

LIBERTY OF SPEECH BY RADIO! (See Page 547)

Popular Wireless

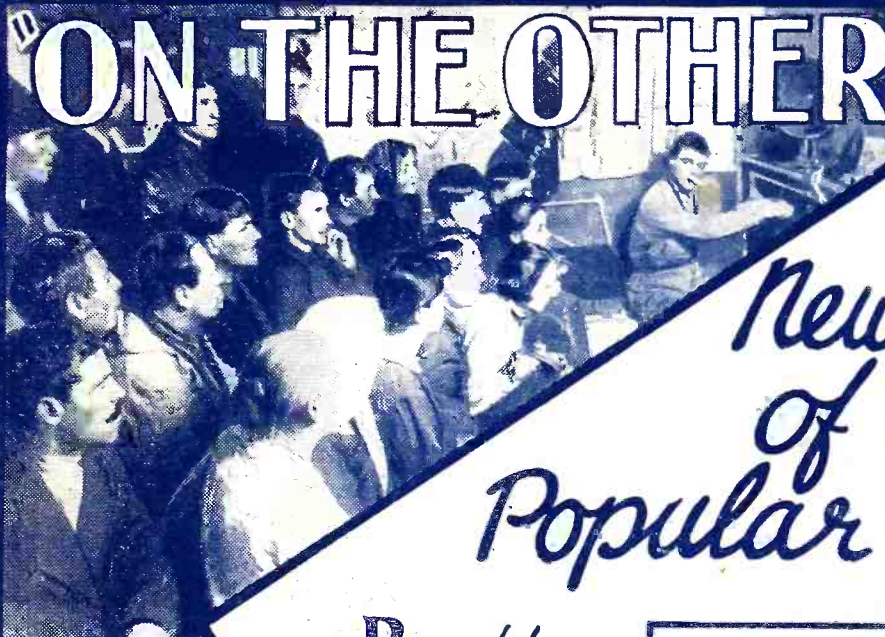
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No. 528. Vol. XXI.

INCORPORATING "WIRELESS"

July 16th, 1932.

ON "THE OTHER SIDE"



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of these
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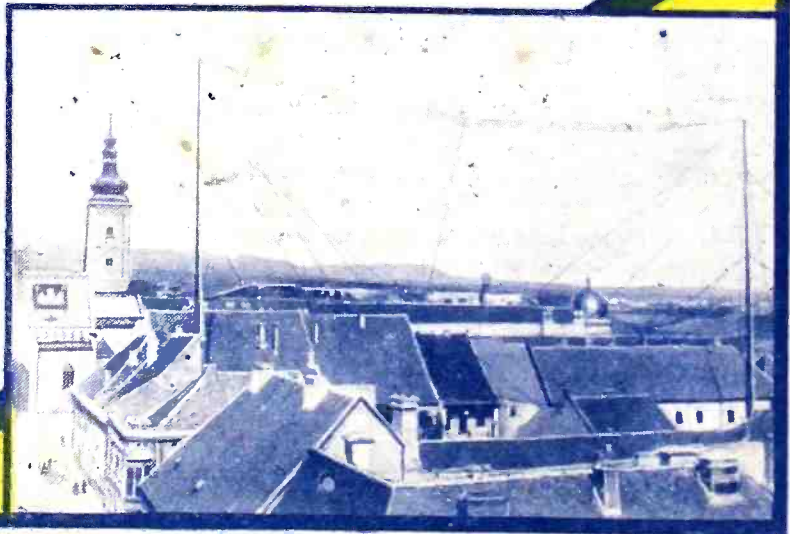
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**NOTES
FROM THE NORTH**

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**LETTERS TO
A YOUNG "HAM"**



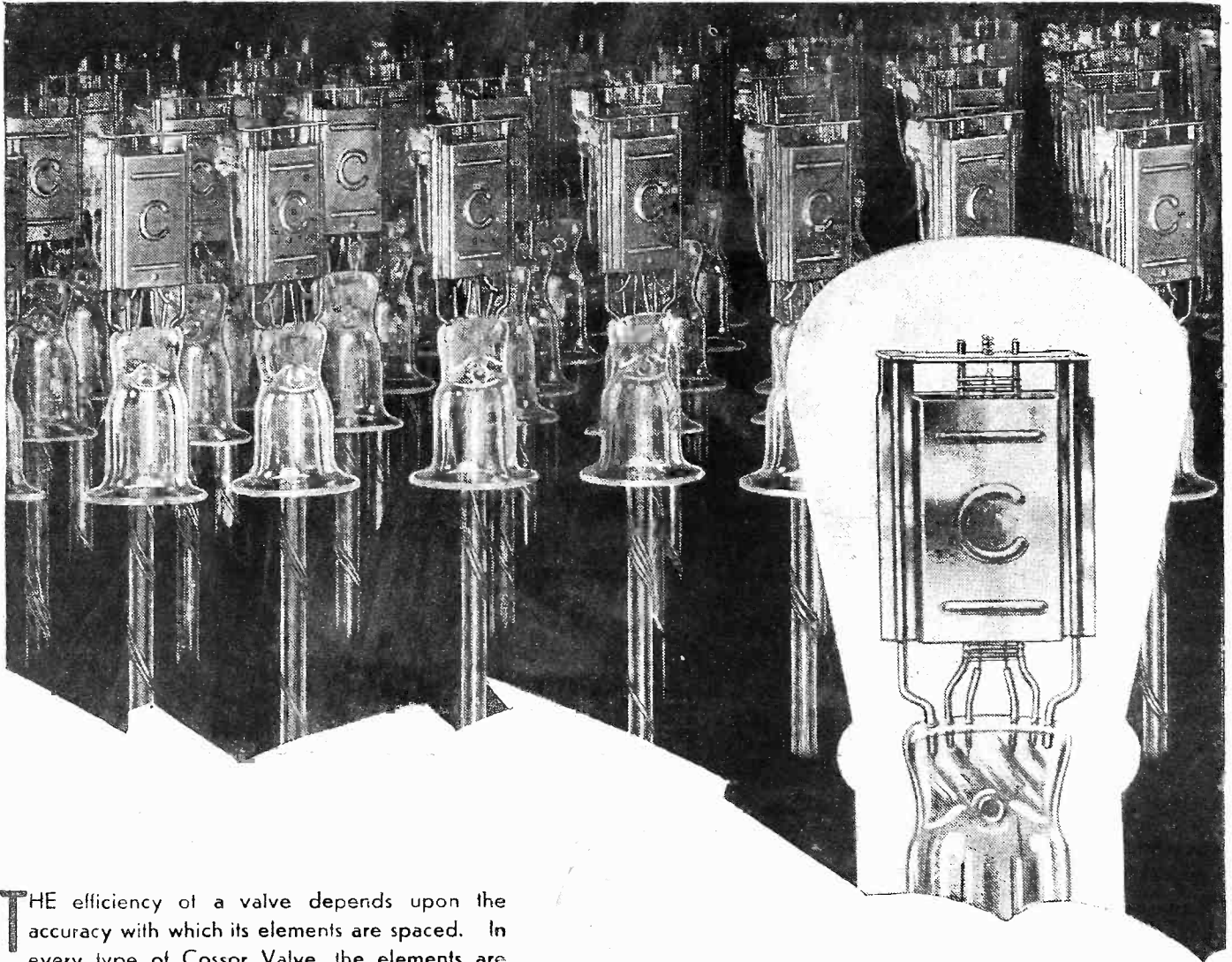
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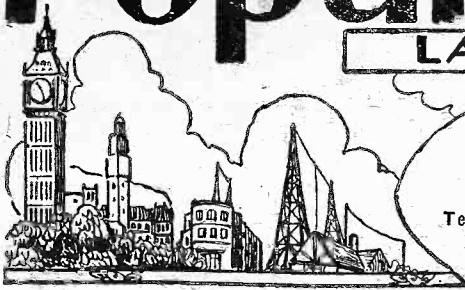
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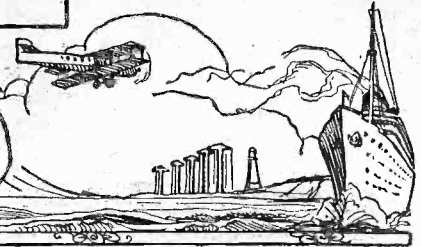
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**MODERN MOHOCKS
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DETECTING DOG**

RADIO NOTES & NEWS

**BASE USES
GOING AHEAD
SEEN IN SUBURBIA
HEARD IN BOND STREET**

An American View.

WHILST on one of my periodical visits to Westminster Abbey, I was privileged to answer a few questions put to me by an American; we walked along Victoria Street afterwards.

He seemed to be a very nice man, full of intelligent curiosity and so well-informed about England that he didn't want to know why people are asked to keep off the Abbey's lawn. He had listened much to English broadcasting at his hotel, he said, and admitted at once its cultural superiority to the American brand.

"But," he added, "whilst most of our folk need culture they don't wish it."

No National Urge.

HE imagined, he said—as we walked—that the three great strata of English society feel their own solidity, are conscious of their own needs and strive towards their own class ideals. For all of this the B.B.C. caters.

But in the States, which is populated by people of so many nationalities, there is not the same concerted, subconscious urge towards a well-defined national culture. Thus, what is, in his view, the best broadcasting system for England, would not be suitable for the States, even though it is of a higher standard. Sound sense.

The Modern Mohocks.

IN the 18th century a lawless band, called Mohocks, existed in London for the purpose of clubbing innocent and well-meaning citizens.

I was reminded of them by the announcement of the formation of the Broadcasting Committee of the Critics' Circle, the object of which is to specialise in brickbat practice, the B.B.C. being the target. If I were Sir

John I should fall back into my bath at Broadcasting House, helpless with laughter at this swarming of the bees—or bricklayers.

Other than Captain Eckersley, I cannot think of very many "radio critics" whose qualifications for the job demand respectful attention.

How many are there who could sway the B.B.C.'s policy a hair's-breadth from its normal course?

It is as well to remember that the ten shillings per annum is not for a licence to receive a guaranteed supply of broadcasting.

The First Luxury Air-Yacht?

PRINCE BIBESCO of Rumania, President of the International Aeronautical Federation, has acquired a passenger-carrying aeroplane fitted as a luxurious air-yacht, with private room and study with two beds, sleeping and living quarters for his suite, a wireless cabin and a dressing room. The aeroplane is German, the motors are French, the radio equipment is English, and the pilot Rumanian. The radio was made at Chelmsford and is suitable for telephony and telegraphy, with a wave-range of 300 to 1,600 metres.

WOULDN'T YOU LIKE TO JOIN IN?



Here is a happy holiday snap of the beach at Brighton, with a portable set handing out the harmony of Henry Hall & Co. But won't they be "wet" batteries when the tide comes in?

Is There a Contract?

NOTICE that a Dundee listener has asked a local newspaper whether he could institute an action for breach of contract against the B.B.C., because he, having bought a set and paid his licence fee, now finds himself "cut off."

What contract did he make with the B.B.C.? The licence for which he has paid authorises him to work a receiver. And the Post Office does not care an empty marmalade jar whether he receives B.B.C. programmes or Morse from Mexico.

steps clean "into the blue." (Did you ever read Wells's "Mr. Polly"?) How often, when I have seen or heard a man I disliked I have desired to say to him: "You were last heard of at Chorlton-cum-Hardy and are believed to be suffering from cerebral debility!"

A Typical Question.

MR. JACOB SHAYMOW, of New York City, asks me to inform him "by mail" why the Government of

(Continued on next page.)

S.O.S. Reflections.

ISN'T it strange that there should be so many folk, with parents and brothers and sisters living, who disappear for years from their kin and do not even reveal their whereabouts? Or is it? May depend on the kin, of course, who may be hard to live with.

A man has his breakfast, lights his pipe—and then

"ARIEL'S" RUNNING COMMENTARY ON RADIO (Continued)

Britain (*sic*) does not commercialise the radio industry. To us, the "radio industry" means the manufacture and sale of radio apparatus, and I may assure Mr. Shaymow that it is a commercial affair; slow, perhaps, but sure.

Perhaps he means, "Why does not the Government give broadcasting over to the unholy power of the commercial sponsor?"

The answer is, "Because the B.B.C. system suits us better than any; because we like to pay a fee and have the privilege of growling at the B.B.C.; because America is sick of radio advertising; because in collaring a hearty rake-off from the licence money the Government *has* commercialised radio."

The Detecting Dog.

THIS is not, as you might suppose, a police dog, but a mastiff or Great Dane. He is called Fritz and was once the property of the ex-Kaiser of Germany.



Mr. F. C. Verk, of Jersey City, now his owner, says that Fritz is a radio set; all he has to do is to connect an aerial to the dog's tail and a pair of telephones to a clip at the dog's neck.

Then the telephones deliver music. Mr. Verk says that he has tried other dogs but they don't work. Not so bad! What about trying Senator Borah? The only other musical dog I have heard of was kept in great luxury by a Jew, because it said, "Oof, oof."

International Broadcasting Union.

THIS Union, during its summer meeting at Montreux last month, re-elected Vice-Admiral (now Sir) C. D. Carpendale, C.B., as its President. It was announced that during the twelve months ended March 31st, 1932, the number of licences in Europe had increased by over two millions. Delegates to the coming world radio-telegraphic conference in Madrid were elected as "observers." A number of other measures designed to further the interests of broadcasting entities and listeners were decided upon.

"To Such Base Uses!"

WHEN the inmates of a certain New Zealand prison began to show a marked desire to study the Scriptures, the Chaplain patted himself on the head; the Governor wondered and smelt rats and things. Then there was a large order for Bibles, duly executed, and the Governor pinched himself. But eventually a miniature radio set was found, nestling between the covers, and there was a general "show down." Radio



parts had been smuggled into the prison, assembled, and concealed in the Bibles. "Give me liberty or give me—radio!"

A Great Convention.

ON June 14th, 15th and 16th Blackpool was painted red—I mean *positive*—by the delegates to the Twelfth Annual Exide Convention. I have remarked before that when things are extra pestiferous I long to be a happy Exide boy, and a sight of the ten pages of programme, which tells of whist drives, dinners, dances, cabaret shows,

"SHORT WAVES"

"Scandal of wireless licence."
Yes, I have always thought the B.B.C. had too much.—"Pictorial Weekly."

"So Joe was the life of the party?"
Yes. He was the only one who could talk louder than the radio."

"The power collected by an ordinary wireless aerial and passed on to a receiving set, is so incredibly minute that the only simple standard with which to compare it is the vastly greater energy used by a small insect," we read.

But we're afraid the B.B.C. might be annoyed if we start comparing them with microbes.

Visitor: "What a quaint accent your children have!"

Father: "Yes, between the talkies and the wireless I don't know what they're saying half the time."

BILLY'S BED-TIME STORY.

Child: Mother, dear, please tell to me Just what is the B.B.C.?

Mother: Darling, 'tis a lovely place. Trimmed with velvet, silk and lace, Like a lordly emperor's seat, It used to be in Oxford Street.

Child: But their programmes are so bad— Auntie says so, too, and dad. Far too many highbrow plays, All with plots designed to daze.

Mother: Yes, dear, but we mustn't scold— All the "mikes" are made of gold.

Child: Is that better, mother dear, Than the tin they used last year? Will the entertainment be Far more fun for you and me?

"Answers."

and all kinds of social jollities, has brought a hot fit of that yearning upon me.

How well these Exide people do things besides making accumulators! Why, they even issued a daily newspaper for the benefit of the delegates, "The Exide Convention Chronicle"; a real, printed, illustrated, four-page affair, fully charged with pertinent, topical, humorous matter.

Going Ahead.

DELEGATES came from all parts of the British Isles and from some ten other countries, including Australia, South Africa and Burma.

It is cheering to note from the opening speech of the firm's Managing Director, Mr. D. P. Dunne, that notwithstanding the prevailing trade depression the turnover of the Company increased during 1931, and that

the sale of "Drydex" batteries had passed all expectations. Bravo! That shows what first-class batteries and service can do.

Seen in Suburbia.

WHILE I was walking to the station after a visit in a south-eastern suburb, I caught sight of a garden scene which reminded me so much of one of Gluyas Williams' cartoons, "The world at its worst," that I stopped to admire it.



A charming family group, helping Father to fix the aerial to a tree. Father, balanced like a "rocking stone" on the top of a pair of steps held by Sister Jane. Mother hovering by with that, "Mind you don't tumble, Henry," look on her face. Boy Brother enjoying it hugely and holding up the end of the wire. Done at last. Father crept gingerly to earth, only to find that the weight and pull of his precious aerial had bent the branch, and it had sagged to within eight feet of the lawn!

Reflections of a Listener.

WHAT a chance the B.B.C. missed in not inviting Mr. De Valera to give a short talk to the audience of his life during his recent visit to London. ("I think your policemen are too cute, begorra!")

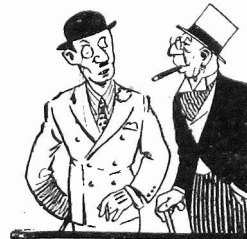
Impudence of the "Radio Times" in publishing a protest against the six wicked "pips" without comment!

A. J. Alan has improved enormously. That Chislehurst yarn was delightful. The prince of story-tellers, the drawling, casual blighter is a triple credit to the unknown genius who discovered him.

Heard in Bond Street.

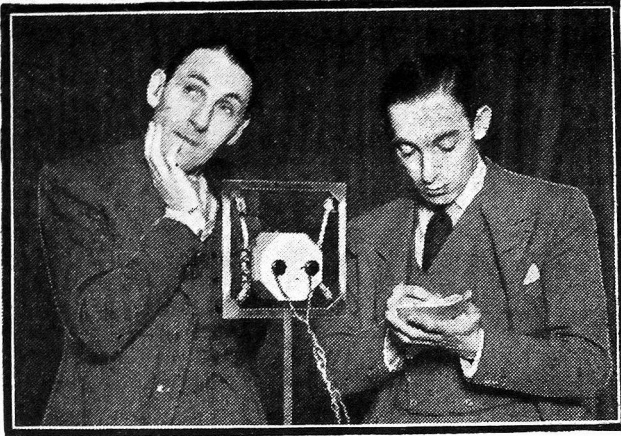
WAITING for the 'bus. Two men got out of a taxi, and stood talking. They were well-dressed and might have been dress-designers or even nothing.

"No," drawled one, "we don't affect a wireless set. Everybody does it—and it's too common. The matah and I are going to revive the magic lantern."



Dee-or, dee-or!
I remember hearing, when I was a boy, a very superior young man give precisely the same reason for his eschewing the bicycle. But, bless 'em, it's only skin deep. That non-bicycle man made a fine name for himself during the War!

ARIEL.



THE B.B.C. AND FREE SPEECH

A straight-to-the-point attack on the B.B.C.'s banning of a speech by Mr. Winston Churchill on the economic situation—with a few remarks on the freedom given to speakers in America.

By LT.-COMMANDER THE HON. J. M. KENWORTHY, R.N.

MR. WINSTON CHURCHILL'S trouble with the B.B.C. raises once more, and in an acute form, the whole question of the functions of this body.

I am not referring here to the B.B.C. programmes of entertainment and education, nor even the news bulletins, but to wireless as a medium for reaching the public and as a means of permitting well-known men and women of varying opinions on politics and economics to express their views. The absolute monopoly of the B.B.C. and its freedom from Parliamentary criticism, unlike the Post Office itself, imposes a peculiar responsibility upon its governors.

Not Playing the Game.

When the Indian controversy was raging last year a series of talks, presumably passed and censored by the India Office, was given by various visiting Indians, and by Englishmen with a knowledge of the East. Mr. Churchill was at that time the leader of a body of opinion, in Parliament and outside,

Are all those who happen to be out of agreement with the Government of the day to be silenced by the B.B.C.? Are they to be allowed only to talk on the mating habits of butterflies? Is the B.B.C. a political organ of the Foreign Office? These are some of the questions raised by Commander Kenworthy in his provocative statement.

which was not negligible. Indeed, his views have since been adopted by the present Government, as he himself has admitted and taken credit for.

But because his opinions were obnoxious to the then Government—and there was no other discoverable reason—he was not allowed to speak over the ether.

We are now in the midst of an acute economic crisis which affects every man, woman and child in this country and the prosperity and livelihood of all of us. Mr. Churchill holds certain views—which, again, are not those of the Government of the day—as to how the crisis should be met and a remedy found. And once more he is banned from the microphone.

His Views are Interesting.

I doubt if there is anyone in public life who has attacked Mr. Churchill more vigorously on the platform, in Parliament, and in the Press, than I have; and he and I agree on very few subjects. But he

is an ex-Chancellor of the Exchequer, and has held a number of other important posts under the Crown.

He is also a Privy Councillor and his views on the needs of monetary reform in order to meet the present business depression are not only interesting, but are supported by a large number of thinking people.

America Did Not Object.

The boycott of which Mr. Churchill complains—and he is not alone—therefore raises a public question of the first importance. The history of this stage of the Churchill episode is entertaining.

The Columbia Broadcasting Company is very active in arranging for prominent Europeans to speak to the American public over their chain of wireless stations from this side of the Atlantic. They have arranged for His Holiness the Pope, Signor Mussolini, the French, British, and German Prime Ministers, and a number of other people of prominence in one sphere or another to give these talks. I myself have given several, speaking from London.

Mr. Churchill was amongst those invited to speak over the Columbia system, which he did; and he gave a talk on the causes of the present business depression, how the slump could, in his opinion, be ended and what monetary reforms are necessary to restore world prosperity. This happens to be the hottest (in the journalistic sense of the word) subject of any to-day. Great interest was shown in the United States.

Mr. Churchill then attempted to give a similar talk to the British public. The excuse for barring him appears to be that the Lausanne Conference was sitting.

Perfectly Harmless.

In view of the actual results of this much trumpeted meeting over reparations and debts and its foregone conclusion, it is difficult to understand how any expression of opinion by Mr. Churchill or anyone else could have done any harm. Everyone knew that international debt and reparation payments would not continue, in any case, and that they are only one of many causes of our present troubles.

It is just possible that Mr. Churchill's talk might have done some good. But no; his views are not orthodox, and therefore he must be banned. Mr. Churchill threatens to make arrangements to speak to the British public from Paris or Brussels, and that is what some of us may come to. But what a reflection on our boasted liberty!

I feel no personal tenderness towards

Mr. Churchill, who can well look after himself; but a question of principle is, as I say, raised. Any of us can be barred, apparently, who wish to speak on any subject where we might express views that are not on all fours with those of the Government of the day.

Last year we had a Socialist Government; this year the Government is predominantly Conservative; next year there may be a Government of some other complexion. Are those who happen to be out of agreement with the Government of the day to be permanently silenced and only allowed to speak on what the B.B.C. governors, in their offer to Mr. Churchill, describe as "non-controversial" subjects?

TEN YEARS A TALKER



Nobody wants to silence Mr. Foster Hewitt, of Toronto, said to be the best sports announcer in the British Empire. He has been before the microphone every day since 1922.

Are we only to be allowed to describe the mating habits of butterflies, or the writings of Chaucer? Is the B.B.C. a political organ of the Foreign Office, or the Treasury?

Taking Away Our Liberty?

It looks very much as though this is one more encroachment by the bureaucracy on the liberty of the subject. They daren't suppress the newspapers, though no doubt they'd like to censor them; and the right of free speech on the platform was won after a long struggle with the all-powerful officialdom of the day.

(Continued on next page.)

THE B.B.C. AND FREE SPEECH

(Continued from previous page.)

But apparently the bureaucrats intend to keep an iron grip on this wonderful new medium of expression and information, and to see that only the views in fashion at the moment shall reach the public. And yet we boast of England as a free country!

The Statue of Liberty.

Some people in Britain are fond of jeering at the Americans and pretending that wealth rules the great Republic on the other side of the Atlantic, and that the Statue of Liberty, at the entrance to New York Harbour, is a colossal joke. There are many features about the American broadcasting which would not commend themselves to the majority of people in this country, and particularly the way it is used for advertising, sometimes in a rather blatant manner.

But as regards expressions of opinion, the two great systems—National and Columbia—allow an open forum. Anyone with anything to say that is of general interest to listeners can go "on the air" in the United States without let or hindrance, or censorship, or even submitting the manuscript of the talk beforehand.

Thus, the American public were allowed to hear this Englishman, Mr. Churchill, on the financial and monetary problems of the day, although we English are not allowed to.

A Free Hand.

When I am asked to broadcast in America the companies never even suggest the subject to me, but leave it entirely to my own choice. I prefer to speak from a manuscript, and did so in the United States; but there was nothing to prevent me from speaking extempore. On one occasion I did so when I found I had not exhausted my time, but had finished my notes!

The Americans are allowed far more liberty in this matter than we in England, the traditional home of liberty.

The only time that the B.B.C. has allowed an open forum has been during general elections, when no parliament is in existence, and when the fate of the Government is in the balance. But in between elections the ban has been very rigid on all views that might not have commended themselves to those who happen to be in temporary authority in Downing Street, and the Civil Service and Treasury officials who are the real rulers of the country.

Like the Spanish Inquisition!

As the B.B.C. is a public corporation and is supposed to be free from political influence, this, I submit, is a highly objectionable state of affairs. Far better to have it under the open political control of the Party in power; because, then, for the very sake of their own opportunities when they are in opposition, the Political Cabinet would probably allow their opponents opportunities of broadcasting on the great subjects of the day.

But to speak of the political independence of the B.B.C. and then subject it to

the dead hand control of the bureaucracy is a state of affairs that should not be tolerated in this twentieth century.

It is too reminiscent of the days of the Spanish Inquisition!

TRACKING TROUBLE

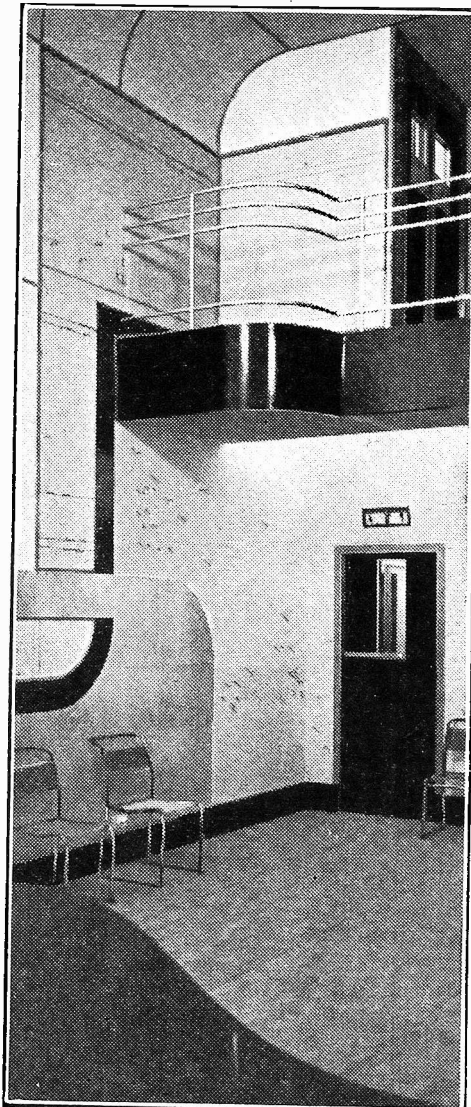
Some useful hints about valves and valve holders.

As a faulty valve holder may be overlooked when conducting tests, remember that the safest way to make sure that a valve is really faulty is to connect its filament legs directly across its accumulator, to which is joined the negative of an H.T. battery, the positive of this going through a milliammeter to the plate of the valve under test.

A good rough and ready test to discover whether an H.F. valve is pulling its weight is to take it out and attach the aerial lead to the lead which formerly went to its plate terminal (usually on the bulb), thus converting the set into a detector with or without low-frequency, as the case may be.

Great care must always be taken when inserting or removing a metallised valve, owing to the liability of a short occurring through the metal coating.

NOW'S THE TIME FOR DANCING



This is the studio at Broadcasting House, from which Henry Hall and his Orchestra play during the less serious hours of the programmes.

A HANDBOOK ON RADIO

The "Wireless Manual" by Jack Frost. 3rd. revised edition. Pitman, 5/-.

CAPT. JACK FROST has a great deal to say to the non-technical listener about wireless in his handbook, the third edition of which has recently been thoroughly revised by Howard Gibbons.

The result of this commendable venture is 197 pages of close print which deals with such widely separated subjects as baffle boards and batteries—pick-ups and potentiometers.

The manual is profusely illustrated with circuit diagrams, valve curves and photographs, and contains a useful bibliography for those who feel the urge to probe deeper into any of the subjects mentioned.

Not the least useful part of the book is the appendix, which contains every possible detail about the leading makes of valves as well as a list of British and continental broadcasting stations.

Capt. Frost is rather apt to let his style run away with him and, as a result we get such a passage as this: "The microphone! Oh, the energy, the time, the effort which is wasted if he loses faith and ceases duty!" Or again, "we are paddling . . . in the fringe of the waves that belong to the Great Unknown of the ether of space."

And his advice to listeners—that they should write and tell the B.B.C. whenever they are dissatisfied with the programmes—is not likely to meet with much favour at Broadcasting House!

But taking it all round, the "Wireless Manual" is a useful little book to have about the house if you are just entering the ranks of home constructors—or if you are feeling the need to "brush up your radio!"

P. C.

USEFUL REMINDERS

IT is imperative that the right filament pin of a metallised valve should go to low-tension negative. If it does not you run the risk of either shorting the L.T. accumulator or else burning out all the valves in the set.

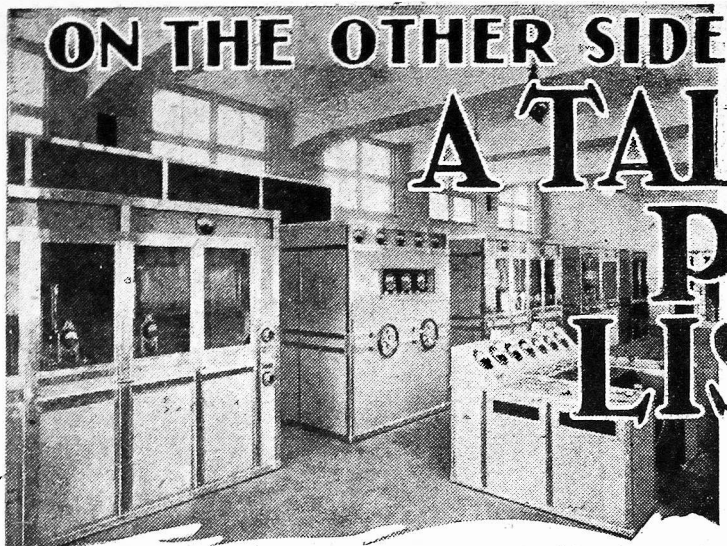
The first may happen when the valve is an S.G. and passes through a hole in a metal screen. The valve coating will be L.T. positive if the filament is connected up wrongly, and the screen L.T. negative, so the valve has only to touch the screen to cause the short.

The other trouble would happen if an H.T. lead such as that going to the terminal on the top of an S.G. valve were to touch the metal coating.

Testing Jelly-Filled Cells.

Time and time again we are told that a voltmeter test is not enough for an accumulator and that a hydrometer should be used as well. But what about those accumulators where the electrolyte is in jelly form?

For testing such accumulators it is necessary to have a load across them when reading the voltage. A motor car bulb of the 6-volt type makes a good load, and should be connected in parallel with the voltmeter.



ON THE OTHER SIDE A TALK WITH A POLISH LISTENER

When you tune-in to Warsaw, Wilno, Lwów, or Katowice, do you ever wonder what the people are like who have these stations for their "locals"? This week a listener in Poland tells you something of broadcasting conditions in his country—the "station societies," the instalment plan for licences, and the large number of "pirates"!

"BROADCASTING in our country," said a Polish friend thoughtfully, "centres around Warsaw.

"We are very proud of Warsaw. It was once the largest broadcasting station in Europe—perhaps in the world.

"I speak as a keen patriot when I say that Broadcasting, Warsaw and the Polskie Radio concern have made a considerable difference to national life, especially among the poorer people.

"Have you heard of our station societies? In Poland we have an excellent scheme. Each main station has its society of listeners and they do all they can to suggest cheery programmes and, in certain circumstances, assist the local funds.

A World-Wide Society.

"Now, take the Katowice station. That is only a 16-kilowatt, but it has friends all over the world. There is a society of Katowice listeners called the *Société Internationale des Katowicards*, and we reckon that there are about two million members in fifty-seven centres all over the world.

"Many Poles go abroad and still maintain their membership of the *Société*. It is four years old and was started accidentally.

"One evening the Katowice Musical Director, M. Stefan Tymien Ecki, walked up to the microphone after the main programme was over, and gave a hearty 'Good-night' to everybody in French.

"He speaks French fluently, and it is he who makes the occasional announcements in that language, which are given with English and German.

"Papa Stefan."

"Well, his 'Good-night' developed into a friendly talk, and inspired by some letters which he had that morning received from long-distance listeners, he gave a cheery address to all European enthusiasts who might be listening.

"In a few days there was an enormous post and the idea of a society of *Katowicards* was launched. M. Ecki is known as 'Papa Stefan.' Many other stations had their societies, too.

"There are the two Warsaw transmitters (the old 1.9 kw. plant being kept still in reserve), and stations at Lodz, Cracow, Poznan, Lwów, Wilno and, of course, Katowice.

"Broadcasting is controlled by a private company in which the Government have under a fifty per cent. interest. Modifications may be made to an agreement between the Post Office authorities and the broadcasting people, made in 1925, and which was supposed to last for ten years.

Help for the Hard-Up.

"The present arrangement suits us very well. Licences are cheap, and the Post Office will take monthly payments if you are hard up. Of the receipts from licences, three-quarters go to the Polskie Radio.

"Personally, I think the programmes are very good. But I have heard it said that it is lack of interest in the programmes which results in there being so many pirates. A representative of the Department of

That is why the stations assist their licensing societies, because they know that it helps to rake in licence money.

A Typical Day.

"There were two Communist stations at Wilno way back in 1925, and the programme interest was practically nil. Not until the official Polskie Radio concern came along did programmes buck up at all.

"The Warsaw programme is relayed through some of the other stations, or very similar items are given at the same time."

From a sheet which my friend showed me I obtained a good idea of the sort of thing which makes up the day's programme for Polish listeners.

There is an aviation weather report (too technical for ordinary listeners), soon after ten o'clock in the morning. The rest of the morning is made up of a Press review (not a news bulletin, but a broadcast extract of the "dailies"). Then gramophone music until tea-time, with weather reports, exchange quotations, history talks, literary talks and language lessons.

Theatre Relay.

"French is being constantly developed," continued my friend. "Tea-time music is usually taken from one of the popular outside broadcast centres in the City,

such as the Café Gastronomica.

"Just before seven o'clock there is the Radio Journal. As in your country, our evening programme is divided into halves. An orchestral concert, sometimes relayed from a concert hall, takes up one period, and a radio play, or a theatre relay, takes up the other.

"At nine o'clock there is a weather report, short news bulletin, and a reading

(Continued on next page.)

PLENTY OF LIGHT AND SHADE



Here is the main studio at Warsaw, with its attractive scheme of decorations in black and white. The balcony seen on the right of the picture can be curtained off and used for news or talks.

Overseas Trade says that about forty per cent. of listeners are pirates—and he ought to know!

"Last year only 310,214 licences were taken out among nearly 30,000,000 people. And yet when broadcasting started in 1925, nearly 5,000 licences were taken out in a few months, as people were so keen to hear this new marvel.

"M. Pikiel of the Polskie Radio is doing all he can to get listeners more interested.

A TALK WITH A POLISH LISTENER.

(Continued from previous page.)

of special police notes. I hear that this is doing a lot to reduce crimes.

"Dance music finishes the evening programme on four nights of the week, and the most useful source of dance music is the studio gramophone. That is the criticism which listeners appear to be raising—that there is too little original matter. I suppose it is all a matter of funds.

"Of course, it is very difficult to interest so large and varied a group of people as listen, say, to the Wilno station. Has it ever occurred to you that this district is only just over sixty miles from Russia? There are Lithuanians, White Lithuanians, Jews and Russians. They cannot all be expected to like the same programme or even understand the same language!

Multi-Lingual Announcements.

"Mind you, at a station like Warsaw, the announcements are given in English, French and German, as well as in Polish.

"There is both a man and a woman announcer in order that the announcements shall be as clear as possible, and the opening call is simply "*Hullo, Polskie Radio, Varshava*"—phonetically understandable to most listeners.

"It is the old anthem, *Dombrowski Mazurka*, which is used at the end of each evening programme. At Wilno announcements and even occasional talks are given in Lithuanian. The trumpet call which you hear occasionally through Polish stations is relayed from the tower of St. Mary's Church."

TRANSMISSIONS from abroad continue to retain their volume and their quality to a remarkable degree. We may, in fact, say that the great majority of stations which provided genuine alternative programmes of real entertainment value during the winter-time have continued to do so throughout the summer.

Such stations as are now temporarily lost to us are mainly those which were never very reliable even in winter-time.

There are naturally a few exceptions, and some of these are to be found on the long waves. This is curious, since, normally, long-wave transmissions are not very much affected by conditions of daylight and darkness.

Summer "Possibles."

One notices, though, that both Motala and Oslo, which could be relied upon to provide good volume until the spring was well advanced, must now be classed as "possibles" rather than "probables." Both of these, in fact, have become what I term chancy stations during the summer-time.

You may find them coming in splendidly; on the other hand, unless you live in the North country, you are just as likely to find that if they are coming in at all they cannot be worked up to loudspeaker strength.

The most striking instances of summer-time feebleness on the medium waveband are those furnished by Budapest, Vienna,

I asked about receivers and popular circuits.

"There are all kinds of sets in use. Polish electrical engineers have not made much of a success of wireless sets. Most of the gear is imported. One firm makes its own valves, but most valves are imported from Holland.

"In spite of trade fairs, and the fact that a provisional relay station was built some years back, in the Fair Building, I do not think that the opportunity of marketing wireless stuff in Poland has ever been grasped properly by foreign countries.

No Alternatives.

"It is true that many of the stations take the Warsaw programme, but that does not annoy most of our listeners. There is little call, yet, for an alternative programme. Even a station such as Lwów takes the Warsaw programme for most of the day, but Jewish talks and recitals of popular Jewish songs are often interposed (originating from the locals Lwów studio) with the Warsaw items.

NEXT WEEK

A TALK WITH A TURKISH LISTENER

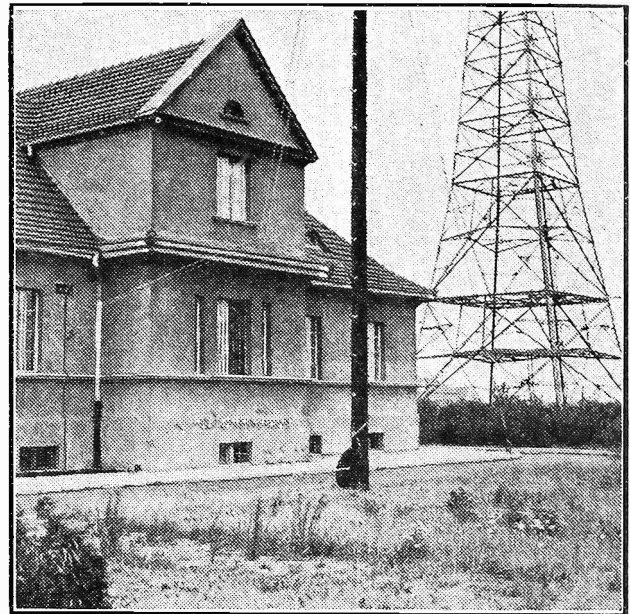
will reveal many interesting and amusing facts about broadcasting in the Ottoman Empire.

Many of the relay stations shut down earlier, too, and only Warsaw continues on till the closing down just before midnight.

"I have heard it said that German broadcasting officials are jealous of the long wavelengths bagged by Polskie Radio for Warsaw. They say that we do not deserve an exclusive long wavelength since, for a small country, we have too many medium wavelengths for Wilno, Katowice, and the rest.

"It seems very unlikely, though, that we shall lose our 1,411-metre band. Surely every European country, no matter how small, is entitled to one long wavelength?"

PROVIDING POZNAN'S POWER



This building, which looks rather like an English country cottage, houses the transmitting gear and power generators for the Poznan Station, which broadcasts on 335 metres.

STATIONS WORTH HEARING.

Up-to-the-minute information for the long-distance searcher.

Bordeaux and Barcelona. All of these were good winter stations, but none of them can be relied upon nowadays.

You can nearly always hear Budapest, though on most nights his transmissions do not rise above bare audibility. Every now and then, though, you find them coming in with quite extraordinary volume. The other stations just named behave in very much the same way.

Contrast with these the regular winter standbys, which continue to be completely reliable at the present time. Amongst these we have the two Brussels stations, Prague, Langenberg, Rome, Sottens, Toulouse Midi, Strasbourg, Hilversum, Heilsberg, Turin and Trieste—a whole dozen.

They Will Not Fail.

And we can add to these a considerable number, to which, though they have nights when they are below par, you can nearly always turn, feeling pretty sure that they will not fail you unless conditions are

particularly unfavourable. Such stations are Florence, Stockholm, Belgrade, Katowice, Milan, Göteborg, Gleiwitz and Bratislava.

Long-distance wireless would lose a large part of its interest if every station came in perfectly on every night. It is just because there are certain variations that it is such a fascinating hobby.

Almost all evenings in summer-time have their surprises. On several recent occasions, for instance, Belgrade, which had not been well heard for a long time previously, has been receivable at full loudspeaker volume. Hamburg, after weeks of feebleness, had an amazing evening early in July.

Strength After Silence.

Lille has a way of making you wonder whether you have not mistaken his call-sign by suddenly providing splendid loudspeaker reception after, maybe, weeks of silence. Munich, Lyons Doua, Berlin, Witzleben, Rennes, Toulouse P T T, Moravska-Ostrava and Falun are other stations which give occasional thrills of the same kind.

Meantime, the list of receivable foreign stations is slowly but surely growing, and not a few of those who had vanished altogether at the height of summer are now becoming faintly audible on good nights. There is a wonderful time in store for the long-distance man during the coming autumn and winter.

R. W. H.

CAPT. ECKERSLEY'S QUERY CORNER



Under the above title, week by week, our Chief Radio Consultant comments upon radio queries submitted by "P.W." readers.

**FIXED CONDENSERS—END PLATES—GETTING SENSITIVITY IN HEAD-
PHONES—HOW A SHIP OBTAINS AN EARTH.**

Unexpected Reception.

H. T. W. (Dundee).—"Why is it that since connecting large fixed condensers across my H.T. battery to prevent battery noises, I find that after the set has been switched off signals can still be heard for several seconds? Does this indicate that the condensers are faulty?"

On the contrary it indicates that the condensers are very good. For the purposes of this explanation it is fair to think of electricity as being carried by little particles called electrons.

An H.T. battery is a method of making one side of the battery (the positive) deficient in electrons; the other (the negative) holding a surplus.

Now, if you connect a condenser across a battery all the electrons surplus to establishment will collect on the plate connected to negative and the positive pole of the battery will suck out all the negatives in the top plate of the condenser and push 'em round and into the negative.

That's what a battery does, it sucks out from the positive and pumps into the negative. But the condenser negative

other, the current through R will continue—diminishingly.

If we put the switch at Y the current will cease at once—you try putting the switch there, as an experiment, and see. You can take a condenser, put it across a battery for 5 seconds, take it away from the battery, and then short circuit the condenser, when there will be quite a gratifying spark.

It's not very good for the condenser, but try it once or twice.

* * *

Metal or Ebonite?

E. P. (Weymouth).—"Some tuning condensers are made almost wholly of metal, while others have 'end-plates' of some such insulating material as ebonite. Are the two types for different purposes, and when should either one be chosen?"

I should choose a condenser with the best possible mechanical construction, and

I should make sure that any insulating material really was insulating material and not "muckite," particularly if that material was anywhere subjected to a concentrated electric field.

Apart from these factors, metal or ebonite end plates are equally good.

* * *

Does a High Resistance in 'Phones Limit Sensitivity?

R. S. (Shrewsbury).—"Why are sensitive headphones almost invariably claimed by their makers to be 'high resistance'? One would think that high resistance would limit current flow and make the 'phones very insensitive."

Yes! It is rather misleading and silly. 'Phones are more sensitive as they have more turns on the pole piece, provided you can get the current into these turns.

With a limited winding space you get more ampere turns as there are more turns and hence there is a higher total resistance.

Thus, 'phones are more sensitive as they are of higher resistance provided, of course, that the wire used is of the same type.

One man, hearing that high resistance 'phones were better than low made his of fine resistance wire—and was very disappointed.

* * *

Anchoring a Circuit.

R. D. (Lee).—"I have often wondered how an earth is obtained on a ship. Since the vessel is surrounded by water, it seems

impossible for a normal earth to be used. Is this so?"

"An earth" only means that an electrical contact is made between some one (or more) conductor and "the earth," meaning the world, if you like. We want to anchor a certain point of a circuit so that its potential will not vary.

You cannot change the total potential of the whole world relative to an ordinary circuit, so the earth is our anchor of zero potential.

Now, water, and particularly salt water, is a good conductor, and when you tie a circuit to the metal hull of a ship, and when that whole metal hull is touching water, and when water as big as an ocean is touching sea bottom—well, you've got a very good earth.

It is only when the contact between circuit and earth is of high resistance that you get a bad earth. Look at it this way:

In Fig. 2 (A) we show an attempt to earth a circuit. But if that earth is bad, we can show it—Fig. 2 (B)—as a circuit with a potential E (+) connected to real earth (E) through a resistance (R). Obviously, E (+) continues as a potential if R is large, but if (good earth) R=0, E must be equal to 0.

It is only when the contact between circuit and earth is of high resistance that you get a bad earth. Look at it this way:

INTRODUCING RESISTANCE

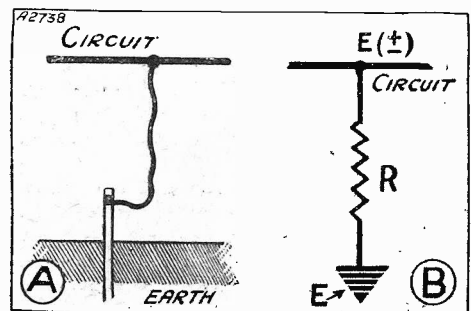


Fig. 2. It is very important to have a good earth connection; for if the contact is bad it has the same effect as a resistance in the circuit.

LIKE A LARGE TANK

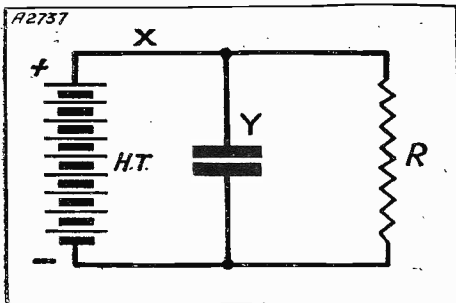


Fig. 1. If a condenser is connected across a battery, it acts like a tank and accumulates a store of electricity.

plate soon gets full and you cannot pump any more electrons into it—we say it holds a charge of electricity.

Now, if we have a "load" R across the condenser, the battery keeps the charge on the condenser, and supplies a current through the resistance as well, because the battery is always maintaining the disequilibrium of electrons, and these are struggling always to reinstate their equilibrium.

Now, if we cut off the battery at X the electron flow from the battery ceases, but there is still a supply stored up in the condenser. Until the condenser has as many electrons in one plate as in the

THE MIRROR OF THE B.B.C.

By O.H.M.

THE KING AT BROADCASTING HOUSE

WAR ON WIRELESS EXCHANGES—HONOURING SIR EDWARD ELGAR—LOSS ON "PROMS"—A SUCCESSFUL TOUR.

ALL kinds of stories reach me of remarks made by the King during his inspection of Broadcasting House last week. As was to be expected, he paid special attention to the Military Band which is a great programme favourite at the Palace. But what probably surprised his B.B.C. guides was that the King was particularly curious about Television.

Lady Snowden's personal friendship with the Queen was clearly reflected during the visit. I hear that Lady Reith presided at the tea-party in Sir John Reith's room afterwards.

A Big Staff Shake-Up.

There are signs of an impending big staff shake-up in the B.B.C. Admiral Carpendale's knighthood is accompanied by a great increase in his powers and duties. Much of the work formerly done by Sir John Reith is now delegated to the admiral who accordingly is in a better position to apply his own policies and views.

B.B.C. and Wireless Exchanges.

Having formed a common front with the newspapers and press agencies against wireless exchanges, the B.B.C. is now turning its attention to Parliament where support is being sought from individual members of all parties. Sir Kingsley Wood, the P.M.G., is gradually being isolated and encircled.

Lady Snowden for the Mike?

I hear that, beginning this autumn, Lady Snowden will be able to devote much more time to microphone work than in the past. I hope she is induced to take on a regular policy explanation series, outlining simply and clearly, at intervals of not more than a month, what the Board of Governors are thinking and doing.

Prom. Prospects.

The troubles between Sir Henry Wood and the B.B.C., which at one time endangered the whole prospect of this Year's Proms., have been sufficiently resolved to enable the season to go forward. Apparently this happy outcome is due chiefly to the persevering tact of Mr. Owen Mace, Dr. Adrian Boulton's able assistant at Broadcasting House.

The first performance will be on August 6th. Only one first show is to be given, Edgar Bainton's "Epithalamion."

The New Symphony Concerts.

Eighteen days after the end of the Promenade season, the B.B.C. is starting a new series of eighteen Symphony Concerts which will run until December 14th, and then continue after Christmas until March 29th. The last three of the Symphony Concerts in 1932 will be devoted to the works of Sir Edward Elgar to mark and honour the year of his seventy-fifth birthday.

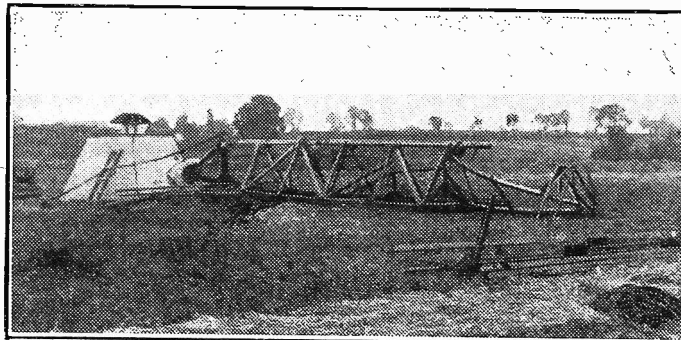
Broadcasting will thus enable every music lover in the British Isles to participate

in this Festival of Homage to our composer-laureate.

The Christmas holiday period is practically devoid of musical entertainment, and this year the B.B.C. is giving a two week's season of Promenade Concerts from December 31st to January 14th. It remains to be seen how the public supports this innovation of "Christmas Proms.," but as Sir Henry Wood is to conduct and the programmes will be run on the same lines as the famous summer concerts, there is little doubt that their efforts to provide good music all the year round will be appreciated.

The B.B.C. is actually out-of-pocket in running the autumn Promenade Concerts, but by setting off the amount which would have to be spent in providing studio broadcasts against the receipts from the

THE ACCIDENT AT WEST REGIONAL



This photograph was taken shortly after the sad fatality at the B.B.C.'s West Regional station, when one of the partly-erected masts collapsed, resulting in the death of two of the workmen. The fracture occurred at the insulator on which the mast rested.

THE LISTENER'S NOTEBOOK

A rapid review of some of the recent radio programmes.

A Modest Speaker.

MR. J. W. C. DOUGALL tried to put us off at the outset of his talk by saying that he was going to be dull. He proved, on the contrary, very interesting, and confounded his own fears. Rex Evans (the next turn) gave us to believe that he was going to be the last word in entertainment value. Results didn't justify his claim, for the beginning of Merry-Go-Round was as dull as ditch water. I didn't listen much beyond the first sketch. It was clear these artistes needed some instruction in voice production. At times they were inaudible.

Mr. T. W. Russell on "Dope" was as breezy an affair as one could wish for. He struck me as being a man very much in love with his work, and who liked nothing better than being on the trail of some notorious international dope gang. Some

"Proms.," the result is a slight gain to the Corporation.

More Ridgeway.

The next of the "Ridgeway Parades" entertainments, which, as I have already mentioned, are to take place on Tuesday and Wednesday, July 19th and 20th, are merely interludes in a tour of the music-halls of the country. The tour has already lasted five months and bookings go well into next year, evidence that Mr. Ridgeway's show is as good a stage attraction as it is a microphone performance.

A Programme from Germany.

Act II. of Mozart's "Don Giovanni," relayed from the Residenz Theatre, at Munich, forms the last of the series of four operatic broadcasts from Germany for British listeners on Wednesday, July 27th. The performance is part of the Annual Munich Festival devoted to the operas of Wagner and Mozart.

Entertaining America.

Music, specially chosen and arranged, with some composed for the occasion, will be heard by West Regional listeners on Tuesday evening, July 26th, in a Welsh programme called "Entertaining America," which its author, Mr. J. Eddie Parry de-

scribes as a musical extravaganza. The story running through the programme deals with the arrival of a party of exiled Welshmen from the United States who are met on the quay by childhood friends and taken home to their native village where they are entertained at a local concert. The programme also includes excerpts from Eisteddfod music, without which no Welsh programme would seem to be complete.

of his stories were good enough to include him in the "Hazard" series. Methinks it will be an unhappy day for Mr. Russell when this international traffic in illicit drugs is stamped out.

I notice "Music Hall" is no longer graced with a number to distinguish it from its predecessors. The fact is, I suppose, it is now fully established and has justified its claim to be first-class variety. Though in essence it is Vaudeville pure and simple, in quality it is streets ahead of the so-called Vaudeville. There is something in a name after all!

The Wimbledon Running Commentaries.

It was unfortunate that the running commentaries from Wimbledon weren't restricted to their scheduled times. That nasty little habit of butting in, at the

(Continued on page 569.)

YOUR A.C. RADIOGRAM IN USE



As we mentioned last week, there are hundreds of home constructors all agog to start in on the construction of an all-mains A.C. Radiogram. There must also be countless others who would very much like to tackle such an instrument—it is undoubtedly the goal of all radio enthusiasts—but who doubt whether they could make a success of the job.

That their doubts are completely unjustified was amply proved by the diagrams we gave in our last number, from which anyone can make up the magnificent "P.W." A.C. Radiogram. There are definitely no snags to be encountered anywhere.

Ready to Start.

We have already given a description of the general lines along which the radiogram is designed, and explained its comparative inexpensiveness both in regard to first cost and running. We have also dealt with the components needed, and so will assume you have these collected together ready to carry on with the good work.

First of all, a word or two about the general layout. The cabinet is of the pedestal type which stands on its own legs, and you can get a good idea of what your instrument will look like when completed, by the picture in our heading.

Cabinet Arrangements.

The main body of the cabinet is divided into two parts, the top one housing the receiving and amplifying components together with their panel for the controls, and the lower section containing the loudspeaker and mains unit. The use of a separate and complete mains unit in this way greatly simplifies the assembly.

The gramophone turntable, and the pick-up and tone-arm are to be found under the lid of the cabinet. And now, for the time being, we will turn our attention wholly to the chassis assembly (or panel and baseboard and their components).

The work here is more or less the same as that for an ordinary three-valve receiver, but when you drill the wooden panel you also have to cut a rectangular piece out of the top of it.

The approximate size of this piece is shown on the panel layout diagram, but no dimensions are given as its size is unimportant. It is cut out to clear the large nut which you will find on the underside of the motor and which

would otherwise get in the way, because the panel is slid into the cabinet from the back.

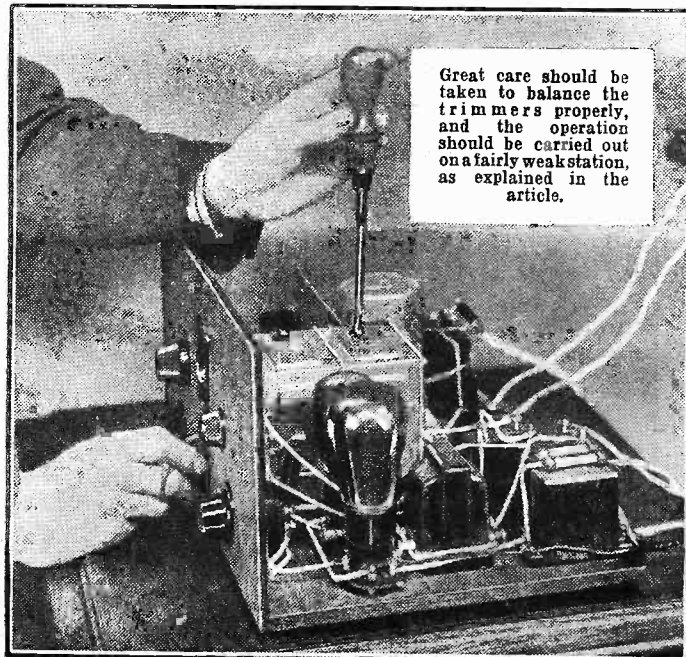
When you come to screwing the components on the baseboard, be careful to follow the arrangement shown in the wiring diagram as closely as you can, because

the whole thing being very compact, there is not room for variations. It is important that a very good choke is used in the H.F. stage, and in the case of the second H.F. choke it is important that it should be a small, compact one.

This week final details for completing P.W.'s magnificent all-mains radiogram are given, as well as full information on its extremely easy operation.

When the set is finished it will provide you with an amazing variety of full-volume high-quality programmes, either from gramophone records or from radio.

TRIMMING UP THE TRIMMERS



Great care should be taken to balance the trimmers properly, and the operation should be carried out on a fairly weak station, as explained in the article.

In regard to the double gang condenser, you will not find any alternatives for this in the list of components, the reason being that it is doubtful if any other make will fit in the space available. Before you screw any of the components to the baseboard there is a piece of copper foil to fit in place.

This is fixed flat on the baseboard, but it does not cover the whole of it. Actually, the foil only covers the H.F. part of the baseboard.

Fixing the Foil.

In the wiring diagram you will find a line showing where the foil ends. This line starts just to the left of the aerial terminal (as you look at the diagram) and goes straight towards the panel until it is nearly level with the gang condenser, when it turns to the left.

After running along parallel with the back of this condenser it once more turns towards the panel and runs along the side of the condenser.

It is necessary to have the foil underneath the gang condenser because the screening incorporated in this component does not run under it, but only around and on top of it. The vertical piece of screen needs little mention except to say that there are two holes in it, one for the valve and a much smaller one for the spindle that controls the wave-changing of the two coils.

The makers of these coils also supply similar coils on one metal base, in which case the operating rod for the switches is shorter than that required for this set. It is, therefore, important to specify, when ordering, that the rod is 8 in. long. This rod, which has a flat cut on it, is fitted by being simply pushed through the holes provided in the coil formers.

(Continued on next page.)

YOUR A.C. RADIOGRAM IN USE

(Continued from previous page.)

The wiring is quite straightforward, but there are three little points that are worth making reminders about. Don't forget to use twisted flex between the heater terminals of V_1 and V_2 .

Be very careful you get the connections to the control switch wired up properly, and note that a large tag is fixed beneath one of the screws that hold the gang condenser down at the back. This has a nut and bolt through one end, and serves to earth the moving vanes of the gang condenser as well as the copper foil.

Preliminary Try-Out.

One end of the .0001 fixed condenser, in series with the aerial lead, is fitted directly under the nut on the aerial terminal, the other end of it going to the wire that comes from terminal 5 on the back coil. As soon as you have finished the chassis work, it should be tried out before being fitted into the cabinet.

When connecting up, note that H.T.— and one side of pick-up go to the earth terminal as well as the actual earth connection. The other pick-up connection is taken straight to terminal No. 3 on the switch on the panel.

There is also a common lead for L.S. positive and H.T. positive. For the time

being the pick-up leads can be neglected, and the mains wired up as follows.

One of the leads from the mains plug, that goes into the lighting or power socket, is taken to one of the input leads of the Heyberd power pack. The other lead from the mains goes to terminals Nos. 6 and 4 on the control switch.

That leaves the other power-pack terminal, which is joined up to terminal No. 5 on the control switch. The two leads from the heater terminals of V_1 are taken to the L.T., A.C. terminals of the power pack.

A connection should also be made between the H.T.— terminal on the power pack and one of these L.T., A.C. terminals. If the one you first choose seems inclined to permit a little hum to be present, try connecting up the other one instead.

Radio First.

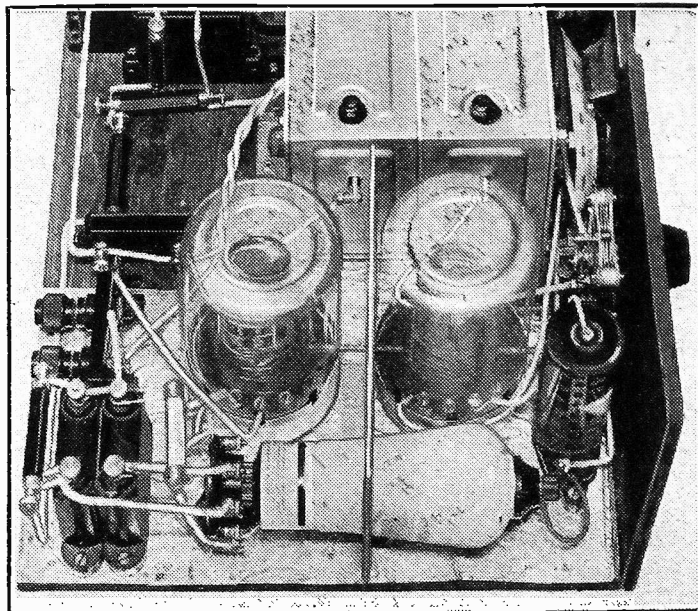
Give the set a good try out on radio. The use of the controls is quite obvious. Don't forget to put the switch in the "radio" position, and see that

the volume control is at the maximum volume position whenever reaction is necessary.

Adjusting the two trimmers on the gang condenser is quite an easy matter. It should be carried out on a weak station near the bottom of the dial on the medium waves.

(Continued on page 556.)

THOROUGHLY SCREENED TO SECURE STABILITY



The H.F. end of the receiver is very thoroughly screened. The baseboard is covered with copper-foil, the ganged condensers are totally enclosed, the S.G. valve is metallised, and the coils are contained in metal "cans" so you will not be troubled with instability!

YOUR GUIDE TO THE COMPONENTS AND ACCESSORIES

1 Wood panel 14 in. × 7 in.

1 Coil (Colvern, K.G.R.).

1 Coil (Colvern, K.G.O.), with switch rod, 8 in. long.

1 Twin-gang condenser, .0005-mfd. with disc drive (Lotus).

1 Screen-grid 5-pin valve holder (Lissen, Telsen, W.B.).

2 5-pin valve holders (Lissen, Telsen, W.B., Lotus, Graham Farish, Wearite, Igranie).

2 1-mfd. condensers (Lissen, Telsen, T.C.C., Dubilier, Igranie, Graham Farish).

2 1-mfd. condensers (T.C.C., etc.).

1 2-mfd. condenser (Telsen, etc.).

1 2-mfd. condenser (Lissen, etc.).

1 Terminal block with two terminals (Belling & Lee).

1 H.F. choke (small type Lissen, Lewcos, Telsen).

1 L.F. transformer (Lissen Hypernik, R.I. Hypermite, Varley Nichoke, Lotus, Graham Farish Snap).

1 .0001-mfd. condenser (Dubilier type 670, T.C.C. type M).

1 .0001-mfd. condenser (Lissen, Dubilier, Telsen, T.C.C., Ferranti, Graham Farish, Sovereign).

1 ½-meg. volume control (Igranie).

1 Radiogram on-off switch (Bulgin).

2 ½-meg. grid leaks, with wire ends (Lissen, Dubilier).

1 .0003-mfd. differential condenser (Ready Radio, Telsen, Lotus, J.B.).

1 350-ohm resistance (Dubilier 1-watt type, Graham Farish, Lissen).

1 500-ohm resistance (Dubilier 1-watt, etc.).

1 250-ohm resistance (Dubilier 1-watt, etc.).

1 1,000-ohm resistance (Graham Farish Ohmite, etc.).

1 30,000-ohm resistance (Graham Farish Ohmite, etc.).

1 60,000-ohm resistance (Graham Farish Ohmite, etc.).

1 40,000-ohm resistance (Graham Farish Ohmite, etc.).

1 .0003-mfd. condenser (Lissen, Dubilier, T.C.C., Graham Farish, Sovereign, Telsen).

1 H.F. choke (Peto-Scott, Ready Radio, Wearite, Lewcos Type II).

Aluminium screen, 5½ in. × 4½ in. (Peto-Scott).

Copper foil, 10 in. × 9½ in.

Baseboard, 14 in. × 10 in. × ¾ in. (Peto-Scott).

Cabinet (Peto-Scott).

Power pack (Heyberd "Popular").

Loudspeaker (R & A "Challenger," Epoch, etc.).

Gramophone motor (Simpson Synchronous).

Pick-up (Zonophone).

2 Needle cups (Bulgin).

Power plug (Bulgin P.12).

18-Gauge tinned wire and sleeving (Wearite).

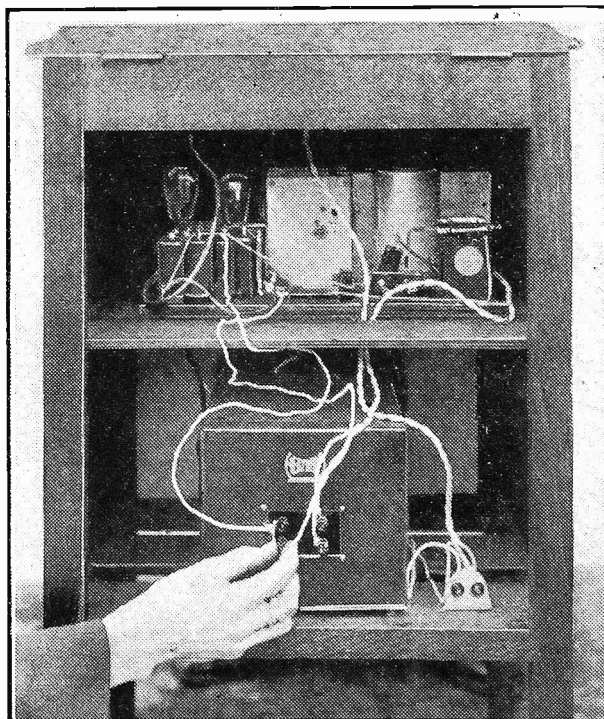
Flex, screws, etc.

VALVES.—S.G.: Mullard S4V.B., Mazda A.C./S.G., Cossor M.S.G.L.A., Six-Sixty 4Y.S.G.A.C., Marconi and Osram M.S.4.

Detector: Cossor 41M.H.L., Mazda A.C./H.L., Mullard 354V., Six-Sixty 4G.P.A.C., Marconi and Osram M.H.L.4.

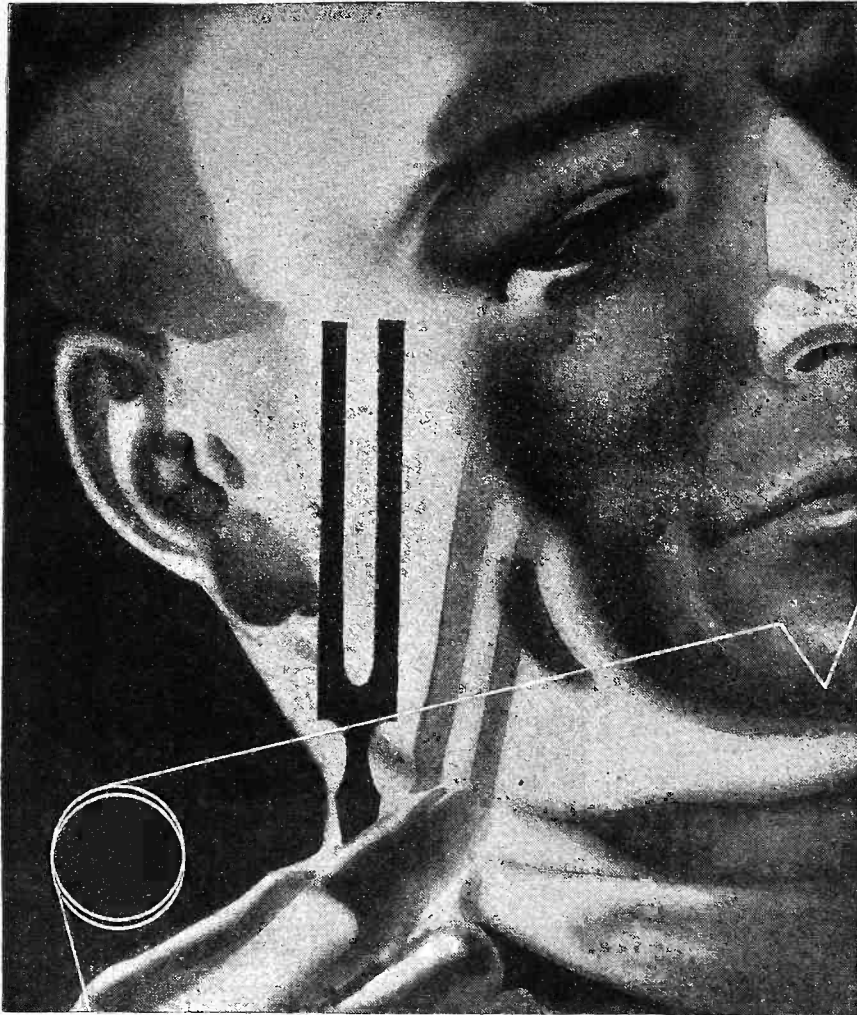
Power: Cossor 41 M.P.

PROVIDING THE POWER



All the power for the set, both H.T. and L.T., is supplied by a separate unit. This is housed in the lower compartment of the cabinet and, as this photograph shows, it is a very neat arrangement, being totally enclosed in a protective metal case.

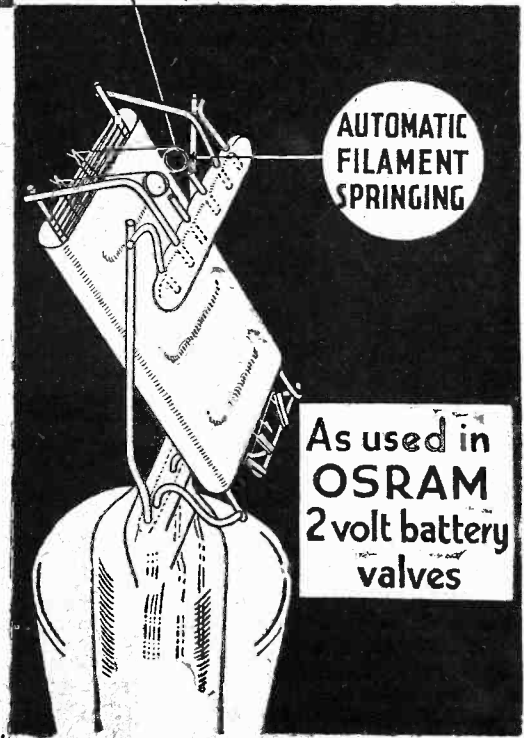
EVERYTHING **The G.E.C.** ELECTRICAL
your guarantee



OSRAM
new automatic cushion
filament springing
ensures
ABSOLUTE CONSISTENCY

**REPRODUCTION
TRUE**

All valve filaments expand when heated, and unless this expansion is automatically, continuously compensated the position of the filament will vary. Then consistent, true reproduction is impossible! But OSRAM'S far-reaching development in valve design (the new OSRAM automatic cushion filament-springing) ensures true reproduction with absolute consistency. This very remarkable OSRAM achievement clears away microphonic disturbance once and for all—it eliminates all effects of both internal and external vibration. Further, it ensures a silent background that really, is dead silent and a longer, more useful life.



Osram
2 VOLT BATTERY
Valves
MADE IN ENGLAND
SOLD BY ALL WIRELESS DEALERS

WITH THE WEMBLEY FILAMENT

Advt. of The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2

**YOUR A.C. RADIOGRAM
IN USE**

(Continued from previous page.)

Choose a station that just does not require reaction and turn the trimmer knobs with a wooden-handled screwdriver or piece of sharpened wood until reception is at its loudest.

As soon as you are satisfied with the working on radio, you can try the pick-up results. Before this can be done, however, you must mount the electric motor to the motor board and fix the pick-up in place. Neither of these operations will present any difficulties. Just follow whatever instructions the makers may give you.

No Switch Needed.

The volume control is the only adjustment that has to be made when working on pick-up. Two leads for the electric motor must be run, one direct from the side of the mains plug that goes straight to the power pack, and the other from terminal No. 5 on the main control switch.

No switch is necessary for the motor as it can easily be stopped with the hand and started again by a slight swing. But if you prefer, you can mount a switch on the motor board and connect it in series with one of the leads to the motor.

The main control switch on the panel disconnects the current to the motor when the complete radiogram is turned off, so that there is no need to see that the extra switch (if fitted) is "off" each time the complete instrument is turned off.

Before actually finishing this article, there is a little matter connected with the automatic bias resistances with which we must deal. The values shown on the diagrams of last week, and specified in the list of components, are the correct ones for the valves mentioned first in the list.

Resistance Values.

In the case of the power valve, where only one make is specified, the question of correct values of resistances for alternatives does not crop up. But so far as the alternatives for the S.G. and detector valves are concerned, different values for the resistance are necessary.

Dealing with the S.G. valves first, we find that the Mazda A.C./S.G. and the Marconi or Osram M.S.4 require a 600-ohm resistance; the Cossor M.S.G.L.A.; a 230-ohm; and the Six-Sixty 47 S.G.A.C.

a 300-ohm. The resistance that would be replaced in this case is the 350-ohm one across a 1-mfd. condenser near the "aerial" and "earth" terminals.

The alternative values in the case of the detector valve are: for the Marconi or Osram M.H.L.4, 750 ohms; and for the Mazda A.C./H.L., Mullard 354V., and Six-Sixty 49 P.A.C., 1,000 ohms. The detector's biasing resistance is the 500-ohm one across a 2-mfd. condenser (see bottom left-hand corner of the wiring diagram given last week).

All that there is left to be done now is to disconnect the chassis and install it together with the loudspeaker and power pack in the cabinet. After this it is connected up again just as before and you are ready to enjoy full-power quality reproduction from record or radio.

Foolproof Operation.

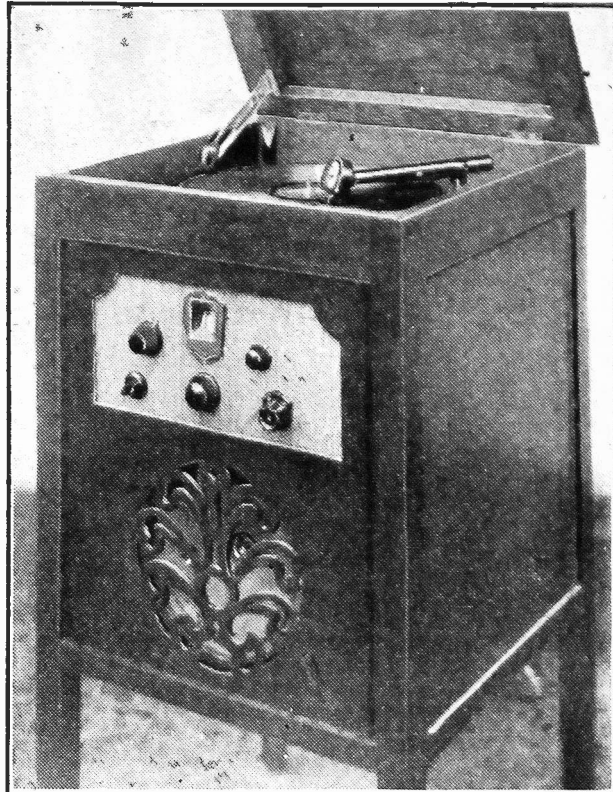
Remember what we said last week about ease of control.

There is single-dial tuning on the radio side and, since an independent motor switch is not essential, the volume control is the only knob you have to touch when the set is used as a gramophone.

Provided the very simple building specifications are carefully followed, the

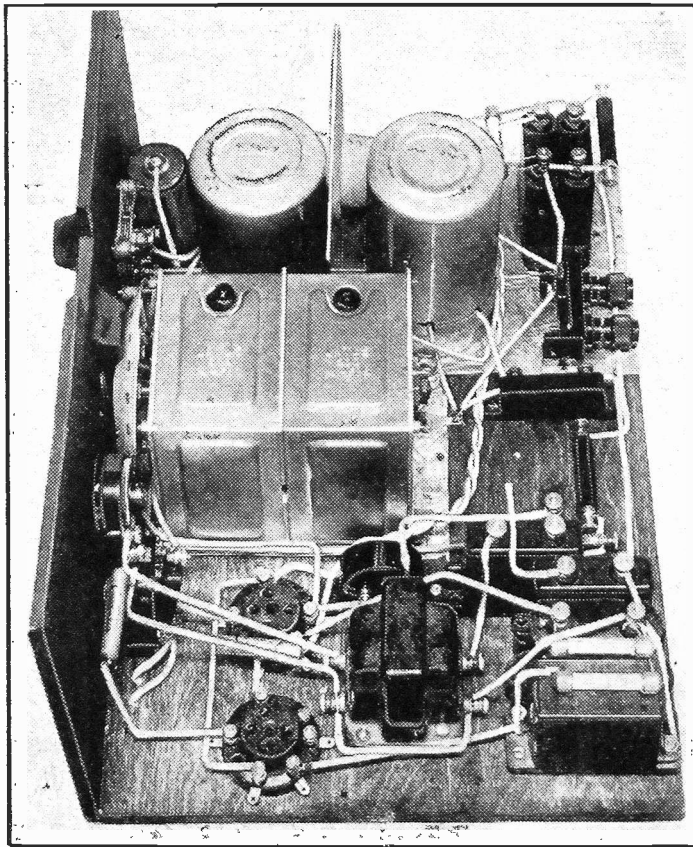
"P.W." A.C. Radiogram is "fool-proof," and can be successfully operated by the most inexpert member of the family!

A HANDSOME SET



How do you like it? Your A.C. Radiogram will look every bit as good if you follow the instructions given in this article. The cabinet is made of beautifully polished oak, and the panel, which is also of oak, is finished to match.

FROM DETECTOR TO LOUDSPEAKER



This photograph shows the detector and L.F. end of the receiver. In the extreme right-hand lower corner you can see a pair of white tubular resistances, connected across two large fixed condensers. The upper one of these is the automatic grid-bias resistance for the detector valve, which only comes into use when on gramophone.

**THE "S.Q. STAR" IN
ACTION**

Readers' Reports on Popular
"P.W." Set.

The Editor, POPULAR WIRELESS.
Dear Sir,—I would like to congratulate you on "S.Q. Star" Super Four. I am using a Cossor five-pin, a Cossor screen-grid, Mullard D.N., and P.M.2., and the transformer is Feranti 4-1.

With 72 volts on the anode and 140-150 on the power valve, the signals come through at deafening force, but are clear and rich, and on a Celestion P.P.M. moving-coil it's great.

I have only had it going two evenings, and have logged 63 stations already.

Five of my friends are very enthusiastic over the set, and two of them have started building, so I think that speaks well of your set.

Yours sincerely,
T. L. BRUERLEY.

Cowes, I.O.W.

The Editor, POPULAR WIRELESS.

Dear Sir,—It may interest you to know how my "S.Q. Star" has performed, as I have not seen many reports of this set. To begin with, it is the finest "P.W." set I have built, and I have been building sets for a good long while now—since the famous "P.W." Undyne (that was not yesterday). I lately built the "Magic" Three, then I changed it to the "Comet." I only use the four valves, and using a small indoor aerial I get the greatest satisfaction from it. Up to the present I have logged 60 stations at good loudspeaker volume; in fact, some of the more powerful stations, i.e. Warsaw, Heilsberg, Stuttgart, Horby, etc., are at times too loud.

I have no bother with it; just turn the dials and in come the stations. You were quite right when you said there were no snags about it. I use a Blue Spot 66R unit and cone, and the tone from the set is very pure, owing, I think, to there being no reaction. Wishing your paper continued success and thanking you for such a splendid circuit.

Yours faithfully,
JOHN CARMICHAEL,

Stirling.

NOW READY!

The first of the Ekco 1933 models

A new 3-valve All-electric Set fitted with moving-coil speaker

Figured bakelite cabinet in Walnut shade ; Single knob tuning ; Illuminated dial, calibrated in wavelengths ; Combined Selectivity and Volume Control ; Highly sensitive and selective 3-valve circuit (Screened Grid, Detector and Pentode) ; Internal aerial giving local reception without the use of an external aerial or earth ; Patented Mains Aerial with which greater range is obtained ; Sockets for connection of external aerial and earth (the number of stations obtainable with these is truly amazing) ; Sockets for connecting a gramophone pick-up ; Sockets for connecting additional external loudspeaker ; Westinghouse Metal Rectification (in A.C. Model) ; **Permanent Magnet Moving-Coil Speaker** with new type of high-efficiency magnet giving superb tone ; Remarkably low running costs—only 7/6 per 1,000 hours (with electricity at 3d. per unit) ; for A.C. and D.C. Mains.

PRICE **17** GUINEAS

OR 12 MONTHLY PAYMENTS OF 32/9

To E. K. Cole, Ltd., Dept. A.14,
Ekco Works, Southend-on-Sea.

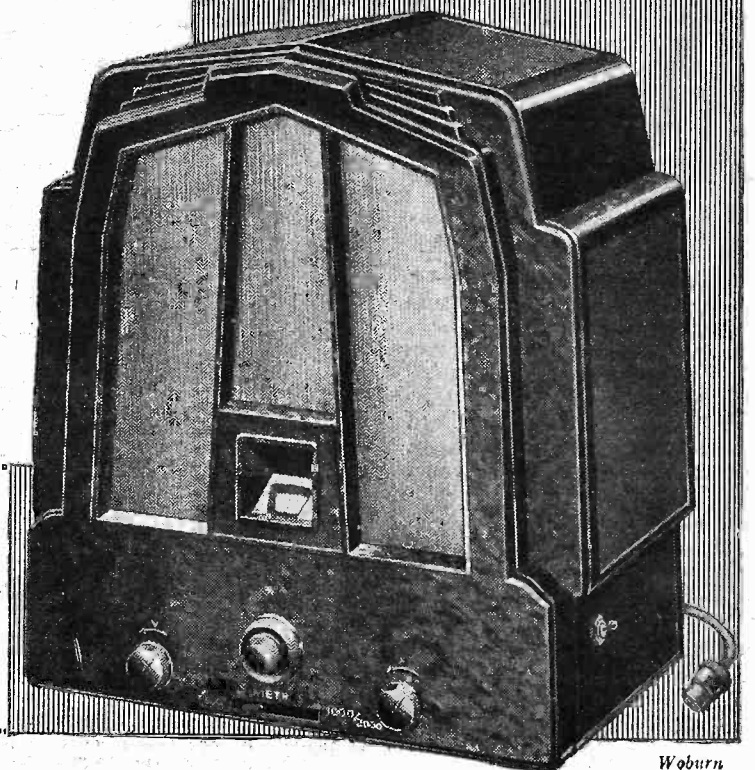
Please send me full details of Ekco All-Electric Radio.

Name.....

Address.....



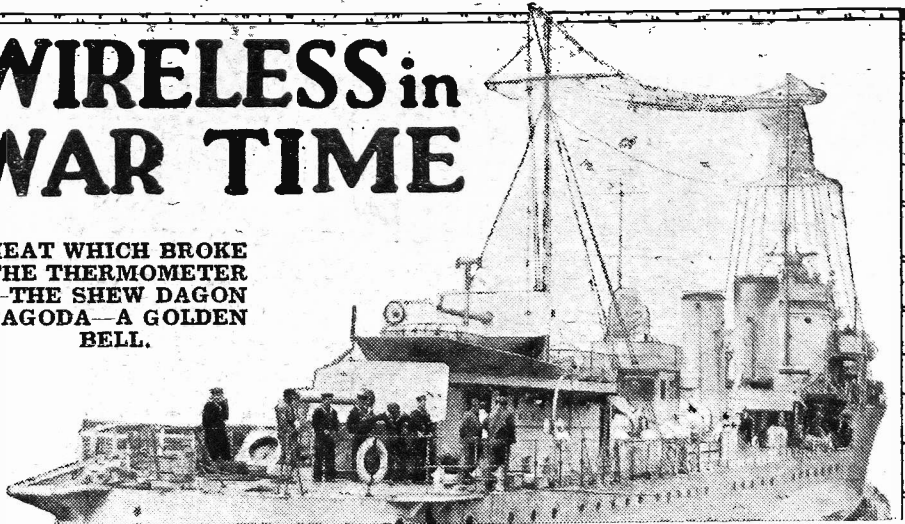
M23 CONSOLETTTE



Woburn

WIRELESS in WAR TIME

HEAT WHICH BROKE
THE THERMOMETER
—THE SHEW DAGON
PAGODA—A GOLDEN
BELL.



Extracts from the Diary of a Wireless Operator at Sea, 1916-1918

December 17th, 1917.

WE are hearing some terrible yarns about what happened last summer, after we left. It appears to have been the hottest season for twenty-five years, and it was a common thing for the glass of the thermometer to break. Almost every other man went down with something or another, and dozens died like flies. Thank heaven we left when we did.

I spent a good deal of my time this trip wandering about the bazaar at Ashar. Even the films can't give the average stay-at-home any proper idea of what an extraordinary place a real Eastern bazaar is.

You must try and imagine a long, crooked lane with a very uneven earthen pathway lined by all sorts of queer patchwork hovels, the whole covered in at the top by a multitude of odd straw mats and rugs. The shops are built of mud-baked bricks, and the merchants display their variety of goods on little wooden trays, or spread-eagled anyhow on the edge of the pathway. The merchandise offered to the potential purchaser ranges from sock suspenders to antiques.

Trying It On.

On one visit, I stopped at a stall and asked a sleepy old native with a long white beard the price of a spiked Persian helmet which struck me as being the type worn about the thirteenth century. Having primed myself with a spot of Arabic, I walked up to the old man and said:

"Salaam, ya sedee."

"Salaam," he replied courteously.

"Baysh haaide (how much)?" I inquired.

The old man cocked a speculative eye at me, stroked his beard, and replied in English:

"Twenty-six pounds."

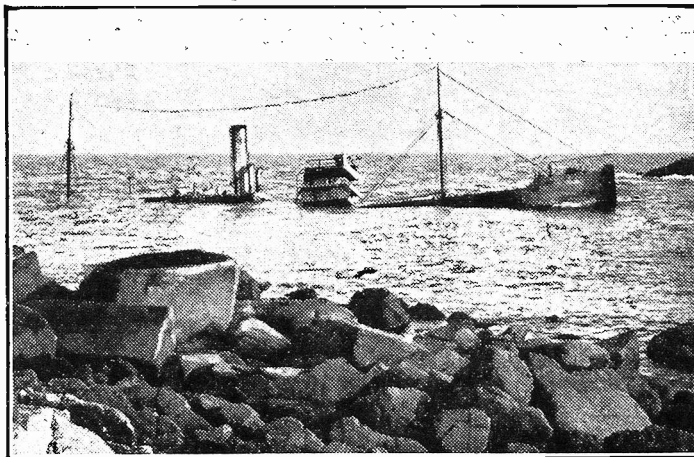
I did not stop to argue, but hurried on. Twenty-six pounds! Shades of Omar! And I had ten bob to last the month!

DECEMBER 26TH.—Colombo. We arrived here on the 23rd. Yesterday morning, Christmas Day, I went over to H.M.S. "Northbrook" to get some wireless spares.

I think Colombo must be the prettiest port I have yet struck. The whole place is like a garden city, each little bungalow nestling amidst charming clusters of palms and climbing plants. I hired a rickshaw, went round the town, and had a good "dekko" at the place. I bought a few curios and some lace.

Colombo has been very hard hit by the war. The biggest hotel here, the "Goldface," is practically empty, for very few passenger boats come here now.

A CASUALTY OF THE SEAS



During the war quite a number of ships, after getting torpedoed, were prevented from becoming total losses by being towed to the nearest land, there to lie, like this one, almost completely awash, until their valuable cargoes could be unloaded.

JANUARY 8TH, 1918.—Rangoon. Rangoon has an atmosphere essentially Eastern which the modern European buildings cannot wholly eradicate.

Never Ending Stairs.

One evening, in company with our purser, I set out in a rickshaw to visit the Shew Dagon pagoda. Arrived at the top of the hill on which the pagoda is built, we dismissed our rickshaws and com-

menced to climb the seemingly endless flight of steps that lead up to the main entrance of the temple. I couldn't help wondering how many millions of pilgrims had already ascended those stairs, for they were worn terribly slippery by the devotees of Buddha.

The steps run to the top of a fort-like platform whereon the temples and shrines are situated. About half-way up the steps we had to pass over a fosse, or ditch, via a drawbridge.

I was told that during the Burmese rebellion, when Thewbaw revolted against the British, the white residents took refuge in the main part of the pagoda, drawing the bridge up behind them.

And, what is more, the natives soon left off attempting to storm the place when a threat was made to destroy the holy temples and shrines!

Buried beneath the main pagoda are three hairs of Buddha. Sometimes, in fact, the pagoda is known as the "Temple of the Sacred Hairs."

To give a list of the many wonders of this famous pagoda would take a good-sized book, but there are two little stories I heard about the place which are rather interesting, and bear repeating.

The Sleeping Beauty.

There is a popular legend among the natives concerning a certain carved statue of a sleeping woman which may be seen in one of the shrines near the main pagoda. As a work of art it is magnificent; but the interesting part of the story is that the natives believe that when this lady wakes up the British will be driven out of Burma!

A second anecdote concerns a large bell that stands in the courtyard. It must weigh several tons, although half of it is of gold.

When the Burmese War broke out the British threw this bell into the river, but, later on, when peace was declared, and all was friendly again with the natives, we attempted to recover the bell for them. But it is a fact that all our modern cranes and mechanical devices could not drag the bell from the river. We had to give it up as a bad job.

The natives, who had watched our endeavours with interest, eventually decided they would have to do the job themselves, and one night they lugged that bell out of the river and set it up in the pagoda. How they did it nobody knows to this day—possibly a little black magic.

Queer Fish.

In the grounds belonging to the monastery attached to the pagoda is a colossal statue of Buddha. It looks down on what is called the Sacred Lake—a large pond full of dirty green water and fish which are supposed to be the reincarnated forms of certain "holy men."

I was told that it is certain death to interfere with these fish. (Whether the fish stand up and bite you, or whether the natives assassinate you for the sacrilege I'm not quite clear.)

(To be continued.)

LETTERS TO A YOUNG "HAM"

By ARIEL

Thanks to "Uncle Ariel's" helpful letters, young "Horace" has been elevated to the proud position of Chairman of the "Lower Wimble Green Scientific, Radio, Television and Optical Society"!

This week the enthusiast is given some really sound advice as to the amount of time he should devote to radio.



Dear Horace,—You looked fine, the last time I caught a glimpse of you as you shot along Main Street in that blood-red "sports" car that your father was misguided enough to give you. That wave in your hair! That nonchalance! That general film-star atmosphere! Those alone are enough to turn the heads of all the girls who see you.

An Ornamental Simp.

Who would have thought, though, that instead of being what you looked, an ornamental simp or apprentice dress-designer, you are the Chairman of the Lower Wimble Green Scientific, Radio, Television and Optical Society?

My lad, I'm proud of you. It's a fair beginning, I must say, and one for which I feel entitled to claim a little credit. Of course, your ascent to the Chair was due more to your pushful personality than to your profound knowledge of radio or your ability to conduct a meeting.

Talking of meetings, remember that the perfect Chairman has no temper but a patience several hours longer than eternity. Your remark at the last meeting of the Society (which I attended unknown to you), to the effect that "any blighter who raises objections at this time of night had better dry up," is not in keeping with the best traditions of Chairs.

However, I dare say that amongst the rough-cast companions of this, your hey-day, those sentiments prevail. And, as I said—I'm proud of you.

If that was you, who came hurtling up our alley at eleven-forty-five last night, without a silencer on that infernal "sports" car, I've a darned good mind to come round and pull your ear. Oh, yeah! I know it was you well enough. Bet you ten bob it was. Hum! You haven't ten bob, except what you squeeze out of your parents or your Uncle Tim. Well, half-a-crown.

Giving the Game Away.

Done? Very good! It was you, because you Morsed your call-letters on that—er—blighted hooter. Purely mechanical action, due to your having competed for and won the "Round the World in Ten Minutes"

Radio Contest held by the "Daily Tarrara." But, seriously, *don't do it*, there's a good fellow. Uncles don't count, but there may be sick people, babies, and all that sort of thing, y'know!

A Thoughtful Nephew!

Oh—I got your note about my set. Thanks, ever so much! I'm afraid that, as you say, it is a back number, but I like it: it suits me and, besides, it was doing pretty good work in a slightly different layout, while you were playing with toy trains on the floor of your nursery. All the same, it is awfully decent of you to offer to bring me and the set up to date. I appreciate that! Fully! Ever so much more fully than you would dream.

I don't think much of your notion of

of, though! Money is a curse. But every woman seems to be able to turn curses into the loveliest clothes. Give her half a chance. And what is nicer than a nice girl? Two!

I mean to say—don't get carried away with the idea that you or the world will be any the happier for your "giving your life to radio." You ought to get into a job which will give you the money necessary for you to do all the radio work you wish—and all the many other things you will wish to do.

Radio Responsible.

Coming back to radio for a moment, let me urge you to keep it as a living thing in your life. An inspiration, as it were. You couldn't possibly have a finer, cleaner, hobby. Look at what you have learnt since I took you in hand!

A smattering of physics, mathematics and optics! Lots of geography and a certain amount of foreign languages and sympathy with foreigners.

You have become skilled in the use of many tools, learned many manual tricks and have been trained in accurate, dispassionate observation. You have made friends abroad and at home.

Your ears have been trained, your patience has been developed and your self-control strengthened. In spite of your wavy hair and "sports" car you are much more of a man than you would have been without radio.

I am quite sure that you are solid platinum at the core. Let me ask you to try and turn

to some good account the knowledge and skill which you have acquired from me and your own efforts. Do not rest content with mere listening. To rest content is to rot.

Politeness and Patience.

Don't forget what I said about politeness and patience. They carry much farther than "push." Yes, even in these days. It all comes back to my earlier lesson—*proportion*. Cultivate a proper sense of values—and you win.

Your affectionate uncle,

ARIEL.

P.S.—Bring her to tea on Sunday.

CRIMINAL CATCHERS

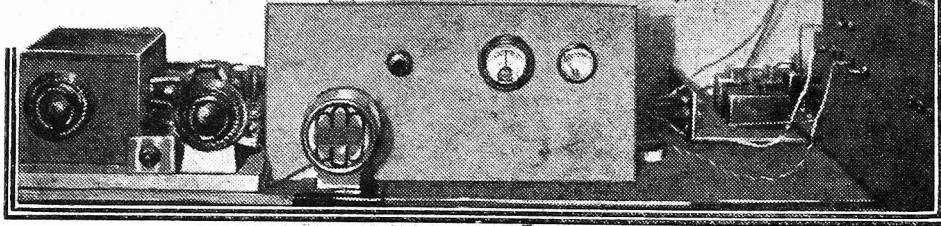


Here is M. Lahur, Divisional Inspector of the Paris Secret Police, at his desk in the private wireless station operated by the Surete Generale. the "Scotland Yard of France."

"devoting your life to radio." Devote your leisure to it, by all means—until you get a wife—but, for wireless as a career, you have begun at the wrong place. You wouldn't see it through, anyhow, because a wireless engineer's job is reached through a dull series of years of study and examinations, especially maths. and dreadfully dry antics with slide rules.

No! Go into pa's office and learn how to make the "dough" which bought you a "sports" car. Money is a curse. Oh, what gorgeous stuff some curses are made

Short-Wave Notes *By W.L.S.*



Here are some interesting items written by our popular contributor specially for short-wave listeners. In this series of notes he covers every aspect of the subject, both the "old hand" and the newcomer being fully catered for.

SHORT-WAVE conditions, according to my regular correspondents, are "not so bad" at the moment. All the stations that one normally looks for at this time of year are generally there, and excellent reception from the 49-metre Americans has been a feature of June and July this year. These, together with Nairobi, Buenos Aires, the new Rio station and Sydney appear to be the most consistently received stations in the "real DX" class.

"Y. A." (Eastbourne) makes successful application for swelling the ranks of the "H. A. C. Club," and sends in a beautiful log. He combats the variable conditions by using a four-valve and a six-valve superhet; then if his station is not there on the "four" he just finds him on the "six." (What happens if he isn't on the "six"? I don't quite know!)

"J. W. B." (S.W.18) doesn't like my use of the word "unusually" in connection with another reader's reception of W.F.X.A.Z. I stand corrected "J. W. B." I did not mean to imply that it was at all unusual to receive "X A Zee," but that it was unusual to find him so consistently as did the other man. Thanks for the report of "Rio."

—And the Rest Nowhere!

"G. N." from Johannesburg, positively makes me blush when he sends me the particulars of the Field Day held by the Pretoria Radio Club. It appears that his version of the "W. L. S. One-Valver" created a lot of interest and "proved to be the best receiver on the field." Unkind readers, please refrain from writing to ask me if the others were all crystal sets.

"E. S." a Scottish reader, thanks me for the enlarged version of "Short-Wave Notes" now appearing. (Thank the Editor, "E. S.") He says "it is a great thing to be able to sit down and immediately enjoy a programme from some really distant country." He seems to do it very successfully, having found the Rio broadcast at full loudspeaker strength.

"E. J. W." (Cosham) makes a suggestion that is ingenious, and probably correct, about the mysterious relay of the National Programme on 65 metres. Divide 261 metres by four, says "E. J. W." and you will see why. Quite probably it is a fourth harmonic of London National that is doing it.

This same reader regularly receives Fecamp on 54 metres and 44 metres—the fourth and fifth harmonics—and he also finds Muhlacker's seventh on 51.5 metres and Frankfurt's seventh on 55.7 metres, both R7.

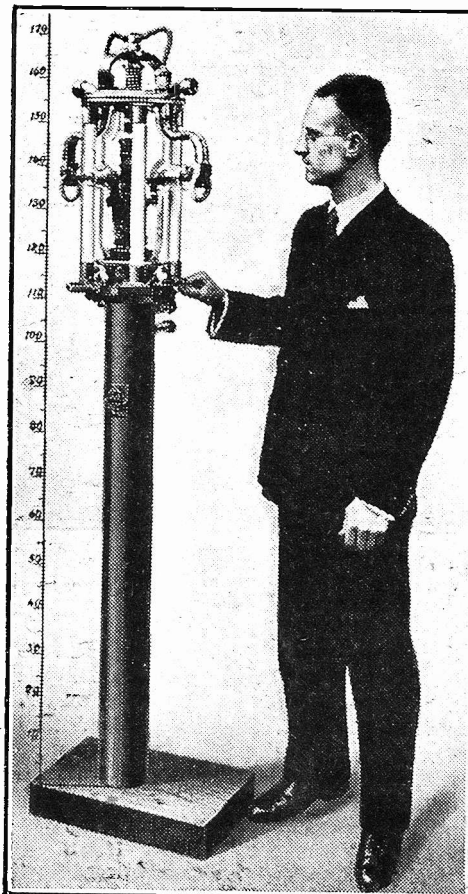
Curious Harmonic.

I think a lot of this is probably due to the receiver. I never find them myself, but I have noticed that with some types of detector circuit I get W3XAL's second harmonic at greater strength than with others, although there is no difference in the strength of his fundamental wavelength.

I should like to hear from regular readers about the actual number of bona fide short-wave broadcasting stations that they have heard. By "bona fide" I imply that only those that broadcast regular musical programmes should be included. Here is a chance for another "cut-throat" competition. Any offers over 50?

This simply could not be done with amateur stations. I used to keep a log

A GERMAN GIANT



The heading to this photograph refers to the valve—not the man! It is Germany's largest transmitting valve, and is rated at over 300 kw.

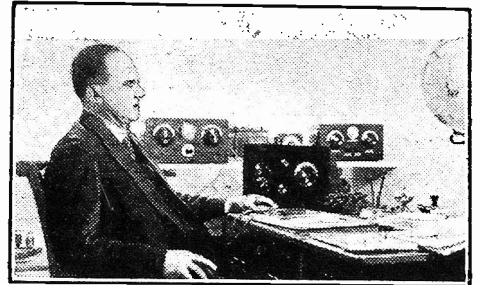
of American amateurs received, but gave it up when I reached the 6,000 mark.

My appeal in the recent article "Short-Waves and Location" for particulars from readers has not brought forth a great number of replies, but the quality compensates for the small quantity. "F. J. F." (Raynes Park) has an aerial pointing west and finds reception best from the southeast. He finds no effect whatever from the phases of the moon and says that he "can't find rhyme or reason in anything pertaining to short waves." Agreed, "F. J. F."

This same reader suggests that we still don't make our tuning circuits "hot" enough, and advises the use of a self-supporting coil wound with thick wire and bolted directly on to the tuning condenser. Excellent. "F. J. F."—I have done that with my five-metre receiver and with many others.

But your scheme for tapping the aerial directly on to the coil would completely

IN THE "HAM'S" DEN



The owner and operator of the Austrian amateur station U O 3 W B in his den.

spoil it. Why build a nice low-loss, high-impedance tuned circuit and then proceed to ruin it by introducing the damping effect of a closely-coupled aerial? At first sight this procedure may seem to bring in very strong signals, but it does so only at the expense of selectivity which is all too necessary in these days.

"W. H. R." (Plymouth) has a long aerial running north and south and finds reception uniformly good except from South America. He sends in a very detailed log that shows that there is very little difference in his results when a small "east-west" indoor aerial is used. Others have sent in valuable details but have in all cases omitted to say anything about their aerials or the direction of any local screening, so that I cannot make much use of them.

Notes from Nairobi.

My own results, both with the receiver and the transmitter, may be summed up as follows: Aerial, due east and west; best localities, U.S.A., South America and South Africa; rather poorer for Australasia and Asia.

As a concluding item, here is Nairobi's new schedule, kindly sent by "W. H. R." The station's new address is "Imperial and International Communications, Ltd., Nairobi, Kenya Colony." Programme times: Monday, Wednesday and Friday, 4 till 7.30 p.m.; Tuesday and Thursday, 4.30 till 7.30 p.m.; Saturday, 4.30 till 8.30 p.m.; and Sunday 4 till 6.30 p.m.

All these times are G.M.T. There are also mid-day transmissions on Tuesday and Thursday, but these are hardly likely to reach us. Reports will be greatly appreciated by the station director.

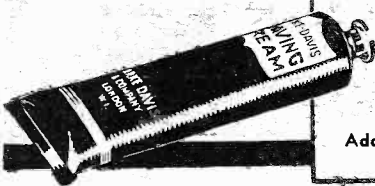


**A week's holiday
from Shaving
Troubles
free**

We would like you to enjoy a week of perfect shaving comfort. That is why we gladly offer you a seven-day tube of Parke-Davis Shaving Cream free. Wherever it is used it makes friends, and the more you have tried different shaving soaps, sticks, powders and creams, the more you will be delighted with the efficiency of the newest perfected beard softener. Fill in the coupon for sample tube. Afterwards you will purchase the large 1/6 tube regularly from your chemist.

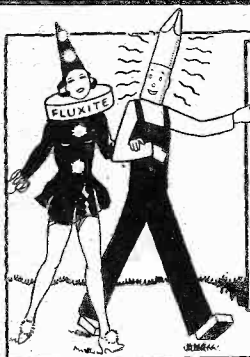
**PARKE-DAVIS
Shaving Cream**

Made by the makers of Euthymol Tooth Paste



COUPON. Euthymol (125 K),
50, Beak Street, London, W.1.
Please send FREE sample tube
Shaving Cream.

Name.....
Address.....
(Use block letters please)



**FLUXITE
INDISPENSABLE
TO EVERY
RADIO
ENTHUSIAST
IT SIMPLIFIES
ALL SOLDERING**

"We're Fluxite and Solder, the reliable pair, Famous for Soldering—known everywhere! Now here is a statement—bound to come true, If you'll invite US to come and help YOU!"

See that Fluxite and Solder are always by you—in the house, garage, workshop—anywhere where simple, speedy soldering is needed. They cost so little, but will make scores of everyday articles last years longer! For Pots, Pans, Silver and Brassware; RADIO; odd jobs in the garage—there's always something useful for Fluxite and Solder to do.

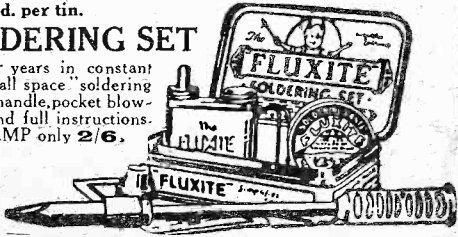
All Hardware and Ironmongery Stores sell Fluxite in tins, 8d., 1/4 and 2/8.

NEW "JUNIOR" SIZE 4d. per tin.

FLUXITE SOLDERING SET

Simple to use and lasts for years in constant use. Contains special "small space" soldering iron with non-heating metal handle, pocket blow-lamp, Fluxite, Solder, etc., and full instructions. COMPLETE, 7/6, or LAMP only 2/6.

FLUXITE LTD.
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ROTHERHITHE, S.E.16



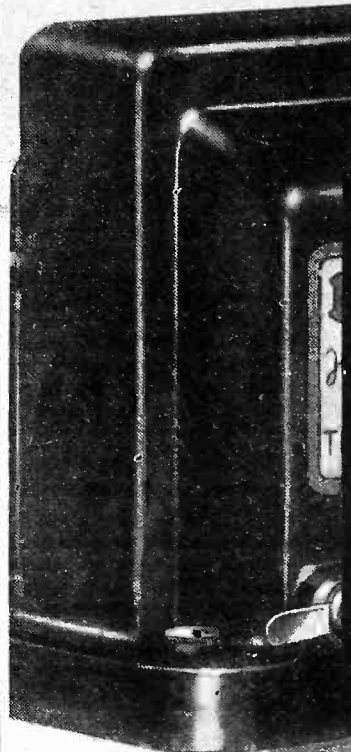
ALL MECHANICS WILL HAVE

FLUXITE

IT SIMPLIFIES ALL SOLDERING

LISSEN

**SPECIFIED
PARTS FOR THE P.W.
"AC RADIOGRAM"**



LISSEN

HYPERNIK L.F. TRANSFORMER

You must not depart from the specification—you must use this Lissen Hypernik Transformer—if you want to get the same results as the designer of this P.W. Radiogram.

With a primary inductance of fully 100 henries, it yet operates perfectly when passing currents up to 5 m/A or more. Its step-up ratio is 4 to 1, and a stage amplification of more than 100 is obtained. PRICE **12/6**

LISSEN

MANSBRIDGE TYPE CONDENSER

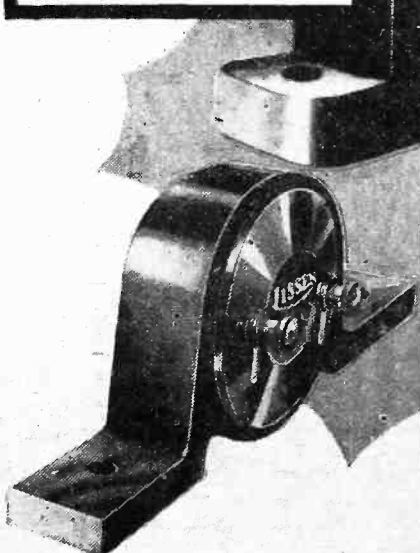
The designers of this P.W. Radiogram have specified Lissen Mansbridge Type Condensers. Keep closely to this specification, because upon the reliability of the condensers you use depends the performance, the safety and reliability of your set. PRICE **3/6**



LISSEN

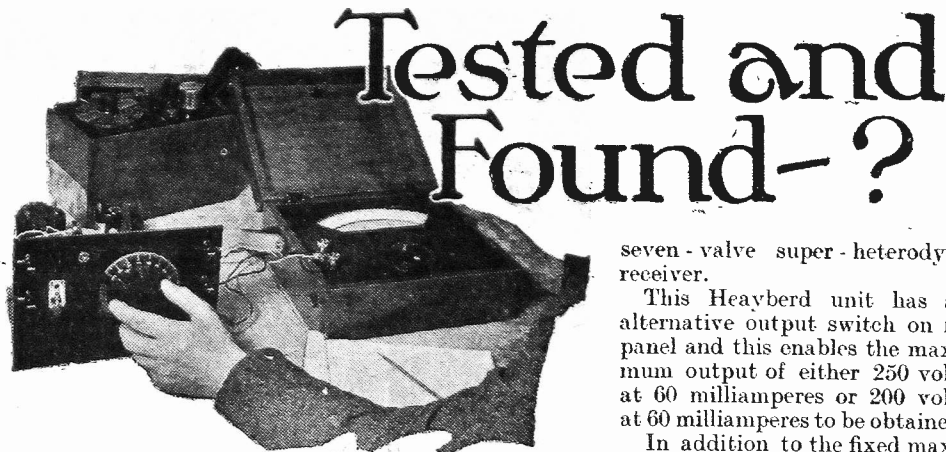
DISC TYPE HF CHOKE

A disc-type H.F. Choke of outstanding merit in very compact form. Will operate perfectly in any capacity reaction circuit wherever an H.F. Choke is specified. Suitable for both long and medium wavelengths. Will give perfect results in receivers employing Dual Wave Coils. PRICE **2/6**



LISSEN LIMITED, Worple Rd., Isleworth, Middlesex

FROM THE TECHNICAL EDITOR'S NOTE BOOK.



Tested and Found-?

SMOOTH H.T. SUPPLIES.

A SMALL-capacity H.T. battery will give satisfactory service with a big set for a restricted length of time. But the same does not apply to a mains unit.

Almost invariably it is quite hopeless to try and run a mains unit at a current above its specified output. Hum and instability usually result.

It used to be widely believed that these troubles were the direct result of an insufficient current. But this is not the case.

A small mains unit will possess only sufficient "smoothing" and decoupling to cope with the small kinds of sets for which its output is suitable.

Cutting Out That Hum.

If you use it with a larger and more sensitive set the greater amplification present will bring up the hum and extend the decoupling to its limits, unless, of course, the set itself is very adequately decoupled.

Even if this should be the case there is still the hum, for the designer of a receiver reckons on a smooth H.T. supply as a matter of course, and there will be little in any set which will smooth a coarse H.T.

Smoothing costs money, and it is not an economic proposition to equip a junior type mains unit as lavishly in this respect as a senior type.

But whereas it is highly improbable that an inexpensive unit will give even a passable performance with a largish set, there is no doubt at all that a large, high-class unit designed for a heavy output will operate a small set satisfactorily.

In actual fact it should be far superior to the smaller unit.

Which is all an argument in favour of adopting a bold policy when buying a mains unit, and that is, always go for the very biggest and best you can possibly afford.

Alternative Outputs.

Then, if and when the time comes that you add a larger output valve or build a larger set, your mains unit will easily be able to stand up to the greater current demands.

There won't be any waste in using a "senior" type mains unit with a "junior" class of set for good mains units are flexible by nature.

For instance, the Heayberd D.250 can be adapted to give perfect service with practically any set from a simple one-valver up to and including an elaborate six- or

seven-valve super-heterodyne receiver.

This Heayberd unit has an alternative output switch on its panel and this enables the maximum output of either 250 volts at 60 milliamperes or 200 volts at 60 milliamperes to be obtained.

In addition to the fixed maximum output terminal, there are no less than three variable H.T. plus tapplings giving respectively 60 to 80 volts (for a screened grid), 0 to 150 volts, and 100 to 200 volts. The last is also rated to carry the full output of the unit.

As an indication of the nature of the smoothing provided, it can be mentioned that the fixed condensers employed give a combined total of 23 microfarads! (Some of those small units have no more than 4 mfd.)

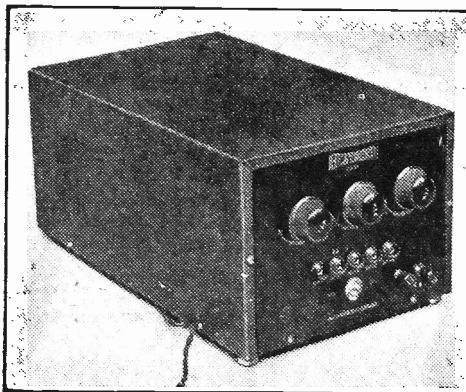
Strongly Constructed.

The unit is built into a stout metal case having an attractive crystalline finish, and the plugs, sockets and controls are mounted on a neat bakelite panel.

Special rubber feet are fitted so that the unit can be placed anywhere.

The price of this Model D.250 is 170s.,

A FINE UNIT



The Heayberd Model D.250 H.T. Mains Unit.

and for 10s. extra an L.T. supply of 4 volts, 6 amperes, for A.C. valves can be provided if required.

Our tests of the D.250 have been of a wide and eminently practical nature, and we have no hesitation in saying that we consider it to be a very fine unit indeed. Its output is wonderfully clean, and even with sensitive supers it maintains its silence, and you can't say that of more than an extremely few makes. Heayberd have provided ample justification of their slogan "Monarch of The Mains."

TWIN METALLISED TUBING.

You will no doubt remember my fairly recent reference to Goltone Flexible Metallic Screened Tubing. It is a single sleeving for shielding leads and it has a tinned-copper braided wire covering.

Well, owing to the successful reception accorded to this material Messrs. Ward and Goldstone have decided to manufacture a twin metallised sleeving capable of accommodating two leads.

This will no doubt prove almost equally popular for there are many occasions when it is desired to run a screened pair of leads to a panel light, meter or panel switch.

And at the reasonable figure of 1s. per yard, no doubt, most constructors will add the twin type to their stocks of materials.

A NEW RADIO SERVICE.

The radio dealer has had a lot of brickbats thrown at him during the past, and a few may have been deserved. But it is unfair to expect the ordinary vendors of radio goods to be able to give a first-class technical service.

PLEASE NOTE.

Manufacturers and traders are invited to submit radio apparatus of any kind for review purposes. All examinations and tests are carried out in the "P.W." Technical Department with the strictest of impartiality, under the personal supervision of the Technical Editor.

We should like to point out that we prefer to receive production samples picked from stock, and that we cannot, in any circumstances, undertake to return them, as it is our practice thoroughly to dissect much of the gear in the course of our investigations!

And readers should note that the subsequent reports appearing on this page are intended as guides to buyers, and are, therefore, framed up in a readily readable manner, free from technicalities unnecessary for that immediate purpose.

He cannot afford to engage skilled technicians and seldom ever has the space available for the installation of complete workshops, laboratories and testing plants, let alone the considerable capital required for such things.

Therefore, the National Radio Service Co. does fulfil a definite requirement and we offer it our best wishes for success. Working through the trade this company will undertake at reasonable charges the repair, conversion, re-conditioning and re-construction of all types of sets, the skilled assembly of kit sets, testing, etc. They have, we understand, a well-equipped repair depot equipped with the latest gear and a fully qualified staff.

THE CHAKOPHONE TUNER.

This is made by the Eagle Engineering Co., Ltd., and is an attractively neat component. It is designed to cover the usual two wavebands by operating a push-pull switch (the one on my sample is rather stiff, by the way).

There is a neat panel plate. A rotating reaction coil is embodied in the tuner and the price is 10s. 6d.

Within its obvious limitations it is a component which I would describe as adequate. That is to say, its efficiency is such that it should prove popular among those desirous of possessing simple but effective broadcast receivers which are not called upon to accomplish unusual DX or selectivity feats.

YES! — A LONGER USEFUL LIFE

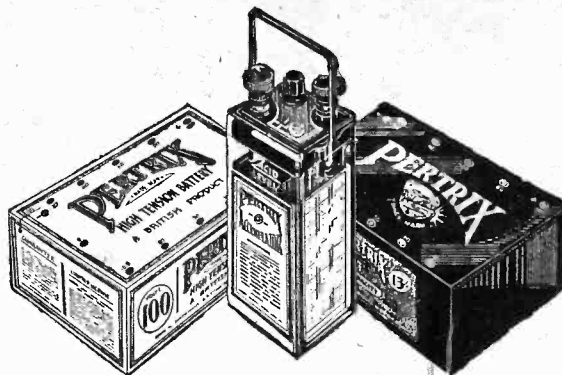
Exaggerated claims are often made about the life of dry batteries, but it can be claimed quite definitely for a Pertrix Dry Battery that it has an undoubtedly longer useful life.

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H.T. BATTERIES - - From 5/6
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Model Aeroplane Chat

IF you are interested in model aeroplanes and wish to keep right up to date in all aeroplane matters, you must write to **THE MODERN BOY** about it. Full particulars of what you have to do are given in this week's fine issue. Make sure of your copy *Now*.

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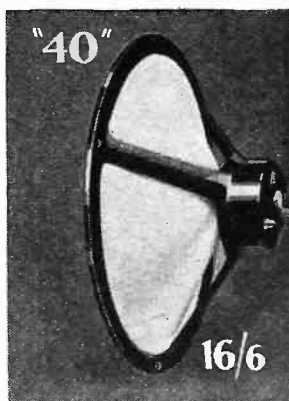
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R & A "CHALLENGER" Permanent Magnet Moving Coil Reproducer. Will operate with any set from a 2 valve to a power amplifier. The "WIRELESS WORLD" states—"The performance is such that it merits discussion from an absolute standpoint ... overall sensitivity slightly better than average of its class ... reproduction of bass below 100 cycles quite definitely above average ... full-bodied bass without 'boom' ... speech natural ... balance in music exceptionally good."

REPRODUCERS & AMPLIFIERS LTD., FREDERICK ST., WOLVERHAMPTON

NOTES FROM THE NORTH

By **OUR NORTHERN CORRESPONDENT.**

Who comments on television possibilities, together with other news items of particular interest to listeners in the North.

WILL television be extended to the North Regional station as well as London Regional? This question has been hanging fire for a long time, but now there appears to be a prospect of a decision on the matter.

I am informed by the B.B.C. that until the installation of television apparatus at Broadcasting House, London, is completed, no plans will be announced as regards the use of any wavelength, either London, Northern, or Midland, for the transmissions. It is expected that the work at Broadcasting House will be finished during the middle of July, and then the B.B.C. will show its hand.

Reception Conditions Are Bad.

There are not many television "fans" in the North, but those who exist are super-enthusiasts; they have to be, for they work under discouraging and difficult conditions. When the vision is broadcast on the London National wavelength, reception is well-nigh hopeless, for at a distance of 200 to 300 miles from the transmitter this is a poor "signal."

Some months back hopes ran high in television circles for an extension of the transmissions to the North Regional station. But the engineers ran up against difficulties in the transmission of the image from London over the long landline to Moorside Edge.

At Moorside Edge, by the way, the B.B.C. has been tidying up the site, and the station now has quite an elegant appearance, what with the long concrete approach road, the concrete-posted fence round the site, the iron gateways, and an extensive line of fir trees. These have been planted round the site, and when they have grown they will certainly tone in admirably with the bleak and mountainous surroundings. But by that time the rapid evolution of radio transmission will probably have made the North Regional station quite obsolete. Perhaps it will by then have been turned into a hikers' hostel!

An Impressive Station.

I have visited nearly all the B.B.C. stations, and Moorside Edge always seems to me the most impressive of all. This is partly due to the striking position it occupies, and partly to the grand scale on which the station was set out (contrasting, for instance, with the unimpressive Scottish Regional).

The Scottish Regional transmission is proving good strength in many parts of the North of England as well as in Scotland.

More Power on National.

I often hear people who reside within the service area of the North Regional station remark that they get stronger reception from North National than North Regional. It is not generally known that actually the National transmitter at Moorside Edge does put out slightly more power, although they are both officially listed as 50 kws.

A proposal that certain programmes in Welsh shall be broadcast from North Regional is not likely to provoke enthusiasm in the North. Admittedly by this means the programmes concerned would reach a larger number of Welsh listeners than if they were broadcast from Cardiff, but is the function of the North Regional

station to cater for Wales? As far as I can gather, however, nothing has yet been decided definitely.

As regards the North Regional programmes, there is no important development to report this month, but I should like to emphasise the popularity of the occasional concerts by the Augmented Northern Studio Orchestra. There is no doubt of the feeling in the North about this.

So long as orchestral activities are permitted in provincial studios there is every reason why they should be conducted on bold lines, employing fairly large orchestras; but the most ardent enthusiast for local studio work would be hard put to justify the transmission of a concert by a small and inadequate "orchestra" from a provincial studio when simultaneously a large orchestra is playing in a London studio for the London Regional programme. I often receive complaints from listeners that the small Northern Studio Orchestra is used when such an orchestra as the Theatre Orchestra is available for relaying from London.

No Celebrations!

There will be no celebration of any kind when the B.B.C. moves its Yorkshire head-

quarters from the premises it has occupied in Basinghall Street, Leeds, since 1924, to the new offices, studios and control-rooms in Woodhouse Lane. This move may not, after all, take place in September. There have been considerable delays in the work of transforming the one-time Quaker meeting house into a modern broadcasting house. It should be remembered that the B.B.C. maintains not only studios and offices in Leeds, but also the "S.B. centre" through which London is linked by landline to Manchester, Moorside Edge, Newcastle, Belfast, and Scottish stations.

The landline terminations will have to be transferred to Woodhouse Lane from Basinghall Street, and a large amount of new engineering equipment must be installed. This will be similar to that at the new control-rooms in London and Edinburgh.

Very Little Comment.

There has been surprisingly little comment amongst Tyne-side listeners with reference to the B.B.C.'s wavelength experiment at Newcastle. Local radio dealers tell me that they have not received many complaints respecting failure to receive the transmission on the new wavelength (211 metres); excepting from a few crystal-users.

The temporary, low-power, 211-metres transmitter is giving quite a good signal strength in Newcastle, in spite of the fact that its power is only 120 watts. Actually, it is one of the old relay transmitters removed from a relay station which has been closed down.

THE FLYING SCOTSMAN



This splendid photograph was taken from the air liner "Heraclus," when it accompanied the famous train "The Flying Scotsman" northward. Two-way communication by means of radio telephony was successfully maintained over the whole journey. In the circle you see the operator on board the air liner.

AN AERIAL TIP

By C. S. POLLARD.

Who describes a trouble-free method of arranging the pulley rope on your aerial mast.

I WONDER how many receiver-owners have had their pride as efficient radio enthusiasts badly smitten—when a break has occurred between the aerial wire and the supporting wire—by such remarks as, "Fancy your aerial falling down! Why don't you put up a decent one?"

It Always Happens!

The aerial probably was a decent one at first, but, like so many other people, the owner, having put it up, gave all his attention to his receiver and only realised that his aerial required overhauling when it had fallen down. And in all probability the supporting wire had shot merrily over the pulley and followed the aerial to the ground.

Hence we see a large proportion of aerials fastened only half-way up the mast, which is the highest point their owners could reach after the pulley has been rendered useless.

There is a very simple scheme, which does not seem to be in general use, whereby if the aerial wire should part company with its supporting wire, it will still be possible to haul it up again.

Most people, before putting up an aerial pole, simply thread a supporting rope or wire through the pulley, attach one end to the aerial, and leave the other end free to be wound round a hook at the base of the pole when the aerial has been drawn up into position.

It is a much better arrangement to tie the two ends of the rope together, after it has been passed over the pulley, so as to form a loop, and so attach the aerial (or a supporting wire if the aerial is to be short) to the rope, preferably by means of an insulator tied in the rope; this will keep the wire from cutting the rope.

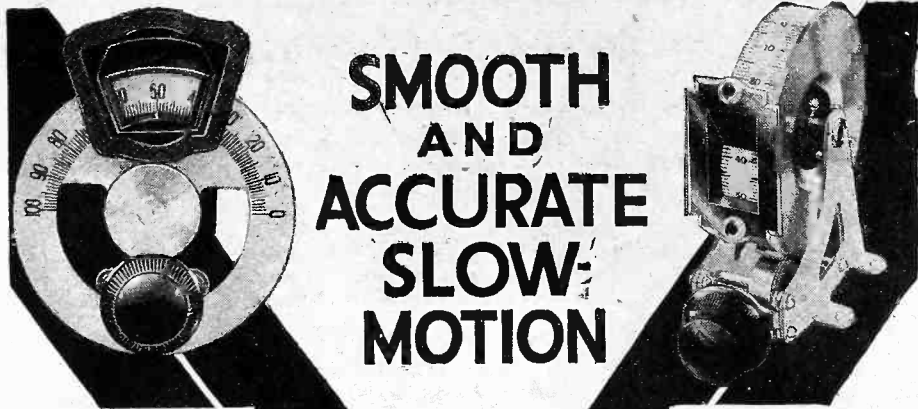
After this has been done, if the aerial corrodes and breaks, the rope will remain over the pulley and another aerial can immediately be put up.

Use Good Rope.

Rope, provided it is strong hemp cord such as that obtainable for window-sashes, has certain advantages over wire, the most important of which is that it runs over the pulley so easily. Wire has a habit of acquiring kinks which catch on the pulley, making aerial overhauling a tiresome job, and giving the owner an excuse for not attending to his aerial as frequently as he should do.

Another advantage is that while wire will corrode quite soon after being put up and break strand by strand, hemp cord will withstand much more weather before giving in. This does not mean that the aerial system needs less attention when a rope support is used. As it is so easy to lower it, the aerial should be overhauled once a year.

If desired, an aerial strainer may be used to compensate any shrinkage of the rope during wet weather, though good hemp cord will not give much trouble in this respect.



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J.B. ILLUMINATED VERNIER DIAL
Takes panels up to $\frac{1}{4}$ in. Fitted easily—only one round hole to cut. Scale mounted neatly behind panel. Smooth action. Price 5/—, complete with lamp-holder.

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Exceedingly powerful, reliable and simple to fit. Mounts on baseboard independent of panel. Height to match J.B. Gang Condensers. Ratio 16/1. Oxidized silver or bronze panel plates. 7/6



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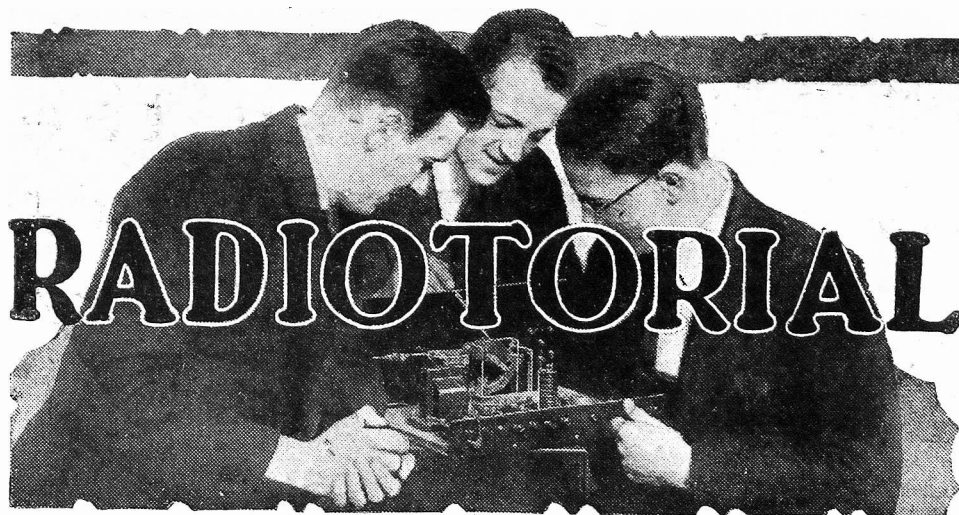
A TENSE MOMENT FROM "WEB OF THE PEACOCK BAND"

A gripping long complete novel of detective adventure, which appears in the AUGUST issue of

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RADIOTORIAL

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The Editor will be pleased to consider articles and photographs dealing with all subjects appertaining to wireless work. The Editor cannot accept responsibility for manuscripts or photos. Every care will be taken to return MSS. not accepted for publication. A stamped and addressed envelope must be sent with every article. All inquiries concerning advertising rates, etc., to be addressed to the Sole Agents, Messrs. John H. Lile, Ltd., 4, Ludgate Circus, London, E.C.4.

The constructional articles which appear from time to time in this journal are the outcome of research and experimental work carried out with a view to improving the technique of wireless reception. As much of the information given in the columns of this paper concerns the most recent developments in the radio world, some of the arrangements and specialities described may be the subjects of Letters Patent, and the amateur and the trader would be well advised to obtain permission of the patentees to use the patents before doing so.

QUESTIONS AND ANSWERS

CONNECTING AN AMPLIFIER.

"Fuse" (Lee St., Haggerston).—"I built the 'Comet' One, and I had on hand an Ediswan B.B.C. one valve amplifier.

"This amplifier incorporates a 3.5 bulb in the filament positive return to H.T.—. Worked with a crystal set this bulb is glowless.

"Reading the descriptive detail accompanying the design of 'Comet' One in 'P.W.' an amplifier was referred to in conjunction with 'Comet' One.

"I connected my two outfits up, using same batteries, and, lo! what was a fuse

HOW ARE YOUR RESULTS NOW?

Perhaps your switching doesn't work properly? Or some mysterious noise has appeared and is spoiling your radio reception? Or one of the batteries seems to run down much faster than formerly?

Whatever your radio problem may be, remember that the Technical Query Department is thoroughly equipped to assist our readers, and offers its unrivalled service.

Full details, including scales of charges, can be obtained direct from the Technical Query Dept., POPULAR WIRELESS, The Fleetway House, Farringdon Street, London, E.C.4.

A postcard will do. On receipt of this an Application Form will be sent to you post free immediately. This application will place you under no obligation whatever, but, having the form, you will know exactly what information we require to have before us in order to solve your problems.

LONDON READERS, PLEASE NOTE: Inquiries should NOT be made by phone or in person at The Fleetway House or Tallis House.

became a pilot light! Otherwise, everything functioned O.K.

"The trouble is, of course, that whereas L.T.— is insulated from H.T.— on amplifier, it's joined to H.T.— on receiving gear. So when one's hooked to the other the bulb is across the low-tension accumulator.

"How can I cure this? Separate batteries for each is going to take up a mile of room, and a spot of coin, too.

"I want that bulb to do its specified job: protect the power valve.

"By the way, could it be made to protect the detector in 'Comet,' too?"

Your diagnosis of the trouble is the correct one and there is an easy way out of your difficulty without the necessity for re-wiring either the set or the amplifier.

What you can do is to modify the external connections in such a way that the H.T. negative is still joined to both the "Comet" One and to the amplifier, without connecting the fuse across the L.T. battery.

It may not seem easy at first glance, but you will begin to "see daylight" if you remember that there are too many connections at present. How can one of them be dispensed with?

It is easy enough. Simply ignore the H.T. negative terminal on the set, and carry on as though it did not exist.

There is no need for extra batteries, etc., as will be apparent if you consider the batteries separately, and their connections to both set and amplifier. Taking the L.T. battery first, its new connections will be exactly the same as before, and it will thus supply both the amplifier and the set with the necessary low tension.

In the case of the high-tension battery, the H.T. positive plugs remain unaffected, so all we need worry about is to see that the H.T. negative is properly connected to both instruments.

Obviously, it goes to the amplifier correctly, because this lead has not been tampered with. And as "H.T. negative" on the amplifier is joined to the L.T. positive (through the fuse), this L.T. positive is, serving not only the amplifier but the set as well, and there is no need for the extra connection to the set's H.T. negative terminal.

It was this extra lead which caused all the trouble. Without it the fuse is in the common H.T. negative circuit, and is therefore doing duty for both valves at once, as you desire.

(In action, of course, the H.T. current flowing through it is too small to make it light up, and if it does so, the glow is a warning that something is wrong.)

COMPARING WAVELENGTHS.

"ILKLA MOOR BAR TAT" (Ilkley).—"Is it a fact that the wavelengths given to the North Regional station are better for broadcasting than those given to the London station at Brookmans Park?"

"P.W." PANEL No. 80.—CONNECTING "IN SERIES."

When electrical apparatus is connected "in series" all the current flowing must pass through each piece of apparatus in turn.

Thus, if two coils or chokes are joined "in series" the end of one is joined to the end of the other; and current flowing will pass through each, in turn.

Similarly, if two condensers were to be connected "in series" with one another it would be necessary to join one terminal on the first condenser to one terminal on the second condenser, the other circuit connections being taken from the free terminals of the arrangement.

Yes, the North Regional certainly scores over London. For one thing its two transmissions are more widely separated, the kilocycle separation in the case of London being a matter of 304, and in the case of North Regional 370 kilocycles, thus rendering the separation of the two programmes on simple sets much easier in the latter instance.

Another big advantage is that the North Regional wavelengths are longer than their London counterparts, and they thus have superior carrying-power.

"STABILISING" AN H.F. VALVE.

P. K. (Malta).—"Not being endowed with an abundance of this world's goods, and having an inherent abhorrence of parting up

DO YOU KNOW—

the Answers to the following Questions?

There is no "catch" in them, they are just interesting points that crop up in discussions on radio topics. If you like to try to answer them, you can compare your own solutions with those that appear on a following page of this number of "P.W."

- (1) How much does the American listener have to pay for a broadcasting licence?
- (2) Which English county has the smallest percentage of licensed listeners to population?
- (3) When broadcasting began?
- (4) About how many miles of electric wiring there are in Broadcasting House—exclusive of technical wiring for microphones, etc.
- (5) Who is the B.B.C.'s Music Director?

with cash unnecessarily (due to a Glasgow mother and upbringing), I still use a set with no S.G. in the high-frequency amplifying stage, but one of the old 'H.F.'s' instead. And what is more it is good.

"My only trouble with this arrangement is that when I change over one valve for another I get bothered with the neutralising setting, and it takes an unconscionable time to get the adjustments right.

"At the time when neutralising was popular I was working a one-valve set, and did not therefore pick up all the little refinements and niceties of H.F. operation. In particular, I never had explained to me in detail the best way to neutralise, and so I have since proceeded on the good old hit or miss principle.

"Could you give me some sounder guiding principle for neutralising, to work on? And please do not confine the reply to cover only one class of valve, or anything like that, as if I get another chance of picking up 'Luckshee' valves or old stock I shall certainly postpone the purchase of an S.G., with its greedy H.T. propensities in favour of the economical old-timers."

The method of neutralising does not vary according to the particular make of valve, so the following procedure is recommended for all valves of the H.F. class when used in conjunction with a neutralising scheme for H.F. amplification.

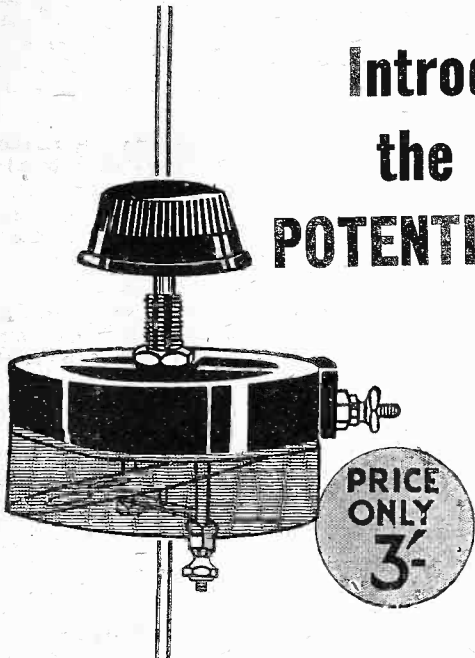
Set the reaction control at minimum and likewise the neutralising condenser. Now, on setting the tuning condensers so that the two tuned circuits are "in step" with each other it will probably be found that the set is oscillating.

(Continued on page 568.)

Many Important Conversions have been made since

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Introduced the new **POTENTIOMETER**



Make your set yield an extra "bonus" of enjoyment; convert it to better Radio by fitting the new LEWCOS Potentiometer which enables you to accurately control your Low Tension input to varying conditions, thus ensuring a higher degree of efficiency.

This wonderful new LEWCOS product can be purchased from all Radio dealers at an absurdly low price.

THE LEWCOS TYPE M.C. CHOKE (PRICE 2/6) IS SPECIFIED FOR THE "A.C. RADIOGRAM" DESCRIBED IN THIS ISSUE. The small size of this Choke (2 1/2 in. long by 1 1/2 in. wide by 1 1/4 in. high) renders it particularly suitable for sets where space is of paramount importance.

And these are some of the reasons it is accounted a good investment :

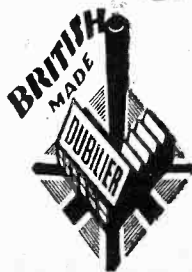
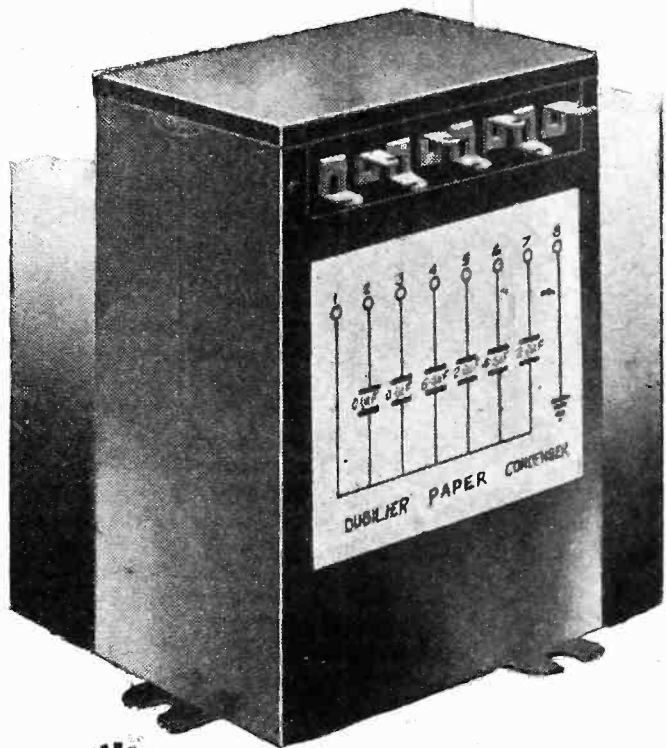
1. It is dead silent in operation.
2. Perfect contact is made by an eccentric rotating plate.
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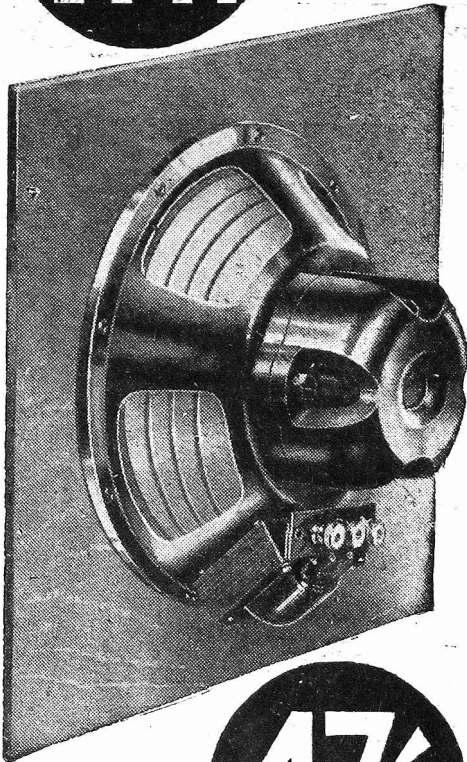
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**RADIOTORIAL
QUESTIONS AND ANSWERS**

(Continued from page 566.)

The best way to test for oscillation is to touch one or other of the sets of plates of the tuning condensers (this may be either the fixed or moving, according to the particular set). When the set oscillates you get a loud double click.

You will probably find that the set will only oscillate under above conditions when the two circuits are in tune with each other and this can be used as an indication. (It is convenient to perform the operation at some point near the middle of the tuning range.)

Now increase the capacity of the neutralising condenser. (In the case of most condensers this means screwing downwards.)

Test at intervals for oscillation as this is done and you will presently find that the set has ceased to oscillate, and will not re-commence even when the tuning dials are slightly readjusted.

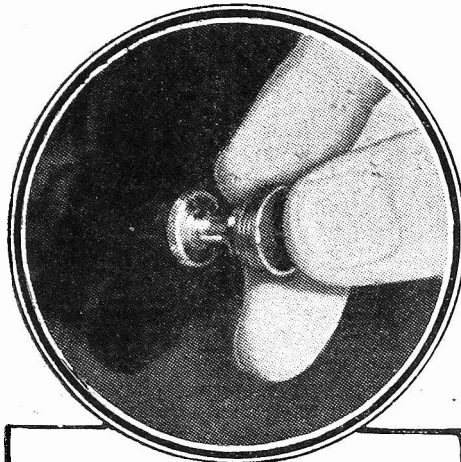
Now increase the reaction a little, until the set once more oscillates, and again increase the neutralising condenser setting until oscillation ceases. Slightly readjust the tuning condensers again to make sure that the set is completely stable once more.

Proceed in this way until it is found that the correct adjustment of the neutralising condenser has been "over-shot." Once this point has been passed, it will be observed that further increases of the neutralising condenser setting no longer stop oscillation, but cause it to become stronger.

The object is to find such an adjustment of the neutralising condenser as will permit the greatest setting of the reaction condenser to be used without producing oscillation.

TAKING CARE OF SHORT-WAVE COILS.

G. D. B. (Foleshill, Nr. Coventry).—"Having read all this about the fascination of the short waves, and the big distances they would



WHAT'S WRONG ?

If a switch is noisy the probability is that the spring has loosened, and the noises will vanish when this has been attended to.

In many types the moving "plunger" may be withdrawn easily by unscrewing the knob, and the tension of the spring can then be increased.

Watch out also for dust and specks of dirt, which are quite sufficient to cause crackling.

cover, I thought I ought to try my luck. And my luck was out!

"First I could not hear a single thing with the set, not even an H.T. click. But that was comparatively easy to spot the cause of, because I had noticed when putting the valve holder in the baseboard, that one of the spring contacts looked fuzzy.

"Then I got going, and at first things were fine, with plenty of Yanks, and as many Europeans as I wanted, let alone amateurs. Then I dropped the 4-turn coil, and accident-

ally stood on it, and that altered all my readings.

"True, the alteration is only a slight one, and every station is altered by about the same amount on the dial, which I suppose is due to something I have done to the coil in dropping it. But is there anything I can do

THE ANSWERS

TO THE QUESTIONS ASKED ON PAGE 566 ARE GIVEN BELOW.

- (1) Nothing. The revenue is obtained not from licences, but from the selling of time "on the air" to advertisers.
- (2) Durham, with only about 3 per cent. (Compared with Hertfordshire's 15 per cent.)
- (3) According to the B.B.C., "broadcasting" in the now well-understood sense of the word came into being in the States in the autumn of 1920."
- (4) About 50 miles!
- (5) Dr. Adrian Boult.

DID YOU KNOW THEM ALL ?

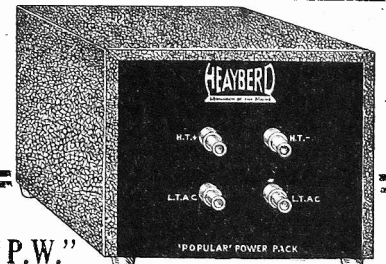
to bring all the readings back again to the ones I have logged, or had I better just mark out a new tuning curve once more, and try to make that one permanent?"

We are afraid you won't get the old readings back again, for it is only a matter of luck when this can be done, and as you say your luck seems to be out. But honestly, this last bit of "bad luck" would appear to have been due to your own fault.

To drop a short-wave coil and then step on it is simply to ask for trouble, as its construction necessitates the coil being rather fragile, and liable to get bent or else badly strained so that in use it does not retain its original shape.

It is this alteration of the shape, (of the spacing between turns, and so forth) that is so detrimental, and obviously, the tuning is going to alter if you alter the inductance of the coil by any such careless handling.

What you must do is to make sure that the coil is now reasonably rigid, and in future treat it with the greatest respect, remembering that any rough usage will have to be paid for in shorter life or shaky service.



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THE LISTENER'S NOTEBOOK
(Continued from page 552.)

expense of another turn already begun, must have been very irritating to devotees of the latter. It is these little things that lose the B.B.C. many friendships.

Those listeners not in the mood for the Sibelius Concert from Queen's Hall found an attractive alternative in the London Regional's "From Revue to Grand Opera No. 4." Both Gaby Valle and Trefor Jones were in fine trim in a medley of first-rate songs. The Studio Chorus, too, seemed to be more indispensable than the average revue male chorus usually is.

The Burlesque on "Waterloo."

Lance Sieveking's burlesque "Victoria" proved a real laughter-maker, but only those who had listened to the original "Waterloo," produced a week or so previously, would appreciate its cleverness to the full. I was pleased to see that Mr. Sieveking had enlisted the help of a few more gulls and sea-wash for atmosphere than the Effects Dept. did in the original production. In spite of the fact that the effects were burlesqued on this occasion, they were much more telling because they were quite audible. Of course, the fading in and out of the different national anthems was just good-humoured fun.

The pamphlet issued by the Central Committee for School Broadcasting offers interesting reading, and one is struck by its ready-to-accept-suggestions tone. There is no doubt that during the past three years, which the Council term an experimental period, progress has been made, but it is also true that all the possibilities of this branch of broadcasting have not yet been explored.

Helping the Teachers.

Personally, I am sure that the school-teacher can be helped very materially by broadcast lessons, but in certain subjects more than others. History, Geography, Science and Music are all subjects that can be treated comparatively easily via the microphone. Talks by outsiders, experts in their subject but not necessarily school-teachers, can help tremendously in a supplementary capacity.

But with a foreign language, one is up against a different proposition. The B.B.C. has undertaken a tough job when it essays to teach a foreign language to the children of a nation which almost boasts of the epithet "non linguistic" generally applied to it.

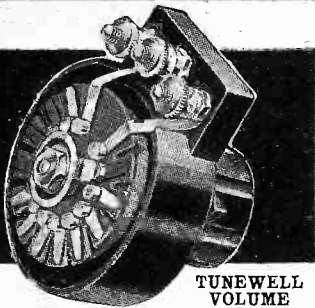
I cannot help feeling that its method rather suggests an ignorance of the child mind and of its capabilities. My opinion of the "French to Schools" talks is that they are too few in number to have anything more than a negligible value.

Tackled in the Wrong Way.

In the second place, these talks are unsuitable in themselves. They are generally either readings from the French classics, such as Racine, or the "dry as dust" excursions in Paris. The first, being in verse, are much too difficult for any but advanced boys of school or Higher Certificate Standard. The second, though simple, are too dull to sustain interest, as this sort of story has been done to death in the class-room for generations.

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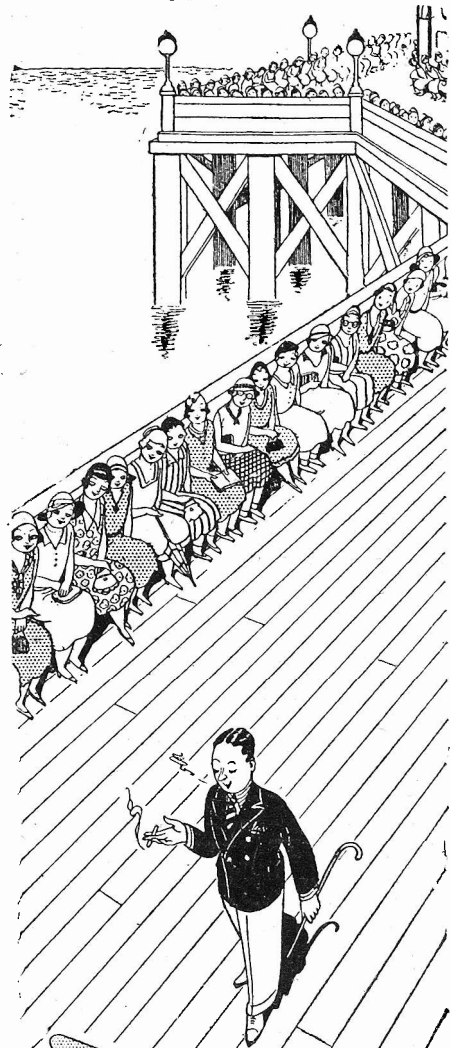
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TECHNICAL NOTES

Some diverse and informative jottings about interesting aspects
of radio reception.

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

Losses and Efficiency.

WE are often warned about the importance of avoiding losses in different parts of the receiving circuit, but I am afraid many of us do not pay enough attention to this. Of recent years manufacturers have undoubtedly made great improvements in components, and we have been told about these so often, by advertisements and otherwise, that we are getting into the habit of thinking that losses have been done away with and all obligation rests with the maker.

To some extent this is true, but remember that whilst there are many very good and efficient components on the market, there are also plenty of the other kind, and that the more efficient we make some of the components in the set—valves, for instance—the more important it becomes to improve the efficiency of all the other components, on the well-known principle that the strength of a chain is the strength of the weakest link.

It is surprising how little things will affect the results. I wonder how many set constructors there are who stick absolutely, even down to the smallest detail, to the specifications given by the designers of the set. I guarantee that in nine cases out of ten *some* variation, especially in the matter of choice of components, is made by the constructor himself.

Components Left Over.

This is excusable to some extent, because you almost invariably have a number of spare components on hand, left over from sets which you have previously made and altered or dismantled, and naturally you don't want to waste these. I am not suggesting that you should discard everything which you previously had in your laboratory or workroom and buy everything afresh, but I am suggesting very strongly that you should give careful consideration to all the components which you propose to use and make sure that by departing from the specification of the designer, in however small degree, you are not introducing losses or other effects which, for all you know, may vitally affect the results.

Screen-Grid Valve Holders.

To take a case in point, even such an apparently insignificant thing as a valve holder for a screen-grid valve can make quite a lot of difference, if it is not up to standard, by introducing losses into the circuit. Sometimes these losses may be quite enough to upset not only the signal strength, but also the tuning of the receiver.

The insulating material of the valve holder produces a capacity between the valve electrodes; the capacity between the grid contact and the filament contact, for instance, may be quite appreciable, and if this represents a poorish condenser with considerable losses, the overall results are sure to be affected because this condenser is, in effect, connected across the

tuning condenser and the coil. The result will be the same as though you had an inferior tuning condenser.

One Hundred Per Cent Results.

I could go on and mention quite a number of other points such as fixed condensers, grid-leak holders, and so on, which should be very carefully considered if you want to get the best out of the set.

It takes an expert to know just where a little inefficiency produces the worst effects. A given amount of inefficiency in one part of the circuit will be much less important than in another. But even an expert cannot always tell, without actually testing, how much inefficiency is being introduced by any component.

One is continually hearing of experimenters and constructors who make up a set and fail to get a hundred-per-cent results, and in the great majority of these cases the reason is because the builder of the set has departed, consciously or unconsciously, from the instructions.

Irritating Mains Valves.

I have been making up a set just lately in which I wanted to use indirectly-heated mains valves, but for a special reason I wanted these to "come on" with as little delay as possible; actually, from this point of view, it would have been better to have used ordinary battery-heated valves, but for other reasons it was essential that the set should be worked from the mains.

I think I have tried pretty well all the indirectly-heated mains valves available, but so far I have found nothing which really answers my requirements fully in this direction, and I have had to be content to put up with a certain amount of "delay."

In the course of these tests I was rather surprised to find what great variations there were in the "lag" with different types of valves. Some will come to life in a few seconds, whilst some others which I tried (German, by the way) took an unconscionable time to waken up.

As things are at present, I suppose we can scarcely hope to get an indirectly-heated valve which will come into action anything like as readily as a battery valve, because we have the insulating material between the heating filament and the cathode which has to be heated up and then the relatively massive cathode also has to attain the necessary temperature for electron emission.

Even if the insulating material is omitted we still have the cathode which has to be heated by radiation. In some types of valve the insulating material between the filament and cathode is of spiral formation, so as to leave fairly large spaces between, whilst in other cases it is notched, for a similar purpose.

Too Slow.

I suppose improvements will be made as time goes on—in fact, improvements

(Continued on next page.)

TECHNICAL NOTES

(Continued from previous page.)

certainly have been made very definitely since indirectly-heated valves were first introduced—but it seems to me it would be very nice if the "lag" could be reduced to negligible proportions.

As I mentioned, the particular circuit I was making up was for rather a special purpose, but even with an ordinary mains receiver it is rather irritating, on glancing at the clock, to remember that there is something on that you want to hear, and to switch on and then have to wait for perhaps a quarter of a minute or half a minute (it seems like half an hour) before you begin to hear anything. Rightly or wrongly, you are sure that the very thing you wanted to hear was just the thing that was coming over during those precious seconds!

Curing Background.

Apart from the operating lag mentioned above, mains valves have been improved out of all recognition, and now the "background" can be made so small as to be really negligible. A good deal depends, however, not only on the valve itself, but also upon the circuit arrangements, and particularly upon the provision of an efficient earth.

A good earth will do more to cure hum and background than all other dodges put together. This is a point to remember if you are troubled with background.

Potentiometer Troubles.

I have several times come across sets with which the owner was having all kinds of trouble owing, as it turned out eventually, to a faulty potentiometer. In some cases the winding was faulty, but in most cases the trouble was due to a bad sliding contact. The result of the bad contact is that either partial connection is made or there is no connection at all.

If a high-resistance potentiometer which is faulty in this way is used, for instance, in a screen-grid circuit for volume control, you will get all kinds of erratic results and sometimes no control at all. If the voltage on the screen is too high, you may get the set oscillating or again the amplification may turn out to be poor.

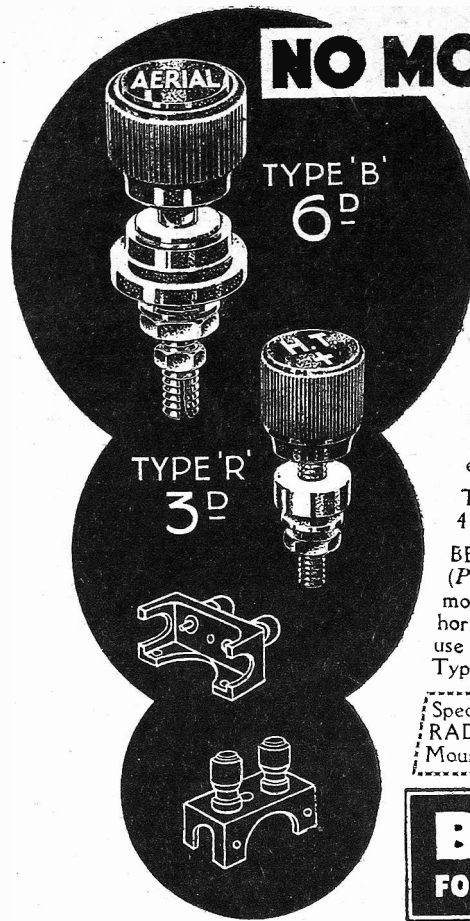
It is surprising how often bad contacts are met with in the slider of the potentiometer (and also in a rheostat, for that matter), and it is worth while to examine the sliding contacts very carefully and make sure that they really do their job properly.

So far as rheostats are concerned I have met some, and I expect you have too, which caused most awful crackles when they were operated, a state of affairs which is all wrong, since it can be so easily remedied.

Chasing His Tail.

The American General Electric Company recently made some tests of a round-the-world radio relay on WGY; the round

(Continued on next page.)



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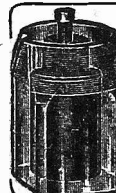
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TECHNICAL NOTES

(Continued from previous page.)

trip was via Kootwijk, Holland, Bandoeng, Java, Sydney, Australia and back to Sohenectady.

The account of these tests which I received from W G Y station a few days back mentions rather an amusing little incident. A favourite dog on the testing station ("Shorts" by name) happened to bark just while the world trip was in progress and, of course, his bark came back a fraction of a second later, having circumnavigated the globe.

"Shorts" thought he was being answered by an invisible rival; he barked back, as all good dogs will, and continued barking at himself until he was led out of the shack.

The account goes on to say that although "Shorts" has learned that no matter how fast he runs he cannot catch up to his own tail, he cannot understand why it is impossible to catch up to his own bark when it is travelling 25,000 miles round the world in a fraction of a second!

ARE RADIO WAVES HARMFUL?

An Interesting Question Revived

ONCE again the question of whether or not wireless waves affect the human body has been raised in the press; this time in connection with short waves. The probability of these affecting the nervous system has been suggested.

It is an indisputable fact that the whole of the space in which we move, eat and rest is completely permeated by wireless waves, and it is not absurd for the layman to wonder if these affect his health, though remembering the claims of advertised electro-medical appliances he ought to be more prepared to hear that they have a beneficial rather than a harmful effect!

But judging from the most recent scientific experiments carried out, it would seem highly improbable that there is any appreciable influence at all on the human body from artificially generated ether waves of a different character such as wireless radiation.

An Intense "Field."

The electrical quantities are too small. The intensity of the waves at and in the immediate vicinity of a high-power station is, of course, many thousands, even millions of times greater than at a distance of a few miles. Indeed, so intense is the "field" of a powerful station such as one of the British Regionals that sufficient current may be generated in isolated metal to give noticeable shocks.

But engineers have worked in such centres of concentrated ether activity for years, and there is nothing to show that these engineers are affected in health by their interesting occupation. As a matter of fact, all those I have met, to the number of some hundreds, appear to be perfectly sound in mind, limb and nerves!

Radio contributes but a small proportion of the etheric activity which is occurring throughout the world. One lightning flash may cause a far greater etheric disturbance over the whole of a continent

than the combined efforts of all the broadcasting stations in the same area.

It has been said that mice and rats have been killed by very short waves—but not at any distance, it should be noted. And anyway, they no doubt died because of excessive heat developed in their tiny bodies by being in an extremely concentrated field of radio force and not because of mental strain!

A terrifically greater amount of energy would be needed before the comparatively immense human body could be so affected.

No, there is no likelihood of the ether disturbances due to wireless stations having any effect on the population and, as I have already suggested, even if there were they might just as possibly be beneficial.

G.V.D.

TUNING WITHOUT CONDENSERS

Shall we come to it?

THERE has been so little fundamental change in certain branches of radio technique during the past ten or fifteen years that we are apt to regard these things as permanencies.

For example, every set, whatever its circuit, uses variable condensers for tuning. Every set, that is, with the possible exception of the more primitive types of crystal sets.

We will freely admit that variable condensers have been vastly improved, but the blunt fact remains that, after all is said and done, the variable condenser of 1932 is essentially similar to that which figured in 1922 receivers.

However, there are increasing signs that the variable condenser may soon have a most formidable rise.

And the cause of this will be the commercial development of modernised permeability tuning. The idea itself is not new, but it is only recently that discoveries have been made which not only bring it right up to date, but give it considerable advantages over the capacity-adjustment method.

Would It Be Cheaper?

Permeability tuning is very easy to understand. You know that inductance alterations vary wavelength, and that the larger the coil the higher the wavelength to which it will respond.

Instead of varying the size of the coil you can increase its inductance by inserting iron instead of the air which normally constitutes its core.

Well, permeability tuning is merely the pushing in and pulling out of such an iron core. But it is only recently that a practical scheme for making a core out of special finely-ground iron, the particles of which are insulated from one another, has been worked out.

Thus the losses attendant on the original use of solid or even laminated cores have been almost entirely eliminated.

Permeability tuners should be more effective, more compact and decidedly cheaper than the present systems of tuning.

Considerable research has been carried out in the U.S. and practical constructions have been developed. Before long we may find the scheme being investigated by enterprising British manufacturers.

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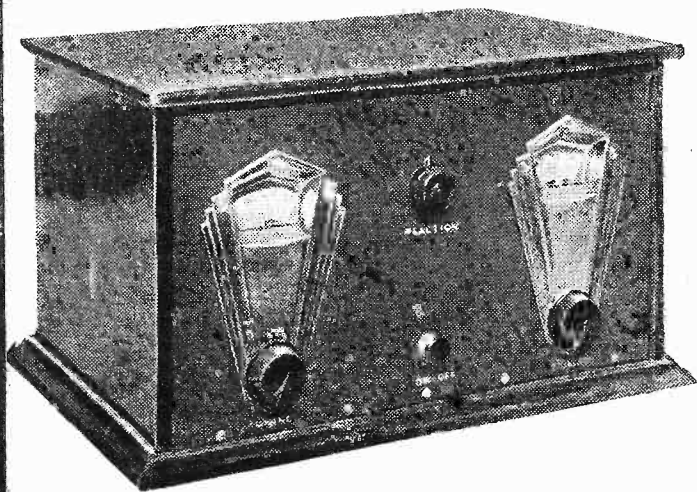
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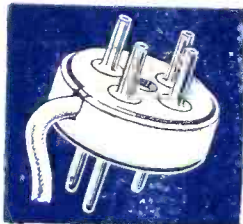
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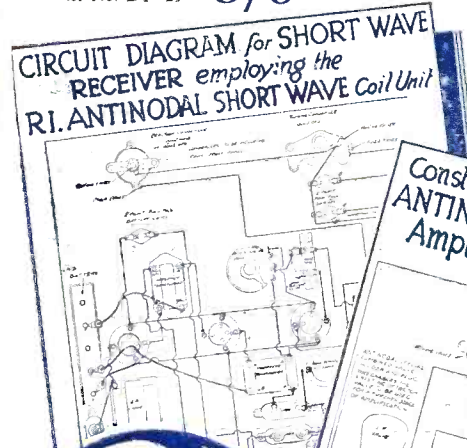
ANTINODAL Combined Valve Holder and Plug with screened lead. It accommodates your set's detector valve and plugs into the existing socket. It is used with the "Antinodal" Amplifier Adaptor.

List No. BY 25 **3/6**

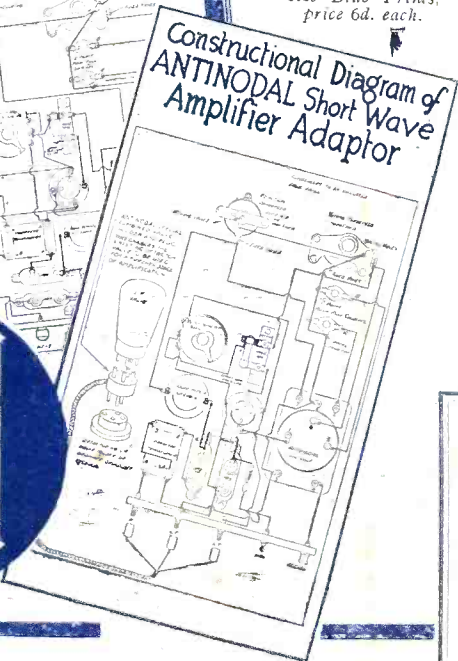
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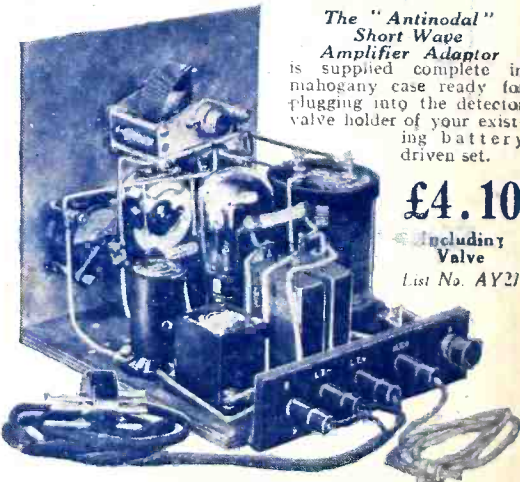
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