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Amateur Wireless and Radiovision

3d Every Wednesday

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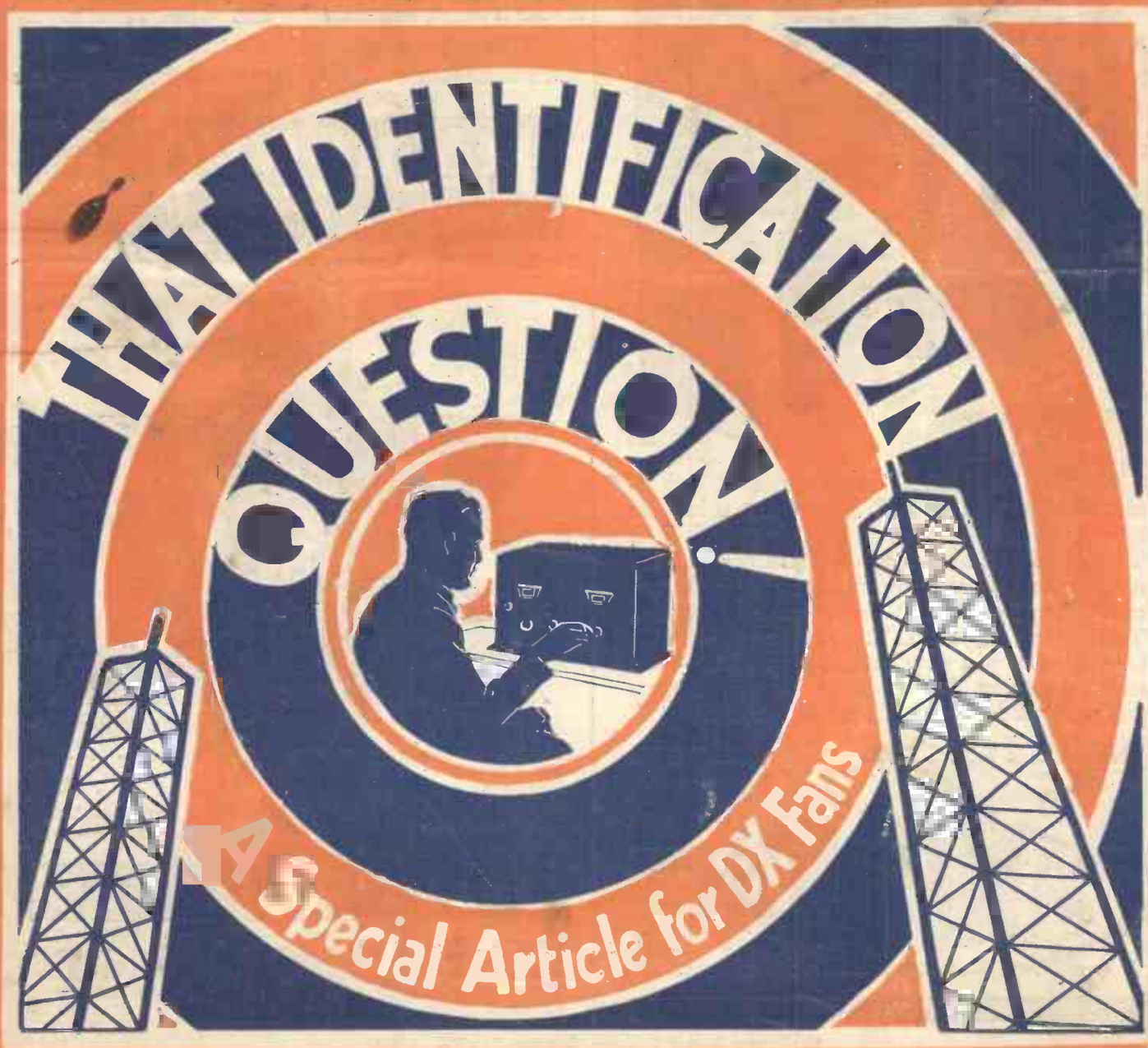

Vol. XXIII. No. 602 Registered at G.P.O. as a newspaper December 23, 1933

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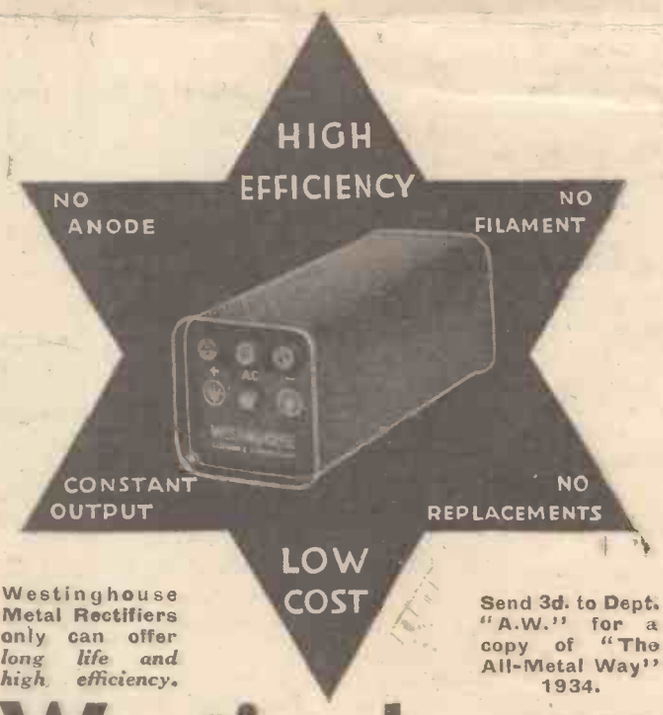

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Amateur Wireless & RADIOVISION

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News from Broadcasting House

By Our Special Commissioner

Double Dance-band Broadcast

TO revive listeners' waning enthusiasm for dance music the B.B.C. has conceived a novel programme for January 22, 1934. Two dance bands will broadcast in the hour's programme from 7.30 to 8.30 p.m.

The Barnstormers will be in one studio and Don Sesta's gaucho band in another. Between the two we shall have the comments of a capable compère, who will provide us with a non-stop programme.

Sharing the Honours

THE Barnstormers will stick to snappy rhythms, such as one-steps and foxtrots, while Don Sesta will devote himself to the waltzes and tangoes.

It is rather piquant to record that the Barnstormers were once with Jack Payne's band and Don Sesta's band with Geraldo's gaucho band.

Geraldo on the Air

BEFORE the above novel broadcast you will have an opportunity to hear Geraldo and His Sweet Music—a new combination replacing the original gaucho tango band.

Robert Tredinnick, in a new rôle, will compère this attractive hour, from 8 to 9 in the National programme. To his six fiddles and harp Geraldo has added a school—is that the word?—of saxophones.

◆ ◆ ◆

Justifying Those Intervals

WE grumble rightly, I think, at those wretched B.B.C. intervals. Here is a naive excuse from a B.B.C. engineer.

"The other night," he tells me, "during an advertised interval on the Daventry National from 7.23 to 7.27 p.m., we had just time to change a valve in the magnifier-rectifier unit. If there had been no interval the programme would have been interrupted."

Like the filament of the burnt-out valve, this sounds pretty thin to me.

◆ ◆ ◆

B.B.C.'s Latest Craze

EVERYTHING at Broadcasting House centres round St. George's Hall at the moment. It is quite a craze. Producers have found out that the acoustics are marvellous.

Gordon McConnell is producing his *Sinbad the Sailor* there, but without an audience. Just as Denis Freeman, the other night, produced his "By Royal Command" show in St. George's—also without an audience. Seemingly, only our Eric Maschwitz wants the audience.

◆ ◆ ◆

Sir John on Tour

TAKING the advice he so often gives his senior members of staff, Sir John Reith, the Director General of the B.B.C., is off on a tour of the regions.

He will visit Belfast, which is by way of being the Cinderella of the B.B.C. stations owing to its remoteness.

◆ ◆ ◆

More of Miss Allen

ALTHOUGH she has been at the B.B.C. for six or seven years we have only lately heard much of Miss M. H. Allen, the B.B.C.'s only woman producer. Until now she has been devoted to somewhat highbrow programmes, but she is coming out into the open in the near future.

◆ ◆ ◆

New Year's Eve

LISTEN to my tale of "high-spots" for New Year's Eve. Paul Robeson, now on his way back from the States, will be heard at 10.30 p.m. Records and Impressions of the year, a Blattnerphone hotchpotch, will follow at 11 p.m.

At 11.35 a Watch Night service from St. Giles, Edinburgh, will be broadcast.

All Sorts of Bells

AT 11.58 p.m. we shall hear the muffled sound of the Bow Bells, followed by Big Ben at mid-

At this time of the year Father Christmas appears under many guises. Here is the latest from Berlin—a microphone for Father Christmas

This Week's Features

Gillie Potter

night. Immediately after there will be all kinds of bells ringing in the New Year.

A voice will cry "Happy New Year" and the programme will close with "Auld Lang Syne" and "God Save the King."

◆ ◆ ◆

Busy "O.B." Engineers

PERHAPS the busiest members of all the B.B.C. staff on duty at Christmas will be the Outside Broadcast engineers. They are all down for duty from Friday to Wednesday without a minute's break.

They will be detailed to various parts of the country. Some will be 5,000 ft. down the Bedwas coal mine; others will be in the chilly lighthouse off the Northumbrian coast; still another gang will be up at Sandringham for the King's broadcast.

◆ ◆ ◆

New Year's Resolution

WE hear that Gillie Potter is going to stand for Parliament. If this is true it is high time the B.B.C. made up its quarrel with him.

Why not make a New Year's resolution to that effect, B.B.C.? There is only one Gillie—and we want him back in the programmes.

◆ ◆ ◆

Reginald Dixon's Absence

TO the hundreds of thousands of fans of Reginald Dixon, the highly popular organist of the Tower Ballroom, Blackpool, I bring glad tidings.

The only reason for the present absence from the programmes is the relaying of the floor of the dance hall. As soon as that work is complete Reginald Dixon will be heard again.

◆ ◆ ◆

B.B.C.'s Own Critics

OLIVER BALDWIN will continue in the New Year with his popular film criticisms. Jolly G. K. Chesterton will also go on delighting us with his inimitable book talks.

It is in the dramatic criticism that the B.B.C. intends to introduce a change, but no name has yet been mentioned.

◆ ◆ ◆

Conducted Straus Night?

AT the end of January Oscar Straus will be in Paris for a while. The B.B.C. is going to try to induce him to cross the Channel on our behalf.

If he comes he will conduct a broadcast programme of his own musical works, which would be rather delightful, I imagine.

◆ ◆ ◆

Droitwich Masts Up

YES, both of them, 700 feet each, with lifts inside. Now for equipping the station building, which had its roof on before the present bitter weather set in.

Installation of the transmitter equipment, now undergoing final tests at the Marconi works at Chelmsford, will begin almost at once.

By the way, there is no truth in the rumour that Droitwich's power will be more than 150 kilowatts.

Radio Gossip of the Week

Christmas Broadcasting

OUR centre pages this week are devoted to the Christmas programmes, which, quite apart from their enormous value *as* programmes, are notable for the great technical advances they represent.

Land-line and radio-telephone links on a world-wide scale will be heard in operation; on Christmas Eve for the Bethlehem bells relay and on Christmas Day for the eagerly awaited message from His Majesty the King.

◆ ◆ ◆

Ether Searcher History

ON page 1131 this week we continue our short history of one of the most remarkable series of sets ever published—the Ether Searchers. It seems now, looking back on the years, that ever since there has been an ether worth searching there has been an up-to-date Ether Searcher ready for the job.

That is not *quite* true, because Ether Searcher history dates back only to 1927. Since then, though, one or another of the famous Ether Searcher series has been ready to get the most out of the ether.

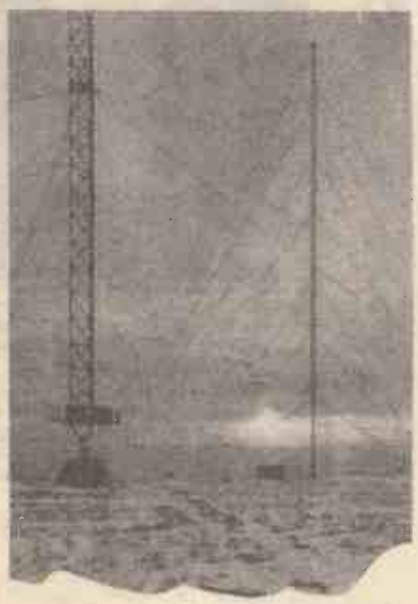
◆ ◆ ◆

What Are Your Mains?

ARE they A.C. or D.C.? If D.C., how long will they remain so—how long before they will be changed over to A.C.? Difficult question, that!

But, equipped with an A.C.-D.C. set, you can snap your fingers at supply changeovers, for you will have a set that will work just as well on either supply, and without any alteration.

Our first details, on page 1131 of this issue, should be of special interest to all on D.C. in danger of being changed over to A.C. In any case, a universal mains set is a great convenience, as we have recently discovered.



A wintry scene at Moorside Edge, where the North Regional aerials have to be heated electrically to drive off the snow and ice

At the B.B.C.

BROADCASTING *over* SNOW *and* ICE!

THE accompanying photograph, which at first looks as though it were of some Icelandic station, makes you realise what the B.B.C. engineers have to face in winter time.

It is a picture of the North Regional masts in their now seasonable setting of snow and ice.

The North and Scottish Regional transmitting stations are on very bleak sites, and at this time of year there are all manner of difficulties to be battled with owing to the gale-strength winds and the cold.

The masts, of course, are the most liable factors. At Moorside Edge, for instance, there is an enormous weight of stranded cable in the air. The top wire of the T-aerial is about 200 ft. long, and the down-lead is even longer; about 450 ft. The wind pressure on this area of cable is enormous during the heavy winds that blow in winter time around North Regional, but the masts are pivoted at the base so that they can sway. Once, last winter, a down-lead guy broke at the start of the evening's transmission, and the engineers had a thrilling hour in the darkness—and in a howling wind—temporarily anchoring the broken cable.

During the night it is often very cold, and ice forms on the aerial cable and guy wires.

This coating of ice on the cables and insulators acts as a short-circuit, and so before every morning transmission in the winter time a heavy current is turned on through the whole aerial system. After a few minutes this heats up the wires and thaws the aerial ready for broadcasting.

During the winter at a bleak spot like Moorside Edge any kind of spray cooling for the valve radiators would be unreliable, as it might freeze up. So there has been built a 200,000-gallon tank holding a constant supply of water for cooling the valves and for the Diesel engines which provide the station's power. But on cold mornings they have to go out and break the ice before the power can be started up.

Gear Unaffected

The cold weather is not allowed to affect the delicate transmitting gear, for both at the North and Scottish Regional the exhaust gas of the huge oil engines is used to heat water boilers which keep the station at an even temperature.

If the cold should affect the Diesel engines, making them difficult to start, the emergency bank of accumulators can be switched on to supply power and light for the station for a short period.

THAT IDENTIFICATION QUESTION!

In this article, J. GODCHAUX ABRAHAMS discusses the question of recognising stations—by interval signals and other means—from every point of view. Every DX fan will be interested in his suggestions

WHETHER or not the new Lucerne Plan is brought into operation on January 15, 1934, either wholly or in part, as a *pis aller*, there is no doubt that the almost general change over of the transmitters in respect to channels is likely to cause considerable confusion in the minds of listeners.

Possibly from that date most possessors of wireless receivers who desire to establish new logs of their captures will find considerable difficulty in identifying foreign broadcasts unless better means of recognition is offered to them by the individual studios. This, however, should be simple enough to achieve.

Interval-signal Peculiarities

It is true that, contrary to the custom adopted in the United States of America, Canada, and other countries overseas, the calls are not given out at regular intervals and unless the listener cares to stand by for some considerable time in most instances he is compelled to rely solely on the peculiarities of an interval signal which may not be sufficiently distinctive from others to allow him to state definitely that he has tuned-in a particular transmission.

It is fortunate, however, that in most cases the studios have realised that the ticking of a metronome—however varying in number the beats may be—does not present sufficient characteristics to establish individuality and consequently a number of them who, in the past, had consistently used this method to fill up gaps in the programmes, have now elaborated more pleasant and most certainly more useful musical intervals.

Progress in Germany

Germany, I consider, is the country which has made more progress in this respect than any other European state and, with but few exceptions, when hearing a broadcast from that country, providing the short musical phrases have been memorised, it is possible to state without hesitation from which particular city the transmission emanates.

So far so good, but in the event of the programme being relayed by several stations it is the original signal which is heard and, although establishing the source of the broadcast, it is still necessary to investigate further in order to ascertain through which particular channel it is picked up.

As a rule the condenser-dial readings, or whatever other indication is given on the scale, should be sufficient to set the listener's mind at rest.

A casual twirling of the dial during the evening hours when most of the Continental stations are on the air will quickly show how many of them are now following Germany's example in adopting distinctive identification signals; it is true that they have not yet been generally accepted, but there is every reason to believe that the custom is rapidly growing.

During the past five or six years many schemes have been put forward and many different mechanical or electrical devices have been tried by the studios in their endeavour to discover something showing at least a modicum of originality; but whereas in later years, in view of extra power used, the station engineers have realised the fact that the broadcasts are received far beyond the country's frontiers, they have been hampered in their selection of interval signals by the local listener, namely, the possessor of the small wireless receiver who takes but little interest in foreign programmes.

He, as a rule, is the person who objects to metronome, bell, bird call, or short musical phrase used between items in the entertainment. I have been told on more than one occasion, when discussing this point, that the monotonous repetition of such a call is irritating and that it serves no useful purpose, inasmuch as he—the person in question—knows perfectly well to which programme he is tuned and there is no reason for which the signal should be used merely to convey information to listeners abroad who do not subscribe to our broadcasting system!

A selfish policy, we must admit, but an opinion I have heard expressed by a number of people.

On the other hand, according to my experience, persons of that description who normally later acquire multi-valve wireless sets have been the first to express annoyance at the fact that they were unable to state from which country or city they were picking up broadcasts, adding that "it was a shame foreigners do not take the trouble to announce more frequently in the course of the evening's entertainment."

It is impossible to satisfy everybody's requirements, but there is no doubt that with the number of existing high-power stations and, consequently, their extended range, most listeners to-day must inevitably listen to many wireless programmes in addition to their local broadcasts.

Names Not Standard

As most of them are sufficiently interested to wish to know the source of the signal, the question of verbal announcements *a priori* may appear to be an easy one, but to use an Irishism, "it is, and again it isn't." The point is that unfortunately for us the names of cities are not standard throughout Europe.

By this I mean that *Par-ee* to the Frenchman is *Paris* to us, and so far deformed that it becomes *Parigi* to the Italian. A number of examples can be put forward to show that if an announcer gives the name of his city according to its native pronunciation, it will not be understood by everybody; in fact, as some names have been changed since the war, it might not convey any information whatsoever to the casual listener.

Failing, therefore, the adoption by the entire world of the native name of the city, thereby putting an end to its different translations—an occurrence which is hardly likely to take place—we must find some other means to permit the stations to identify themselves to their multi-lingual audience.

Must we have recourse to a morse signal? Possibly this would be the easier way and, generally speaking, to the radio-minded, would be the most acceptable, but a measure of this

Broadcasting a dance lesson from the Munich studio—a good example of German thoroughness

It looks strange—and it probably sounds strange, too. A scene in the Japanese J O A K studio

Two listeners try out the Columbia Battery Two receiver

nature would imply the more or less compulsory learning of the morse alphabet; not a difficult matter, perhaps, but sufficiently onerous to be objected to by thousands.

It is a pity, as such a solution of the problem would work well in practice. As an example, Hamburg, until recently, used the morse letters HA as an interval signal; *there was never any doubt in regard to its identity.* In the same way other cities could adopt a symbol of two or more letters, to cover all stations in Europe a combination call sign of three letters would be needed.

Better Alternative

As a better alternative, instead of the simple musical-box contraption used by many studios, why not use a special gramophone record? This would cover all requirements inasmuch as in the case of, say, London (National) the one-second tock-tock-tock would still be reproduced by this method and yet could give at the end of every fifteen seconds the call: "This is the *British* National programme from London on 261.6 metres and 1,147 kilocycles."

Where other B.B.C. stations are taking the same entertainment, the record would be worded in accordance and the listener would thus be told that he is hearing the National programme not from London direct, but through whichever channel to which he is tuned.

In the case of English radio entertainments the question of an alternative language is not such an important matter, but if found necessary there is only one choice to be made, namely, French. It is the diplomatic language—under Louis XIV of France (1638-1715) French became the official language of diplomacy and as such was used up to the Treaty of Versailles; in view of this distinction it should be used for all secondary announcements.

A similar method could be employed for Continental broadcasters as, to comply with their requirements, the British "tocks" would be replaced either by the musical phrase or particular interval signal already adopted by them followed at intervals of fifteen or thirty seconds by their station call in their native and at least one other language.

If a census were taken in Great Britain I feel inclined to believe that of all foreign languages French is the one most popular in these isles; conversely, in European countries the two tongues mostly taught in schools are French and English.

This reiteration of the place name given out in speech, in my opinion, would be no more wearisome to the local listener than the repeated musical tones or other mechanical noise now used to bridge two broadcast entertainments.

Already on the Continent you will find many studios broadcasting details of their programmes in more than one foreign tongue, especially in the case of entertainments of international interest. I do not know whether any general agreement can be arrived at on this point; doubtless it is a matter which could be raised and handled by a competent body, such as the Union Internationale de Radio-diffusion, which has done so much valuable work in the past.

There is a possibility that on a question of general policy, and especially one of general interest throughout the Old World, an agreement could be reached amongst all states interested in broadcasting, and a formula found which would prove of assistance to listeners of all nations.

In the meantime, as we are approaching the period when broadcasts will be found on unfamiliar condenser-dial readings, announcers should be asked to give their calls clearly and more frequently during the programme intervals; they should be reminded from time to time that the information they impart is as much appreciated by an unseen audience hundreds of miles distant as by residents in their immediate neighbourhood.

With modern receivers, as now conceived, we may scour Europe with ease; the same facility should be given to us to know to what particular radio broadcast we have tuned our sets.

Possibly in some quarters opposition may be raised against the suggestions I have put forward, as doubtless there still exist studio officials who hold the opinion that their broadcasts are only destined for local listeners.

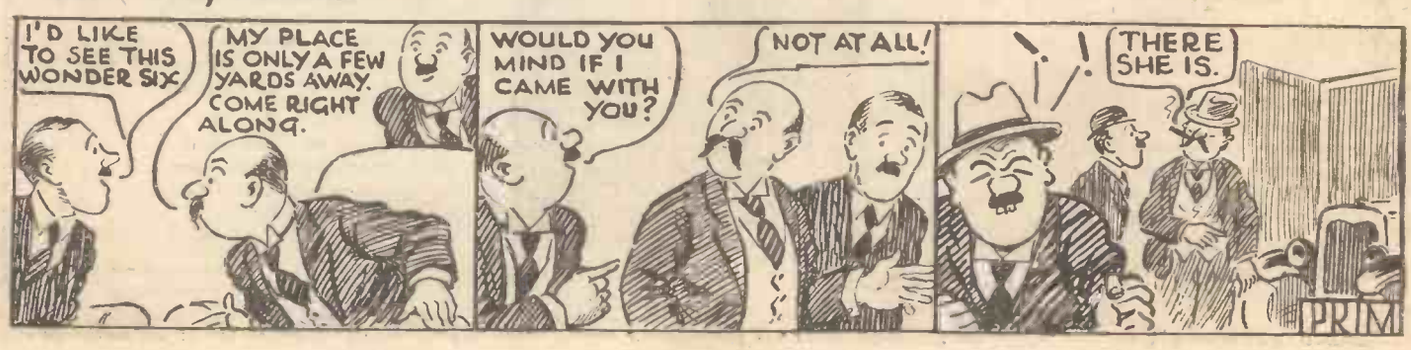
Bearing in mind, however, that in most states radio transmissions have stimulated patriotism, governments have done much in recent months to inculcate in their nationals both love and pride of country and nation. Transmitters are used as a medium to radiate through the ether the thoughts and aspirations of many different peoples; they are heard far beyond the boundaries of each individual country.

Broadcasting an early-morning concert from a ship in Hamburg Port

So far no universal language has been adopted and broadcasts of foreign talks possess but a limited interest. Music, however, is an international tongue appealing to all; it will lead to a better understanding of our neighbours. That appeal is strengthened if the ordinary listener is told from which country and city it emanates.

Mr. Flex Thinks He Hears Something Good—

—But Is Sadly Mistaken



The Song of Radiowatha

(With apologies to Longfellow)

You shall hear how all the winter,
All this long and dreary winter
They have tried to entertain us,
Tried variety, tried the vaud'ville.
Got together all the people
Who could make us laugh and giggle,
Called together all the crooners,
All the waltz and fox-trot players,
All the chamber-music players,
All the choirs and chorus singers,
For our greater entertainment.

First the willowy Eric Maschwitz,
Long of form, of mighty sinews,
Searched the forest, searched the glade-lands,
Searched the length and breadth of London,

Finding talent for his vaud'villes.
Calls he Mabel Constanduros,
Hogan's Michael, Grandma Buggins,
That they come and entertain us,
Tell us how they swept a chimney
With an aerial pole of cedar
From the wilds of Epping Forest.
Eric then did make a long call—
Called he long, and long, and longer,
Called he long, till Long the Norman
Came along with song and piano,
Came along with joke and piano,
Came along with joke and song.
Then he rushed across the jungle,
Bounded through the rough and thicket
Tore his trousers in the bushes.
For he heard a lovely maiden
Whistling far and high above him,
Whistling in the blue above him.
Then he called her : " Dorothy, Dorothy,
"Come at once to us, O Dorothy,
"Come and whistle in your throat."
Then the maiden came and whistled,
Like a thousand songbirds whistled,
Till her whistle left these islands,
Left the country, sailed o'er Europe
Till it reached unto South Pole.

Eric then did turn about him,
Turned and saw a nose of great size,
With a man attached unto it.
" Hi !" he called. " Hi ! Hi ! I need you,
"Come at once, O Rose of Julian,
"Come and tell us of the vedding
"And the lovely bride you saw there."
Then he heard a sound of laughter,
Merry, merry, merry laughter,
Eight most lovely, wondrous maidens.
Sixteen feet they had between them,
All a-tapping, ever tapping,
Like the rain upon the windows,
Like the hailstones in the roadway.
" Step and step, O Eight Step Sisters,
"Step with me across the woodlands,
" Step along up Street of Regent,
" Step along through halls of marble
"Down unto the basement studio."

Hardly were these words but uttered
When he saw a man with breastplate,
Shining armour was he dressed in,
Very bright and very shiny.
He was spotless, he was Stainless
In his suit of shining armour,
Polished up so bright and shiny.

Then the lovely Eight Step Sisters
Seeing the shiny suit of armour
Nearer came, and nearer, nearer,
Till they saw themselves reflected.
Then they powdered all their noses
In the brightness of reflection.
Then they looked and saw reflected
Julian's nose, the nose of Hebrew.
Then they called him : " Come, O Julian,
"Come and let your nose be powdered."
Then they fetched the puffs and powders
Sixteen puffs and tons of powder,
Till its fragrance filled the woodland.
Then the breezes freshened, freshened,
Till they blew the powder—blew it
Upwards, downwards, blew it sideways,

Till it blotted out the landscape,
Like unto a desert sandstorm.

Then the lovely Eight Step Sisters,
Waited till the fog dispersed,
Danced their graceful, stately measures,

Calling unto all the artists.
First they called a lovely maiden,
Dressed from head to foot in feathers,
" Come, they said, O Jeanne de Cas'lis,
"Let us hear from Mrs. Feather,
"How she telephoned the butcher."
Then they called the Houston Sisters :
" Sisters, come and be with Sisters,"
Called the great Seven Singing Sisters,
Called the Sisters of the Waters,
Even called the Carlyle Cousins.
" For," they said, " it does not matter
" Whether cousins, whether sisters."
Then they called the Western Brothers,
Cads they were, arrayed in school ties,
But they came with Leonard Henry,
Henry Hall and Flotsam, Jetsam,
Hulbert's Claude and Trevor's Enid,
Dwyer and Clapham, Lee and Haver,
Farr and Farland, Gwen and Alec,
Handley's Thomas, Mose and Alex,
All came hurrying from the forest
Eager in anticipation.

Thus you see how all the winter,
All this long and dreary winter,
They have tried to entertain us—
Tried being funny, tried being serious,
Got together all the crooners,
All the mimics and ventril'quists,
All the players on the sax'phone,
All the players on the banjo,
Mandoline, guitar, and harpers,
All the waltz and fox-trot players,
All the choirs and chorus singers,
And the wondrous Eight Step Sisters
For our greater entertainment.

W.-W.

Programme Criticisms by WHITAKER-WILSON

WITHOUT FEAR OR FAVOUR

Monday

THE Alhambra edition of the series of programmes called *The Old Music Halls* was one of the best shows I have heard for some time.

Did you hear what the announcer said? "For the benefit of certain critics, we wish to state that the artists taking part are *not* imitating the originators of these songs."

Gracie Fields

Not guilty, me Lud! Read me of this journal on the twenty-fifth day of November last: "None of the singers . . . attempted to imitate the style of the originators . . . they simply sang them in their own excellent way and left it at that." *Oh, what a good boy am I!*

I wonder whether, in thirty years' time, shows of this nature will be as successfully convened with our present-day songs. I doubt it. By the time we have taken the best of Leslie Sarony's and a few like "All the King's Horses," we might fill *one* hour, but there won't be much of a series, I imagine.

Another point about these old songs: the singers did sing them. None of that wheezy crooning.

If you missed the tapping of those aluminium-soled shoes of the Eight Step Sisters it wasn't because they had engineered a strike. I was told they were silent because they were pirouetting. Can't some of the crooners be persuaded to learn how to pirouette?

◆ ◆ ◆

Just heard the first half of *Romance*. Judgment reserved until to-morrow night.

Tuesday

Charming, of course, and beautifully produced. *Romance* is worth doing every time, but whether it is wise to give anything in halves by wireless is another matter.

◆ ◆ ◆

Stanelli and Edgar are generally good. Knowing this, I was disappointed because they did not live up to their Fiddling Fanatical reputation.

Their patter also wants touching up a little. The joke about the illuminated address and one's house having caught fire probably originated in Rome, when Nero burnt it. They all had illuminated addresses that night.

It is hard on comedians, but ages-old jokes don't make the best broadcasting.

Wednesday

I wonder how many times Myra Hess had played the Schumann piano concerto at Queen's Hall? Probably she, herself, has lost count. At all events, she need never play it better than she did to-night. Her playing was so beautiful that it made me forget some of the hideousness of the Sibelius symphony.

Thursday

Owing to difficulties of time, my listening to-night began and ended with *Good-night Vienna*. Now I come to think of it, quite enough, too. It was a good show.

If romanticism can be presented with a strong atmosphere, good and tuneful music, and a reasonably strong plot, it is always good enough. This little comedy possesses all those good points. The best thing that can happen is for someone to write another like it.

Friday

I reached out to the Midlands to-night to hear the Regional Revellers. They were exceedingly good—certainly good enough to come to London. More than once I have heard good shows on the Midland Regional which have been taken no notice of here.

Is there no method of finding out beforehand how good or how bad some of these people are? It seems to me that, as everyone is crying out for good light shows, some of these might be roped in. What about it, Eric, you are Variety Director?

Saturday

The *In Town To-night* shows are getting really good. If you have not yet heard one, I recommend them to you. On the other hand, don't be angry with me if you should think yourself let down, for the simple reason that the B.B.C. has to take whomsoever happens to be in town on any given Saturday evening. These are not prearranged programmes at all. It is surprising how varied they are.

To-night's pleased me very much. I was interested to find that Suzanne Lenglen speaks English so well, even though with traces of Americanisms. Did you hear the advice she gave at the end? If not, perhaps you would like to know that she advised tennis-players never to let themselves down on to their heels while in play. "Always stand on your toes," said Suzanne. Well, she ought to know.

There was a nice American cabaret singer—Ann Greenway. I liked her song and the way she sang it.

Evidently people were scarce in town to-night because we were taken over to listen to a rehearsal of a pantomime in Manchester. I take it we had chanced upon a part where the dialogue was not at its best, but there was some atmosphere of a stage rehearsal which, at least, afforded entertainment.

Leslie Sarony

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The Music Hall from St. George's was, at least, varied. Which it should be. I, personally, enjoyed Walter Williams and Percy Hayden in their songs. If, for another time, they care to add some real smart patter, I think it would be appreciated.

Perhaps the same thing might be said of Leslie Hutchinson. With all due respect to him, I think his songs rather lack point. A melodramatic aria about "Dusty Shoes" does not get very far, does it? Why not flick them with a handkerchief or even rub them on your socks (stockings)?

Mrs. Rodney Hudson has taught the Eight Step Sisters to dance beautifully. Can someone teach them to sing? Poor darlings, they do want a family singing-master, don't they?

I wonder what you thought of Albert Burdon's turn, with Barbara Wood as the Impossible Child? I thought she was rather too impossible. Yet the idea is a good one. I feel the turn wants some revision, and the Child made more attractive *as* a child. This is not negative criticism; it arises from interest in the turn itself.

The eight pianos entertained me thoroughly. (1) because I noticed an acoustical tendency for them to cancel each other out and (2) because I think two would have made a better effect broadcast. In the Hall it may have been very different. I should like to hear them "unbroadcast."

Gracie Fields was at the top of her form. There is no question about it; she has an enormous appeal. She fascinates me musically. I listen to her harsh croaking with a feeling of utter despair. I am sure she has ruined her voice for ever. Then the next minute she defeats me by soaring up to the E natural in alt, with good tone, too.

She is an amazing person. Apart from her vocal powers, which are very nearly ventriloquial, there is no doubt she knows how to handle an audience. To-night she managed the St. George's audience so well that she made them part of the show. And that is no mean feat.

Average Listener says—

"When I listen to a play I like to know who is acting in it. Sometimes the announcer gives out the cast in the proper manner. Then I do know. Other times he simply says 'The cast includes.' Then I don't know. When I go to a theatre I buy a programme. So does everyone else. Half the pleasure is gone when I don't know who is playing.

"This 'Cast includes' is all wrong. There is no argument in favour of jumbling all the names together and leaving me to sort them out. I must know who plays what, or I shan't listen at all. If the Dramatic Producer wants me for one of his audience (as though I were in a theatre) he must adopt theatrical methods. Then I know where I am.

"All this mystery irritates me. Now, Mr. Gielgud, sir, what about it? I have told you what I think. Now let me hear from you."

1934 Century Super

How to Use It with a Frame Aerial and a Pick-up

By The Experimenters

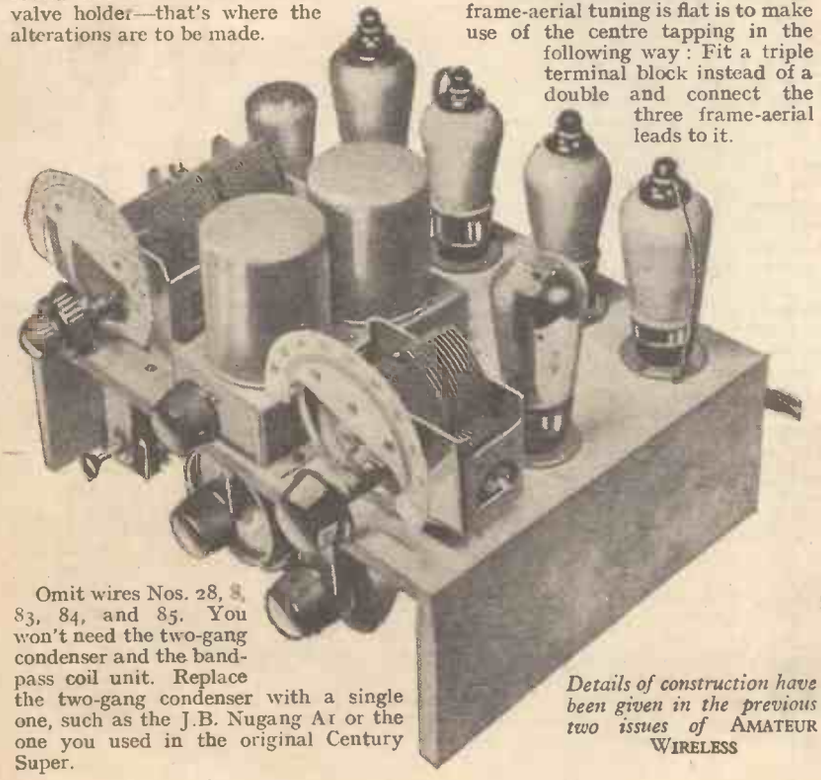
AS we were about to enter the railway station the other morning, a terrific "Hi!" from the local policeman gave us a momentary shiver. He gave us a very pleasant smile, but you can never tell with a policeman; he might only want to know something, but, on the other hand, he may have wanted us.

His first words were: "What's your new set like?" We gave him all the dope he wanted, and then he said: "Have I got to scrap my frame aerial; it cost me a lot of money?" Half an hour's argument about the relative efficiency of frame and external aerials—with one eye on the station clock—failing to convince him, we left with a promise to alter his blueprint for him. After we had made all the alterations, we discovered quite a number of other people with similar ideas.

More Space Available

So, for those who do not wish to use an external aerial, here are all the details you will need to alter the 1934 Century Super to work with a frame aerial. It will be a lot cheaper this way—you will not want a band-pass coil or two-gang condenser and, at the same time, there will be a lot more room to play with.

Take a good look at the blueprint round about the first-detector valve holder—that's where the alterations are to be made.



Omit wires Nos. 28, 83, 84, and 85. You won't need the two-gang condenser and the band-pass coil unit. Replace the two-gang condenser with a single one, such as the J.B. Nugang A1 or the one you used in the original Century Super.

Fix a double terminal block at the back of the chassis, then you are ready to begin rewiring.

The first wire to be put on is No. 7, which comes from the push-pull switch. Fix this under the lug of the condenser so that when the wood screw which fixes the condenser is screwed down the wire will make good contact with the chassis.

Then take a wire from one of the terminals on the double block at the back of the chassis to the grid of the first detector valve. You know the one, wire No. 28 used to go there. Don't cut this wire, it has to go to another point yet, from the grid of the first detector to the fixed plates on the new single condenser you have just put in.

The moving plates of this condenser, by the way, make automatic contact with the chassis, so don't worry about there only being one direct connection.

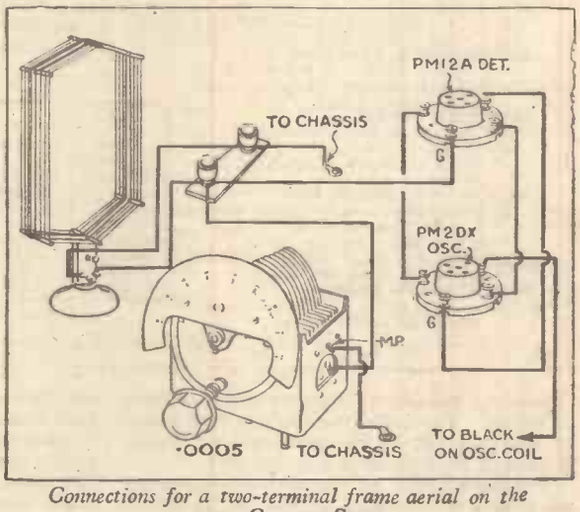
The second terminal on the block must be connected to the chassis. Take a wire under the wood screw that holds the terminal block.

That's all there is to do—less wiring than before.

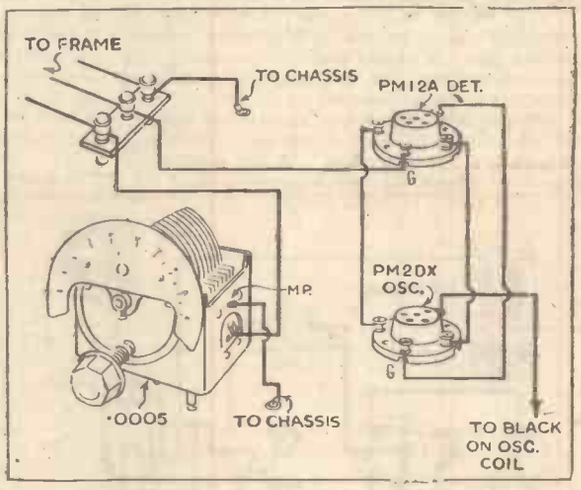
If you have a frame aerial that has three leads coming from it—the centre one being the tap—connect the outside leads to the terminal block and ignore the middle lead.

A variation that can be tried if the frame-aerial tuning is flat is to make use of the centre tapping in the following way: Fit a triple terminal block instead of a double and connect the three frame-aerial leads to it.

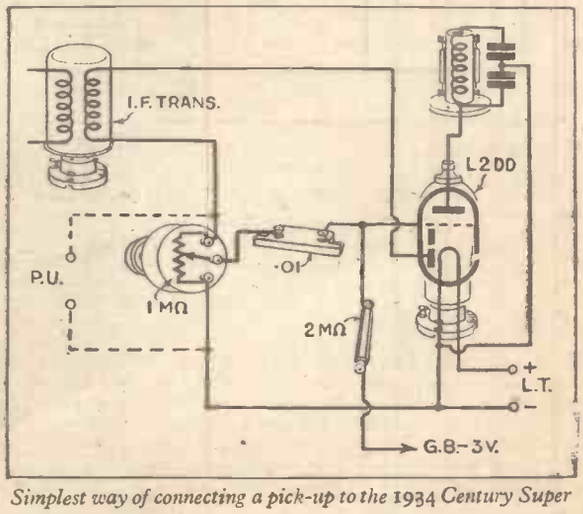
Details of construction have been given in the previous two issues of AMATEUR WIRELESS



Connections for a two-terminal frame aerial on the 1934 Century Super



Improved results are obtained if the frame aerial has a centre tap (three terminals)



Simplest way of connecting a pick-up to the 1934 Century Super

HERE ARE THE COMPONENTS NEEDED FOR "THE EXPERIMENTERS'" 1934 CENTURY SUPER

CHASSIS
*1—Peto-Scott Metaplex, 12 in. by 9¾ in. by 4 in.

COILS
*1—Wearite band-pass unit, type G.N.2.
1—Wearite oscillator, type O2.

CONDENSERS, FIXED
*2—Graham-Farish .0001-microfarad (or Lissen, Telsen).
1—Graham-Farish .0002-microfarad (or Lissen, Telsen).
*1—Graham-Farish .002-microfarad (or Lissen, Telsen).
*2—Graham-Farish .01-microfarad (or Lissen, Telsen).
5—T.C.C. 1-microfarad (or Graham Farish, Lissen).
*1—T.C.C. 2-microfarad (or Graham Farish, Lissen).

CONDENSERS, VARIABLE
*1—J.B. .0005-microfarad, type Nugang Ar.
*1—British Radiophone two-gang, .0005-microfarad, type 458A.

HOLDERS, VALVE
*4—Clix four-pin, chassis mounting.
*2—Clix five-pin, chassis mounting.
3—W.B. four-pin, type Midget, (or Graham Farish).

PLUGS, TERMINALS, ETC.
6—Belling-Lee wander plugs, marked G.B.—1, G.B.—2, G.B.—3, G.B.+, H.T.+, H.T.— (or Clix, Eelex).
2—Belling-Lee spade terminals, marked L.T.— L.T.+ (or Clix, Eelex).

RESISTANCES, FIXED
*1—Graham-Farish 5,000-ohm, type Ohmite (or Lissen, Telsen).
1—Graham-Farish 15,000-ohm, type Ohmite (or Lissen, Telsen).
1—Graham-Farish 20,000-ohm, type Ohmite (or Lissen, Telsen).
*1—Graham-Farish 30,000-ohm, type Ohmite (or Lissen, Telsen).
*1—Graham-Farish 50,000-ohm, type Ohmite (or Lissen, Telsen).
*1—Graham-Farish 150,000-ohm, type Ohmite (or Lissen, Telsen).
*1—Graham-Farish 1-megohm, type Ohmite (or Lissen, Telsen).
*2—Graham-Farish 2-megohm, type Ohmite (or Lissen, Telsen).

RESISTANCES, VARIABLE
*1—Igranic 1-megohm, type Megostat.

SUNDRIES
*3—British Radiogram 2-in. metal mounting [brackets.
*1—Bulgin four-way battery cord.
*1—Bulgin six-way battery cord.
*1—Siemens 1.5-volt cell.
*Connecting wire and sleeving (Lewcos).
*3 ft. screened sleeving (Lewcos).
*1—J.B. escutcheon.

SWITCH
*1—Telsen four-point, type W153.

TRANSFORMERS, INTERMEDIATE-FREQUENCY
3—Wearite, type OT1.

TRANSFORMER, LOW-FREQUENCY
1—Lissen, type Hypernik (or Graham Farish, Telsen Ace).

WHISTLE FILTER
*1—Kinva type B (or Bulgin type LF26).

SUITABLE VALVES

Make	Oscillator	1st Detector	Intermediate-Frequency (2)	2nd Detector	Power
Mullard	PM2DX†	PM12A†	PM12M	—	PM22
Cossor	210Det	215SG	220VS†	—	220PT
Mazda	L2	215SG	S215VM	L2DD†	Pen220A†
Osram	L21	S23	VS24	—	PT2
Marconi	L21	S23	VS24	—	PT2
Hivac	D210	SG210	VS210	—	Z220
Lissen	—	SG215	SG2V	—	PT240
Tungsram	L210	S210	—	—	PP230

†Valves used in "A.W." tests. All metallised except power.

ACCESSORIES

BATTERIES
2—Lissen 60-volt high-tension, type super power LN2005 (or Drydex, Ever Ready).
1—Lissen 16-volt grid-bias (or Drydex, Ever Ready).
1—Lissen 2-volt 40-ampere-hour accumulator (or Fuller, Ever Ready).

EARTH
1—Filt earth connector.

CABINET
1—Osborn, Type 257 in walnut.

LOUD-SPEAKER
1—Blue Spot 45 PM (or W.B. type PM4A, Igranic, Rola with pentode transformer)

** Asterisks indicate parts needed for the new set which were not used in the original Century Super*

Join one outside terminal to the woodscrew as before. The centre terminal is then taken to the grid pin of the first detector valve, instead of the outside one as before.

The fixed plates of the variable condenser are joined to the third, or outside, terminal, instead of to the first-detector grid.

This circuit was created to decrease the damping effect in the first-detector circuit. Boiled down, it means that the selectivity will be increased and the directional properties of the frame aerial enhanced.

Why didn't we give you this circuit before? It is obviously the better, you say. Well, yes, the circuit is better; but it has the effect of making the dial readings disagree and some readers don't like this as it tends to make tuning difficult.

How about fitting a pick-up so you can turn the set into a radiogram?

To alter the Century Super to work with a gramophone pick-up is quite easy, and the connections are little different from the usual methods.

The pick-up has to be connected in the grid circuit of the double-diode-triode (second detector) valve. Just to try it out you can join the two pick-up leads across the two outside terminals of the volume control. This arrangement works quite well, but when you want to listen to the radio the pick-up must be disconnected, which means delving into the middle of the set. At the same time, when the pick-up is used there is always a radio leak.

No, this method will not work. You must have a switch to cut out radio or gramophone at will.

Do it this way. Take off wire No. 66 from the centre terminal of the volume control. Fit a radio-gramophone switch with three points on some convenient position on the chassis. Join wire No. 66 to the centre point of the switch, then either side of the radio-gramophone switch can be taken to the middle terminal of the volume control, in place of the original wire No. 66.

Fit two insulated terminals at the back of the chassis for the pick-up. Join one of these terminals to the chassis or any other earthed point. The second terminal is coupled to the spare point on the radio-gramophone switch. The pick-up can always be left connected, being brought into circuit by means of the switch.

A scratch filter-cum-tone-control can be added just as simply. All you want is a 25,000-ohm variable resistance and a fixed condenser with a capacity of between .005 and .01 microfarad.

Join these two components in series; that is, join one side of the condenser to either of the outside terminals of the variable resistance and then connect the centre terminal of the resistance to the high-tension terminal on the low-frequency transformer.

That leaves one side of the fixed condenser free. Connect this to the "P" terminal on the same low-frequency transformer.

Keep the pick-up leads as short as you can and use metal-covered wire with the covering earthed to the chassis.

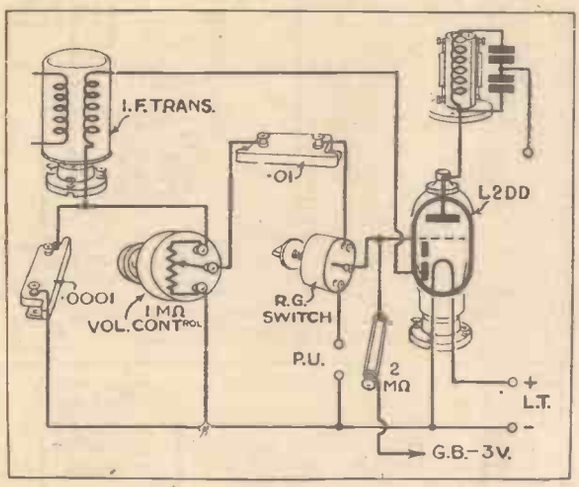
Those who are using the original type of oscillator coil may like to make use of the short-wave winding on it. If your frame aerial is of the simple type, that is without a centre tap, just remove the frame aerial and in its place put a four-turn Igranic short-wave coil.

Tap the external aerial on to the side that goes to the grid of the first detector valve and earth the other side of the coil. Switch the oscillator to the extreme left when all will be ready to receive short-wave stations between 19 and 50 metres.

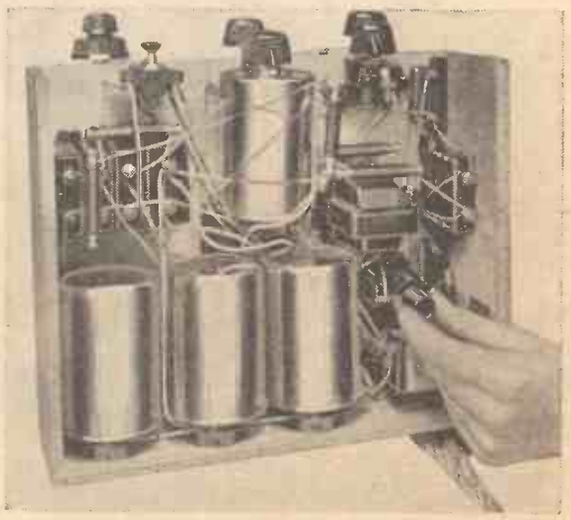
When the frame aerial has a centre tap, join the external aerial lead to the middle terminal and make an artificial tap on the coil by means of a crocodile clip and a length of flexible wire.

With these few additions you will have a highly efficient super-het radiogram, capable of world-wide reception, so go ahead and let us know how you get on!

If you are going to build the 1934 Century Super—and you certainly should!—you will find it best to work from a full-size blueprint. Order No. A.W. 413, price 1/6., post paid.



How to fit the 1934 Century Super with a radiogram switch to change over from radio to pick-up at will. Nearly everybody will want to make this improvement!



A view of the underside of the 1934 Century Super

On Your Wavelength!

By Thermion

Here's to You!

ALREADY I have wished you a Merry Christmas in the Christmas Number of "A.W.," but since this issue appears on December 20, I feel that I must do so again. May the new set come fully up to your expectations, or the old 'un, if you can't run to a 1934 model, prove to be at the top of its form!

I don't think I can do better really than give you the old Yorkshire toast: Here's tiv oos, arl on oos. May we niver want nowt, noone on oos.

In case you belong to the South and can't translate, it runs: Here's to us, all of us. May we never want anything, any of us. There is no charge for the translation.

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When the Battery Set Scores

THOSE who were using battery sets had the laugh of their superior mains friends when the big "black out" took place in North London some days ago. It seems that a busbar at the generating station burnt out and the result was that for a period varying between two and four hours in different localities twelve square miles of London and its suburbs were plunged in darkness.

The all-electric receiver, of course, went out of action, but battery sets carried on gaily to comfort those who were making do by candle light.

When the Lights Go Out

ONE tip, by the way, when an electrical breakdown occurs. Don't leave all your lights and so on switched on. If everybody does this the load, when the station comes into action again, is so enormous that a further breakdown is quite likely to take place. This is what happened more than once during London's big "black-out."

Switch off everything but one light. This will be bright enough to indicate that juice is once more flowing in the mains. If everybody would do this kind of thing, power-station engineers would burst into songs of gratitude.

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It Pays to Be a Fan

HAVE you seen the play, *Whistling in the Dark*? If you haven't you ought to because it has a big wireless thrill: if you have, you will realise how well it pays us strong, silent men in moments of emergency to have some knowledge of wireless. During the big scene the hero is imprisoned in a house, waiting for a nasty, sticky end.

Why, by the way, do villains always keep heroes shut up for several hours before slitting their weazands? They ought to know by this time that the fellow will escape in the middle of the second act (or in the last chapter but two). Myself, I have resolved, if ever I take to a life of crime and capture a hero, to knock him on the head without a moment's delay. But I digress.

What the Loud-speaker Did

IN this play the hero, having read his "A.W." since he was a lad, is not in the least nonplussed by finding that the telephone leads have been cut. He remembers that the loud-speaker can be used as a microphone.

It is the work of a few moments to connect up the severed telephone wires to the loud-speaker of a wireless set that happens to be handy and presto! he is talking to the operator at the telephone exchange. Don't ask me how he discovers instanter which telephone lead is which. That is the kind of thing that heroes do, and being no hero I have not the knack.

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The Battery's Progress

LAST week I gave you the figures for the first two days of the five-shilling battery's performance. You may remember that my condemnation of cheap batteries was challenged by a reader who told me that he had thirteen weeks' service from one costing five shillings—120-volt size—used with a set drawing nominally 10 milliamperes.

I therefore purchased one of the same make and it is at present undergoing a laboratory test by being discharged through a fixed resistance, which made the load 10 milliamperes when the battery was new, for four hours each day. Owing to the earlier dates of going to press necessitated by the Christmas holidays, this report covers only five days.

Here are the figures: Third day, starting voltage 116.0; voltage after four hours, 107.8. Fourth day, starting voltage, 114.4; ending voltage, 106.2. Fifth day, starting voltage, 113.8; ending voltage, 106.0. Sixth day, starting voltage, 112.4; ending voltage, 105.4. Seventh day, starting voltage, 111.8; ending voltage, 104.0.

The battery has now given twenty-eight hours' service and as you will see it is down to the tune of 18.6 volts, since its E.M.F. was 122.6 to begin with.

Leslie Hutchinson, familiarly known as "Hutch"—see Whitaker-Wilson's comment on page 1126

A Loud-speaker Problem

A READER sends me a problem which at first sight seems quite baffling. Some time ago he bought a permanent-magnet moving-coil loud-speaker, which he connected to the output of a portable receiving set. To begin with he was delighted with the reproduction, but after two or three days he found that the set had lost all its brilliance. There was nothing wrong with the batteries and the valves were in first-rate order.

The loud-speaker was returned to the makers for an overhaul if necessary and was sent back at once as being in perfect condition. Next, the loud-speaker was used with a three-valve battery set of the non-portable type and exactly the same thing happened—all was well for the first couple of days, then speech and music became "woomphy." Now for the big thrill. When used with an all-mains set, the loud-speaker displayed exactly and precisely the same symptoms!

Is There a Solution?

IT is a pretty problem, as you will admit. If the loud-speaker had become "woolly" with the first set and remained "woolly," one could explain it possibly as a result of the effects of dampness on the cone. But why should it do well when first brought into action with each of three different sets?

At first I was very much puzzled; then I remembered an experience of my own. Some time ago, when a set came down to me for test I was quite pleased with its quality on the first evening; less so on the second, and not at all so on the third. The reason was that there was a certain bass over-emphasis which did not begin to get on one's nerves until about the third evening.

Now, Then, Loud-speaker Experts!

NOW, here is what I think has happened in the reader's case. His loud-speaker has such an over-emphasis of the bass, which didn't make itself noticeable when he first tried it with his portable set. A day or two later he was unconsciously growing tired of it, just as you become cloyed in time with a particularly sickly kind of sweetmeat. He changed over to the second set. The tone was slightly different and again he was deceived for a day or two. The same thing happened when he connected up the loud-speaker to the all-electric set.

Can any reader offer a better solution of the mystery? Meantime, I have suggested to my correspondent that the fitting of a tone-control transformer might work wonders. If there is a bad cabinet resonance he may find it better, I have told him, to take the loud-speaker out of its case and to operate it behind a plain vertical baffle.

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Current Wasted Unawares

A RATHER interesting point occurred the other day when I was making tests on a battery receiving set incorporating self-adjusting volume control and working from a frame aerial. The frame, as you know, is at its best when it is pointing directly towards the wanted transmitting station.

This means that impulses are then at their strongest; hence the self-adjusting volume control can cut down the magnification of the

high-frequency and intermediate-frequency valves to something quite small. When it does this the high-tension current is at its minimum. On the other hand, if the frame is almost at its worst position the H.F. and I.F. valves have to work all out, with a consequent increase in high-tension current. I found that by rotating the set to the optimum direction for the frame I could reduce the total high-tension drain by as much as 5 milliam-

Keith Falkener, who will broadcast a recital with Moisevitch on December 23 in the special Christmas programmes (*see pages* 1132-1133)

peres. This is a point well worth bearing in mind and here's a tip you may care to remember.

It is difficult to find the direction of the frame which gives the loudest signals, but you can very easily discover that at which signal strength is *least*. When you have tuned in a station turn the frame to the worst position, which is always strongly marked. Now turn it exactly at right angles and that is the best and most economical position.

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Earths and Super-het Hiss

SOME super-hets are much more susceptible than others to the effects of a bad earth connection. The other day a case in point occurred to me. A friend who had purchased a set, which I know to be absolutely in the first class, complained rather bitterly that not a single foreign station was worth listening to on account of the terrible noisiness that was something more than a background to its transmission.

When I went round to investigate I found that he had not exaggerated. Imagine a battalion of geese registering their combined hate and you have some idea of what the hiss was like. Investigation showed that his earth was about as bad as an earth could be and when we had attended to it the geese were entirely put to flight.

I have always believed, and I shall still go on believing, that in eighty per cent. of cases poor performances or even alleged blind spots are really and truly due to faulty earth connections.

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B.B.C.'s Music Hall

FOR some time now the B.B.C. has been relaying its big variety shows from the St. George's Hall, but the Corporation has only a short lease of this building and it will soon have to move out. It has now secured the lease of the Maida Vale skating rink, and it seems likely that part of this will be converted into a studio big enough for variety and orchestral performances.

It is a big building and there will be plenty of room for many other studios as well. It is surprising what an amount of space is required nowadays to give house room for all the items of the twin Regional and National programmes.

Broadcasting House Too Small

IF it continues to grow at its present rate, mathematicians may calculate just how many years will be required before the B.B.C. occupies the whole of the West End of London. Broadcasting House was big enough when it was built, but it was soon found that outside studios were necessary. Now it hasn't anything like space enough for all the offices required.

The other day I went to call on one of the B.B.C. people, and was stepping towards the lift when the hall porter informed me that his office was now round the corner in Portland Place. At least two complete houses here have been taken over by the B.B.C. for office accommodation, and I am told that they have their eye on others.

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Points Designers Miss

WHEN manufacturers' sets come down to me for test, I am often struck by the little points that just haven't occurred to their designers. And some of these points make a vast amount of difference to the attractiveness of the set and to its convenience in use.

Here's an instance. I am using just now a portable super-het with a built-in frame aerial. The directions inform me that I can use an outside aerial if I want to—and so I can if I will open the back in order to lay bare the aerial and earth sockets.

But why should I have to open the back? If a couple of half-inch holes had been drilled in it, I could insert the aerial and earth plugs into their respective sockets without any trouble. And if you will believe me, you have also to open the back in order to connect up a pick-up, though here again a pair of holes would have saved all the trouble.

Independent Tests Are Valuable

TIME and again I come across small but important lapses of this kind in design. The more I see of them the more I wonder why manufacturers don't obtain independent test reports on rough and ready models before putting them into production.

The trouble is that most firms do their own tests, and it is an old saying that parents are apt to see their offspring as swans whereas in reality they are geese.

"A.W." is much wiser in this respect. You may have noticed that when sets are produced by its designers, reports upon them are often done by those who are not members of the staff of the paper. It is only in that way that unbiased opinions can be obtained and additions or alterations made where they are desirable.

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Over-working a Valve

ONE of my correspondents is rather peevish at the result of what—at the time—he thought to be rather a smart piece of work. The rectifier valve of his high-tension eliminator suddenly gave up the ghost on the very evening that a particularly interesting play was to be broadcast.

Having read somewhere that an ordinary valve can be used as a rectifier if the grid and plate pins are wired together—and, being as he thought, lucky enough to have a "spare" handy—he proceeded to rig it up as a substitute.

At first everything went quite well, but after about an hour—right in the middle of the play—the set slowly but surely petered out. And to make matters worse, it seems that the "spare" now refuses to function any more—even in the set.

I'm afraid it's a case of a short life but a gay one. Whilst serving its time as a rectifier the "spare" was probably being driven at anything from three to four times its proper rate of emission, and naturally couldn't live up to the strain.

Full-wave or Half?

TALKING of rectifiers, I recently heard a man in a railway carriage laying down the law very firmly to a less learned friend on the merits of full-wave as compared with half-wave rectification. He said, very rightly, that the former threw less work on the smoothing-unit, but rather spoilt his argument by adding that it gave twice the output of the half-wave arrangement.

As a matter of fact, this is not so. Using the same transformer one would get double the voltage from a single-wave rectifier—but approximately the same power. The "ripple" would, however, be more pronounced, and therefore more difficult to smooth, and this is what really turns the scale in favour of full-wave rectification.

◆ ◆ ◆

"Thawing" the Aerial

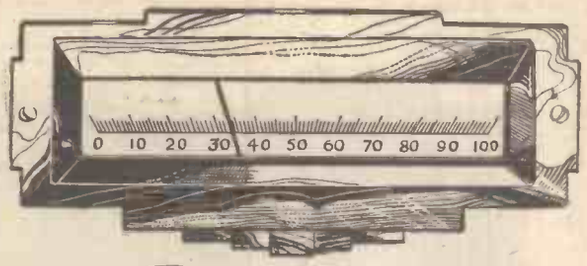
REAL Christmasy weather with plenty of ice and snow used to be very unpopular with the engineers in charge of transmission. After a snowstorm, the extra weight thrown on the aerial wires and supports at a big station may easily amount to several tons, and has, before now, brought the whole installation crashing to the ground. In fact, a heavy deposit of hoar frost alone is quite sufficient to impose a dangerous strain on the supports, whilst both snow and frost tend to "bridge" the insulators and so short the aerial currents to earth.

Nowadays, however, most transmitting aerials are so arranged that they can be cleared in a very short time from frost and snow—or even dried-out after rain—by passing a heavy heating-current through the wires.

For That Christmas Party of Yours!

Forfeits are a feature of any Christmas party and H.M.V. have produced a special record of them. This young lady is drawing the figure "6" while rotating the right leg in a clockwise direction. Try it yourself!

Two New Sets Are Coming!



Preliminary Details by the "Amateur Wireless" Technical Staff

Tell your friends about the receivers announced on this page!

WE give you this week some early details of a very interesting mains set just completed in our Constructional Department. It is a three-valver for universal mains operation. It can be used on A.C. or D.C. at will—without any alteration to the wiring at all.

We need hardly stress the value of such a facility. Many listeners now on a D.C. supply know that before very long they will be changed over to A.C. Others probably want to work the set on two different supplies, one A.C. and the other D.C.

Moderate Cost

As the cost of a universal mains set is really very moderate, it is surprising that more sets of this type have not made their appearance. Possibly the trouble has been lack of suitable valves.

In the new set we are discussing the latest Tungsram mains valves have been utilised, these having 20-volt filaments with filament currents of only .18 ampere. High-voltage valves are *not* essential for a universal mains set, as we have proved in this new model.

The heaters of the valves are wired in series with each other and with the mains, a resistance cutting down the voltage to the required amount. There are no dangerously high voltages involved at any point in the design.

No Mains Transformer

There is no mains transformer. This may seem strange to some readers, but it must be remembered that direct current cannot pass through a transformer. When the set is on the A.C. mains a half-wave valve rectifier converts the alternating current into uni-directional current, but when the set is on the D.C. supply the current passes straight through the rectifier without difficulty.

The circuit we have adopted is a well-tried sequence—screen-grid, detector and power output. A double-grid valve, of the pentode type, is used in the output stage.

Two tuning circuits are provided, with a differential condenser control of the aerial input to increase the overall selectivity. Parallel-feed coupling has been employed between the high-frequency and detector valves, with a small coupling condenser again increasing the selectivity.

To make doubly sure of the set's ability to cut out interference and cope with present-day conditions in the ether, the tuning coils are of the iron-core type.

This circuit has been built up into a neat console set, with the set at the bottom of the cabinet and a permanent-magnet moving-coil loud-speaker at the top. It is a simple base-board set, with no under-baseboard wiring. The set and power supply are all in the one design, no extra unit being used.

We have said enough about the set to show that it is a first-rate design. Next week we will give much more detailed information, with full layout and plenty of illustrations to help you to build the set. Meanwhile you might glance down the list of parts below.

Sets That Set a Standard—2

The 1930 Ether Searcher

IN the Christmas number of AMATEUR WIRELESS dated December 7, 1929, there came upon an expectant public *another* Ether Searcher, this being the second set of that name. It was a gallant effort. Designed by Alan Hunter, the originator of the Ether Searcher, in collaboration with J. Sieger, this second Ether Searcher worthily upheld the wonderful tradition that had grown up around the first model.

But it was a very different Ether Searcher. The age of metal had wireless amateurs in its thrall. The 1930 Ether Searcher was therefore a metal set—possibly one of the first metal sets designed for amateur construction.

It had an entirely new circuit, consisting of a screen-grid stage, a detector and a power output valve. Dual-range coils were used instead of the plug-in coils of the first Ether Searcher. These coils were much more selective, and as there were two of them, one for the aerial tuning and the other for the inter-valve coupling, the overall selectivity was very good indeed.

Such developments as an aerial-compensating condenser, loose coupling for the aperiodic winding and a differential reaction, were included in this 1930 Ether Searcher—a set that went over with a bang.

Once again the name Ether Searcher became associated with the set that set the standard.

In that year of 1929-1930 there was no better straight screen-grid three-valve set designed. The design was so up-to-date that it was really ahead of its time.

Once again, then, the Ether Searcher proved itself to the constructor public. Since that 1930 Ether Searcher there have been later models, with still more refinements, still more in tune with the trend of their days.

In fact, a year would not now be complete without an Ether Searcher. We approach the New Year, 1934, and with it a new Ether Searcher. Be patient. It is coming soon.

COMPONENTS NEEDED FOR THE A.C./D.C. THREE—to be described next week

BASEBOARD
1—Peto-Scott Metaplex 16 in. by 10 in.

CHOKES, HIGH-FREQUENCY
1—Telsen standard screened, type W341 (or Graham-Farish, Wearite).
1—R.I., type Quad Antic (or Lissen, Graham-Farish).
2—Goltone mains, type PHF (or Wearite).

CHOKE, LOW-FREQUENCY
1—Heayberd, type 751 (or Wearite, Bulgin).

COILS
2—Lissen iron-core screened aerial, type LN5321.

CONDENSERS, FIXED
1—Lissen .0001-microfarad (or Dubilier, Graham-Farish).
1—Lissen .0002-microfarad (or Dubilier, Graham-Farish).
1—Lissen .0005-microfarad (or Dubilier, Graham-Farish).
1—Lissen .005-microfarad (or Dubilier, Graham-Farish).
2—Dubilier .1-microfarad, type BB (or Lissen, Graham-Farish).
2—Dubilier 1-microfarad, type BB (or Lissen, Graham-Farish).
3—Dubilier 2-microfarad, type BB (or Lissen, Graham-Farish).
2—Dubilier 8-microfarad, type reversible electrolytic.

CONDENSERS, VARIABLE
1—British Radiophone two-gang .0005-microfarad, type 458A (or J.B., Utility).
1—Graham-Farish .0003-microfarad differential (or Telsen, Polar).
1—Graham-Farish .0003-microfarad (or Telsen, Polar).

HOLDERS, VALVE
4—Graham-Farish five-pin (or Lissen, Telsen).

PLUGS, TERMINALS, ETC.
1—Bulgin combined mains plug and fuse holder, type F15.
3—Lissen terminal blocks (or Telsen).

RESISTANCES, FIXED
1—Graham-Farish 500-ohm (or Lissen, Telsen).
1—Graham-Farish 750-ohm (or Lissen, Telsen).
1—Graham-Farish 1,000-ohm (or Lissen, Telsen).
1—Graham-Farish 15,000-ohm (or Lissen, Telsen).
1—Graham-Farish 20,000-ohm (or Lissen, Telsen).
1—Graham-Farish 25,000-ohm (or Lissen, Telsen).
1—Graham-Farish 100,000-ohm (or Lissen, Telsen).
1—Graham-Farish 1-megohm (or Lissen, Telsen).
1—Bulgin mains, type MR25.

RESISTANCES, VARIABLE
1—Bulgin 5,000-ohm with switch, type VS36 (or Claude Lyons, British Radiophone).

SUNDRIES
2—British Radiogram 4 in. metal-mounting brackets.
2—British Radiogram single electrolytic condenser mounting brackets.
1—Peto-Scott Metaplex strip 5 in. by 2 in.
Connecting wire and sleeving.

TRANSFORMER, LOW-FREQUENCY
1—Varley, type Nicore II (or Lissen, Telsen).

ACCESSORIES

CABINET
1—Peto-Scott, type ACDC.

LOUD-SPEAKER
1—Amplion, type MC22.

VALVES
1—Tungsram SG2018.
1—Tungsram R2018.
1—Tungsram PP2018.
1—Tungsram V2018.

The Inside Story

How the Year's

(Left) View of the Church of the Nativity, Bethlehem, from which the bells will be relayed on Christmas Eve by the B.B.C. and many other broadcasting organisations. (Below) Picturesque blending of the old and the new at Bethlehem

Vast networks of land-line and radio links are being arranged by the B.B.C. and the Post Office engineers in preparation for the special Christmas broadcasting relays. In addition to the link between Sandringham, the King's Norfolk residence, and the whole Empire, there will be the unique link with Bethlehem for the broadcast of the famous bells. These two broadcasts entail very great care and detailed organisation, as explained in this article—of interest to all listeners

EVERY Christmas emphasises more and more the wonderful world-girdling possibilities of wireless. Last year the Empire was thrilled by the King's Christmas message, and greetings from one part of the Empire to another echoed round the world. This year the arrangements are even more ambitious.

If present plans succeed, and there is little cause to doubt that they will, the entire English-speaking world will make radio contact this Christmas. The National Broadcasting Company of America is taking our Christmas Eve programme.

Church of the Nativity

The Christmas Eve broadcast relay of the bells from the Church of the Nativity, Bethlehem, has stirred the imagination of the whole Christian world. Every organisation is doing its utmost to take this inspiring Christmas symbol.

Just think of it; microphones will be installed at the site traditionally associated with the birth of Christ. From this hallowed spot the sound of those Nativity bells will be clearly picked up . . .

They will travel as electrical impulses to Cairo, *via* a repeater station at Ismailia. The next link is Abu Zabal, which is connected to Cairo by a relatively short land-line. At Abu Zabal is a Post Office beam station, which will send out the signals of the bells to the Post Office receiving station, also of the beam type.

From this key point of the Post Office in Hertfordshire the signals come to the nerve centre of the system, Faraday House, London.

The first part of the great journey of the bells is safely accomplished, thanks to Post Office land-lines and beam transmission. Now it is the turn of the B.B.C. They take the signals from Faraday House to their amazing control room at Broadcasting House.

From there the signals go out to all the B.B.C. stations for local transmission, to Daventry for national transmission, and to the Empire short-wave stations at Daventry for transmission to many different parts of the globe.

That does not exhaust the use made of those tiny electrical impulses originating from Bethlehem. America, whence the idea of the bells broadcast originated, wants to be quite sure of good reception. So from Faraday House there will be a land-line link with Rugby, and from that world-famous Post Office key point beam transmissions will carry the signals with the utmost reliability to America.

So much for the broadcast of the bells, which will be the outstanding feature of the Christmas Eve arrangements of the B.B.C. On Christmas Day, as we have fully explained in previous issues, His Majesty the King will broadcast a message of goodwill to the entire world.

Again the broadcast is notable for the extraordinary tie-ups by radio and land-lines. At 3 o'clock in the afternoon thousands of listeners will rely on the technical arrangements now being completed. From his study desk His Majesty will speak into a microphone, which is linked to Broadcasting House by land-line. From London the signals go out to all the S.B. system and to the Empire via the Daventry stations. America will take the message by the trans-Atlantic telephone. Both N.B.C. and Columbia systems, which together control hundreds of stations all over the United States, will make contact in this way.

Preceding this message will be an interchange of greetings between various parts of the Empire. The Post Office radio-telephone service will be exploited to the full. In turn will speak the Irish Free State, the Bermuda Isles—via New York, Canada via Ottawa, Australia and New Zealand via the Sydney beam station.

No one with a wireless set should miss these gigantic relays. They will serve as a memorable reminder of the steady technical advance of the radio and the telephone lines of the world. For a brief hour or so the world will draw itself together, united in common tribute to the spirit of Christmas.

Outstanding Xmas Items

AMONG the many interesting programmes to be put over during the Christmas holiday broadcasting from the B.B.C., we must not forget the revival of *The Three Musketeers*, the first part of which will be broadcast on December 20 in the National programme. The second part will be heard in the Regional programme on December 21.

The play will be produced by Peter Creswell. It was adapted from the original Dumas novel by Tyrone (*The Flowers Are Not for You to Pick*) Guthrie and Patrick Riddell. Incidental music will be provided by compositions from Victor Hely Hutchinson.

All lovers of this thrilling tale will tune in with eager expectation to the two broadcast parts of the play, which comes as a welcome item in the Christmas programmes.

Dance-band fans should certainly make a note of the fact that the ever-popular Debroy Somers and his band will be broadcasting an hour's dance music in the National programme on December 21. Tune in at 8 p.m.—push back the carpets and get on with the dance.

Nativity Play from Cornwall

We come to the Nativity Play on December 22. Again a National offering that will find many listeners. This play will be relayed, as usual, from Marazion, Cornwall. The St. Hilary Players will again interpret the spirit of the Nativity Play, under the able guidance of the Rev. Bernard Walke. It was Filson Young who discovered these players when on a holiday in Cornwall, and it was through him that listeners have come to know their work so well.

Saturday, December 23, will be a jolly night

y of the Christmas Programmes

Biggest Broadcasts Have Been Arranged

on the wireless. We shall have the Kentucky Minstrels holding a Christmas party. This is a Harry S. Pepper show, which is interesting, because Pepper's father started a coon party many years ago.

Scott and Whaley will be the cross-talk comedians, and there will be plenty of negro spirituals and banjoes and bones. The banjo team is particularly strong, consisting of Joe Morley, Tarrant Bailey, jun., and Dick Pepper.

If you are out on Saturday you can tune in the Minstrels on the preceding Friday on the Regional wavelengths.

High spots of the Christmas-week Programme Items

Wednesday, December 20

Midland Regional: Dr. S. A. Auden talks on "Good Boys for Bad."

Scottish Regional: Glasgow Parks Military Band, director John A. McIvor.

Thursday, December 21

Midland Regional: Studio recital of works by Dorothea Barcroft. Bach *Concerto in A major*; conductor, Johan Hoch.

Scottish Regional: *The Shepherds*, play by George Rowntree Harvey.

Friday, December 22

National: Annual banquet to Little Londoners (relayed from Guildhall); music by City of London Police Band.

London Regional: Kentucky Minstrel's Christmas Party.

West Regional: Relay of dance music and the Fourth Annual Bristol Press Ball.

Scottish Regional: Special programme for Bach lovers.

Saturday, December 23

National: Kentucky Minstrel's Christmas Party. Talk on how a Welshman keeps up Christmas.

London Regional: Children's Hour as Midland Regional.

Midland Regional: Special play about ski-ing in Children's Hour.

West Regional: Layton and Johnstone relayed from the Pavilion, Bath; also the Pump Room Orchestra. "Market Special," new type of feature programme.

Scottish Regional: Children's Hour as Midland Regional. Also "A Recollection of some Pantomime Successes in Bygone Years." Excerpts from *Aladdin* at Theatre Royal, Edinburgh.

Sunday, December 24 (Christmas Eve)

National: World Broadcast of the Bells of Bethlehem. Story of the First Christmas, told in relays from London, New York, Winchester Cathedral and the Church of the Nativity at Bethlehem (arranged in co-operation with the National Broadcasting Company of America). A Festival of Nine Lessons and Carols relayed from King's College Chapel, Cambridge. Carols by Wireless Choir (Stanford Robinson) from Whitechapel Parish Church.

London Regional: B.B.C. Orchestra (conductor, Joseph Lewis) in afternoon programme, "Memories."

Midland Regional: Concert of Christmas music, including "Love-offering of St. Theresa to the Infant Jesus."

West Regional: Roman Catholic service from the Servite Church, Fulham Road, London.

North Regional: Creswell Colliery Band; director, David Aspinell.

Scottish Regional: "Round the County," from the three stations in Scotland.

Belfast: Bell relay as National.

Monday, December 25 (Christmas Day)

National: Morning Service from Christ Church, Oxford. The King's message at 3 p.m. from Sandringham (relayed to all stations). *Sindbad the Sailor*, a pantomime produced by Hickory Wood. Dance music by Henry Hall. "Divertissement," relayed from Midland Regional.

London Regional: "Heigh Ho the Holly," seasonal programme arranged by M. H. Allen and C. Denis Freeman. Nativity play by Sussex Mummers.

Midland Regional: "Divertissement," produced by Martyn C. Webster.

West Regional: "Heigh Ho the Holly," from London Regional.

North Regional: "Heigh Ho the Holly," from London Regional.

Scottish Regional: Service relayed from Paisley Abbey.

Belfast: *Sindbad the Sailor*, from National.

Listen to His Majesty the King at 3 p.m. on Christmas Day

(Right) His Majesty the King, whose Christmas message is eagerly awaited by the whole world, is seen here in a happy incident before a football final. (Below) Sandringham House, Norfolk, whence the B.B.C. will relay the King's Christmas message

Tuesday, December 26 (Boxing Day)

National: Special dance-music programme.

London Regional: "Blue Bonnets Over the Border," Scottish variety.

Midland Regional: Orchestral concert relayed from Leamington Spa.

West Regional: Police Band concert.

North Regional: Augmented Northern Studio Orchestra; conductor, T. H. Morrison.

Scottish Regional: As London Regional.

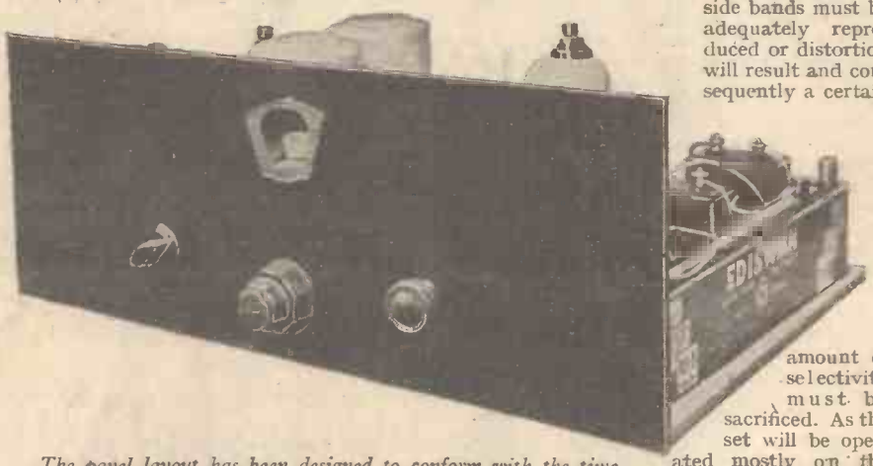
Belfast: Vocal and instrument recital (from London).

THE C.R. FOUR

Here are details of a four-valve receiver which has been specially designed for cathode-ray television

A RECEIVER for C.R. television is a much less ambitious affair than a similar piece of apparatus for use with a mirror-drum visor.

Whereas a good 4-5 watts A.C. output is needed properly to modulate the mirror-drum arrangement, adequate modulation can be obtained on a C.R.T. apparatus with only 100-200 milliwatts. This is less output than is needed to drive a loud-speaker and represents very little more than loud phone strength.



The panel layout has been designed to conform with the time bases previously described so that the whole can be mounted in a frame as a complete assembly

A suitable modulator valve for our receiver was found to be the Mazda L2, which will handle a grid swing of 3 or 4 volts and will easily give the required modulation voltage to the tube without overloading. This simplifies the receiver design very considerably as it can be fitted directly after the rectifier. This enables us to dispense with an intermediate low-frequency stage and thus removes one possible cause of frequency distortion.

As has been explained previously, the essential characteristic of any television receiver is a good frequency response, especially at the high-frequency end. This means that a regenerative detector must be avoided at all costs. After some consideration it was decided to adopt diode detection and to use the Mazda L2DD to perform the dual functions of a diode detector and modulator valve.

The trouble with a diode rectifier, however, is that it gives no amplification, therefore in order to get about 3 volts applied to the grid of the L2 for adequate modulation, the diode will need 8 or 9 volts radio-frequency input.

This could be achieved with a single high-frequency stage if the set were situated close to the transmitter, but, in order to ensure the universal application of the set we have employed two stages of high-frequency amplification. The valves used are of the variable-mu high-frequency type and allow a distortionless control of volume and sensitivity by varying the bias on the high-frequency stages.

Contrary to usual reception practice, the tuning circuits of the two high-frequency stages are quite flat. In television the side bands must be adequately reproduced or distortion will result and consequently a certain amount of selectivity must be sacrificed. As the set will be operated mostly on the National transmitter, however, the high-frequency sensitivity will be reduced to such an extent as to make interference from neighbouring transmitters almost negligible.

It will be noticed that the diode is tapped down on the second high-frequency coil to reduce the loading on the circuit.

Continued on page 1136

COMPONENTS for the C.R. FOUR

BASEBOARD
1—Peto-Scott, 16 in. by 10 in.

CHOKES, HIGH-FREQUENCY
1—Wearite screened, type HFP.
1—R.I., type Quad-astatic.

COILS
3—Colvern, types (two) KGO, (one) KGR mounted on one base.

CONDENSERS, FIXED
2—T.C.C. .0001-microfarad, type S.
1—T.C.C. .0005-microfarad, type S.
1—T.C.C. .001-microfarad, type S.
2—T.C.C. .25-microfarad, type 50.
5—T.C.C. .5-microfarad, type 50.
1—T.C.C. 1-microfarad, type 50.

CONDENSERS, VARIABLE
1—J.B. three-gang .0005-microfarad, type Unitune.

HOLDERS, VALVE
4—Benjamin five-pin, type Midget.

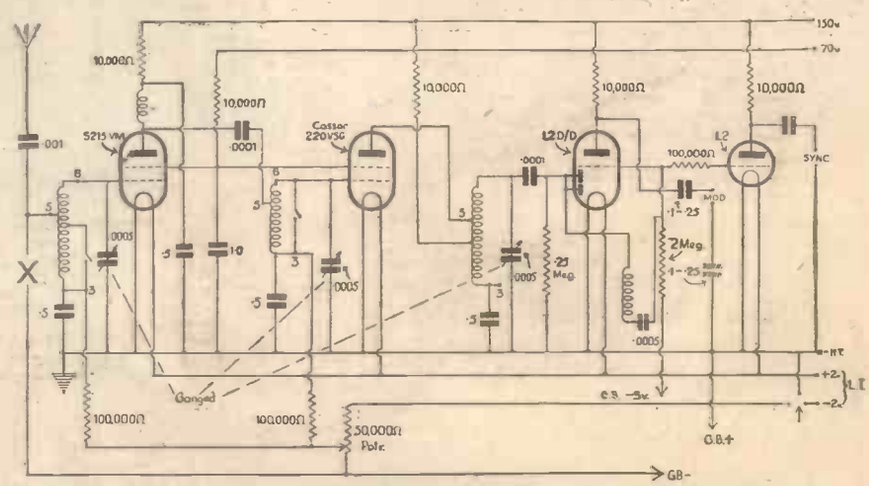
PANEL
1—Peto-Scott ebonite, 16 in. by 6 in.

PLUGS, TERMINALS, ETC.
7—Belling-Lee wander plugs, marked: G.B.—1, G.B.—2, G.B.—3, G.B.+, H.T.+1, H.T.+2, H.T.—.
2—Belling-Lee spade terminals, marked: L.T.+, L.T.—.
4—Telsen terminal blocks.

RESISTANCES, FIXED
5—Dubilier 10,000-ohm.
3—Dubilier 100,000-ohm.
1—Dubilier .25-megohm.
1—Dubilier 2-megohm.

RESISTANCES, VARIABLE
1—British Radiophone 50,000-ohm with combined three-point switch.

SUNDRIES
Connecting wire and sleeving (Lewcos).
4 yd. thin flex (Lewcoflex).
1—Bulgin knob, type K14.



Two stages of H.F. are employed, followed by a double-diode-triode with a medium-impedance triode for synchronising

What's happening now in—

Build with your own hands a set on which you can hear the news and views of all the world DIRECT!

At last the day of All-World Radio has arrived, and you can build with your own hands the first receiver to give you not only England and Europe, but America and Australia direct. The Lissen All-Wave All-World Skyscraper 4 tunes from 12 to 2,100 metres. It gives you all the ordinary British and Continental programmes you can desire, and in addition stations all over the world which broadcast news and views and entertainment on the Short and Ultra Short wavelengths. These Short Wave stations are receivable on this Lissen All-Wave All-World Skyscraper at truly amazing ranges—Melbourne, Australia, at almost 12,000 miles, Johannesburg at 6,000 miles, Sydney, Australia, at 12,000, Pittsburg, Pennsylvania at 4,000 miles—these and many more of which the ordinary listener cannot hear even a whisper.

CHASSIS KIT COMPLETE WITH FOUR VALVES £5·12·6

And remember you get these stations through Double Balanced Pentode Output giving brilliant reproduction on a Moving Coil Speaker—as much power as a Mains Set from ordinary high-tension batteries

ULTRA-SHORT-SHORT MEDIUM & LONG WAVES

Lissen have made this All-Wave All-World radio available to Home Constructors first, because it brings back the thrill of conquest to hear America and Australia direct on a set you have built yourself. It makes you an enthusiast to realise what a wonderful thing you have created!

And when you see the Great Free Chart of the All-Wave All-World "Skyscraper" 4, which tells you how to build it and how to work it and why it gives such marvellous results, you will agree at once that it will be wise of you to build for yourself rather than buy a factory assembled receiver which cannot give you these new and intriguing short-wave stations.

The FREE CHART simplifies everything; there are pictures of every part, with every wire numbered every hole lettered, every terminal identified. YOU CAN'T GO WRONG! But get the Chart and see for yourself—then build the Lissen All-Wave All-World "Skyscraper" 4, the SET THAT SPANS THE WORLD!

THE SET THAT SPANS THE WORLD

GREAT CHART FREE POST THIS COUPON!

To LISSEN, LTD., Publicity Dept., ISLEWORTH.
Please send me FREE copy of All-Wave All-World "Skyscraper" Chart.

Name .....

Address .....

..... A.W.2134

LISSEN ALL-WAVE ALL-WORLD 4 "SKYSCRAPER"

THE C.R. FOUR Continued from page 1134

Synchronising

The synchronising valve is also a Mazda L2 and is fed from the diode through a 100,000-ohm grid stopper resistance. The output of this is fed to the time bases already described. The combination of the set is extremely simple and, provided that the layout is followed and all the essential high-frequency wires are kept reasonably short, no trouble should be experienced in getting the set to work.

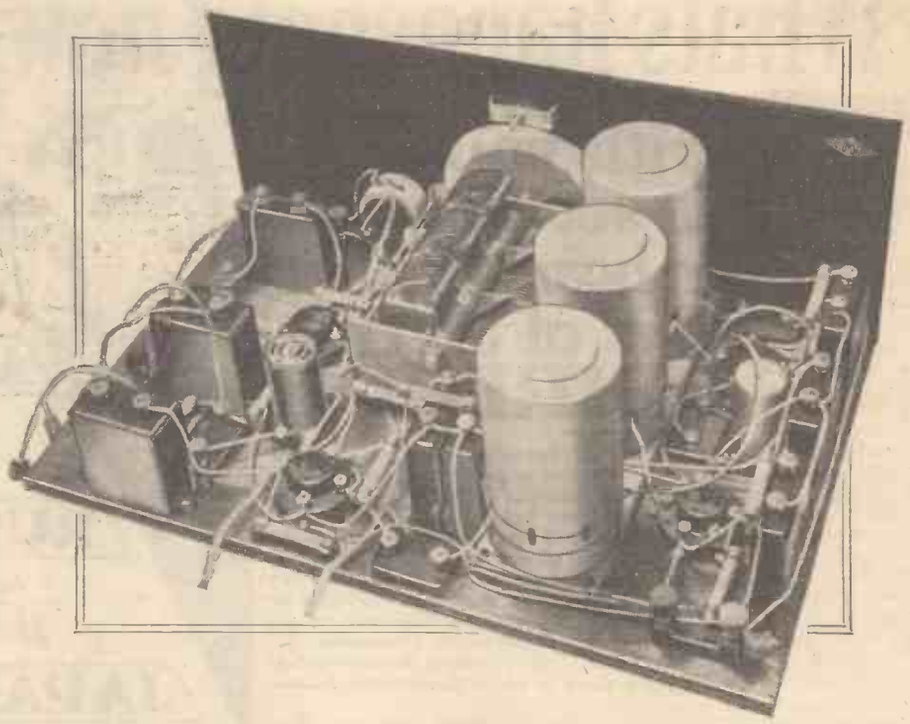
The panel is exactly the same size as that of the two time bases placed side by side. This enables the complete television apparatus to be assembled very neatly and we shall show the completed assembly in a later issue, together with a reproduction of the layout and wiring diagram.

Excellent Broadcast Receiver

Although this set is primarily intended for feeding a cathode-ray tube, it will also make an excellent quality broadcast receiver.

There are a number of good class-B output speaker units on the market at the present time and it is only necessary to connect the input of one of these units to the "modulation" terminals of the receiver to make a high-quality radio receiver which will give an output large enough for any domestic requirements.

It will be observed that there is a shorting link in the aerial circuit. This is to form a local-distance switch and should be shorted to give local reception if the set is used right on top of the National transmitter.



Here is a rear view of the C.R. receiver, showing the layout. A full-size blueprint is available, price 1s. 6d.

An Informative Essay!

The Cumulator

A CUMULATOR is that glass bottle thing that stands near your set and is so wobbely; its full of water with sumthing in it and has got funny-looking plates inside sum of wich look like chocklit bars only there not. So Smith Minor says and I blieve him. He says it isnt spelt cumulator but when I asked him he coodnt tell me why becos after all he didnt invent it.

Most cumulators Ive seen are long and narnow; they nock over eesily, ours does even if you dont touch it but Ma sed I did. The stuff inside burnt wholes in the tablecloth and the carpet and also my hanky wich I tried to mop it up with. If you put it on the flore it falls over just as eesily altho I didnt kick it. The cat likked it and mooed for ours.

This falling over bizness is all rong as I get blamed for evrything that happens; I got spanked by Dad last time, I also got spanked yestiddy but that wosnt for the cumulator, sumfing else but I forget. It looks like water but is reely a lectric currant its full of valtz and thats why we hear dance mewsic.

We take it round to the shop to get filled every fortnite. Sumtimes its emty just when Dad wants to show orf his set to a frend then theres more trubble.

You can do all kinds of things with cumulators. Smith Minor showed me how 2 get fyreworks from it. You hold sizzers acros the big screws on top and then you see a fat bloo spark. Cumulators seem to go by clockwork because when ours is full it plays but when it dozent Dad says the damfings run down. I serpose the damfings the spring and I took the choklit plates out wun day but coodnt find it ennywhere.

Another good experment is to loop up the two ends of the rubber wires on the cumulator this makes them get warm smoke and stink. Its grate fun. When all the valtz are out of it Dad takes it to the Garridge for charging, they charge sixpence to fill it up and it gasses like billyo.

Sumtimes we get ours back. Last time by mistake they gave us a new wun so Dad now takes it to another shop for filling. He sez it dozent matter if they do charge sevenpence it was worth it. Thats all I no about cumulators.

P.S.—Smith Minor told me that you can get better fyreworks from the aitch tee battry but he told a lie and Im going to punch his hed. I tryed it with sum wires from the set wen the wireless was going and nuthing much happened but Dad sed my foolery had cost him three valves. It cost me my burthday presence.

P.S.S.—You mustnt emty the cumulators into the set when it wants more jews as it gets the jews through the wyres. I try everything wunce becos teacher says that you learn by sperimenting but this speriment wosnt a suckcess as it made Dad wild. I dont like two rite about it as I can still feel a sore spot.

Miggs (Tertius),
the yungest.

Difficult Tests

DO you appreciate the difficulty of testing a receiver in the neighbourhood of static interference such as radiated from the electric signs of Piccadilly Circus? If you do, then you will be surprised to know that at the Radio Centre in Haymarket a radio receiver on test can reproduce programme signals without a trace of static interference. The manager has installed a Rejectostatic unit. He claims that good reception is possible on any make of set.

Three-minute Interviews—I

A Bus Conductor

I MET him just as he stepped off the bus at the depot, with his tickets and box under his arm.

"Are *you* interested in wireless?" I asked him.

"Yes, I am; but only in a very elementary way, not from a technical point of view. But I am very interested as a listener."

"What sort of programme do you like best?"

"Well, of course, there are various things I like, especially vaudeville—when it is good, but we have so much that is not."

"How about talks?"

"Now, those *are* things I like, but have so little opportunity of hearing, as my turns always seem late when there is a good talk on in the evening. I also like the majority of the music, omitting the Proms; they are too heavy for my taste, but, of course, some people enjoy them. I do not like Henry Hall's band, and personally should like the old B.B.C. Dance Band back again. The B.B.C. Military Band is good and I like Ambrose's orchestra.

"My favourite, I think is Christopher Stone; you have a bit of everything then. His programmes are equal to anything, in my opinion."

"What about Sunday music—do you like the services, or do you think the programmes want brightening up?"

"Well, I think Sir John Reith could do something about that. The service in the morning is all right, but I think they could cut out a few of the boring tenors and sopranos, and have some light music, not necessarily dance music. They could also have a few *interesting* talks, such as exploring or similar subjects. Oh, here's my bus, I must go."

J. A. P.

Famous Broadcasters Who Make Furniture!

DOES a highly-developed musical talent often go hand-in-hand with a taste for amateur carpentry? It would seem to do so, if one may judge by the number of famous musicians and singers among broadcasters who have adopted carpentry and cabinet-making as their spare-time hobby.

Sir Henry Wood, for instance, is enthusiastic about amateur carpentry, and soon gets busy with his tools when he is able to take a brief respite from his strenuous musical activities at the "Proms" and elsewhere.

Means of Relaxation

Then there is Dr. George Dyson, another noted broadcaster, who combines musical attainments with a liking for rough carpentry as a means of relaxation during leisure moments.

Among well-known singers, this somewhat unexpected enthusiasm for plying tools on wood is equally to the fore. John Armstrong's skill at cabinet-making in his spare time is such that his friends are said to prevail upon his good nature to make furniture for them as well as for himself!

Leonard Gowings, the tenor, is another famous wireless singer who enjoys furniture-making for fun.

Again, there is Ernest Butcher, who sings folk-songs so delightfully with Muriel George. He is yet another popular broadcaster to whom amateur carpentry appeals as a hobby.

Joan Stonehewer, who has entertained wireless listeners on a number of occasions during the past few years by her novel musical performances, has linked up broadcast music even more closely with carpentry (though in a very different way) by playing solos on a saw!

Joan Stonehewer, of Putney, well known for her B.B.C. broadcasts, trys the charms of her musical saw on the boat builders—and demonstrates that any saw will do!

As far as I know, however, the only occasion on which she has attempted to use the saw for anything in the nature of carpentry was in an emergency, when she resorted to it as a means of cutting away part of a gate to release a pet kitten which had got itself jammed in the woodwork.

W. O.

Midget Valves for Ultra-short Waves

YOU have all read of giant valves, the power it takes to drive them, and the huge quantities of water used in cooling them, but have you heard of valves made to the other extreme of minute dimensions?

It has been left to some American scientific experimenters to design and make a few valves of tiny size, but of comparatively powerful output, for use on short waves under one-tenth of a metre long.

Only Three-quarters of an Inch High!

Recently a description of these experiments was given in Chicago, and triodes and screen-grid valves were described and operated. These valves are but ¾ in. high, and about the same in diameter, and an ordinary receiving valve like we use in our sets is about ten times larger than these midgets.

The recent interest taken in ultra-short waves has caused these attempts at producing a valve in which the inter-electrode capacities have been reduced to a fraction of those in ordinary valves to be made, and it says a great deal for their design when it is realised that smallness in size has not greatly altered the general characteristics.

These valves operated quite well in a standard retroactive oscillatory circuit on a wavelength of 30 centimetres, with an anode current of 3 milliamperes at 115 volts. A screen-grid valve has been used at wavelengths of 100 and 75 centimetres, and a radio-frequency amplification of four per stage has been obtained on the higher wavelength.

It is believed that the reception of ultra-short waves will be revolutionised if the development of midget valves can be accomplished, but the difficulty at the moment is in their manufacture. It is extremely doubtful if these can be made in any quantity as their intricate manufacture does not lend itself to mass-production methods.

R. T. P.

New Records for Your Radiogram

Old Sam's Party, 4s. **Columbia DX512**

Stanley Holloway brings all his characters together at a "do." It is all very funny, with its many absurd situations; and Stanley shows, too, how fine a singer he is. You can't help but enjoy this.

A Gypsy Sing Song, 1s. 6d. **Regal-Zono MR1048**

One of those real, hectic affairs which never seems to exhaust the performers. Sidor Berma's gypsy musicians give an unusual performance, and a very good one.

King of Palestine and **Romeo,** 1s. 6d. **Regal-Zono MR1095**

By Ike Freeman, the Scottish Hebrew gentleman. Here is a comedian reminiscent of the older school with some really good tunes. Most attractive.

Nineteen Dirty Three and "Pose" and **Everyone's Got Sex Appeal for Someone,** 2s. 6d. **Parlophone R1661**

You can guess that such titles by Ronald Frankau are not quite intended for our maiden aunts. But they are—oh, *so* entertaining!

Follies of the Imps and **Shooting Stars,** 2s. 6d. **Parlophone R1664**

Fox-trots of a very tuneful sort played with the skill always shown by the Bravour Dance Orchestra. Pianist brilliant as ever. A *great* dance record.

Three Loose Screws, 2s. 6d. **Columbia DB1217**

That is, Chick Endor, Charlie Farrell, and Eddie Pola—a powerful trio. An amusing turn, with some quite funny imitations.

Hello Susie Green and **Under My Umbrella,** 1s. **Winner 5567**

G. H. Elliott still keeps on. And very good he is in these two old favourites.

The Man on the Flying Trapeze, 1s. 6d. **Decca F3682**

It is a long time since I came across a tune such as this. It simply will not leave you. It is only a nonsensical yarn about an acrobat taking the singer's girl, but it is highly diverting entertainment. The Jolly Rollickers are the culprits.

Twiddling With the Knobs on the Radio and **That Naughty Old Man of Madrid,** 1s. 6d. **Regal-Zono MR1121**

Welcome back to Derrie Dene after a long absence from records. All her songs are of the saucy kind and the first is very reminiscent of dear old Marie Lloyd. These songs are not even *middle*-brow, but I imagine most of my readers will enjoy them.

Minstrel Memories, 4s. **Columbia DX513**

Four of the best from the old Scott Gatty selection. They are really well sung, with banjos and bones, and are quite the thing for gatherings of those who remember them in their younger days.

"RECORDER."

Alternative for Plymouth

FEARS of poor reception are disturbing the goodly listeners of Plymouth. On January 15, when the great wavelength change-over occurs, the Plymouth relay will be synchronised with the Bournemouth station, which ought not to cause much trouble.

Droitwich ought to give these listeners a very good National programme. If it does the B.B.C. will increase the power of Plymouth to 5 kilowatts, designing the new transmitter to work especially well around 200 metres. It will then provide some sort of alternative programme to the National offering.

Broadcasting Stations

Wavelengths are brought up to date week by week. For the purpose of better comparison, the power indicated is that of the carrier wave.

Metres	Kilocycles	Station and Call Sign	Country	Power (Kw.)
16.86	17,790	Daventry (GSG) ...	Great Britain.....	20.0
19.56	15,330	Schenectady (W2XAD)	United States ...	20.0
19.68	15,234	Paris (Coloniale) ...	France	15.0
19.73	15,200	Zeesen (DJB).....	Germany	8.0
25.2	11,905	Paris (Coloniale) ...	France	15.0
25.28	11,865	Daventry (GSE) ...	Great Britain ...	20.0
25.4	11,810	Rome (2RO).....	Italy	15.0
25.51	11,760	Zeesen (DJD).....	Germany	8.0
25.53	11,750	Daventry (GSD) ...	Great Britain.....	20.0
25.57	11,730	Huizen (PHI)	Holland.....	40.0
25.63	11,705	Paris (Coloniale) ...	France	15.0
30.0	10,000	Madrid (EAQ)	Spain	20.0
31.25	9,598	Lisbon (CTIAA).....	Portugal.....	2.0
31.3	9,585	Daventry (GSC) ...	Great Britain.....	20.0
31.38	9,560	Zeesen (DJA).....	Germany	8.0
31.55	9,510	Daventry (GSB).....	Great Britain.....	20.0
31.6	9,490	Poznan (SRI).....	Poland	1.0
37.33	8,036	Rabat (CNR).....	Morocco	6.0
38.47	7,799	Radio Nations (HBP)	Switzerland	20.0
42.92	6,990	Oslo (LCL)	Norway	0.5
43.86	6,840	Budapest	Hungary.....	2.0
45.38	6,610	Moscow	U.S.S.R.....	10.0
46.69	6,425	Boundbrook (W3XL)	United States ...	1.0
48.86	6,140	Pittsburgh (W8XK)	United States ...	40.0
48.94	6,130	Mexico (XETE)	Mexico	2.0
49.02	6,120	Wayne (W2XE) ...	United States ...	1.0
49.18	6,110	Chicago (W9XF) ...	United States ...	5.0
49.18	6,110	Boundbrook N.J. (W3XAL)	United States ...	18.0
49.4	6,073	Skamlebaek (OXY)	Denmark	.5
49.5	6,060	Nairobi (VQ7LO)...	Kenya Colony ...	.5
49.55	6,055	Vienna (UOR2) ...	Austria	.5
49.59	6,050	Daventry (GSA) ...	Great Britain.....	20.0
49.83	6,020	Zeesen (DJC).....	Germany	10.0
50.0	6,000	Moscow (RNE)	U.S.S.R.....	20.0
50.26	5,969	Vatican (HVJ)	Italy	10.0
202	1,484	Tarragona (EAJ33)	Spain.....	.25
203	1,478	Bilbao EAJ28	Spain	.25
204	1,470	Seraing	Belgium.....	.3
204.7	1,465.4	Liege (Exp.)	Belgium	.35
209.8	1,429	Miskolcz	Hungary.....	1.25
209.8	1,429	Magyarovar	Hungary.....	1.2
209.8	1,429	Pecs.....	Hungary.....	1.2
211.3	1,420	Newcastle	Great Britain.....	1.0
214.3	1,400	Aberdeen	Great Britain.....	1.0
215	1,395	Liege (Reg)	Belgium.....	0.35
215.6	1,391	Chatelineau (EL) ...	Belgium.....	.2
217.1	1,382	Konigsberg.....	Germany	.5
217.1	1,382	Dublin.....	Irish Free State...	1.2
218.5	1,373	Salzburg	Austria	1.5
218.5	1,373	Plymouth	Great Britain.....	.2
220	1,365	Beziers	France	1.0
220	1,365	Turin (2)	Italy	1.0
222.1	1,351	Binche.....	Belgium	.2
223.5	1,342	Antwerp.....	Belgium	.4
224.4	1,337	Cork (6CK)	Irish Free State...	1.2
225.9	1,327.3	Fecamp	France	10.0
227.4	1,319	Bremen	Germany	1.5
227.4	1,319	Flensburg	Germany	.5
227.4	1,319	Hanover	Germany	1.5
230.6	1,301	Malmo.....	Sweden	1.25
231.7	1,294.6	Kiel	Germany	.25
232.8	1,289	Wallonia (Binche)...	Belgium	.3
235	1,283	Lodz	Poland	2.2
235.9	1,271.5	Bordeaux (S.O.) ...	France	3.0
237.2	1,265	Nimes	France	1.0
238.9	1,256	Nurnberg	Germany	2.0
240.6	1,247	Stavanger	Norway.....	.5
242.3	1,238	Belfast.....	North Ireland ...	1.0
242.7	1,236	Liege	Belgium.....	.3
244.1	1,229	Basle	Switzerland	.5
245.9	1,220	Linz.....	Austria	.5
247.7	1,211	Trieste	Italy	10.0
250.1	1,199.7	Juan-les-Pins	France	1.0
251.5	1,193	Barcelona (EAJ15)...	Spain	1.0
253	1,185	Gleiwitz.....	Germany	5.0
255.1	1,176	Toulouse (PTT).....	France	.7
257.3	1,166	Horby.....	Sweden	10.0
259.3	1,157	Treves (Trier)	Germany	2.3
259.3	1,157	Frankfurt-A-M	Germany	17.0
259.3	1,157	Cassel.....	Germany	0.5
261.6	1,147	London National ...	Great Britain.....	50.0
261.6	1,147	West National	Great Britain.....	50.0
263.8	1,137	Moravska-Ostrava...	Czechoslovakia...	11.0
265.7	1,129	Lille (PTT)	France	1.3
267.4	1,122	Nyiregyhaza	Hungary.....	6.3
267.6	1,121	Valencia	Spain	3.0
269.8	1,112	Bari.....	Italy	20.0
271.5	1,105	Rennes (PTT).....	France	1.3
274	1,095	Turin (Torino)	Italy	7.0
276.5	1,085	Heilsberg	Germany	75.0
277.8	1,080	Bratislava	Czechoslovakia...	14.0
281.2	1,067	Copenhagen	Denmark	.75
282.2	1,063	Lisbon (Tests)	Portugal.....	20.0
283.6	1,058	Berlin (E)	Germany	.5
283.6	1,058	Magdeburg.....	Germany	.5
283.6	1,058	Stettin.....	Germany	.5
285.1	1,052	Radio Lyons	France	1.0
286	1,049	Montpellier	France	.9
288.5	1,040	Bournemouth	Great Britain.....	1.0
288.5	1,040	Scottish National ...	Great Britain.....	50.0
291	1,031	Viipuri.....	Finland	13.2
293	1,022	Kosice.....	Czechoslovakia...	2.5
293.7	1,021.5	Limoges (PTT)	France	.7
296.1	1,013	Hilversum	Holland.....	20.0
298.8	1,004	Tallinn.....	Estonia	11.0
298.8	1,004	Salonika	Greece	1.5
301.5	995	North National.....	Great Britain.....	50.0
304	986	Bordeaux (PTT).....	France	13.0
308	974	Vitus-Paris.....	France	1.0
309.9	968	West Regional	Great Britain.....	50.0
312.5	960	Genoa.....	Italy	10.0
312.8	959	Cracow	Poland	2.0
315.8	950	Marseilles	France	1.6
318.8	941	Sofia (Rodno Radio)	Bulgaria	.5
318.8	941	Dresden	Germany	.25
319.5	939	Naples.....	Italy	1.3
321.9	932	Goteborg	Sweden	10.0
325	923	Breslau	Germany	60.0
328.2	914	Poste Parisien	France	60.0
332.2	903	Milan (Siziano)	Italy	50.0
334.4	897	Poznan.....	Poland	2.0
338.2	887	Brussels (No. 2).....	Belgium	15.0
342.1	877	Brunn (Brno).....	Czechoslovakia...	32.0
345.2	869	Strasbourg (PTT) ...	France	38.0
348.4	861	Barcelona (EAJ1) ...	Spain	8.0
348.8	859.2	Leningrad RV70 ...	U.S.S.R.	100.0
352.1	852	Graz	Austria	7.0
355.9	843	London Regional ...	Great Britain.....	50.0
358	838	Tiraspol	U.S.S.R.....	10.0
360.6	832	Stuttgart (temp) ...	Germany	1.5
363.6	825	Algiers (PTT).....	North Africa.....	13.0
364.1	824	Bergen	Norway	1.0
366.5	818	Fredriksstad	Norway.....	0.7
368.1	815	Bolzano	Italy	1.0
368.1	815	Helsinki	Finland	13.2
368.1	815	Seville (EAJ5).....	Spain	1.5
370.1	810	Radio LL Paris	France	0.8
372.2	806	Hamburg	Germany	1.5
376.4	797	Scottish Regional ...	Great Britain.....	50.0
380.7	788	Lwow	Poland	16.0
385.1	779	Radio Toulouse.....	France	8.0
385.1	779	Stalino	U.S.S.R.....	10.0
389.6	770	Leipzig	Germany	150.0
394.2	761	Bucharest	Roumania	12.0
398.9	752	Midland Regional ...	Great Britain.....	25.0
403	743	Sottens	Switzerland	25.0
408.7	734	Katowice	Poland	12.0
413	725	Athlone	Irish Free State...	80.0
416.4	720.5	Rabat	Morocco	6.0
419.9	716	Berlin	Germany	1.5
424.3	707	Madrid (EAJ7)	Spain	3.0
424.3	707	Moscow (ROZ).....	U.S.S.R.	100.0
431	696	Belgrade	Yugoslavia.....	2.8
436	689	Stockholm.....	Sweden.....	55.0
441.2	680	Rome (Roma).....	Italy	60.0
447.1	671	Paris (PTT).....	France	7.0
447.1	671	Danzig.....	Danzig	.5
451.8	664.1	Madona	Latvia.....	15.0
451.8	664	Agen	France	.6
452.8	663	Milan (Vigentino)...	Italy	4.0
453.2	662	Odessa (RDH)	U.S.S.R.....	15.0
453.2	662	Klagenfurt	Austria	.5
456.6	657	San Sebastian.....	Spain	5.0
459.4	653	Beromunster	Switzerland	60.0
465.8	644	Lyons (PTT)	France	15.0
472.4	635	Langenberg	Germany	60.0
480	625	North Regional.....	Great Britain.....	50.0
488.6	614	Prague.....	Czechoslovakia...	120.0
495.8	605	Trondheim.....	Norway	1.0
501.7	598	Florence	Italy	20.0
501.7	598	Gorki.....	U.S.S.R.....	10.0
508.5	590	Astrakhan.....	U.S.S.R.....	20.0
509.3	589	Brussels (No. 1).....	Belgium	15.0
518.1	579	Vienna.....	Austria	100.0
525.3	571	Riga.....	Latvia.....	15.0
532.9	563	Munich	Germany	1.5
539.8	555.7	Palermo	Italy	3.5
542	554	Sundsvall.....	Sweden	10.0
550.5	545	Budapest (1)	Hungary.....	120.0
555.5	540	Wilno	Poland	22.0
559.7	536	Tampere.....	Finland	1.0
559.7	536	Kaiserslautern	Germany	1.5
559.7	536	Augsburg	Germany	.25
565.5	530.5	Freiburg i/B	Germany	0.25
569.3	527	Grenoble (PTT).....	France	3.0
577.3	519.6	Ljubljana.....	Yugoslavia	7.5
578	519	Innsbruck	Austria	.5
582.6	515	Tartu	Estonia	.5
690	434.7	Oulu	Finland	1.2
746.2	402.	Moscow (RMO).....	U.S.S.R.	20.0
747.2	401.5	Ostersund	Norway	0.6
760	395	Geneva	Switzerland	1.25
833	360.1	Heston Airport.....	Great Britain.....	5.05
844.8	355	Budapest (2)	Hungary.....	3.0
1,000	300	Moscow (ROZ).....	U.S.S.R.	100.0
1,071.4	280	Tiflis	U.S.S.R.	35.0
1,083	277	Oslo.....	Norway	60.0
1,105	271.5	Minsk (RMG).....	U.S.S.R.	35.0
1,115	269	Moscow (Popoff) ...	U.S.S.R.	40.0
1,137	263.8	Monte Ceneri	Switzerland	15.0
1,153.8	260	Kalundborg	Denmark	30.0
1,190.5	252	Luxembourg	Gd. Duchy of Lux.	200.0
1,200	250	Istanbul	Turkey	5.0
1,200	250	Reykjavik	Iceland	21.0
1,255	239	Vienna (Exp.).....	Austria	3.0
1,276.3	235	Tunis	Tunisia	.75
1,304	230.1	Leningrad	U.S.S.R.	100.0
1,348	222.5	Motala.....	Sweden	30.0
1,411.8	212.5	Warsaw	Poland	120.0
1,445.8	207.5	Eiffel Tower	France	13.0
1,481	202.6	Moscow (RTC)	U.S.S.R.	500.0
1,554.4	193	Daventry National	Great Britain.....	30.0
1,634.9	183.5	Zeesen	Germany	60.0
1,724.1	174	Radio Paris.....	France	75.0
1,796	167	Lahti	Finland	54.0
1,875	160	Kootwijk	Holland.....	50.0
1,875	160	Moscow (RCZ).....	U.S.S.R.	100.0
1,875	160	Brasov (tests)	Roumania	20.0
1,935	155	Kaunas	Lithuania	7.0

How the Foreigners Are Coming In

By Jay Coote

IN anticipation of any mystified knob twiddlers who, on tuning their sets between December 13-16, failed to pick up Radio Strasbourg, may I inform them that the station was off the air from G.M.T. 13.15 on the former, until 16.00 on the latter date, to permit the engineers to make essential alterations to the plant? On December 17 you should have noted an improvement in signals.

◆ ◆ ◆

From the queries I receive each week, I take it that many enthusiasts must stay up all night to pick up North and South American transmissions, and I wonder whether towards 5 a.m., they think of turning to some of the European transmitters. If they do, they will hear Prague's famous cock-crow, which is now being imitated and even embellished by the new opening signal put out by the Latvian stations to awaken the sleepy heads and drag them out of bed for the daily physical jerks.

◆ ◆ ◆

Tune in to Madona or Riga and enjoy the short farmyard "song scena" which acts as a prelude to the early morning gymnastic course. Whether it is an effective alarm or not I cannot say, but at least it is a novelty for the town dweller.

◆ ◆ ◆

The great event of the week under review has been the launching on the ether of the new Budapest high-power station. There appears to be little doubt whatever of its power in view of the volume at which the broadcasts have been received since the opening date.

Short-wave fans will be interested to learn that an S.B. was also carried out through HAT2, Szekesfehervar (Hungary) on 43.86 metres, and, as a matter of fact, it is largely through that channel that I heard the programme. Although this was only an experiment, the broadcasts will frequently be made on the short wavelength in order to allow Hungarians abroad to keep in touch with their homeland.

Budapest, with the opening of its new station, also appears to have retained its old interval signal, although there has been a question of adopting something more closely connected with the country's history.

◆ ◆ ◆

Under the Lucerne Plan, Belgium was allotted three channels, one of which, 233.5 metres (1,285 kilocycles) she must share with Greece. So far only two of the wavelengths are used for Brussels Nos. 1 and 2, but as some of the German Nazi broadcasts are specially destined to the Eupen-Malmedy districts, which became Belgian after the Great War, the Government is seriously considering the installation of a 7-kilowatt station in that region, through which transmissions could be made in the German language.

◆ ◆ ◆

In regard to the numerous private stations operating in Liége and Hainaut, no decisions have yet been taken, but from January 15 they will be compelled to work on a common wavelength, an alteration which is likely to cause considerable mutual interference.

Sets of the Season Tested

H.M.V. Super-het Portable

WE can pay this new set no greater compliment that to say that it does not sound the least like one. The quality, the volume, the whole effect, is very much above the average. Indeed, more than one member of the staff, hearing the set working during our tests, has mistaken it for a mains-operated model.

Here you have a six-valve super-het portable, with eight stages altogether, driving a moving-coil loud-speaker. The ample volume available is due to an improved system of quiescent push-pull. A big feature of the circuit is the self-adjusting volume control.

First looks at the portable are enough to convince anyone that the much over-worked term "de luxe" is fully justified. The figured walnut cabinet is designed on simple lines, devoid of every sign of frills. Even the usual carrying handle has been omitted. Recesses are provided in the sides, so that the cabinet can be gripped for occasional transport.

The makers are interpreting the idea of a portable in the liberal sense—transportable, self-contained, movable from one room to another. Which is, of course, the only sensible way to think of a portable, batteries being the weight they are.

Two views of the H.M.V. Super-het A.V.C. Portable Grand

There seems to be nothing missing from this portable. It is, as the makers say, a miniature edition of their most expensive 95-guinea machine. There is, for example, a well-engraved tuning scale, with medium and long waves well marked in addition to main foreign stations. The dial is illuminated and very easy to read.

Looking inside the cabinet, we behold a first-class chassis design. We see also the neat fixing of the high-tension battery combined with the grid bias, and the accumulator for the low-tension supply. These batteries are behind the permanent magnet moving coil loud-speaker—which, by the way, is one of the latest types, bringing out a wide range of frequencies.

Brief Specification

Makers : The Gramophone Co., Ltd.
Model : 462.
Price : £15 15s.
Valve Combination : Super-het sequence, with six valves and metal rectifiers. Q.P.P. output.
Type : Self-contained portable.
Remarks : The best quality portable we have ever tested.

Returning to the front of the set, the simplicity of the control is easy to see. There are only two main control knobs. The left-hand knob is for volume, with a super-imposed switch knob for the combined wave-change switching and battery on-off. The positions of this knob are clearly marked.

The right-hand knob is for tuning, with a fine-tuning auxiliary control fitted concentrically to the main control. It is a great engineering feat to have combined the tuning with the oscillator control in a portable.

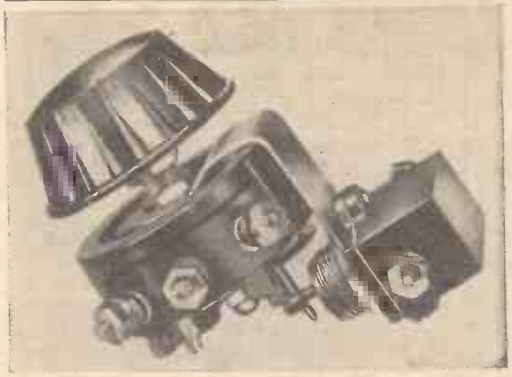
So far we have dealt with the set in a general way. The details would take more space than we can spare to do them justice. Some idea of the work put into the design can be gained from the fact that there are 1,445 different parts in the set, involving 938 tests from start to finish.

A few words on the circuit will interest technical readers: Separate frame aerials are used for medium and long waves. These feed an S21 screen-grid valve acting as high-frequency amplifier. The amplification of this valve is controlled by the dual Westector in the second detector circuit, thus giving self-adjusting volume control.

Continued on page 1142

Conducted by J. H. Reyner, B.Sc., A.M.I.E.E.

We Test for You



Combined volume control and on-off switch made by Sovereign

SOVEREIGN COMBINED VOLUME CONTROL AND ON-OFF SWITCH

THIS Sovereign component has obviously been designed principally for use with battery receivers. For example, the on-off switch, which is of the toggle type, has three contacts which are shorted together in the "on" position and are completely isolated in the "off" position.

The switch is suspended from the main control by means of a small metal bracket and is operated by a pin fixed to the moving arm of the volume control. The volume control itself is of the composition type, the moving contact being a swash plate which is pressed into contact with the element by means of a normal type spring arm.

Test Results.—The rated value of the resistance element was 50,000 ohms and when measured this was found to be sensibly correct. The operation was very smooth, giving a good, definite "off" position. The component is, of course, arranged for single-hole fixing and hexagonal headed terminals are provided for all connections.

Makers: Sovereign Products, Ltd. Price: 4s. 6d.

HELLESEN ELECTROLYTIC CONDENSERS

THESE condensers are of the dry type, which is very convenient for situations where the peak voltage is under adequate control and is always in the same direction. They are similar in principle to the wet type of electrolytic condenser, but the two sets of foils are separated by a moist gauze instead of an actual liquid.

The whole assembly is sealed in a waxed cardboard carton and can be mounted in any position desired.

It is necessary to ensure that the peak voltage of the condenser is not exceeded, but this applies to any paper condenser, while the smaller size of the dry electrolytic type necessitates a material reduction in the losses so that they have an efficiency which comes within reasonable distance of the paper type.

Two samples were actually submitted for test, one a 4-microfarad 500-volt peak condenser, which measured 4⅜ in. by 1⅛ in. by ¾ in. Connections are brought out by two flexible strips coloured red and black for positive and negative. The second sample was a 4+4 microfarad 300-volt peak, which is remarkably compact. It only measured 1¼ in. by 1¼ in. by 2⅜ in. long.

Test Results.—The condensers were checked for capacity and were found to be up to their rating, the actual figure obtained being 3.8 microfarad. The leakage current was measured at the rated voltage and was found to be only .15 milliampere, indicating the high efficiency of the condensers. They represent remarkable value as regards compactness—less than ½ cubic in. per microfarad in the case of the 4+4-microfarad condenser.

Makers: Hellesens, Ltd. Prices: 4 microfarad, AD, 3s. 6d.; 4 + 4 microfarad, type A D, 4s. 6d.

HYDROLOID LOUD-SPEAKER PAPER

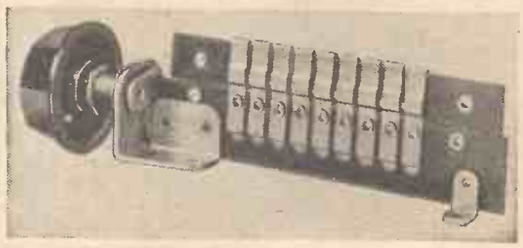
THIS paper, which is known as the Hydroloid type C4, has been specially prepared for the construction of loud-speaker diaphragms. There are probably a considerable number of amateurs who still make their own experimental loud-speakers, and they should find this paper of great use.

Test Results.—The paper was made up into the form of a diaphragm and tested out in conjunction with a good moving-iron drive. The overall results obtained were definitely good, and the paper can be recommended. The thickness is approximately 10 mils and the paper is very easy to use.

Makers: Hydroloid, Ltd.

UTILITY TRIPLE-POLE DOUBLE-THROW SWITCH

WILKINS & WRIGHT, LTD., have brought out a very ingenious flat switch which will appeal to constructors who wish to save space and simplify layout. Essentially the switch consists of two flat strips of bakelised paper. Riveted to one strip is a series of flexible contacts, while the other strip contains metal inserts which bridge certain of the contacts according to its position.



Utility's triple-pole double-throw switch

This second strip is fixed to the first by two small links, one of which carries an extension engaging with a rotary movement, so that by turning a knob the whole strip moves backwards and forwards and changes over the contacts between the various strips.

Two of the new Hellesen electrolytic condensers

The contact strips are long and are bent right round the moving strips, thus giving the effect of a very long and springy contact.

The model submitted, which contained nine contacts, was 4¼ in. long, 1⅜ in. high, and ¾ in. wide.

Test Results.—The motion of the switch provided was particularly smooth and easy, and the contact was good in every case.

The sample tested was a three-pole double-throw switch and a simple movement of the knob through about 45 degrees gave an effective changeover on all the circuits.

If we have a criticism, it is that the groups of contacts are rather close together, so that if one group was included in each of several high-frequency circuits there might be some difficulty from capacity coupling.

Makers: Wilkins & Wright, Ltd. Price: 2s.

Test Methods Explained

Electrolytic Condensers

ELECTROLYTIC condensers require special tests for capacity, owing to their construction. For instance, in one common method of testing the condenser is charged up and is then discharged through a special form of galvanometer, when the amount of discharge current can be used to estimate the capacity.

This is not practicable in an electrolytic condenser, because there is always a small leakage current flowing and the condenser will therefore not hold its charge for any length of time.

An alternative method is to apply an alternating voltage either at power frequencies (or at speech frequencies) across the condenser and to measure the current flowing through it. This, again, is unsatisfactory because most electrolytic condensers are so constructed that they will only stand voltage in one direction, so that an alternating voltage in which the direction reverses periodically cannot be used as it would damage the condenser.

In actual practice condensers of this type are used in filter circuits where there is a steady voltage and the action of the condenser is to smooth out the fluctuations. The best method of test, therefore, is to copy these conditions as far as possible. An alternating voltage is applied across the condenser but in series with this is a D.C. voltage from a battery of a value greater than the maximum value of the A.C. applied so that the voltage actually on the condenser never reverses.

The voltage across the condenser is measured by an A.C. voltmeter, but to allow for the steady voltage a "bucking" battery is included in this voltmeter circuit which is adjusted before the test commences so that the voltmeter reads zero.

On the application of the alternating current, therefore, the voltmeter reads the A.C. volts across the condenser and the current through the condenser is indicated by the milliammeter, and from these readings, with a knowledge of the frequency of the current, the capacity of the condenser can be estimated.

New Kit Set

MOST constructors have heard of Radiopak tuning units, made by British Radiophone, Ltd. Now this firm announces a new and ambitious kit set based on a super-het Radiopak.

The set is known as the Matched Perfection Seven and, of course, has seven valves; it is battery operated. Special features are the incorporation of the new R.F. Super Radiopak, two Westectors, automatic volume control, and pentode output. Tuning is done by a single knob.

Full details of the set, together with a full-size blueprint, can be obtained from British Radiophone Ltd., of Aldwych House, London, W.C.2, provided 3d. in stamps is sent to cover postage.

Short-wave Notes

By Kenneth Jowers

ON the new 7-metre super-het that I have just constructed I have dispensed with the usual band-pass intermediate-frequency coils to make quite sure that there is no frequency cut-off so that it will be suitable for television. Actually, my intermediate-frequency is 1,700 kilocycles. I have constructed coils in solenoid fashion on 2-in. formers and fitted in the top a pre-set condenser so as to trim them easily.

The intermediate-frequency stages are very flatly tuned, which is just what is wanted for these ultra-short wavelengths. The first detector is a normal leaky-grid, but the second detector is anode bend, actually a screen-grid valve, which is then resistance-capacity coupled on to a steep-slope triode.

This is an ideal set for television.

◆ ◆ ◆

Changed Transmission Schedule

Sunday afternoon radio. Since December 11 the radiation times of W3AXL in Boundbrook, U.S.A., have undergone slight revision. The first programme will be radiated at 2 p.m. and will continue until 7 p.m. The wavelength used is 16.87 metres.

◆ ◆ ◆

Some few weeks ago I remarked how easy it was to pick up the transmissions emanating from the trawlers in the North Sea. Since then these transmissions have been getting steadily worse. Over the week-end I was testing a commercial super-het that tuned down to below 200 metres and picked up several calls from trawlers miles off the official waveband, using language far from the drawing-room variety. Just to see what was happening I switched on the short-waver.

The official wavelength for trawlers is 164 metres, but from personal experience that seems to be about the only wavelength that they don't use. They are equipped with portable gear that can be used over a wide frequency band—I have heard them as low as 120 metres and as high as 180 metres.

Why aren't these transmissions policed by the authorities as are the amateur bands? Any amateur putting out stuff like this would probably lose his licence. I suppose that little will be done about it until they start to interfere with some of the important services; then there will be a general clean-up.

◆ ◆ ◆

Varying Conditions

During the past few days I have noticed a curious variation in conditions below 20 metres. A good example of what I mean is W3XAL on 16.87 metres. A little after 2 p.m. signal strength has been between R3 and R4, which is quite good for that time of the day. As all of the usual stations could be heard at fair strength I always consider that by 3.30 p.m. the bulk of them should be heard on the loud-speaker but, contrary to the usual run of things, signals, although increasing a little, got weaker and finally dropped to R1-R2.

These results do not apply to the 25-metre band for W8XK has been coming over at good loud-speaker strength early in the evening.

◆ ◆ ◆

A correspondent in Cornwall has some very interesting results to report. HC1DR was picked up on a commercial one-to-two valve receiver at R6 and held between 10.25 and 11 p.m. This is a very fine performance as Quito (HC1DR) is an experimental station on a wavelength of 47 metres using 500 watts.

My correspondent also reports reception of HVJ, the Vatican station, at R7. Personally, HVJ is a very difficult station to pick up; it just shows what a big difference a matter of 200 miles will make.

Cont. on page 1044

Listeners' Letters

DECRYING THE "FOREIGNERS"

To the Editor, "Amateur Wireless."

SIR,—Your contributor E. H. Robinson, in the course of his comments on Continental programmes (page 1053 of December 9), stated that he is not "crabbing" distant listening; yet goes on to express the opinion that "the number of distant stations which are *worth listening* to, on any particular night, is very limited."

This is by no means the first time that we have been told so and, since the beginning of long-distance facilities, we have constantly been assured that the "foreigners" are not worth while.

It would be interesting to hear what your readers think; and constructors of sets, especially designers, with a view to sensitiveness and selectivity.

Surely super-hets are not bought because they will "bring in" the Regional and National stations without interference?

This, and more, will the two-valve set do; but it will *not* "get" one of those delightful programmes from Trieste, without the National "butting in."

On this question the B.B.C. has a humorously incongruous mind; for while, in arranging station wavelengths and kilowatts, it has never had the slightest regard for the long-distance listeners, it publishes a journal expressly for those who prefer foreign programmes!

L. LUMLEY.

Hendon, N.W.4.

THE EMPIRE STATIONS

SIR,—I have just read your article in AMATEUR WIRELESS of October 28 under "News from Broadcasting House"—"Paying for Empire Stations"—and feel bound to reply in the interests of such listeners as I.

The Empire transmissions are coming over to us remarkably well. I have a four-valve receiver which was in operation months before Empire transmissions were started, and is, as wireless sets go to-day, old-fashioned, yet reception on 25.28 metres fills the whole house on a good night.

Do the B.B.C. really expect broadcasting to become popular in India with an import duty of 50 per cent. on all wireless parts and dealers charging their commission on the gross price? For example, a set costing Rs.200/-+ 50 per cent.=Rs.300/-+dealers profits= Rs.350/-. Insurance, packing, freight, coolie charges, etc., will bring it up to about Rs.400/-. Can you expect "the man in the street" to be interested? A copy of "A.W." costs me 14 annas, with postage and postal collecting charges.

It makes me angry to see the way the home listeners are catered for, a new set every week and hundreds to choose from, whereas the colonial listener has probably half a dozen to choose from and seldom, if ever, is a reasonably priced reliable short-wave set featured in any of the wireless magazines.

Even if there was it would not reach many of us (there are no newsagents' shops here, you know) who left the Home Country ten years ago.

There must be countless who have never heard a wireless programme and haven't the foggiest notion what it is all about. Why doesn't "A.W." feature a really good short-wave set incorporating all the latest improvements, bearing in mind that thousands like myself have no mains and must rely entirely on batteries, and send out a free copy and an order sheet to every European in India?

Also bring pressure to bear on the Indian Government, through the B.B.C., with a view to getting the import duty reduced or even abolished. There are no wireless manufacturers here to protect. I wonder how popular wireless would be in England if low-tension batteries had to be sent 365 miles by train for charging!

Empire transmissions must continue on the short waves for direct contact with the listener. Let them relay for the cities, but the European in the Mofussal will not benefit thereby and surely it is he who is cut off almost entirely from his own kind who will appreciate an English programme most, direct from his own country.

What is England's strength? It's Empire! Then let's have a little more encouragement for the direct short-wave listener.

A. E. PASH.

Kalimpong, Bengal.

H.M.V. Super-het Portable Grand

Continued from page 1139

Another S21 valve is used for the frequency-changer stage, which is followed by the intermediate-frequency amplifier—a VS2 variable-mu, which is also controlled by the Westector circuit. The remaining half of the dual dry rectifier is used for the second detector. Then comes a low-frequency amplifier stage, an HL2 valve, in Q.P.P. coupling with the two PT2 pentode output valves.

For a portable giving such fine quality and volume the consumption from the batteries is commendably low. The low-tension current, including that taken by the lamp illuminating the tuning scale, is .86 ampere. The high-tension current depends, of course, on the volume, but we can bear out the makers' figures of 6 milliamperes total current on the locals, and 9 milliamperes quiescent—that is, when not tuned to any station.

As soon as we operated the de-luxe portable we realised its admirable quality. The locals came in with such full body that it was difficult to believe we were listening to a battery set.

At night the sensitivity is great. There is no trouble about logging all the main foreigners in spite of the fact that only a frame aerial is used inside the cabinet. During daylight such stations as Langenberg are available at fair strength.

The self-adjusting volume contro works amazingly well. By twisting the set so that the frame is at right angles to the incoming waves, that is, at the minimum frame point, you can hear the background come right up, indicating that the high-frequency amplification is increasing as the signal input decreases. All but the worst offenders came through without real fading, many foreigners being held for half an hour or more without a fade-out at all.

No Station Overlap

The selectivity is first rate. There is no overlap between stations separated by the requisite 9 kilocycles, and even the locals are tuned dead out in favour of their adjacent foreigners.

This portable has been tested out under all sorts of conditions, in town and down in the country. It has come right up to scratch every time. Everyone who has heard it has commented on the really beautiful tone.

When a member of the staff took the set down into the country—to Haywards Heath, Sussex, actually—he was intrigued to find that his host was using a 95-guinea H.M.V. radio-gramophone.

Here was a chance not to be missed for a real comparative test. The house-party unanimously agreed that the *de lu*e* portable gave a miniature performance of the big job.

This is a very great compliment to the portable, as anyone who has heard the large and expensive radio-gramophone will readily agree.

Potted Biographies—14

Mabel Constanduros

Not only is Mabel Constanduros a well-known broadcaster, but she also plays straight drama on the stage. Here she is ready for the part of Anne of Cleves

OVER coffee the other afternoon I had a chat with Mabel Constanduros. She told me she was one of a family of seven born in South London. The reason she can speak the Cockney dialect is because she was encouraged by her father to study it. Perhaps that is also the reason her ordinary speech is free from it.

As a child, Mabel read anything she was allowed to, but failed to persuade her father to let her train for the stage. It was not until after her marriage (she is Mrs. Constanduros) that she trained at all. She then began writing monologues, more or less for her own amusement.

As early as 1925 she applied to the B.B.C. for an audition. She managed to impress R. E. Jeffrey enough to secure for herself a place in the first B.B.C. Repertory Company. She then met Michael Hogan, with whom she was acting in a West End show. Between the last rehearsal and the first performance they went out to have a meal together, and decided to write in collaboration.

The result was a three-act mystery play which enjoyed considerable success. In the meantime Mabel had got away with her Buggins family. The only trouble was that she was playing all the parts herself. There was Ma Buggins, the little Bugginses, and Grandma; but no Father Buggins—unless by implication. Grandma put in her observations just as she does now, but Father did not appear as an actual character.

Michael Hogan eventually agreed to play the part of Father, and the scenes became as you are accustomed to hear them—a true picture of a type that undoubtedly exists.

Mabel has written a good deal, one way or another. She has published a number of one-act plays, a book of tales for children, and also short magazine stories.

She has a cottage in Sussex and does her best to spend a day or so in it occasionally. I was interested to find her devoted to history, but not surprised to hear that in the course of a year she receives many letters from listeners. These she answers personally.

I ended my interview with her by asking how Grandma was. She replied in the "voice" (for the execution of which she twists her upper lip), and informed me Grandma liked cream in her coffee. Fine old lady, Grandma! I am glad to have met her. W.-W.

Postcard Radio Literature

Here "Observer" reviews the latest booklets and folders issued by well-known manufacturers. If you want copies of any or all of them FREE OF CHARGE, just send a postcard giving the index numbers of the catalogues required (shown at the end of each paragraph) to "Postcard Radio Literature," AMATEUR WIRELESS, 58/61 Fetter Lane, E.C.4. "Observer" will see that you get all the literature you desire. Please write your name and address in block letters.

Stop Those Radio Noises

MANY people have been trying to do so for quite a long time; but then they have never heard of Radioformer. You must have this leaflet. It tells you how to eliminate static noises from your set with the Radioformer and how it does so. **114**

Extension Loud-speakers

If you are thinking of buying an extension loud-speaker make sure you read the leaflet on the Wharfedale before you finally decide. I am sure you will like them. **115**

For Short-wave Enthusiasts

Are you "short-waving" this winter? You can do so without altering your set with an Eelex converter, providing your set can be tuned to 1,000 metres. Get this catalogue, you'll be a short-wave fan yet! **116**

A Helping Hand by Claude Lyons

A really useful catalogue has come from Claude Lyons Ltd. Every component listed is accompanied by useful text matter and illustrations to show the experimenter how it should be used. The products listed are of all sorts; potentiometers, hum-dingers, fixed resistances, switches of every sort, mains gear, condensers, and even microphones are included. Mr. Lyons tells me that he will send a copy of his catalogue to any reader who cares to apply for one through this free service. **117**

Good Mains Gear

I have been looking through Parmeko's list of mains transformers, chokes, loud-speakers and sundry components. There is a mains transformer for every purpose and they are well made. Rather on the expensive side, perhaps, but well worth it because a Parmeko job never lets you down. **118**

PREPAID ADVERTISEMENTS

THREEPENCE PER WORD, minimum charge THREE SHILLINGS. DEPOSIT SYSTEM.

As the publishers cannot accept responsibility for the bona fides of advertisers in this publication, they have introduced a system of deposit which it is recommended should be adopted by readers when dealing with persons with whom they are unacquainted. It is here explained.

Intending purchasers should forward to the Publishers the amount of the purchase money of the article advertised. This will be acknowledged to both the Depositor and the Vendor, whose names and addresses must necessarily be given. The deposit is retained until advice is received of the completion of the purchase, or of the article having been returned to and accepted by the Vendor. In addition to the amount of the deposit, a Fee of 6d. for sums of £1 and under, and 1s. for amounts in excess of £1, to cover postage, etc., must be remitted at the same time. In cases of persons not resident within the United Kingdom, double fees are charged.

The amount of the Deposit and Fee must be remitted by Postal Order or Registered Letter (Cheques cannot be accepted), addressed to

"Amateur Wireless," Advertisement Department, 58/61 Fetter Lane, London, E.C.4.

REPAIRS to Loud-speakers, Transformers, and Headphones. 4/- each; Blue Spots, 5/-. Moving Coils a speciality. Cones fitted, Eliminators and Sets quoted for. Satisfaction guaranteed. Prompt service. Inquiries invited. Terms to trade.—Loud-speaker Repair Service, 5 Balham Grove, London, S.W.12. Battersea 1321.

CHARGING WITHOUT MAINS!—Thousands are charging their own accumulators, why don't you? "Tonic" trickle-charger kits keep 2-volt accumulators fully charged. Ideal for remote districts. From 7/-, postage 9d. Full particulars, stamp.—Williams, Netherend, Cradley, Nr. Birmingham.

GRAMOPHONES, Radiograms, Motors, Arms, Pick-ups, Loud-speakers, Horns, Springs, Needles, Repairs, cheapest. —Catalogue, Regentem, 120 Old Street, London, E.C.1.

INSTRUMENT AND RESISTANCE WIRES. Transformer and Choke Stampings. Insulation. Lists free.—Lumen Electric Co., Scarisbrick Avenue, Litherland, Liverpool, 21.

ANY RADIO SET, Kit, or Gramophone Part at bottom price or H.P. Catalogues free.—A. W. Burt, 185 High Street, Deptford, S.E.8.

WANTED.—Good Modern Wireless Parts, Sets, Eliminators, Meters, Valves, Speakers, etc. Spot cash waiting. Send or bring. We pay more than any other dealer. Open 9-8.—University Radio, 142 Drummond Street, Euston, N.W.1.

HUNDREDS REAL UP-TO-DATE BARGAINS.—Clear cheap. List.—Simmons, 9 Ilfracombe Avenue, Southend-on-Sea.

NEW AND USED RADIO COMPONENTS.—Cheap for cash. —Arlin, 44 Ranelagh Road, Westminster, S.W.1.

T30 ACCUMULATOR CHARGERS, ½ amp., 2-6 volts, in ventilated metal case with mains flex (Westinghouse rectifiers) 7 days' trial, 13/11, postage 6d. 1½ amp., 21/- —W. Arden Agency, Wollaston, Wellingborough.

OAK CABINETS, good finish, hinged lid, all sizes to clear from 7/6 C.P. Radio Catalogue, 1/-.—Gibson, 99 Burnley Road, Ainsdale, Lancs.

LOUD-SPEAKERS, TRANSFORMERS.—Any make promptly and efficiently repaired, 3/6. Satisfaction guaranteed.—Brieze, Clapper House, Morden, Kent.

SUPER "DIRECTOTONE" KIT BARGAINS.—Remarkable offers to home constructors. All parts guaranteed. Every component carefully tested. Straight 2-valve kit, 14/6. Straight 3, 17/6. S.G.3, employing 2 H.F. stages, 24/6. Also the new S.T.500, 66/6. All carriage paid, cash or C.O.D. Large quantities of radio parts at revolutionary prices! 2d. stamp brings lists of these with particulars of our Special December Snip!—The Direct Trading Company, 65-66 York Terrace, Baker Street, N.W.1.

INFORMATION BUREAU

Will every querist please observe the following revised rules?

Please write concisely, giving essential particulars.

A **fee of one shilling** postal order (not stamps), a stamped, addressed envelope and the coupon on the last page must accompany all queries. Not more than two questions should be sent at any time.

Slight modifications of a straightforward nature only can be made to blueprints. For more serious alterations the minimum charge is 2/6.

Blueprints supplied by us will be charged for in addition, but of course, readers may send their own blueprints for alteration.

Modifications to proprietary receivers and designs published by contemporary journals cannot be undertaken. Readers' sets and components cannot be tested by us. Queries cannot be answered by telephone or personally. Readers ordering blueprints and requiring technical information in addition should address a separate letter to the Query Department.

We do not answer queries in cases where the fee is omitted.

Queries should be addressed to the Query Department, "Amateur Wireless," 58/61, Fetter Lane, London, E.C.4.

LET US QUOTE FOR "A.W." SPECIFIED COMPONENTS. Eliminators, Speakers, anything radio. S.T.500 components. Keenest prices, guaranteed goods.—Childs', Radio Factors, 29 Moray Road, London, N.4.

5-GUINEA S.G.3 KIT with Valves, Kompact Consolette Speaker Cabinet, Batteries, etc., £4/4/0; Class-B Four Kits, £2/16/0; S.T.500 Guaranteed Kits, £3/19/6; Etherdyne Super Kits, £6/5/0. Keenest prices quoted for Radio Requirements. Old Sets taken in part exchange for 1934 models.—Serviwell Wireless Supplies, 64 Prestbury Road, London, E.7.

WANTED.—Mains and battery valves, also clean surplus components.—Newport Surplus Stores, 24a Newport Court, Charing Cross Road, W.C.2

BANKRUPT BARGAINS.—List free with 3-valve diagram. Special bargain: Burgoyne Class B 3-valve sets complete M.C. batteries, Mullards. Listed £6 10s. My price, £4 17s. 6d. S.T. 300 kit, 35/-; S.T. 400 kit, 45/-; S.T. 500 kit, 52/6. Any kit supplied. Lumophon 4-valve S.G. Class B sets in stock, complete valves, batteries, list 9 guineas. My price £5 17s. 6d. Lumophon A.C. and D.C. mains sets, £8 10s. Amplion A.C. sets in stock at right price. PM.M.C. speakers from 12/6. Triotron valves from 3/6. 1934 B.G. tuners 7/-. All S.T. parts in stock. Class B transformer and chokes from 4/6 each. Iron-cored screened duals, 3/9. Dual screened, 2/6. All the smaller parts. A.C. eliminators from 28/6; D.C. from 12/-. Following secondhand to clear. Cossor 234 set with valves, 37/6. Telsen 6v. Superhet, no valves, 57/6. Macom D.C. motor in table cabinet with pickup; ready to use, 50/-. Telsen screened coils 2/9. Telsen S.W. set, 3v. no valves, 10/-. Large stock. Part exchange.—Butlin, 143b Preston Road, Brighton. Preston 4030.

Short-wave Notes

Continued from page 1141

A station that I often hear at good strength without any trouble is Cincinnati W8XAL on a wavelength of 49.5 metres. Try for him after 11 p.m. just below Daventry GSA. The only difficulty is cutting out GSA.

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The Zeesen transmitters have rearranged their schedules and are now on the air at the following times:—DJA (31.38 metres), 5.30-3.15 a.m.; DJB (19.73 metres), 12.55 to 5.30 p.m.; DJC (49.83 metres), 7.30 to 2.15 a.m.; and DJD (25.51 metres), 12.55 to 7.30 p.m.

As all of these stations are heard regularly, keep these times by you.

◆ ◆ ◆

I have not heard, with any frequency, W2XAD. This may be due to the times they use not being suitable, but all the same, I should like to hear from anyone who has had a different experience. VQ7LO Nairobi has been coming over well of late and giving some very good programmes. The best times are between 6 and 7 p.m.

Do you ever hear the Post Office station at Cairo, Abu Zabal on 29.85 metres? The signal strength is terrific. See if you can log this station—try at Christmas time. It will be radiating the programme from Bethlehem.

FULL-SIZE BLUEPRINTS

When ordering, please send Postal Order, NOT STAMPS. Quote the blueprint number shown below; not the number of this issue."

CRYSTAL SET (6d.)

1931 Crystal Set AW308

ONE-VALVE SETS (1s. each)

B.B.C. One-valver AW387
Portable Short-wave One AW354

TWO-VALVE SETS (1s. each)

Clarion-voice 2 (SG Det, Pen) AW371
Home Station A.C. 2 (D, Pen) AW374
B.B.C. National Two (D, Trans) AW377
Melody Ranger Two (D, Trans) AW388
Full-volume 2 (SG Det, Pen) AW392
"A.W." Iron-core Two (D, Trans) AW395
"A.W." Iron-core Two with Q.P.P. AW396
Consolectric Two (D, Pen) AW403
Screen-grid Two (SG Det, Trans) WM289
A Two for 7 Metres (D, Trans) WM295
New-style Radiogram (D, Trans) WM299
A.C. Quality Gem (D, Trans) WM312

THREE-VALVE SETS (1s. each)

James Push-push Three (SG, D, Q.P.P.) (1/6) AW378
Everybody's Home Radiogram (SG, D, Trans) AW381
Home-lover's New All-electric 3 for A.C. mains (SG, D, Trans) AW383
Our Up-to-the-minute Three (SG, Westector, LF, Trans) AW384
Class-B Three (D, Trans, Class B) AW386
S.S.3 (A.C.) (SG, SGDet, Pen) AW390
"Up-to-the-minute Three" with Class B, 1/6 AW384B
New Britain's Favourite Three (D, LF, Class B) AW394
A.C. Triodyne (SG, D, Pen) AW399
Home-built Coil Three (SG, D, Trans) .. AW404
Fan and Family Three (D, 2LF) AW410
£5. 5s. S.G.3 (SG, D, Trans) AW412
1933 Economy S.G. Three (SG, D, Trans) .. WM306
Harris Ethergram (SG, D, Pen) WM308
A.C. Calibrator (SG, D, Pen) WM309
Narrow-pass Three (SG, SG Det, Pen) .. WM314
£6 6s. Radiogram (D, RC, Trans) WM318
Simple-tune Three (SG, SG Det, Pen) .. WM327
Tyers Iron-core Three (SG, SG Det, Pen) .. WM330
I.C.B. Three (D, LF, Class B) WM333
Economy Pentode Three (S.G, D, Pen) .. WM337
Three-range Three (SG, D, Pen) WM336
Simplicity A.C. Radiogram (SG, D, Pen) .. WM338
Duo-tune Three (SG, D, Pen) WM341
A.C. Transportable (SG, D, Pen) 1/6 .. WM347
All-wave Three (D, 2 LF) WM348

FOUR-VALVE SETS (1s. 6d. each)

Melody Ranger (SG, D, RC, Trans) with copy of "A.W." 4d. postage AW375
"A.C. Melody Ranger" (SG, D, RC, Trans) .. AW380
Signpost Four (SG, D, LF, Class B) AW398
"A.W." Ideal Four (2SG, D, Pen) AW402
Table Quad (SG, D, RC, Trans) WM303
"Words and Music" Radiogram (2SG, D, Trans) WM307
Home Short-waver (SG, D, RC, Trans) .. WM311
"Words and Music" Radiogram de Luxe (2SG, D, Q.P.P.) WM307a
Empire Short-waver (SG, D, RC, Trans) .. WM313
Merrymaker Super (A.C. Super-het) WM345
1934 AC Quadradyne (2SG, D, Pen) .. WM349

FIVE-VALVE SETS (1s. 6d. each)

James Short-wave Super (Super-het) AW328
Simple Super (Super-het) AW340
The Etherdyne (Super-het) AW406
1934 Century Super (5v. Super-het) AW413
Class-B Quadradyne (2SG, D, Class-B) .. WM344

SIX-VALVE SETS (1s. 6d. each)

New Century Super (Super-het) with copy of "A.W." 4d., post free AW363
New A.C. Century Super (A.C. Super-het) .. AW365
James Super-straight Six (2SG, D, LF, Push-pull WM339

SEVEN-VALVE SETS (1s. 6d. each)

Super Senior (Super-het) WM256
Seventy-seven Super (A.C. Super-het) WM305
Q.P.P. Super 60 (Super-het) WM319

PORTABLES (1s. 6d. each)

General-purpose Portable (SG, D, RC, Trans) AW351
Midget Class-B Portable (SG, D, LF, Class B) AW389
Holiday Portable (SG. D, LF, Class B) .. AW393

AMPLIFIERS (1s. each)

Universal Push-pull Amplifier AW300
"A.W." Record Player (LF, Push-pull) .. AW319
Battery-operated Amplifier AW362
A.W.'s Push-push Amplifier AW376
Class-B Gramophone Amplifier AW391
Universal A.C. Amplifier (3-valve) AW411
Five Q.P.P. Output Circuits WM315

MISCELLANEOUS (1s. each)

"A.W." Trickle Charger AW352
Add-on Band-pass Unit AW359
Short-wave Adaptor for New Century Super .. AW367
Plug-in Short-wave Adaptor AW382
Three Class-B Units AW400
"A.W." Television Receiver, ... AW401

Copies of the "Wireless Magazine" and of "Amateur Wireless" containing descriptions of most of these sets can be obtained at 1s. 3d. and 4d. respectively, post free. Index letters "A.W." refer to "Amateur Wireless" sets and "W.M." to "Wireless Magazine." Address letters:

Amateur Wireless Blueprints Dept., 58-61 Fetter Lane London, E.C.4

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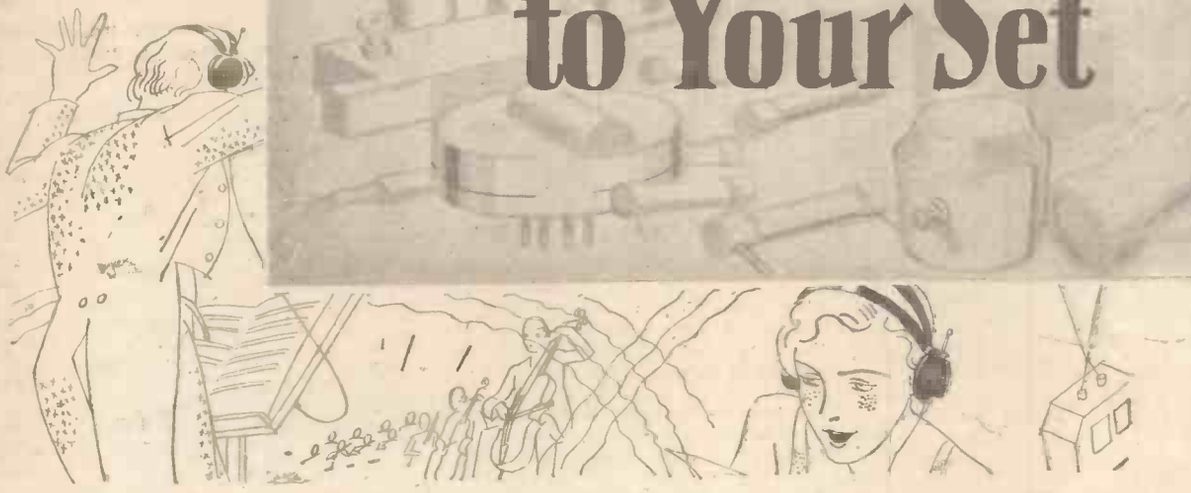
Useful Gadgets to Add to Your Set



CONTENTS of WIRELESS MAGAZINE, JANUARY

FOR THE CONSTRUCTOR

TECHNICAL FEATURES

GENERAL ARTICLES

GRAMOPHONE FEATURES

Since the first days of radio, the word "gadget" has always played a prominent part. No matter how good your present set may be, there is always a simple way of improving reception by the addition of some gadget or another. This interesting article in the January *Wireless Magazine* describes many useful accessories and explains their advantages. For the constructor there are three splendid sets to build. The 1934 A.C. Quadradyne, a Four-valver; the A.C. Transportable, a self-contained Three-valver; and the Battery All-wave Three, which covers two short wave-bands in addition to the normal medium and long waves.

This January issue contains a host of useful and entertaining features that no set owner should miss.