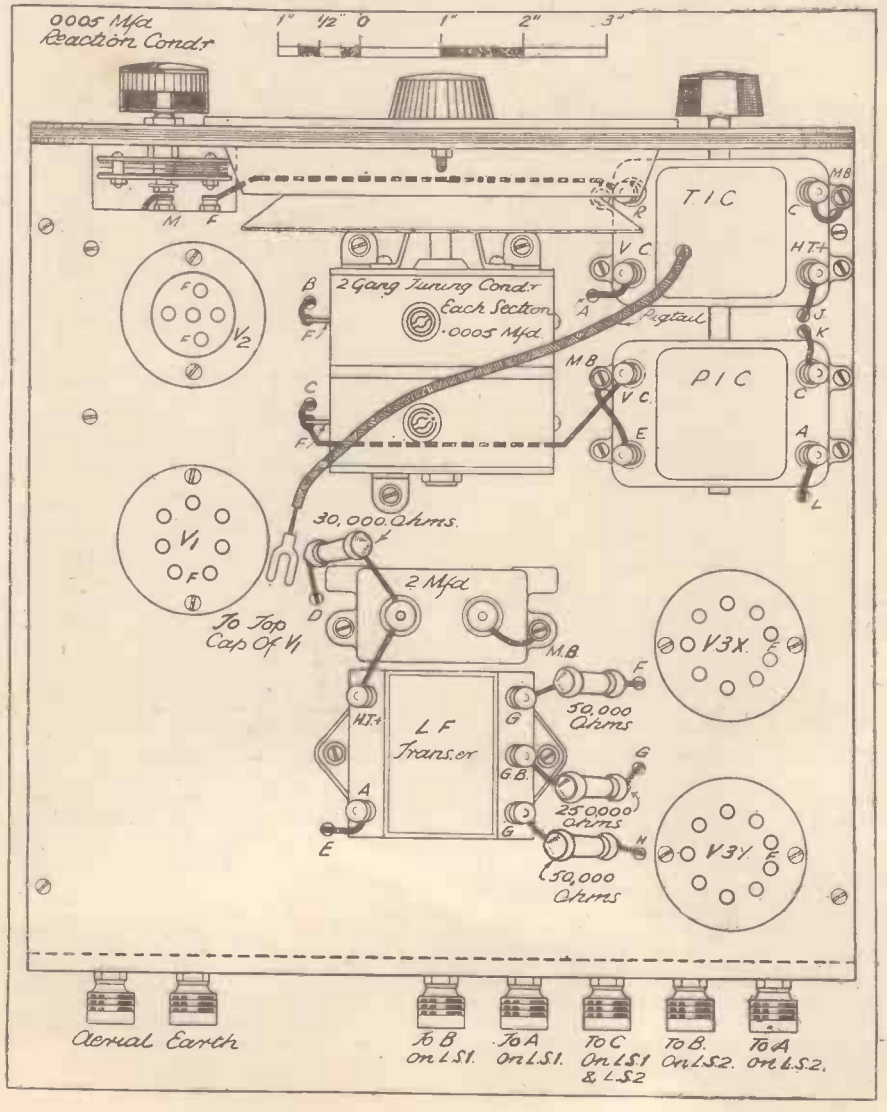
Now we come to the loudspeaker connections. There are several methods of connecting the loudspeaker or loudspeakers. If you use two loudspeakers, and this is sometimes convenient, A terminal of one loudspeaker is connected to A (L.S.1) of the set, B terminal of loudspeaker to B (L.S.1) of set, and C terminal of loudspeaker to C terminal of set. The second loudspeaker is connected in a similar way to terminals A and B (L.S.2), and C. The lower

(*Continued on next page.*)



This view of the underside of the chassis will assist you to follow out the wiring diagram on the opposite page.

THE ABOVE-CHASSIS WIRING



The above-chassis layout is particularly simple. All points marked M.B. indicate direct connections to the metal baseboard.

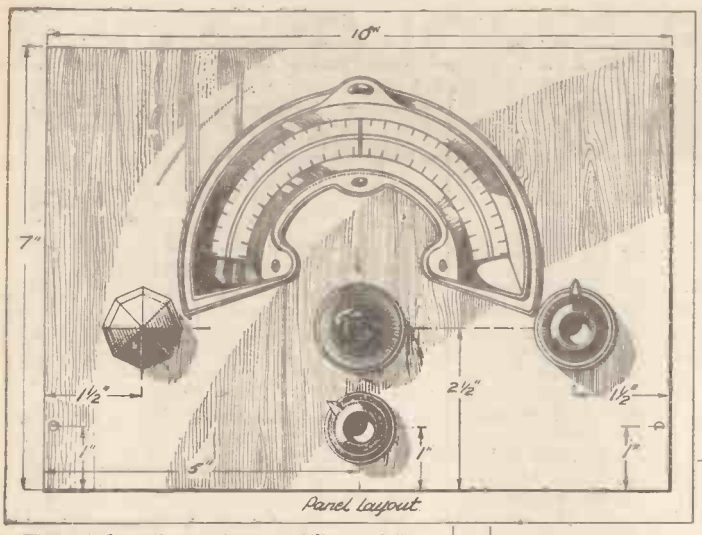
ACCESSORIES REQUIRED

VALVES

V.1.	V.2.	V.3 X and V.3Y
Marconi or Osram V.P.21	Marconi or Osram L.21	Mazda 2—Q.P.240s

LOUD SPEAKER
W.B. Senior Stentorian

BATTERIES
H.T. 150 volts Ever Ready, Popular Power with special taps for Mazda Q.P. 240 valves.
L.T. 2 volts
G.B. 16½ volts



Panel layout

The controls on the panel are as follows : left, wavechange switch ; top centre, tuning control ; right, reaction condenser, and bottom centre, volume control and on-off switch.

switch lever on each loudspeaker should be set to "H.R.," whilst the top lever should be set at E. If you use one loudspeaker, it should be connected to A and B (L.S.1), and C, loudspeaker A terminals on set being joined together, also B terminals.

The top lever on loudspeaker must be set at G. These connections refer, of course, to the W.B. Stentorian loudspeakers specified. Should you desire to economise in L.T. and H.T. current, and a smaller output than 4 watts is sufficient. one output valve may be removed, say V3Y, and terminals A and B (L.S.1), and C connected to the loudspeaker, when V3X valve will be in use only.

Having connected all battery, loudspeaker, and aerial and earth leads correctly, the set may be switched on by means of the combined volume control and on-off switch under tuning-control knob.

Set trimmers of tuning condenser about half a turn back from maximum (screwed hard down, but not too hard). Tune in a fairly strong station at the lower end of the medium waveband. Now adjust front trimmer so that the station registers correctly on the tuning dial. Reduce volume control so that signal is fairly weak, increase reaction to verge of oscillation, and make final adjustment on front trimmer of tuning condenser so that station registers correctly on dial. Adjust rear trimmer for maximum signal strength. The set is now trimmed and ready for use.

Controlling the Tone

No provision has been made in this receiver for tone control. We suggest that the loudspeaker, or loudspeakers, are shunted between A and B with a condenser that gives the desirable effect. Values between ·002 mfd. and ·01 mfd. will give all the effect which will be required. This is largely a matter of opinion, and is the reason why it has not been incorporated in the set itself.

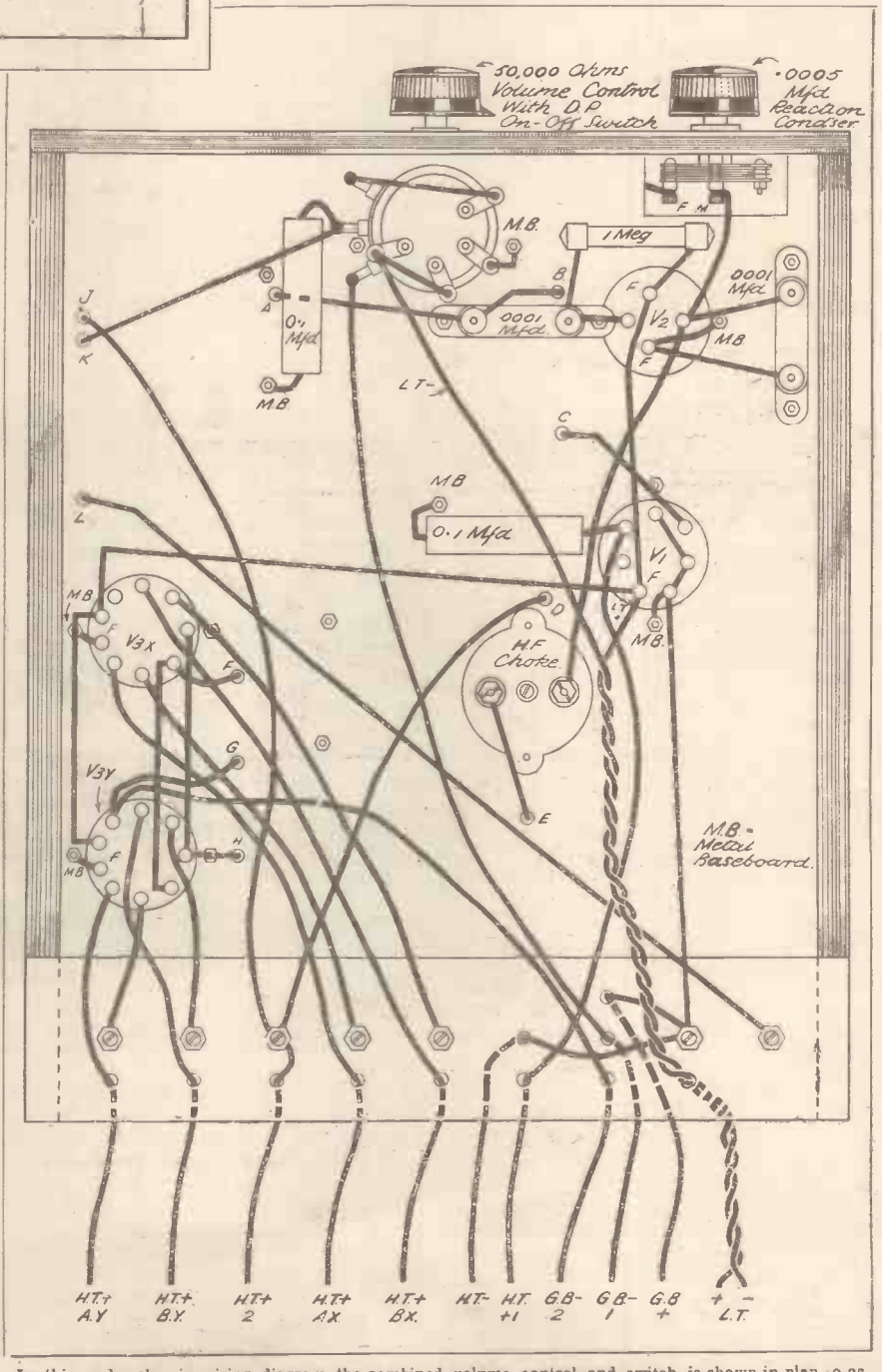
Although, to avoid complication, pick-up terminals have not been provided, a pick-up may be used with this set with very good results. It should be used with a volume control, and connected in the normal way to the grid of the detector (V2) and —3 volts on the G.B. battery. Of course, it must be removed when listening to radio.

A switch could be fitted to obviate the necessity of disconnecting the pick-up when not required. It should be fitted in the pick-up lead which is connected to the grid of V2. To prevent radio signals from getting through when the pick-up is in use, it may be necessary to detune the set and turn the volume control to minimum—not fully anticlockwise, as this would switch the set off.

Speaker Matching

It is advisable to use the loudspeaker specified, as this is known to give excellent results, owing largely to the fact that it can be accurately matched to the output valves. Loudspeakers which have no matching devices should not be used, if the best results are to be obtained. The loudspeaker should be fitted to as large a cabinet or baffle-board as is practicable. Not only is bass response improved but also overall volume.

AS SEEN FROM BELOW



In this under-chassis wiring diagram the combined volume control and switch is shown in plan so as to simplify the drawing. The lettering against the leads where they pass through the baseboard corresponds with that on the above chassis diagram.

LEARNING FRENCH THROUGH YOUR RADIO

By S. C. Gillard, M.A.

PART FIFTY

This is the concluding instalment of the present series, and the many readers who have followed Mr. Gillard through his novel and intriguing course of instruction should by now be equipped with a valuable working knowledge of the French language which they themselves can perfect by remaining listeners to French speaking stations. At some future date we may commence either a "Second Year" French course, or a similar "Through Your Radio" series applied to another language. Our plans in this respect will depend upon you. Please send us a postcard giving *your* views. Yes, such a postcard *could* earn the weekly guinea for the best letter!—*Editor.*

CONTINUING our quest for words, the following lists will augment very considerably your own rapidly growing lists. In addition, they will show you further how much French there is in English, and how easily recognisable these English-French words are.

We begin with a number of ABSTRACT NOUNS, all of which are INTERCHANGEABLE and IDENTICAL, apart from an occasional accent. They all end with the syllable -ENCE, and are all FEMININE in gender. I will give you the French word only, for to give the English as well would be a waste of time and space.

L'affluence, l'influence, l'excellence, l'absence, la présence, l'éloquence, la différence, la résidence, la compétence, l'adhérence, la munificence, la pertinence, la résilience, l'apparence, la décadence, l'intelligence, l'imminence, la subsistence, l'indulgence l'occurrence, la conséquence, l'expérience, l'éminence, la confidence, l'innocence, l'audience, la conscience, etc., etc.

The above NOUNS naturally suggest those ADJECTIVES which are associated with them. Such as, excellent, absent, present, eloquent, etc. Don't forget, of course, that every such ADJECTIVE has FOUR FORMS. That is:
Excellent, excellents, excellente, excellentes. Here is a selection of these ADJECTIVES (in French):

compétent, différent, excellent, absent, présent, éloquent, effluent, affluent, munificent, impertinent, apparent, décadent, intelligent, imminent, indulgent, transparent, récent, etc., etc.

There are also a number of English NOUNS ending with -ENT which find exact replicas in French; Nouns like

president, resident, adherent,
element, torrent, parent, testament.

In French these are: le président, le résident, l'élément, le torrent, le parent, le testament.

English NOUNS ending with the syllable -ANCE are also very plentiful, but no more so than they are in French. Like the -ENCE nouns, these, too, are FEMININE in gender.

La distance, la résistance, la ressemblance, l'importance, la correspondance, la circonstance, l'élégance, l'instance, la protubérance, l'ambulance, l'assurance, la quittance (the (ac)quittance).

And, of course, there are the corresponding ADJECTIVES.

Important, correspondant, stagnant. dominant, récalcitrant, fulminant, concordant, discordant, distant, résistant, élégant, intégrant, protubérant, habitant, etc., etc.

The ending -IAN is a very common one in English. This doesn't exist in French as such, for in place of -IAN we find -IEN. Here are some French NOUNS to illustrate this. Their meanings are obvious.

L'historien, le technicien, le politicien, le mécanicien, le rhétoricien, l'académicien, l'indien, le musicien, l'agrarien, l'italien, le parisien, l'alsacien, chrétien, cistercien, prussien, gardien, mathématicien, logicien, théoricien, opticien, norvégien, grammairien, unitarien, utilitairien, agrarien, statisticien, etc.

The FEMININE form of these words is, as you know, la parisienne, la chrétienne la statisticienne, etc.

There are also a lot of French words which are very like their English equivalents, except that their PREFIXES (i.e. first syllables) are different. A good, example of this is the English PREFIX "MIS-" or "DIS-." Neither of these exists in French as such, but rather in the form of "MÉ-" or "DÉ-." Besides many NOUNS with this MÉ- syllable, there are innumerable VERBS which begin with it. Here is selection of NOUNS and VERBS to study.

Le mécontentement (discontentment), la détresse (distress), détruire (to destroy), la mésaventure (misadventure), la mésinterprétation (misinterpretation), le mésusage (misuse), le mécompte (miscount), le mécréant (miscreant), la mésalliance (misalliance), la mésestime (disesteem), la méfiance (mistrust), mécontent (discontented), méjuger (to misjudge), mésarriver (to happen unluckily), mésinterpréter (to misinterpret), mésemployer (to misemploy), le mésemploi (misuse), mésestimer (to misesteem), mésallier (to misally), mépriser (to misprize), etc., etc.

You will notice that in these words the PREFIX is MÉS- whenever the letter which immediately follows it is a VOWEL. Otherwise it is just MÉ-.

In the same way the English PREFIX DIS- appears in French as DÉ-. Just a few verbs here will illustrate the point.

Désabuser (to disabuse), désaccoutumer (to disaccustom), désappointer (to disappoint), désapprouver (to disapprove), désarmer (to disarm), etc.

A few NOUNS and ADJECTIVES also occur to one.

Le déshonneur (dishonour), la désaffection (disaffection), désagreable (disagreeable), la désapprobation (disapproval), le désarmement (disarmament), le désastre (disaster), désastreux (disastrous), le désavantage (disadvantage), le désembarquement (disembarking), déshonorable (dishonourable), la désallusion (disallusion), la désintégration (disintegration), la désunion (disunion), etc.

Note that again DÉ- becomes DÉS- before a Vowel.

The English PREFIX CON- is well represented in French. Particularly in VERBS do we find this. Look at this array of French CON- verbs. You had no idea that such verbs existed in French, had you?

Condamner (to condemn), condenser (to condense), conditionner (to condition), conférer (to confer), confesser (to confess), confier (to confide), confirmer (to confirm), confisquer (to confiscate), conformer (to conform), confronter (to confront), congeler (to congeal), conglomérer (to conglomerate), congratuler (to congratulate), conjurer (to conjure), conniver (to connive), conserver (to conserve), considérer (to consider), consigner (to consign), consister (to consist), consoler (to console), consolider (to consolidate), conspirer (to conspire), consulter (to consult), consumer (to consume), contaminer (to contaminate), contempler (to contemplate), contenter (to content), contester (to contest), continuer (to continue), etc., etc.

And what a large number of ABSTRACT can easily be derived from these verbs! Such NOUNS as:

La condamnation (condemnation), la confirmation (confirmation), la conglomération (conglomeration), la consultation (consultation), etc., etc.

Words with the prefix COM- are just as prolific. Here are a few:

Commander (to command), commencer (to commence), communiquer (to communicate), comparer (to compare), compléter (to complete), composer (to compose), compresser (to compress), compliquer (to complicate), etc.

And look at the ABSTRACTS derived from these verbs:

Le commandement (commandment), la commencement (commencement), la communication (communication), la comparaison (comparison), etc., etc.

I could go on indefinitely giving examples of IDENTICAL words in English and French. But need I? Haven't I given you sufficient now to show that the two languages have much in common from the point of view of vocabulary? My last words, then, to you are: Prove for yourselves by reading the French newspapers, and by listening to the French stations

(*Please turn to page* 21.)

"WHITE COON" IN NEW FILM

C. Denier Warren of "White Coons" fame, with Patrick Ludlow (seated) in a scene from the Butcher-Hope Bell film "Rose of Tralee."

FROM OUR READERS

HOW TO GET QSL CARDS AND "VERI'S"

Readers who have been successful in obtaining replies to their station reports give their experiences for the benefit of other short-wave enthusiasts.

The Editor, POPULAR WIRELESS.

Dear Sir,—I was interested in the letter in a recent issue of "P.W." from Mr. R. B. Webster, Re QSLs. I think that the details submitted make very sad reading: i.e., reports to U.S.A., 28; veri's received, 4. To Argentina, 12; veri's, 2. To Brazil, 15; veri's 0. To Australia, 28; veri's 5.

Surely Mr. Webster omitted some vital facts when reporting. Perhaps my own experiences and method of reporting will be of interest.

During July and August of last year I sent 15 reports, and during September 38 reports, making a total of 53 reports sent for competition purposes. Of these I have received to date, 50 veri's. Percentage of 94·3.

My method of reporting is to try to get several reports for each station before sending and then send a *full* report, giving, besides the usual R. strength, Q.S.B., etc., the weather and conditions at the time of listening. Also very full report of my receiver and aerial direction, height and screening, etc.

One reason for my high percentage of veri's is that, being a member of the British Short Wave League, I knew, by means of the B.S.W.L. review, which stations required reports and which did not, also which stations will not verify. I think that I saved a lot of time, trouble and money by only sending to stations which could be expected to verify. To amateur stations I sent my report on the official B.S.W.L. report card, another factor which helps to get veri's.

Here are a few details of my veri's.

I have 14 veri's from N. America from 15 reports; 5 veri's from S. America from 6 reports; 4 veri's from Brazil from 4 reports; and 3 veri's from Australia from 3 reports.

Here are some of the messages written on the veri's. From Egypt: Many thanks for your *very full* report. From Peru: Thanks for your kindness in reporting. You now have a new friend. From Brazil: Thanks for the most useful information you gave me. From California: Thanks for your fine report, glad to verify. From Canada: Thanks for your courtesy in writing, always glad to hear from Overseas listeners. Etc., etc.

I think that a Reply Coupon should be enclosed with every report. In conclusion, it appears to me that *full detailed* reports are welcomed, *and verified*, by most stations.

Hoping this will be of interest to readers of "P.W."

Yours truly,

W. BIGLEY, B.S.W.L. 122.

29, Hill Street, Wellingborough, Northants.

REPLY PERCENTAGE OF 70

The Editor, "Popular Wireless."

Dear Sir,—As a keen short-wave listener and ardent supporter of verification collecting I would like to reply to the letter of Mr. R. B. Webster, published in the issue of "P.W." dated February 20th.

Mr. Webster is partly correct when he states that the collecting of QSL cards is "grossly overdone," but I do not consider it to be either a "racket" or a "craze." If done discriminately, the reporting to various stations, both amateur and B.C., can be of great value, and I know of many instances where the station has been just as delighted to receive the report as the listener has the verification sent in reply. Numerous stations even return Reply Conpons, and flatly refuse to accept postage in any form, and innumerable friendships have been made through the medium of a report and a QSL card.

Mr. Webster must either have been very unlucky with his replies, or his reports must have been of a poor standard, for I have sent out hundreds of carefully detailed reports, some with and some without postage, and my percentage of replies is in the vicinity of 70. During a three-month test period I sent out 131 reports to B.C. stations and received verification from 113 of them, a percentage of roughly 87. I seldom report to amateurs, unless of outstanding interest, but out of nine reports sent to Brazil I have received seven cards, and from Argentina a very high percentage. International Reply Coupons are, of course, invalid in Brazil. My lowest percentage is from the U.S.A., but the stations there that really matter, such as W6's, W7's, and so on, have practically all responded. It appears that unused 3 or 5 cent stamps are appreciated more by the Americans than International Reply Coupons, and they certainly are cheaper. Incidentally, I have a small supply of these stamps which I am prepared to sell.

The best advice I can give to those interested is not to send reports via a QSL bureau, but to send them direct. A member of our organisation tells me that he has sent reports via two bureaux; 60 reports sent through one brought six replies and 19 reports through the other brought nil.

In conclusion, I would like to mention a few recent verifications that have been received here recently, including **HIH, YNLG, HI8A, HJ3ABX** (my nineteenth Colombian), **HRD, TI4NRH** (first European report on new series of broadcasts), **YV1AB, YV3AE, YV1RH, HJ2ABD** (31·18 m.), **YV1AA**, etc.

Yours faithfully,

"ONDA CORTA."
c/o BRITISH SHORT WAVE LEAGUE

P.S.—Perhaps you will be kind enough to publish the following: On Sunday, March 28th, Short-wave station **COCD** (48·92 m.), of Havana, Cuba, will broadcast a special programme dedicated to the British Short Wave League from 23.00 to 24.00. This programme is being arranged in honour of the League's first birthday, and a special Cuban orchestra has been engaged to broadcast typical Cuban music. Reports will be appreciated, and may be sent to the BRITISH SHORT WAVE LEAGUE, Ridgewell, Halstead, Essex.

THE AMERICAN OUTLOOK

This reproduction from a page in the American radio trade journal "Radio Today" is interesting in the American views it expresses in the captions. These are as follows: RADIO EAR—speaker atop this set comes off, can be dragged elsewhere in the room. FUN IN BED, except that listening in London is taxed "per valve." Hence fans use multiple (Stentorian) speakers with remote-control. PERMANENT WAVER is the nickname for a German bit built of fancy woods plus bakelite. FLATTEST EVER mechanism for record playing results in a new table "combination." TEASER DIAL tilts to your convenience and has become a popular gadget on the Continent. OBLONG STYLE kept the Europeans happy some three years before the Americans went to work on it. GEOGRAPHY LESSON on a "Radiobell" dial showing locations rather than kc.

A HELPING HAND

The Editor, POPULAR WIRELESS.

Dear Sir,—Having just read Mr. R. B. Webster's letter in your issue of February 20th. regarding what he terms as the "QSL racket," I would like, through the medium of your fine publication, to give your readers a few details concerning my own experiences on the subject.

Mr. Webster says that the whole QSL business is grossly overdone. This I cannot agree with.

For a period of about eight months I sent reports, just an ordinary typewritten report, and not an attractive listener's QSL card, to various DX amateur transmitting stations, and I beg to state that the replies I received were of a very high percentage, as the following list will show:

Reports to U.S.A.	4
Veri's received	2
Reports to Argentina	1
Veri's received	1
Reports to Brazil	2
Veri's received	1
Reports to British Guiana	1
Veri's received	1
Reports to Dutch East Indies	2
Veri's received	2
Reports to Australia	3
Veri's received	3

I also sent reports to the West Indies, Canada, Lithuania, and Egypt, and received a return QSL in *each case*.

As far as one of the Australian transmitters was concerned, this gentleman went so far as to send me his card per Air Mail, the cost for which was 3s. (Australian postage).

(Continued overleaf.)

FROM OUR READERS—*Continued*

At one time I was a little uncertain regarding the last letter in the call sign of a station which I received situated in the Dutch East Indies, and rather than send a report to the wrong Q.R.A., I wrote to the first P.K. address that caught my eye in the Amateur Call Book, and forwarded to this gentleman the report in question.

He very kindly sent this to the local radio club for me, and in due course it reached the person for whom it was meant, and I received his QSL card in return.

I enclose for your perusal a letter which will confirm my statement.

I would like to say that I always give as many details as possible in my reports, and never say that a signal is R9+ when it is only R3.

My advice to any reader who is "bitten by the QSL bug" is to send along their reports, which should be *as correct as possible*, and if possible enclose a Reply Coupon to cover cost of return postage.

Yours faithfully,
S. N. EDMONDS.

Island View, Thornhill Avenue,
Bitterne, Southampton.

THE OTHER SIDE

The Editor "Popular Wireless."

Dear Sir,—I notice in your recent issue that a correspondent again raises the QSL question. Perhaps a few words from a transmitting amateur may paint the other side of the picture.

First, it is not reasonable to expect a transmitter to reply to every report received if he has not asked for reports. How many of your readers acknowledge the circulars their local tradesmen send them? Nearly every amateur will gladly reply to a report that is of interest and value to him; it is therefore up to the listener to report only signals which are not usually heard, and to make his report of the greatest possible value.

Secondly, even if the signal from an unusual country is logged, a report is not necessarily of value, as in all probability he will be in contact with a British station when he is heard.

My advice, for what it is worth, is to send fewer reports, make them more detailed, and to listen on the higher frequency bands. When reporting give details of your receiver and aerial, and also the conditions at the time; mention such phenomena as fading, distortion, variation of frequency, or A.C. hum, all of which are likely to assist the operator.

Don't set out to collect QSL cards—rather, make your object the advancement of radio—for by intelligent reporting you will most certainly be assisting that end.

Listen on the five-metre band. You may not hear much, but every single report will be of value and is likely to be acknowledged.

The amateurs of the last generation were responsible for the growth of radio far more than most people realise, and it is the job of the present "hams" to carry on.

Yours faithfully,
J. J. MALING.
(G 5 J L.)

6, Mount Pleasant, Diss, Norfolk.

A HUMAN AERIAL

The Editor, POPULAR WIRELESS.

Dear Sir,—About three years ago I was only mildly interested in wireless, and did not know the slightest thing about this subject. There lived near to me a man who had a great reputation as a radio engineer. One Sunday evening quite a crowd of fellows who were interested in wireless arrived at the house. This engineer got us all outside and detached the aerial from the lead-in tube. He put a piece of wire about a foot long to the lead-in tube. He then got one of the boys to catch it, and this fellow then caught the next man's hand, and so on down the line.

I followed the engineer into the house, where he did something to the inside of the set. He switched on, and there: "This is the National Programme," said the announcer. The engineer went outside, and as he put more men linked together the volume increased. This is the most wonderful thing I have ever seen. Can you offer an explanation? Remember, I knew nothing about wireless at the time, and I don't know what the engineer did to the set, but he certainly did something to it. I hope that this story may be of interest to you.

Yours truly,
W. O. McGREGOR.

Lavaran, Kesh P.O., Co. Fermanagh, N. Ireland.

[The string of men were themselves acting as the aerial, bodies being conductors. Their boots supplied a sufficient insulation from earth.—ED.]

AN OUTPUT-FILTER TIP

The Editor "Popular Wireless."

Dear Sir,—Perhaps the following will be of interest to your readers:

When output filters are used in short-wave receivers obtaining their H.T. from the mains, hum sometimes results, especially noticeable when phones are used.

This may be cured by joining the phone lead that goes to earth to the H.T. + side of the choke instead.

I found this very effective in my own receiver, and to improve matters I joined a 4-mfd. condenser between H.T.+ and H.T.—. Doing this still kept the phones at "earth" compared with the H.F. side of the receiver, and kept hand-capacity effects at a minimum. The diagram explains everything.

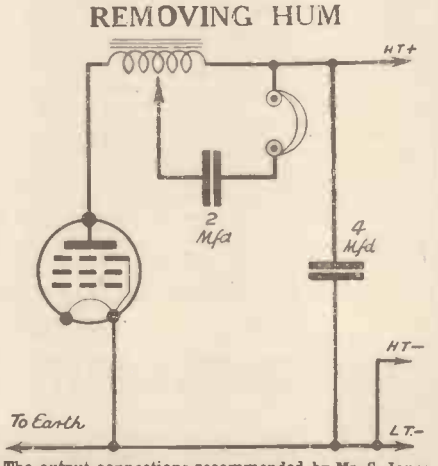
Yours faithfully,
S. JANES.

72, Kimberley Road, Croydon, Surrey.

A BRICKBAT

The Editor POPULAR WIRELESS.

Dear Sir,—I should like to call your attention to a certain defect which, in my opinion, mars your otherwise excellent paper. As in other periodicals, articles in POPULAR WIRELESS are often split up into sections with a "Continued on page——" as the only indication. As a result the reader has to flick over the pages and break his enjoyment until he finally finds half a column, usually the most important, tucked away in some obscure corner.



The output connections recommended by Mr. S. Janes for short-wave working on the mains.

This splitting up of articles is particularly annoying when constructing a set.

On the subject of sets the ubiquitous S.T.800 must have created a record. I saw it about five weeks ago masquerading as a super television set in the Gaumont-British film "All In." Apparently the producer thought that the imposing dial would fit in with the atmosphere.

Yours sincerely,
J. HAY.

29, Jerningham Road, Liverpool, 11.

ED. NOTE.—It is a normal journalistic expedient to run an article over into spaces requiring filling, and at least 10,000 other journals and newspapers do that. The only other alternative often confronting the editor is to cut the article short, and many might think it better to be able to read the words in question, and have to turn over a few pages to do it, than to have them pruned into oblivion. On the other hand, others might not.

Anyway, we do not play hopscotch with our articles in the messy way of certain American journals, nor do we ruthlessly cut our contributors' articles, irrespective of their content and construction, in the manner of some newspapers. We endeavour to strike a happy mean. We would ask our readers' indulgence if sometimes our plans in this respect do not entirely meet with their approval.

A GUINEA FOR YOU

We welcome letters from readers on all radio subjects. Long ones, short ones, humorous ones, practical ones, literary ones—we like 'em all. And each week one guinea is sent to the reader who sends the letter which is best in the opinion of the Editor. So post yours right away! The winner this week is Mr. W. Bigley.

WHY NOT "GRAMOVISORS?"

The Editor "Popular Wireless."

Dear Sir,—Although there's been numerous articles on the future development of television receivers, it seems the poor old gramophone—or should I say radiogram?—has been forgotten. Why this should be I don't know, unless the manufacturers of television receivers have enough to do at present experimenting with television, and trying to reduce the cost of their receivers.

Perhaps when the B.B.C. have a number of television stations working in different parts of the country, and the price of the set has fallen, owing to demand, the manufacturers will turn their attention to the Tele-radiogram.

I don't mean a television set with a gramophone motor and pick-up, like we have in the radiogram of to-day, but when you put a record on the tele-radiogram you will be able to see as well as hear the performer or performers.

I presume this might possibly raise a laugh or two from some of your readers, but personally—although I don't profess to be more than an average "dabbler" in radio—I don't see any great difficulties in the way of this development.

Taking the gramophone record of to-day as a basis for this idea, there wouldn't be any difficulty regarding the sound side, but a way would have to be found of imposing vision tracks on the record, if this could be done.

The television set provides us with the means of turning waves into vision, so what we would need would be a form of pick-up that would turn the vibrations into waves which could then be fed into the vision side of the receiver.

I don't suppose it's as simple as this, but remember, a special pick-up had to be designed before we could have the radiogram, although, of course, we already had the sound-box, and the pick-up is only, more or less, an elaborated version of this.

Possibly there may be difficulties I couldn't even think of, then again there may be an entirely different way of getting about this problem. There is, of course, the possibility of films may provide a solution. The talkie film has, I believe, the sound track on the edge, and this presumably wouldn't provide any difficulty regarding the sound side in a television set, but a way of feeding the pictures on the film into the cathode-ray tube would have to be found. Unfortunately, even if this could be done, there would still be two disadvantages in the adoption of this scheme, first there is the difficulty of hooking the film on to an empty spool; then, secondly, there's the difficulty of rewinding the film after each showing, unless a simple way of doing this could be found, I don't think the idea would catch on with the general public.

That we shall eventually have the Tele-radiogram there doesn't seem to be any doubt, it's the natural outcome of three immensely popular instruments of home entertainment.

I believe the big chiefs of the film world did—and still do, for all I know—view with apprehension the growth of television, but I don't think they have anything to worry about; that the number of cinemas will decrease considerably in the future is quite probable, but I don't think that television will replace the cinema entirely.

When there are television services in every country, then probably we shall get a decrease in the number of cinemas, and by that time the film producers will be busy making films for television and tele-records.

This Tele-radiogram is a development that must come; after all, we know how much the B.B.C. like their programmes of gramophone records, and when we have a regular daily eight or ten-hour television service the B.B.C. will wish to retain their programmes of gramophone records, and they can hardly expect us to watch the record going "round and round," can they—or can they?

Yours faithfully.
HARRY LADNER.

10a, Mulgrave Street, The Hoe, Plymouth, Devon.

WHY TALK AT ALL?

The Editor, POPULAR WIRELESS.

Dear Sir,—Mr. A. H. Simpson's letter in your issue of February 13th, 1937, certainly goes the "whole hog" in favour of free speech, and a letter from the other swing of the pendulum will be welcome by your readers. To pull Mr. Simpson's letter to pieces, word by word, would be out of place, and so to vent the other fellow's feelings. Why should it be necessary to speak at all via the ether? Surely the primary reasons are the love of hearing one's own voice and the inane thought of persuading others to agree with something which is possibly or probably a fallacy.

Programmes at a theatre or music-hall are purchased as is the "Radio Times," the old-fashioned idea of announcing each item with flowery statements (sometimes subsequently turning out far from the truth to some hearers) was discarded long ago.

The human ear adapts itself to the sounds produced by a loudspeaker. Thus voices via the loudspeaker have to become accustomed to by the ear, and their name is legion, giving the unfortunate ear far more work to do than is met with in the course of the average human being's everyday work.

Why not cut it out altogether—instead of the chatter or crooner being "vetted" let it be "verboten"? Little slips (not, we are told, in the script) appear to get over the ether, even though rehearsed.

This is strange, yet seems to be a very good reason in favour of cutting out any kind of talk or human element by means of the voice which evidently suffers the usual human frailties. The human ear is more suited, perhaps, to the sounds of a melodious nature rather than rhythm with crooning or voice alone.

Even a band concert has to have a complement of singers. In the days of the S.T.75 dance music used to be played without the use of the unmelodious saxophone. To-day, years later, a certain dance band leader is trying horns—a pity, really, he does not first cut out the human voice or crooning. No, sir, reduce the human voice to a minimum, and no one would be troubled by Spain, archbishops, or any other controversial matter at all, and probably be all the happier for it.

Yours faithfully,
A. H. PAGE.

Cloverdale, Cotham Park, Bristol, 6.

INTERNATIONAL EXCHANGE

(Continued from page 12.)

on Long Island, the R C A has a very elaborate relaying equipment. British programmes picked up on the spaced aerial system there and sent over United States broadcasting networks often have a very high standard of technical perfection.

By no means all the relays taken by the United States are B.B.C. items. The Columbia Broadcasting System and the National Broadcasting Company frequently take talks through the Post Office radio-telephone service.

Multi-Aerial Reception

In the nature of a *quid pro quo*, Tatsfield has developed for the B.B.C. the technique of picking up United States short-wave broadcasting stations on multi-aerial receivers. On these the B.B.C. can provide a worth-while relay at times when direct reception may be almost unintelligible.

With diversity reception, using directional aerials and the latest type of receivers, we can pick up omni-directional short-wave broadcasts from the other side of the Atlantic with a fair certainty of success. At the same time it is easier still when—as is now being increasingly done—the transmitting aerials are made directional to Europe.

Schenectady occasionally uses an aerial system directional to Europe, while Boston and Bound Brook promise similar facilities in the near future. Wayne, the Columbia short-wave relay, is also working with its eye—as well as its aerial—on Europe.

There is a striking difference between the land line and the radio as a communication link. While the former is more or less immune from interference, the latter is always susceptible to it.

Interference on Empire Stations

As an example one might well quote the interference now being suffered by Empire stations on the 49- and 31- metre bands. The G S A, G S B and G S L signals are seldom free from heterodyning from South American short-wave stations of mushroom growth.

In the United States and in Canada, interference is said to have a serious effect on the programme value of the Empire signals.

Meanwhile, ponder on the paradox: That through the development of broadcast networks the land lines have become the most effective medium of interference-free programme interchange. No sane engineer uses a radio link if he can get a good music cable circuit.

SUPERB COLOUR PLATE PRESENTED FREE

HAVE you seen the glorious postcard size Coloured Flower Studies that are being presented each week with POPULAR GARDENING? The issue now on sale, price 2d., contains a colour plate of the lovely new hardy Scabiosa Fischeri, seeds of which can be sown now. Directions for planting are printed on the reverse side of the plate

This issue of POPULAR GARDENING is a special number, "Flowers to Grow From Seeds," featuring articles by experts on seeds and bulbs, including the popular gladioli, annuals for brightening the greenhouse in summer, early-flowering chrysanthemum, late planting of fruit trees and cropping the kitchen garden.

SEEN ON THE AIR

(*Continued from page* 10.)

are simply too crowded for words. All the early faults of organisation have been eliminated; order and smooth running have replaced some of the chaotic conditions of the first months.

Still there is not room. Half the studio was occupied by the television orchestra, plus the camera trollies, producers and technicians. The rest was stage, so that each of the eight young Cochran beauties had about enough room to swing a cat. For "cat" substitute a hoop, because in the first item they appeared as flaxen-haired Victorian schoolgirls with large yellow hoops which served as skipping ropes.

A Daring Item for the B.B.C.

"The Greeks Had a Word for It" was the most daring B.B.C. item I have seen. Not that it could have been in the least offensive except to a Mrs. Grundy. The girls wore a slight kilt and a brassière.

I may say, as a sidelight on the congestion of the studio, that to reach their appointed positions some of the girls had to pick their way gingerly between the advanced posts of the television orchestra, stepping over wire entanglements and ducking under other obstacles.

Another reflection came later when I sat by my own fireside watching the same show from a different viewpoint. It was still a good show, even on my small screen, but let me confess what a world of difference there is between the glamour and movement, light and colour of real life and the diminutive figures on the home screen. I sometimes think that the producers are carried away by the studio show and have only half an eye for the home audience.

Thus, when in the studio I was chiefly impressed by the performance and charm of the Cochran girls. But at home Bob Robinson and Virginia Martin, the ballroom dancers, easily gained the palm. The small screen will not present eight lovely girls to full advantage.

Earlier in the afternoon, in the grounds of Alexandra Palace I had seen an outside broadcast at close quarters. C. A. Whitcombe, interviewed by Bernard Darwin, demonstrated a number of shots on the miniature golf course.

The camera-men were wearing for the first time their new "outside broadcasting" kit, which consists of complete fur-lined flying kit with a black helmet, said to be sound-proof, containing earphones. Apparently they regard the job of peering into the camera on the freezing slopes of Alexandra Park as comparable to Arctic exploration.

But hardy Leslie Mitchell braved the wintry blast without even an overcoat. He has to be Beau Brummell, of course, and not like an inter-planetary traveller. I suggest fur-lined underclothing.

"Messenger from Mars"

A second engineer, also dressed like a messenger from Mars, walked about with a microphone which he held up for the commentator. There is an amusing pantomime and some tension before the beginning of the broadcast. All watches are synchronised by the control-room. Then the camera-man begins a little commentary on what he alone can hear from the studio.

"Clock striking," he says. "One, two, three. Announcement. Stand by." Mr. Mitchell looks expectant. Now the camera-man says "Another two minutes." I do not understand the necessity for this extra pause. Neither does Mr. Mitchell who looks slightly disgusted. "Stand by," says the Martian again. Then he makes a sign with his hand and Mr. Mitchell begins to talk.

The B.B.C. staff are longing to get delivery of the outside broadcasting vans to tackle this important branch of television in earnest. The golfing demonstration was very good and an earnest of what will be done in the near future.

No Mistakes This Time

Unlike Archie Compston, the first golfer to be televised from the Palace, who "potted" his opponent's ball on the green, C. A. Whitcombe made no mistake.

But owing to the fact that this was a miniature course not designed for the full-blooded professional drive, he must have given the camera-man some qualms as he hooked round and drove through the upper foliage of a tree directly in the line of fire. If he had scored a bull's eye on the trunk, the ricochet might have spelt disaster!

I am glad the B.B.C. has resumed outside broadcasts, they lend reality and give "punch" to the programmes.

THE MUSIC LIBRARY AT BROADCASTING HOUSE

(*Continued from page* 3.)

covers ready for the players, all of the stock being overhauled to see that it is in good condition.

"Then they are labelled with the date and left until the date of the rehearsal. They are sent down for rehearsal and performance, collected afterwards and brought back here for dissection. Anything torn is mended, where music has become limp it is stiffened up, and then back into the stock covers go all the parts awaiting the next rehearsal or performance.

"Look at these new gadgets we've got hold of," went on Mr. Hook, and took me to yet another room.

60,000 Song Titles!

There on two shelves were twelve great vertical revolving files. I tried to draw a sketch of them, but I don't know whether it will show it very clearly. "On each of those files," said Mr. Hook, "are fifty metal leaves. On each side of the leaves is room for fifty song titles. We're getting together in this room a matter of 60,000 song titles on these twelve frames.

"There are 5,000 on each frame, all classified under the name of the song. These are cross-indexed elsewhere under the name of the composer. One system of cataloguing our orchestral library is alphabetically under composers' names, and divided into waltzes, marches, overtures, symphonies and so forth. It's a life's job looking after this lot, but it is a very fascinating business.

"And the 'phone calls!" Mr. Hook mopped his brow. "All sorts of people ring us up for information. Publishers seek advice on such and such a piece of music. The public rings up; outside band leaders give us a call to ask about certain compositions or composers. Then we have a flood of letters which further increases our queries. We are rapidly becoming one of the greatest authorities on music from the library point of view in the country.

Doomed to Hard Wear

"What we are going to do when we have filled this space, I don't know. It *is* rapidly filling and we are also expanding all the time.

"The life of a piece of music? That is a difficult question to answer. It depends on the quality of the paper, and on the treatment it receives. Owing to excitement, speed or temperament, orchestral music is doomed to very hard wear, and the maintenance staff is kept working at high pressure.

"If you get a piece of music printed in 1921 or 1922 you will find that very often it has been printed on war-time paper. This sort of music does not last very long, I'm afraid.

"But the life of music is surprisingly long really—and this is lengthened very considerably by the care we take in mending and stiffening up."

We went back into Mr. Hook's office. A great chart on the wall showed the ramifications of the library. At a table sat a girl busily entering up lists of music in a ledger.

"Just making out our music purchase book," indicated Mr. Hook. "These are made out in triplicate. One copy goes to the publisher, one to the accounts' department and we retain the other. Then all music is listed on special issue cards and in ledgers, so that we know at any moment where every piece is. That is most essential, for otherwise we should soon get into a hopeless muddle.

"All the music we have has been definitely published and either has been or still is on sale to the general public by the various publishers. We have no special copyright music that has never been available to the general public.

"Yet we must have many tons of music up here on those steel shelves, in innumerable envelopes, with their uninspiring, unromantic numbers. But in those envelopes is sufficient music to keep the orchestras of the B.B.C. playing for years on end.

Constantly Expanding

"If we go on collecting music as we are inevitably doing now we shall want the whole of Broadcasting House as a music library before we have finished, and then we shall want a special library for the book of reference telling us what we have in the music library."

I wish Mr. Hook luck. I certainly don't envy him the job, but I am nevertheless convinced that no matter how much he has to expand, that cheery smile will still be there. No complications in the way of libraries will ever stop that good-natured laugh, or damp his buoyant enthusiasm.

LEARNING FRENCH THROUGH YOUR RADIO

(*Continued from page* 16.)

that English words are to be found in abundance in French. Of course, they have their own peculiar pronunciation, and may be difficult to recognise at first, but practice makes perfect, and regular listening works wonders. The same difficulty doesn't confront you in your reading. READ THE FRENCH NEWSPAPERS REGULARLY.

Let me, in conclusion, give you an extract from the PARIS-SOIR, which is typical of all newspaper French. Look at the amount of English in it. Such French isn't difficult to translate, is it? And if you have faithfully followed my French page each week the Grammar should be equally simple. Here is the extract:

"La victime est, cette fois-ci, une jeune femme de 26 ans. Mrs. Mary H. C., célèbre pour sa beauté et son élégance. Fait curieux, elle appartenait au monde des artistes et des écrivains, comme Nancy T. Décoratrice, Mrs. C. avait une réputation artistique solidement établie.

"Elle était mariée à un important homme d'affaires, qui est l'un des directeurs de l'Association des Hôteliers new-yorkais. . . ."

QUESTIONS AND ANSWERS

By K. D. ROGERS

HOW AN A.C. RECTIFIER WORKS

P. G. D. (Southend) *has asked me what is the difference between a full wave and a half-wave A.C. rectifier.*

I explained these things some time ago in the Technicalities Explained section, but here goes again. Look at the sketches. Fig. 1 shows the half-wave rectifier. Note that alternately the anode of the valve will become positive and negative in regard to opposite ends of the transformer secondary. That is the fundamental feature of A.C.

Now when the anode is positive current flows through the valve. When it is negative no current flows. Thus we get surges of current which rise, reach a maximum and fall to zero once every cycle of the A.C. input. The result is that with a 50-cycle supply we get 50 surges of current through the valve every second, and 50 periods when we get no current, the period of time when there is no current being equal to the period when there is current.

The output curve of the valve is therefore as shown. A "portion" of current (on the positive half-cycle), then nothing; then another positive "portion." The result for H.T. purposes being equal surges of D.C. at a rate of 50 per second. That is, surges of 1/100th second duration.

HALF-WAVE

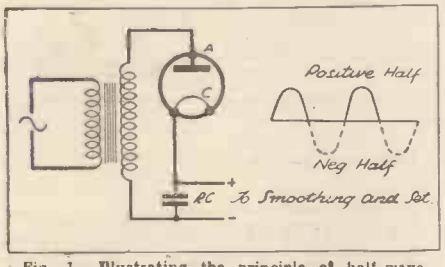


Fig. 1.—Illustrating the principle of half-wave rectification.

Note that when the anode is positive the other end of the transformer is negative. But the cathode is not negative. That point is not easily understood perhaps at first, but it must be remembered that when current flows through the valve, though the cathode is *less* positive than the anode it is still positive in regard to the opposite side of the condenser R.C., which is the reservoir condenser of the H.T. supply.

You can look at it this way if you like. As the A.C. swings in potential across the transformer winding the lower plate (see diagram) of the condenser is made alternately positive and negative.

Now when the bottom plate is positive the anode of the valve is negative, and no current flows. When the bottom plate is negative the anode is positive, and the upper plate (and cathode) is also positive, but owing to the valve resistance it is less positive than the anode. Thus current immediately flows through the valve from cathode to anode and round the external circuit to the bottom plate of the condenser. Thus if the H.T. load is placed across the condenser we get a flow of H.T.

A Double Winding

Now look at Fig. 2. It is merely two of Fig. 1 together back to back. Thus we get the same thing happening in each section of the diagram as we do in Fig. 1. But being connected to opposite ends of the transformer secondary we get the action of each section taking place alternately.

When the top half (1) is supplying H.T. across R.C, the bottom half (having its anode negative) is doing nothing When the bottom half is working (anode positive), the top half is out of action (anode negative).

Thus we get current from A1 and A2 alternately, and the resultant output is as shown in the graph. You can look upon the transformer winding as two windings as in Fig. 1, but put end to end. The centre point is always negative in regard to one end or the other; in fact in regard to that end which is supplying a positive potential to the anode of the valve. So across R.C. there is always a potential rising and falling IN THE SAME POLARITY That is, the right-hand side of R.C. is always positive, first by virtue of one half of the transformer and then by virtue of the other half. We get from this type of rectifier a series of positive surges at the rate of 100 per second instead of 50 per second, the duration of each surge being 1/100th of a second as before.

So you see that in this case we make use of both halves of each A.C. cycle instead of simply cutting one right out, and hence obtain the term "full-wave rectification."

CUTTING OUT H.F.

H. M. L. (Golders Green).—*I am troubled with H.F. on the mains, and have been told to try an H.F. choke and condenser, the former in series with the mains and the latter across the mains or to earth. The condenser would, I take it, be situated on the set side of the choke. How does this device work?*

The scheme is quite O.K., but you must use a mains type of choke. One of the large wire variety that will carry the necessary current to the receiver. The condenser should be on the set side of the choke and connected as you suggest.

The operation of the device is simple. I am not going to draw a diagram for you, but suggest you get a pencil and draw one for yourself, that will impress the circuit and the explanation on your mind.

Here goes: Draw the two lines usually drawn to denote the mains, parallel lines across a piece of paper. Now take off two more lines to go to the set, just like telephone wires tapped into a couple of parallel wires.

In series with one of these wires draw a choke and then continue the wire to a point marked "set." Take the other wire straight to a similar point similarly marked. Between these two points connect a condenser. That's all. Let us mark the choke L and the condenser C.

Now draw a resistance on another diagram instead of the choke L, and another resistance instead of C. Or change the choke and condenser on your first sketch into resistances if you like.

Let the resistance in place of L be very large, and that in place of C very small in value.

What would be the effect in such a case if we were to take a voltage tap off from the junction between L and C and from the feed line connected to the other side of C? In other words, a voltage across the points marked set? We have a potentiometer formed by L and C resistances, and as C is the smaller we should not get much voltage developed across it. That is obvious, I think.

Now forget the resistance idea and go back to the choke and condenser. Remember that to H.F. the choke offers a very high resistance and the condenser offers a very low resistance. What have we got as regards H.F.? A potentiometer. Therefore we shall find that the H.F. voltage across the points marked set is very small. In other words, the H.F. fed into the set by the mains is very small. We have managed to cut down the interference, which is what we wanted to do.

One more point. To the mains current, which may be A.C. or D.C., the condenser offers a very high resistance. It is of small capacity, and therefore A.C. does not readily "pass through it."

To D.C. it offers a complete barrier. But the choke L offers no resistance to the current other than the very few ohms resistance of its wire. We have, therefore, the same old potentiometer to consider, but with the values reversed. Easy passage, or no resistance at L and complete stoppage or very high resistance at C. In other words, the mains voltage available across the points marked set is, to all intents and purposes, the full voltage. No drop is provided across the potentiometer.

Quite easy, isn't it? But that is all there is to it.

SOS

Can any reader help Mr. A. Pollard, 36, Ferndale Road, High Road, S. Tottenham, London, N.15? *He wants the loan of a copy of* THE WIRELESS CONSTRUCTOR, *giving details of the S.T.*1·5.

As a matter of fact, off my own bat, I would suggest Mr. Pollard writes to Mr. F. Harris, Zion Row, Lowerton, Helston, Cornwall, who has copies of the "Constructor" to offer. He may have that particular one in stock.

And here is another type of S.O.S, J. Nelson, 368, Newchurch Road, Rawtenstall, *has several parts from the S.T.*700. *which he is not using (having built the* 800), *and which he is willing to give away.*

He considers the value is about 25*s., but is willing to let "any reader have them, free, gratis and for nothing."*

What about it? The parts are: S.T.700 coil unit, Ormond aerial balancing condenser, 2 Graham Farish volume controls, Dubilier 2-mfd. non-inductive condenser, Wearite screened choke, B.T.S. disc H.F. choke, Lissen fixed condenser, and 5 assorted resistances.

Now. I expect hundreds of you will write. Please write once only, and do not expect an answer. Mr. Nelson cannot be expected to answer your letters. He will obviously choose who shall be the lucky man, send off the things—and there you are! The others will be left. He cannot undertake to write to them to say he is sorry they have been unlucky.

And on behalf of "P.W.," please accept my grateful thanks for your kind offer, Mr. Nelson. It's sporting!

FULL-WAVE RECTIFIED A.C.

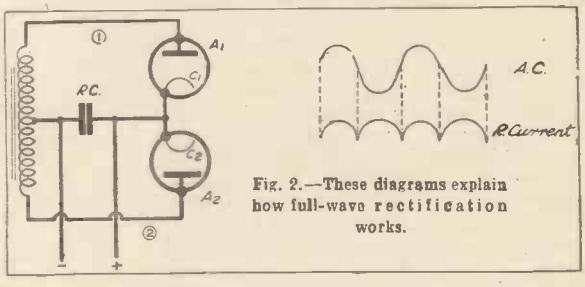
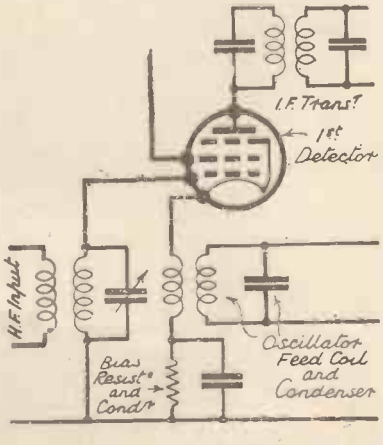


Fig. 2.—These diagrams explain how full-wave rectification works.

TECHNICALITIES EXPLAINED—No. 43

Cathode Injection



This is a method of injecting the oscillator frequency into the anode circuit of the first detector of a superhet. Yes, I mean anode circuit, for the cathode is in the anode circuit just as much as is the anode, though it is on the negative side of the H.T. supply.

The cathode injection method is often used when mains valves are employed, and the skeleton circuit is as shown. The oscillator feed coil is coupled to a coil which is in series between the cathode of the valve and earth. The valve is automatically biased to somewhere round its anode bend point by the bias resistance in series in the cathode connection.

The condenser across the oscillator feed coil may be tunable in certain circumstances; it may be a fixed condenser or it may be omitted altogether, dependent on the exact circuit and design of the coupling arrangements.

TECHNICAL JOTTINGS

BROADCASTING IN U.S.A.

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

THE B.B.C., as we all know, is a non-profit-making organisation, the whole of its revenue, except for the portion which goes to the Postmaster General, being applied to the various services, engineering, entertainment and others, which contribute together to the provision of our every-day programmes. It is interesting to compare the B.B.C with the N.B.C.—the National Broadcasting Company—of America, which has just recently celebrated the tenth anniversary of its foundation. This world-famous organisation was started, in November, 1926, for the purpose "of providing the best programmes available for broadcasting in the United States." It was formed by the Chairman of the Radio Corporation of America, Mr. Owen D. Young, and was intended to pursue the objects set out above on a non-profit basis.

It's a Good Business

The N.B.C. of to-day, however, with its new high-power President Lohr, has entered a new phase of its development. It is no longer the non-profit organisation of 1926, but, to use the words of one of our American contemporaries, is "a hard-boiled, two-fisted selling organisation, which is out to make 1937 radio's first hundred-million-dollar year, with N.B.C. and R.C.A. reaping a good deal more than a lamb's share."

B.B.C. Sets the Pace

The B.B.C., of course, claims pride of place in the broadcasting world, but the N.B.C. of America has certainly, in its ten years' growth, given a very good account of itself and is one of the premier broadcasting organisations of the world. British listeners are becoming more and more familiar with American broadcasting owing to the frequent arrangements made by the B.B.C. for the relaying in this country of special items from the States.

For Experimenters

Another American organisation, which is not perhaps so well known to the ordinary listener in this country, but which is very well known indeed to the experimenter, is the American Radio Relay League. The League was founded in 1914 by the late Hiram Percy Maxim, and the members consistently appointed Mr. Maxim their President year after year until his death in 1936.

The new President of the League is Dr. E. C. Woodruff, head of the electrical and radio engineering department of Pennsylvania State College, and also famous in America and elsewhere as a radio engineer and inventor.

A Bag of Tricks

The professor is well known in his more immediate radio circles for his "bag of tricks," a battered old suitcase which always accompanies him to his numerous popular lectures and addresses. From his bag of tricks he produces all kinds of gadgets and new dodges which never fail to excite interest and admiration.

By becoming President of the American Radio Relay League, Professor Woodruff becomes, *ipso facto*, President of the International Amateur Radio Union, a federation of twenty-six national amateur radio societies.

Changing the Supply

Several readers have written me from time to time to say that they are expecting their electric supply to be changed over from D.C. to A.C. and what are they going to do about it? In a good many cases people are put off from buying a radio set because of some uncertainty as to what is going to happen to the electric supply. There is still a good deal of direct current in use in this country and it is commonly understood—I don't know just how reliable it is—that gradually all this D.C. will be done away with and A.C. become universal.

The "Grid"

The use of a standard voltage and frequency of A.C. throughout the country was one of the objects of the "grid" system, but, as I dare say you know, the grid system has come in for a good deal of criticism, especially lately in regard to the rearmament campaign and the necessity for precautions in the event of war. Some people criticise the grid system generally on engineering or economic grounds, whilst some again say that the system is peculiarly open to the danger of being put out of action.

All this does not seem to have any very direct bearing on the problem of the radio user and I only mention it because it seems to me that no one really knows for certain just whether the grid system is going to be carried through to the bitter end or not.

I suppose the best thing is to assume that the grid system *will* be proceeded with, in which case one district after another will fall due for conversion from D.C. to A.C.

You May be Looked After

However, to deal with the immediate problem of those listeners who already know that their district supply is about to be changed in the near future, I think it will be found that the local electric supply authorities have made arrangements for dealing with cases of hardship, where radio sets (and certain other electrical household appliances) may not be capable of functioning on the new power supply.

If you happen to be in this position and you are considering the question of a new radio set, it might be well to think in terms of a universal set, one that can be used on your present D.C. and equally well on your future A.C. Universal sets were a bit of a mystery a few years ago, but there are now a number of perfectly reliable sets of this type on the market, and if you go in for one of these you will have nothing to worry about.

Were You Brought Up on D.C.

People who have been brought up on D.C. get a curious liking for it, and have an instinctive aversion to A.C. I know this because I was brought up on D.C. myself. But there is no argument that A.C. is much more generally serviceable,

(*Continued overleaf*).

TECHNICAL JOTTINGS

(Continued from previous page.)

because you can do so many more things with it. As soon as your local supply changes over from D.C. to A.C. and you begin to appreciate the great flexibility and convenience of the A.C. system, you will have no regrets about the change-over and you will never want to be back on D.C.

Car Radio

Notwithstanding that radio-in-the-car is increasing in popularity year by year, you would hardly think it worth while for a large concern to devote itself solely to the manufacture of car radio sets only. In this country it may not be time for that yet, although I have no doubt that the manufacture of sets especially designed for car use will in the near future become a very big business.

In the States where, of course, the number of private cars is enormously greater than in this country, no less a concern than the world-famous General Motors Corporation has recently established a subsidiary company solely for the manufacture of radio sets for use in their cars. The new manufacturing venture will be known as the Delco Radio Division and will be a Delco-Remy Corporation subsidiary.

There Must be a Big Field

Some few years ago General Motors went in for the manufacture of regular household radio receivers, but although they put out a line of thoroughly reliable sets and their servicing system was good, they did not seem to meet with success. They believe that there is a sufficiently large field in the making of the sets for their cars and have apparently decided to limit their radio activities to this particular sphere.

Television Comes Out

Now that television really has emerged from its lair "around the corner," where it has been lurking these many years, it will be interesting to see what sort of a reception it meets with from the listener. Some people say that a television receiver must always be in a price range quite different from the radio receiver and that that alone will put it out of reach of a large percentage of ordinary radio users. Some people again say that the type of entertainment that can be given by television will not compare, for range and variety, with that on the radio. On this last point some people on the other hand, think that the television will have the ordinary radio beaten. Again, there is the question of the light intensity, whether it will be easy to see the picture or whether it will involve an undue amount of inconvenience sitting in a semi-darkened room. The size of the screen, the simplicity of the controls and the question of how many people can view the televised picture at once—all these are points which will have to be considered as things go along.

What is a Popular Price?

A well-known radio engineer has been summarising some of these points and he says that first and foremost the way to popularise television will be to bring the receivers down to a popular price. Just what a "popular price" means in this connection it is difficult to say, but I should imagine that, having regard to the types of radio receiver that can now be got for a few pounds, something in the region of ten or twelve pounds would be a popular price for a television set. The "doings" that go to make up a television receiver of the cathode-ray type are much more than those in an ordinary radio set, so that it becomes a question whether a television set is *ever* likely to come into the same price category as an ordinary radio. Such remarkable reductions in price have been effected in radio sets during the last ten years, however, that one hesitates to predict anything one way or the other as to what may come about in regard to television.

Up-to-the-minute news concerning the radio industry

A RANGE of valves having international bases has been introduced by the **Marconiphone Company.** This has been done to allow all Marconi valves to fall in with the standard which has been set up in America and on the Continent. These new valves have 6·3 volt heaters and octal bases, the characteristics being similar to the American "G" range, i.e. the glass equivalent of the all-metal range.

The voltage reading of 6·3 suits them for car radio as well as A.C. receivers, while the current rating of ·3 amps. makes series running on A.C./D.C. receivers possible.

* * *

NEW DRYDEX CARTON

The Drydex **"Super-Life"** battery is now supplied in a three-colour carton of white, green and black, the design being similar to that which has been used for so long for the Red Triangle type of Drydex battery. By this change the Super Life will be more easily recognised as one of the Drydex family.

* * *

LATEST G.E.C. RELEASES

Here are a number of new receiver releases. There are four new G.E.C. models, and these are as follows:

First an all-wave six-valve receiver of the table type, covering two short wavebands in addition to the normal broadcast medium and long waves. The short wavebands extend from 13·6 to 30 metres and 29·4 to 81 metres.

The dial is calibrated in station names, metres and megacycles. The set is designed for A.C. mains and it is priced at 19 guineas.

Next we have **an A.C. transportable five,** an entirely self-contained design, the aerial being built into the cabinet and the set, therefore, only requiring plugging into a nearby mains point to bring it into operation.

There is a turntable on the bottom of the cabinet so that the receiver can be orientated into the position giving best results. The wave ranges covered are the normal medium and long, and the price is 16 guineas.

(Continued on next page.)

THE RADIO BULLETIN

(Continued from previous page.)

The third model in the range is a "Fidelity" All-Wave battery set, and has been designed specially for overseas listeners.

Since the main entertainment value of broadcasting in the case of overseas listeners is that given by the short waves, the wavebands covered by this receiver include every short and medium-wave station between 13·6 and 550 metres (in four wavebands). The usual long waveband has been omitted, as, of course, there are no long-wave stations for overseas listeners to hear. The price is 17 guineas.

An interesting feature is the fact that a specially designed vibrator pack for supplying H.T. and operating from a six-volt accumulator is available as an accessory. This arrangement is obviously an attractive one to many overseas listeners who have difficulty in obtaining dry H.T. batteries.

The set is also equipped with delayed A.V.C. to minimise fading.

The fourth set in this new range is the "Fidelity" All-Wave Eight. It covers the following wavebands: 13–82 metres, 200–550 metres and 900–2,200 metres. It is calibrated in station names, wavelengths and frequencies.

The set is a table model and designed for A.C. mains. The output stage employs a push-pull circuit, capable of delivering 6 watts. It will therefore be seen that very special attention has been given by the makers to the question of high quality reproduction. The price is 25 guineas.

* * *

NEW BUSH SUPERHETS

From Bush Radio comes news of several new all-wave superhets. There is a battery superhet employing four valves and having an H.T. current consumption of 10 milliamps.

The short-wave range is 17–51 metres. A.V.C. is fitted, as are also a continuously variable tone control and dual-ratio tuning. The price of this set is 12 guineas.

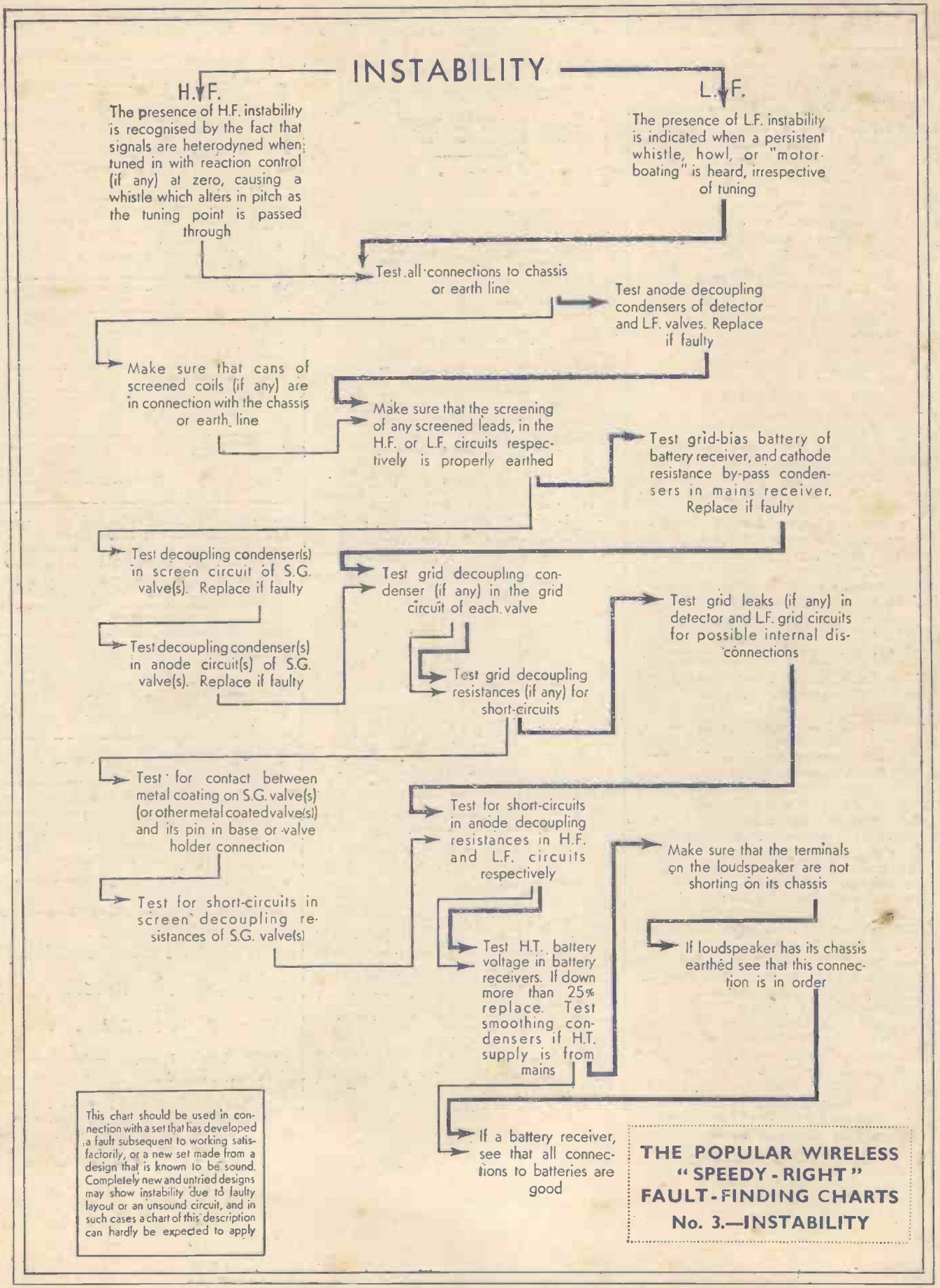
Next there is a universal mains all-wave superhet at 12½ guineas. This set, which has an output of 3½ watts, employs four valves and is fitted with full A.V.C. It is known as the model DAC43.

For those who prefer a console, there is an A.C./D.C. all-wave design (model DUG43) at 16 guineas. A.C. mains consoles are available also. There is a three-waveband model priced at 15 guineas, and a four-waveband (two short-wavebands) model at 20 guineas. The three-waveband set employs five valves (including rectifier), the shortwave coverage being from 17–53 metres.

There are two radiograms in this new range, namely, the RG33 at 24 guineas, and which can also be had with an automatic record changer for an additional six guineas. This model has a five-valve circuit, including rectifier, and is designed for A.C. mains operation. On the short waves the wave range is 17–53 metres.

The other model, the RG37, costs 29 guineas and can be had with a Garrard automatic record changer for 35 guineas. The circuit in this case employs six valves (including rectifier), and the short-wave coverage is 17–53 metres and 75–200 metres.

It has a 12-in. energised high-fidelity moving-coil loudspeaker and triode output.



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