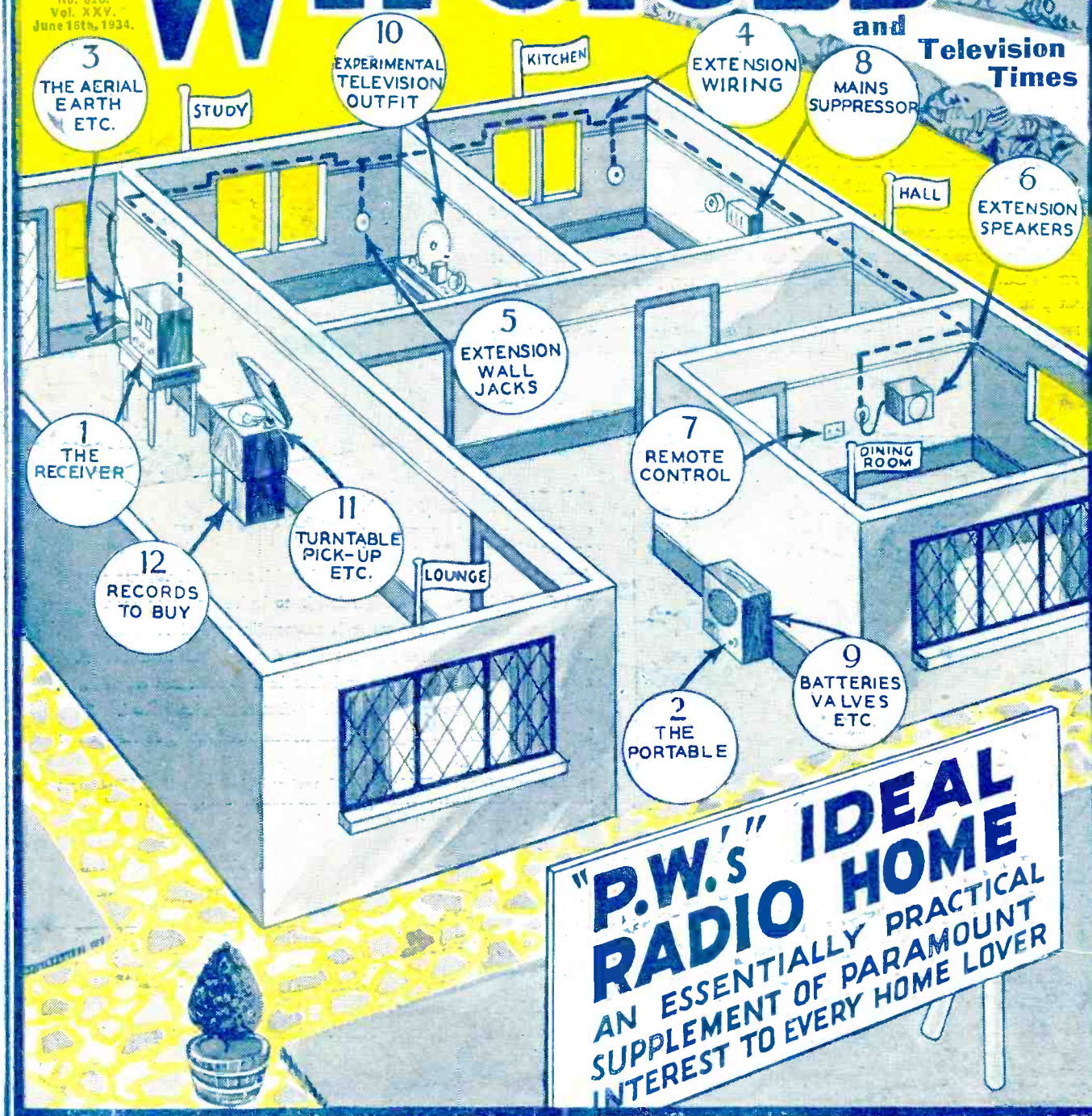


The Wireless Paper That Made Wireless Popular!

POPULAR 3^d Wireless

No. 628.
Vol. XXV.
June 16th, 1934.

and Television Times



"P.W.'s" IDEAL RADIO HOME
 AN ESSENTIALLY PRACTICAL
 SUPPLEMENT OF PARAMOUNT
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FLUID-LIGHT TUNING

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All Electric Superhet PORTABLE FLUID-LIGHT SIX

This new "His Master's Voice" Mains Portable with automatic volume control and fluid-light tuning, works off the mains electricity supply and needs neither aerial nor earth. It is the answer to all who have waited for true to life "mains reception" in a portable set. Its selectivity is so acute that it is fitted with fluid-light tuning—the sensational new device that ensures accurate tuning always. In this model, two illuminated arrows gradually approach each other until they show the exact point of perfect reception. So that by sight alone, unassisted by ear, you can tell when this set is tuned to concert pitch.

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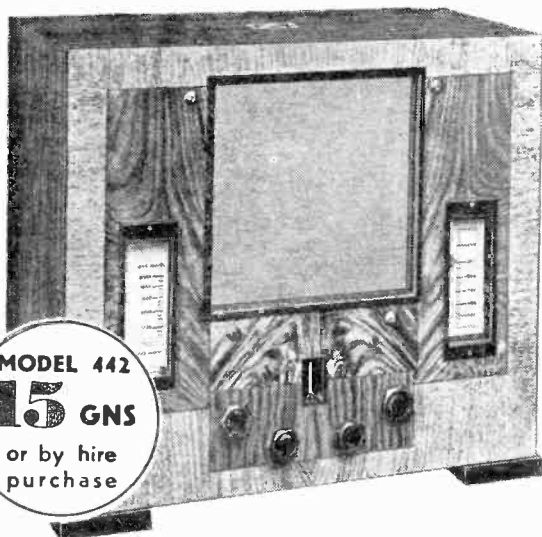


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A new five-valve superhet table model with automatic volume control and fluid-light tuning. It is a delight to look at, a joy to hear, and a pleasure to handle. Its range is extraordinary and every station is kept distinct. The fluid-light tuning device in this model is a thin column of light which rises and falls in a slender central window, indicating the exact spot at which perfect tuning is reached. Only by means of this fluid-light can the extreme selectivity of this set be fully appreciated.

MODEL 442. Superhet Table Model (five valves including rectifier). Fluid-light tuning in central window. Automatic volume control. For A.C. only.



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15 GNS
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POPULAR WIRELESS

THE FIRST AND FOREMOST RADIO WEEKLY FOR THE CONSTRUCTOR & AMATEUR EXPERIMENTER

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OLYMPIA AGAIN
 RADIO AND GOLF
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RADIO NOTES & NEWS

BROADCAST ODOUR
 TELEVISION THEATRE
 WIRELESS WISDOM
 HEAD EFFECTS

The Anti-Wireless Wayfarer.

DURING a recent walk I sat on a gate, smoking, with an amazing tramp who did not beg, bluster or whine, and who spoke the English of the B.B.C. without its frills. He took of my baccy without stint or modesty, and was good enough to praise its qualities.

I rarely talk "shop," but somehow the conversation got round to the subject of broadcasting, whereupon he said emphatically that he hated it and all its works.

buried myself, and I ran away, feeling very bad," he added.

Radio Show Notes.

THE dates of the three big radio shows are as follow: Olympia, August 16th to August 25th; Glasgow, August 31st to September 8th; Manchester, September 14th to September 22nd. They will be open from 11 a.m. to 10 p.m. Glasgow is to go all out this year; its show will be twice as large as in 1933, and I understand that a radio theatre is to be one of its major attractions.

tube mounted in front of a pilot lamp. The tube is filled with oil and is fitted with two shutters which are kept normally closed by a permanent magnet.

When a station is tuned in and there is at least a change of 5 m.a. in current, then, by the effect on a solenoid on one magnet arm, the shutters open and allow a slit of light to show. A cute idea!

Defence Against Annoying Speakers.

INANIMATE loudspeakers, I mean. A fairly comprehensive weekly survey of the Press in all parts of the country shows that there is a very grievous amount of annoyance caused by speakers. Only last week a wretched sufferer got into trouble because he cast gravel about in his frenzy.

The Home Office has now drafted a model by-law which is suitable for adoption by local authorities, provided there is adequate evidence of the inconsiderate use of wireless loudspeakers and gramophones in private premises.

If, therefore, you have a real noise grievance you should inquire of the local authority whether a suitable by-law exists, and, in its absence, press the authority to adopt the Home Office specimen.

(Continued on next page.)

ON OTHER PAGES THIS WEEK

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SPECIAL SECTION

"P.W.'s" Ideal Radio Home Pages 349-360

Was It Kind?

PROBABLY the only firm doing radio business in this country which has the heart to derive some small satisfaction from the defeat that Hungary inflicted upon the English Soccer team is Tungram. You may well sit up and inquire, not without asperity: "How cometh it in thus wise?" Well, you see, five of the Hungarian team are employees

As the man appeared to hold pretty sane views on other matters I was journalist enough to ask him to give his particular reasons.

Back to the Past.

HE said that during the war, in which he served for "duration," he lost his wife and only child, his goods and chattels and, as he found later, his job. He seemed to have nothing to work for, and in a revulsion of feeling took to the road. That was in 1920, and he had wandered ever since.

He neither heard nor saw a radio set until 1928, when one day he was washing at a farmhouse pump and heard, through the kitchen window, a broadcast waltz.

That particular waltz had been played at a restaurant at which he and his wife celebrated the tenth anniversary of their wedding a few days before war broke out. "It dug me out of the hole in which I had

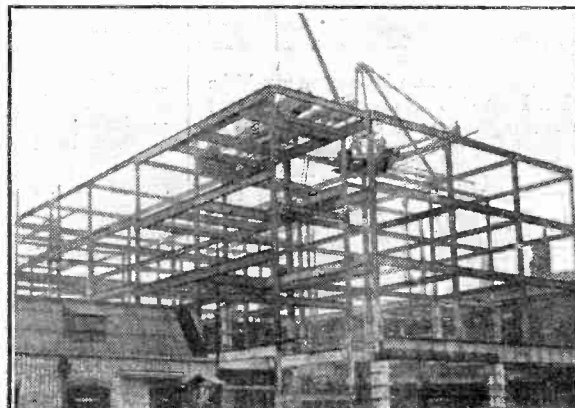
of Tungram, and one of them opened the scoring.

That's done it! Next time I go to buy, say, a walking stick I shall ask of the man: "Do any of your fellows play darts for Belgrade United?" Well, I hope that Tungram will train golfers to bag the Ryder Cup, that's all! They must have some fine lads in their British factory.

An Interesting Visual Tuning Device.

AN ingenious and, to me, new tuning gadget has appeared in the market. It consists of a celluloid

COSSOR BUYS BRITISH



Five hundred tons of British steel girders form the framework of this new factory which is being built for A. C. Cossor at Highbury.

He Tapped Himself on the Head!

Queer Programme Items.

I SEE that station W O K O (U.S.A.) has inaugurated a sketch in which a Waste Dealers' Association urges householders to save, collect and sell old junk.



Station K O I N is giving a weekly fishing-news item for anglers. (Television wanted. "As big as this!") This same station holds cracker-eating contests for kids.

Station K E X gives a police-drama-thriller every Friday, and incites people to listen to it by displaying the tools of murder, robbery, etc., in the local store.

Better Ask H. G. Wells.

A NEWCASTLE reader, who is evidently satiated with radio as we know it, asks me what, in my opinion, will be the next scientific marvel, comparable in importance with radio and television, which will be discovered. There are better objects of inquiry than I, including Mr. Wells and a well-known almanac!

But I will tell my impatient friend a few of the things we need: A cure for colds in the head and for cancer; a guaranteed specific against war; perfect and cheap colour photography; onions with a transient aroma; cheap radium and platinum; an apple completely devoid of pips and core; a week without chamber music. Miracles all!

Versatile Virmani.

MR. B. D. VIRMANI, of Bombay, announces in an electrical "weekly" that he has invented a system called "Tele-Olefaction," for the transmission and reception of smell by wireless. For "smell" read "odours," and you have his meaning; you cannot transmit one of the senses.

I remember having a passage-at-arms with Prof. A. M. Low because he prophesied that such an invention would be made, but I am still sceptical. You cannot smell anything unless it emits a vapour or gas or particles, and how a vapour or gas can be reproduced as a form of ether wave, and how that wave can be received and converted back to a gas or vapour, no one has yet explained.

Mr. Virmani's "Robot Teamaker" or his wireless water softener are more useful and feasible dreams.

New Television Merger.

THE latest attack on television problems is represented by the formation of the Marconi-E.M.I. Television Company, Ltd., with Marconi on its Board.

They don't form companies for fun, and you may be pretty certain that between them Marconi's and the Electric and Musical Industries have something up their sleeves.

A Special Theatre.

ON top of the news of the television merger referred to above comes a strong rumour that the first television theatre in the world is now being built at a Lancashire seaside resort by a Manchester inventor. It is to accommodate 2,000.

Topical programmes will be shown at first, but afterwards all sorts of entertainment are proposed. I understand that the television broadcasts will be made from a station in the Irish Free State, so that the ban on commercial broadcasting in England will be evaded. Later, a chain of such stations will probably be built. Things seem to be moving.

Why Spain Lags Behind.

I ASKED a Spaniard who has been connected with wireless affairs in his country for some twenty years how he accounts for the backward state of broadcasting there—for it is backward when compared with the rest of Europe.

He said that a number of commercial interests would like a concession to provide first-class stations and programmes, but

pickles to be hard to digest, that I am trying to ruin the trade, abolish vinegars and gherkins, and must have shares in a mustard firm!

One Can't Be Too Careful.

AS the gruesomeness of this anecdote is neutralised by its humour, you will forgive me if I introduce the American who is so nervous of being buried before he has fully qualified for that dignity that he has contracted with his undertaker for a microphone to be installed in his "casket." The microphone is to be connected to loudspeakers in the cemetery caretaker's house. (Nice for the family! "Was that Bing Crosby or only the customer in Plot E.15?")

But there is more. As microphones are fallible—like doctors—the careful gentleman is having his coffin fixed up "right now," and during a whole year it is to be tested periodically; a bell in the coffin has to be rung. ("Sadie, is that the ice-man or only your pa giving E.15 the once-over?")



Wireless Wisdom.

IF you have a party and there are signs of frigidity, turn on the radio set. That will cause the ladies to begin to talk vivaciously.

And, again, tell your wife that the making of a pin requires thirty-five distinct operations, and she will probably look at you as she would at a Japanese goldfish in an aquarium.

But let her hear the same on the wireless. Oh, boy! That's quite another kettle of goldfish! She will marvel (aloud) about it for a calendar week!

Finally, know that a radio talk on "The Dentition of the Human Baby" will always be drowned out by Mrs. Bingle-Spoots' account of the teething of her "first." Selah!

Hero of the Studio.

AS you all know, the "effects" men have the most exciting times whilst hunting for methods to counterfeit sounds, but here is a really funny example of the discovery of a perfect effect.

U.S.A. station W H N was to broadcast a baseball play, and as baseballs cannot be slogged about a studio, some other means of making the sound had to be found. No luck!

Then someone playfully tapped the Programme Director over the head with a ruler. "Again," said Control. They did. "Perfect." And so Mr. Programme Director had to tap himself on the head with a ruler during all the programmes containing that play. The hero!



ON THE AIR NEXT WEEK

Commander Stephen King-Hall [National Programme, Monday, June 18th.]

"Economics in a Changing World" is the series which this popular broadcaster is giving on Monday evenings. Besides his interest in foreign affairs, Commander King-Hall is also a novelist and playwright, his most outstanding play being "B.J.I." which many of you may have heard broadcast. He was born in 1893, and fought during the War in the Navy, becoming a member of the Admiralty Staff in 1928. His three daughters are well known to Children's Hour listeners, to whom they have often been introduced during the weekly talks to children. The Commander's hobbies are gardening, tennis and—broadcasting!

that the Government wishes to run broadcasting itself.

Having insufficient funds for the purpose, the Government does not do anything about it, and so the present status of radio in Spain drags on with no substantial signs of improvement.

A Storm in a Beer Mug.

IT appears that a number of people raised objections to the B.B.C.'s broadcast of a gramophone record called "Beer is Best." They took the action to be a calculated blow at the temperance movement—though the B.B.C. did not say, "Too much beer is best"—and a piece of advertising for the brewers.

This sort of fanaticism—which is not the monopoly of the teetotalers, I admit—ought to teach us that, up to a point, the B.B.C. is justified in pursuing its policies steadily without side stepping or bolting every time some partisan flag is wagged at it. They couldn't run the show if they did.

And don't imagine, if I say that I find



ON THE SHORT-WAVES

OUR SPECIAL SECTION for SHORT-WAVE ENTHUSIASTS CONDUCTED by W.L.S.

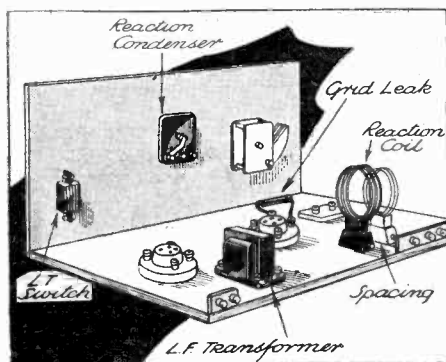
I AM often asked why it is that intelligent people who are quite skilled in the handling of a broadcast receiver can get themselves involved in such a complete mess when they first try their hand at short-wave work. Of course, the mere fact that short waves are as different from the broadcast waves as chalk from cheese has quite a lot to do with it.

Generally speaking, though—in fact, in ninety-nine cases out of a hundred—the trouble can be described under the heading of “operation.” In case any of the impatient ones are wondering what all this has got to do with reaction control, let me say “everything in the world.”

Possible Causes of Trouble.

When I talk of *operating*, nowadays, I include under the same heading the ability to make a set that is operatable, if I may coin a word. There are short-wave sets (and don't I know it!) that the veriest expert could not handle satisfactorily. The

FINDING THE FAULT



remarkable thing is that, apart from our dear old friend hand capacity, the trouble is invariably tied up with the reaction control.

Quite a lot of people hold the somewhat amazing view that if their reaction control is bad, it must be (a) the reaction coil or (b) the reaction condenser that causes the trouble. Have you ever met a motorist struggling with an engine that won't start and blaming the *starting-handle*? That seems to me to be an exact parallel.

Just as the motorist's trouble is probably due to plugs or carburettor, so your trouble with bad reaction control is probably something tucked away inside the set.

Look at Fig. 1, in which I have tried to make prominent the main possible causes.

The reaction condenser *may*, you will notice, be one of them, but it is probably the rest of the lot. If it is much too big (which is unlikely, as everyone specifies '0001 or '00015 nowadays) it may give the effect of ploppy reaction, simply because, however slowly one turns it, the capacity increases too quickly.

YOUR REACTION CONTROL

The L.T. switch, similarly, may be to blame, but only if it's dirty or not making proper contact. In either case the filament voltage will probably be below normal, which is not healthy and may easily cause trouble with the reaction control.

By far the most likely sinner is our much-maligned friend the grid leak. Too low a value of grid leak, except with certain types of indirectly-heated valves, will almost certainly cause a “plop.” Too high a value may cause the set to behave as if there were no grid leak at all, in which case a “hoot” or, yet again, a “plop” might be present.

The L.F. transformer doesn't escape—I've got him on the list! Certain types of

In Fig. 1, to the left, the components in a normal short-wave receiver that are likely to cause poor reaction have been indicated by heavy drawing. Fig. 2, on the right, shows how to deal with ploppy reaction due to unsuitable grid voltage. A potentiometer is fitted across the filament terminals of the valve holder, the grid leak being taken to the slider.

L.F. transformers have an unfortunate habit of inducing a set to go into oscillation with an ear-shattering hoot, known as threshold howl or “fringe noise,” along with less polite titles.

Overcoming Threshold Howl.

The ironic part of this is that it is usually the better transformers, with high-inductance primaries, that cause the trouble. Judicious choice of grid-leak value, H.T. voltage, reaction-coil size and detector valve will, however, generally get rid of this without any further trouble.

Coming to the reaction coil itself, let me give my idea of the golden rule. The coil should be as small as possible (not in physical size, but in inductance); it should be coupled fairly tightly to the grid coil, with

spacing not less than, say, an inch; and you should be quite satisfied if you have to operate the set with the reaction condenser very near the “all-in” position.

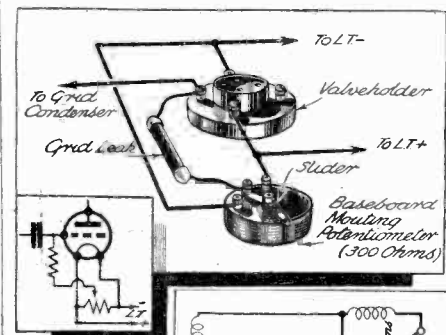
It is definitely better to have a small coil and the reaction condenser near the '0001 position than a large coil and about half a degree of condenser. For one thing, the effect of capacity change is more gradual near the maximum position.

A Potentiometer Will Help.

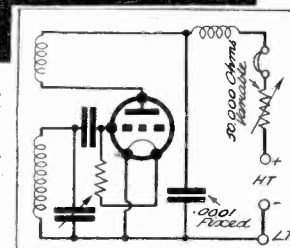
Fig. 2 shows a means of dealing with the grid leak. Instead of returning the bottom end of it directly to the positive L.T., which, with some valves, gives a little too much positive bias, take it to the slider of a potentiometer connected across the L.T. Don't forget to wire this potentiometer directly across the filament terminals, so that no current passes when the set is switched off.

You will soon find the best setting, but don't sacrifice too much signal strength by working it right down at the negative end. We don't often bother to use this scheme

THE GRID RETURN



A simple form of resistance reaction control is indicated in Fig. 3 (right). This gives excellent results though it has not retained its popularity.



nowadays, as most modern valves will stand the grid leak at the positive end. There was a time, however, when it was regarded as a great refinement.

Fig. 3 shows a straightforward arrangement of resistance-controlled reaction which also seems to have gone out of fashion, but is, nevertheless, very good.

ON THE SHORT WAVES (Cont. from previous page).

WHAT READERS ARE SAYING

WILL all those who have written inquiring about the probable date of any 5-metre tests please be patient for a little longer? I hope shortly to be able to announce the first of a series of week-end tests.

R. E. R. (Dulwich) is the first to volunteer for service in the "Helping Hand" department. In other words, he agrees with the scheme put forward by F. S. N. a little while ago, and would gladly help novices in building or operating their sets.

An Egyptian Station.

For the information of R. B. C. and others who have heard station SU1EC on telephony: his address is Haking House, Abbassia, Cairo, Egypt, and the operator is Lieut. E. S. Cole.

T. C., who used to send in beautiful logs from Wakefield, has now removed to Ashford, Kent. I am interested to note that he says he finds very little variation in the general reception conditions, except a terrific increase in the amount of man-made static that he has to contend with.

He seems already to have logged most of the "fashionable" stations, such as CO C, Havana, YV5BMO, Venezuela, and the rest. He tells me that Jely is testing, not only in the 49-metre band, but also on 31.8 metres. Yes, T. C., YU7VV is in Jugoslavia.

J. S. S. (Glasgow) has heard an interesting exchange of programmes between New York and Moscow. J. S. S., by the way, is a novelty, if he won't mind my calling him that. He began "radio-less" a year ago,

FOR THE BATTERIES

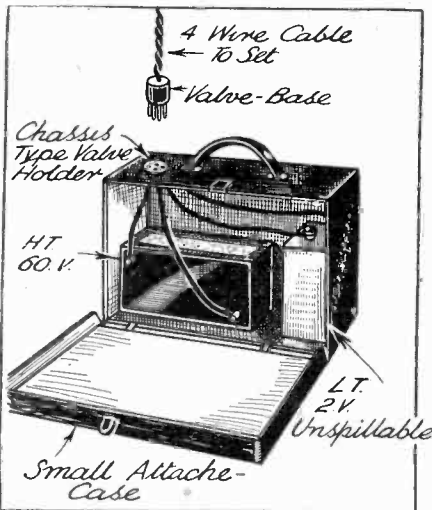


Fig. 5.—W. L. S. suggests this method of arranging a separate battery container for portable sets.

got all worked up at reading some of my notes about what readers were doing, and plunged straight into short waves. Good man!

J. H. (Cambridge) likewise says that the first lot of "Short-Wave Notes" that he read made him take the plunge. He raises one or two queries about untuned screened-grid stages, but as he has doubtless

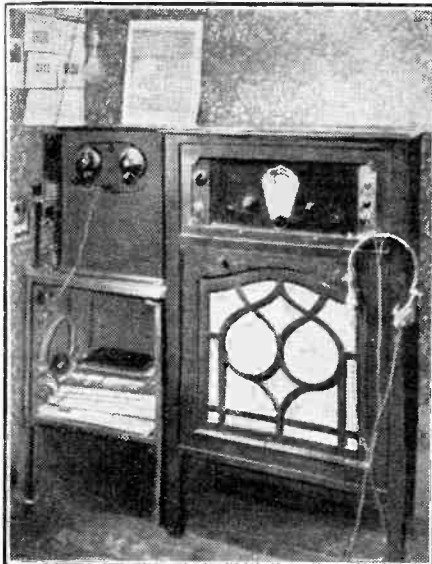
read all about them by now in a recent issue I don't propose to deal with them.

He hazards a guess that I am not one man, but "a sort of committee"! Well, J. H., I've been called many funny things in my time, but you're the first man to call me a committee! No, you're quite wrong; I'm a real live human being.

R. T. (Burwash) is responsible for Fig. 4, a sketch of an interesting little portable 5-metre receiver. Note the 4-ft. aerial and all! Complete with batteries, he says it can be carried about for hours on end without discomfort, thanks to the really lusty strap. If I ever make a "hike portable" like that I shall strap it on my back, though.

By way of contrast, Fig. 5 shows my scheme for keeping batteries (for portable work) separate from the rest of the gear. A cheap attaché case and a chassis-type valve holder are the only requirements, and a valve base and four-way cable bring out the H.T. and L.T. to the set. Other odds

A REALLY FINE PAIR



The Dual-Range Three and, on the left, the Short-Wave Two, neatly arranged by Mr. E. J. Walker, of Standon, Herts.

and ends, such as spare valves and small components, can easily be accommodated in the case.

Don't try to be clever and use triple-capacity batteries for outdoor jobs! They're worth their weight in gold when they're stowed away at home, but you think otherwise after an hour of lugging them about.

I wonder, by the way, how many readers have taken an ordinary short-wave set (portable or otherwise) out into the country. The quietness of the background is certainly amazing, even if one is only a couple of miles from a town.

Long-Distance Remote Control!

L. C. (Reading) remarks on this same phenomenon, and says that it has taken away all his enthusiasm for home listening. He can't tune in a single station without thinking "how much better it would be up on the hill"! There's a chance here for someone with some really ingenious ideas about remote control!

J. McD. (Knutsford) asks me to mention that W5ASG, of Widener, Arkansas, U.S.A., wants reports on his transmissions.

He is on the 20-metre band daily from 22.00 till midnight, and will reply to all cards from listeners who hear him. This refers to telephony, of course.



I AM asked by the Hon. Sec. of the Leicester Chapter of the International Short-Wave Club to announce that regular weekly meetings are now being held. The address of the club-room is 4B, Princess Road, Leicester, and the "fans" may be found there in force every Wednesday evening from 8 p.m. onwards. New members, especially readers of "P.W.," will be welcomed.

Admiral Byrd Listens-In.

A. W., my correspondent from Cape Town, has forwarded me four copies of the "Cape Town Argus," and I am amazed to see a week-end paper of this sort devoting four whole pages to radio and generally at least one to short waves. I am "lifting" from one of their short-wave sections a pleasant little tale about Admiral Byrd, way down by the South Pole. He heard his dogs barking 173 miles away. In a shack, all alone, he tuned in the New York broadcast and heard a relay from the base camp at Little America.

Someone might like to work out the distance that those dogs' barks travelled before their master heard them 173 miles away! The broadcasts have been well received in Cape Town.

They also seem to receive Daventry, Zeesen, Pontoise and Eindhoven exceptionally well this year.

ON FIVE METRES

They nearly missed the Boat Race, by the way, owing to the shuffling about of times. What a thrill it must be for a Londoner in South Africa to hear an event that makes quite a lot of Londoners in London go crazy!

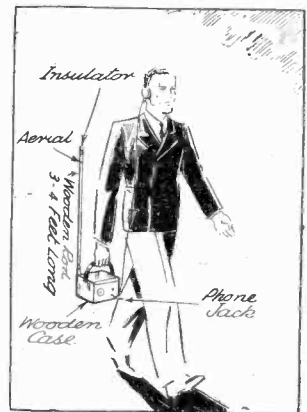
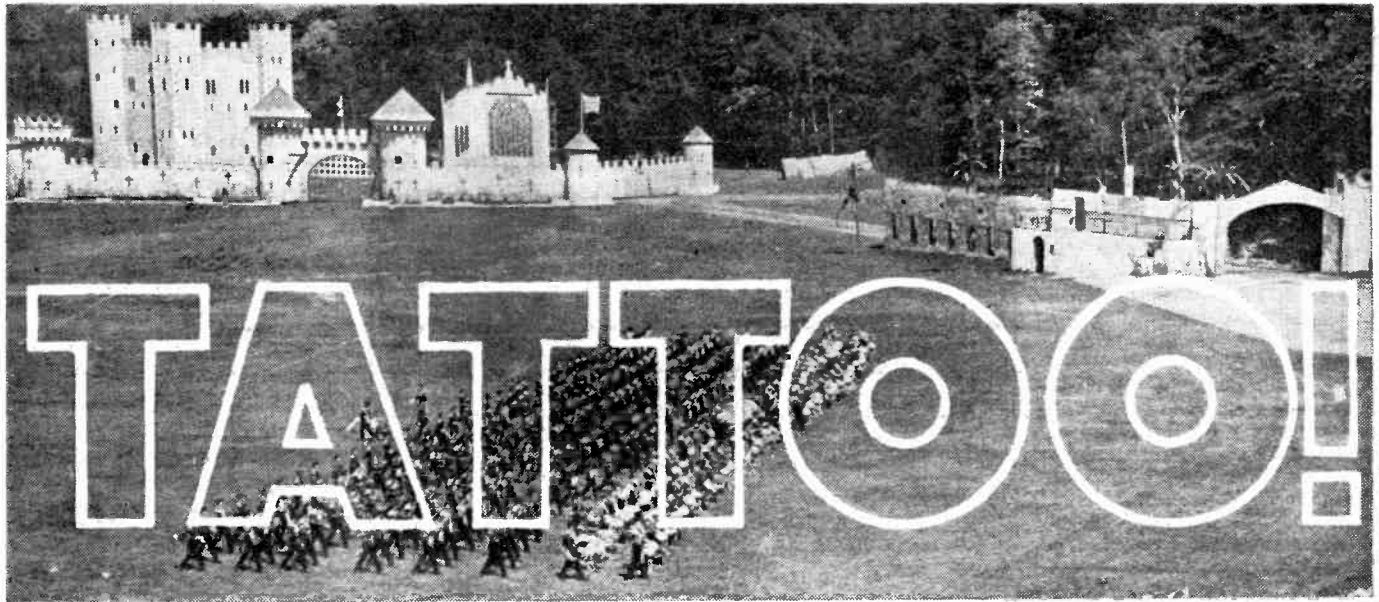


Fig. 4.—A neat portable 5-metre receiver designed by a reader.

CP5, La Paz, Bolivia, is supposed to be testing on 19.6 metres. Look for him just above W2XAD. ZTJ, at Johannesburg, on 49 metres, is being heard here most evenings. He is not as strong as Nairobi, but quite worth listening to.

There is also a new Mexican station, XEB, on 49.75 metres. He has been logged in this country between midnight and 1 a.m.

W. L. S.



IN a recent issue of the "Radio Times," Mr. Gerald Cock, the B.B.C. Outside Broadcast Director, wrote a lively and enthralling history of the work of his department. He mentioned, of course, such popular events as the Cup Final, the Grand National, Tennis and so forth.

An Easy Relay.

But he made no mention of the broadcasts of the Military Tattoos at Aldershot and Tidworth, which are so looked forward to by thousands and thousands of listeners every year.

And this is all the more strange because there is nothing in the world of Outside Broadcasting which can move listeners so much as the music of a military band. There can be no other reason for the popularity of the relay of the Trooping the Colour, which you heard on June 4th, for instance.

But perhaps the real reason why the Tattoo broadcasts were omitted from the list in the "Radio Times" is contained in a remark made by an official of the B.B.C. when we were discussing this year's broadcast from Aldershot.

"Of course," he said, "Aldershot is mere child's play now. It has become the easiest of all the relays."

Two Separate Broadcasts.

It is probably this very simplicity, the fact that the engineers and control men have no need to strive after artificial effect, which accounts for the popularity of Tattoos.

Saturday, June 16th, is the date chosen for this year's broadcast from the Rushmoor Arena at Aldershot. A relay from Tidworth (which is now known in every newspaper in the land as possessing a "grand, natural amphitheatre") will follow on August 7th—a Tuesday.

You will have to stay up late to hear the relay, for it will not start until after 22.30 hours (which is 10.30 p.m. to you and me). But it will be worth it, for the B.B.C. has chosen two periods of half an hour when the very best "sound" part of the Tattoo is taking place.

During these half hours you will hear the dismantled bands playing a selection of lively tunes while the Royal Horse Artillery and the Brigade of Foot Guards give a combined display for the spectators on the ground. Then the Massed Bands will give you a contrast with selections from *Tannhäuser*.

This is eminently suited for broadcasting, and listeners will miss nothing by being present at Aldershot only in the spirit.

The second part of the programme will take the form of a Rally of Empire, which will include another dose of martial music

Actually the points for the microphones cannot be decided finally until the dress rehearsal, because, of course, the movements in the Tattoo alter from year to year. You can be pretty sure that there will be two microphones hanging unobtrusively in front of the grand stand. And it is equally certain that the green O.B. van, with its seven years' service and its intimate knowledge of Tattoos, will be hidden in the trees behind the "castle."

The "Man in Green."

But whether the "man in green" who created such a mystery last year will again be sent on to the ground to wander about with a microphone and keep the music in "focus" is not yet arranged. Actually the O.B. engineers are hoping to be able to run a buried cable under the ground out into the middle of the arena.

The control of this broadcast may seem complicated to the layman. It seems complicated to me. The only people who think nothing of it are the O.B. men themselves. But I have a shrewd suspicion that they will be like the proverbial cat on hot bricks until the whole show is over—although they would never admit it!

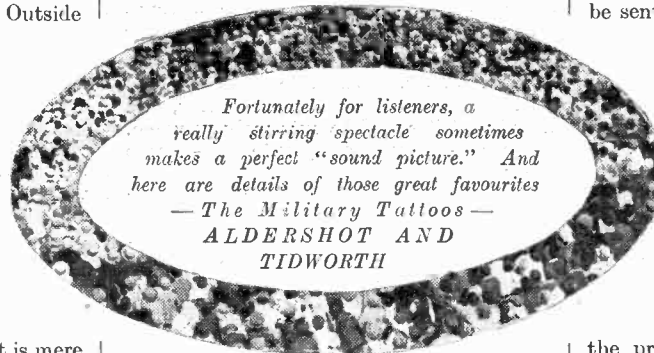
Where the Listener Scores.

When a band is marching across the ground several microphones have to be used. As one becomes too far away from the music, another on the other side of the ground is switched in. You would never notice it when listening, but the result is that you get a steady volume of sound—more or less—while the people who are actually at Aldershot hear the music going away into the distance.

That is where you in your chair at home score. You hear the music of the Tattoo at its best the whole time.

No, there's no doubt about it. These natural O.B.'s run studio performances pretty close all the time, and I think that Aldershot and Tidworth are two of the times when the O.B. must have the prize.

P. C.



*Fortunately for listeners, a really stirring spectacle sometimes makes a perfect "sound picture." And here are details of those great favourites—
—The Military Tattoos—
ALDERSHOT AND
TIDWORTH*

to send you contented to bed at about midnight.

Despite the easy manner in which the technical difficulties of this broadcast have been dismissed by those responsible, there will be a great deal of preparation, culminating in the dress rehearsal.

Positioning the Microphones.

It is not just sufficient, as most listeners are by this time aware, to place microphones here and there about the ground and hope that they will pick up anything that there is to pick up. Such a practice, besides making the effect of a marching band very odd indeed, might have unexpected consequences. The British Tommy is not always too careful of his language when someone hits him in the ribs with a rifle, and if the microphone were in the middle of the arena—well, there would be letters to the papers and questions in the House!

FOR a matter of nine years radio television has been kept well to the fore in the minds of British listeners. Since the advent of the first crude experimental broadcasts by the Baird Company to the present day, when there are several systems clamouring for space in the ether, the public have been waiting expectantly for the dawn of a new radio era.

But so far the wonder has not happened. Not that it is an impossibility technically as far as the present position of television itself goes, but it is not yet accomplished in the true broadcasting sense.

For, apart from the technical considerations of the various processes now available for broadcasting television, a main trouble is the matter of choice of the control under which the broadcasts shall take place. Shall the B.B.C. do it, or shall there be a separate body in control of television broadcasts only? Alternatively, shall there be a competitive scheme allowing several concerns with television systems to take the air?

We are assuming that the systems for television brought forward by the various concerns who have been working on the problem for many years are all sufficiently cut and dried to enable satisfactory public services to be run. But in that assumption we are a little too sanguine, and the pros and cons of the technical excellence of the various systems have all to be most carefully considered before any public services can be permitted.

Control of the Ether.

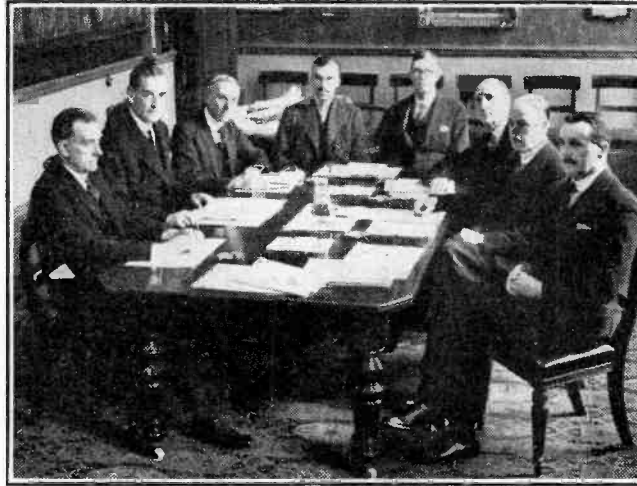
You will note the word permitted. All use of the ether in this country for radio comes under the ægis of the Post Office, so that any application for television broadcasts must be made to the P.M.G. Therefore, it will be realised that the granting or refusal of any application to broadcast television is not one that can be made easily, and especially is this so where a public service has to be considered.

There is great diversity of opinion among technicians and public as to whether the use of the new form of entertainment shall be under the control of the B.B.C., or whether some other body or bodies should be allowed room in the ether. And with this second possibility crops up the problem of the B.B.C. monopoly of sound broadcasting. If someone else takes over *vision*, how is he going to decide the matter of the sound broadcasting that should logically accompany the vision?

The Listener's Attitude.

Not an easy set of problems to solve! Hence a special committee has been set up to thrash out all viewpoints and to advise the P.M.G. on the best way to proceed with the newcomer.

The technical problems are comparatively straightforward, though by no means easy



The expert committee set up to consider the position and development of television. From left to right the members are: Sir John Cadman, the Rt. Hon. Lord Selsdon (Chairman), Mr. F. W. Phillips, Mr. J. Varley Roberts (Secretary), Mr. O. F. Brown, Vice-Admiral Sir Charles Carpendale, Mr. Noel Ashbridge and Col. A. S. Angwin.

to solve, but one of the chief difficulties the committee is up against is the attitude of the average listener to television; so much so, in fact, that when POPULAR WIRELESS suggested to Mr. J. Varley Roberts, the

a darkened room is an inconvenience, thus:

Question No. 5: *Would the necessity of looking-in in a darkened room be a drawback?*

Up to the coming of cathode-ray television reception the only method of obtaining pictures was with moving parts driven by electric motors. These make a certain amount of noise, though not very much in some types, and your opinion on this matter would be valuable.

Question No. 6: *Must the mechanism of a televiewer be completely silent?*

How Much Would You Pay?

Having settled this matter, what about the cost of the apparatus? You pay so much for your ordinary radio reception in the cost of receiver and licence, and television will cost an extra amount.

Question No. 7: *What is the most that you would be willing to pay for a television outfit? (Additional to your present set.)*

Then, having got your televiewer, what about the programmes? The last two questions concern the actual material that is to make up the television entertainment of the day.

Question No. 8: *How often and how long should television programmes be broadcast per day? (For instance, should all programmes be televised, or merely such things as variety, plays and talks?)*

Independent Enjoyment.

And lastly—**Question No. 9:** *How far should programmes rely on television to get over? Should they be completely comprehensive to listeners without televiewers, so that those with television receivers can switch them off if they want to listen without looking, when visual as well as aural concentration on the programme is not desired?*

Nine queries, fairly wide in their application, but the answers will be invaluable to those who are struggling with a very difficult problem. We look forward to your replies, so that we can collate them and forward them to the television committee.

WHAT ARE YOUR VIEWS ON TELEVISION?

"P.W." READERS ASKED TO HELP THE P.M.G.

secretary of the committee, that possibly a collation of readers' replies to a number of vital questions concerning television might be of assistance, he expressed the hope that such assistance might be forthcoming, and stated that it would be extremely valuable.

So we are going to ask you to make a note of the numbers of the questions on this page and to drop us a postcard, giving your answers to the various queries. There is no need to repeat the questions when answering: just place the appropriate number against each reply.

Naturally, the question of the size of the picture obtained on the home-televiewer is an important one, so that the first query concerns this.

Concerning Picture Size.

Question No. 1: *Can you give any idea as to what you consider would be the minimum acceptable size of picture? (A rough estimate will do, such as "playing-card size" or "about a square foot.")*

Coupled with this naturally comes the question of the detail of the picture. Faces must be recognisable, and to obtain detail of a high order is one of the gravest problems confronting television engineers. So here is the second query.

Question No. 2: *Do you think the picture need necessarily be as clear as a newspaper illustration, or would somewhat less detail be sufficient?*

You can take as a standard any of the illustrations in the average penny daily paper. Those special large art pictures in some papers are printed with a closer screen

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MONTHLY
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Having purchased the whole of the remaining stock of High-Class **3-VALVE PORTABLE SETS**

from a well-known manufacturer, we are offering these at the knock-out price of **60/-** complete with valves, H.T. battery and accumulator. Deferred terms (10/- a month) if desired. A great set and a great bargain for motorists, caravanners, campers, etc. Write for full particulars, or call and see it for yourself.

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The unique features incorporated in "W.B." speakers have won wholehearted approval of nearly all the leading Technicians in this country. Users everywhere write in enthusiastic terms of the improvement a "W.B." speaker makes to their sets. You should hear the difference it will make to your set—it will amaze you. Prices from 32/6.

Write for new folder NOW.



Whiteley Electrical Radio Co., Ltd. (Dept. P.), Radio Works, Mansfield, Notts.

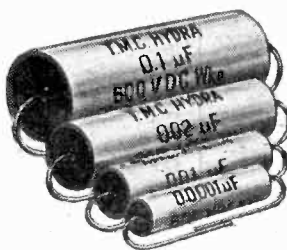
CONSISTENCY



Corn and Condensers—what a curious combination! Yet, just as corn is a living symbol that nature never fails man—so the T.M.C. HYDRA mark on a condenser is a warrant of consistent, good performance. This unfailing consistency is only possible because T.M.C. HYDRA condensers are made from the finest raw materials, with up-to-date plant under the strictest scientific control, to tolerance figures of the narrowest margin.

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HARDLY any other subject, not even Sunday programmes or political controversy, has attracted so much heated discussion and earnest consideration as the now notorious 24-hour clock. It has come out that the B.B.C. was egged on by the P.M.G. personally, and it is believed that he, in turn, received the blessing, if not the positive instructions, of the Prime Minister. So the B.B.C., although it may hedge in its papers, will not give up the 24-hour-clock system on the microphone for a long time yet.

Colonel Dawnay Better.

Colonel Alan Dawnay, the head of B.B.C. programmes, is now rapidly recovering from his nervous breakdown and is expected back at work about the end of June. It remains to be seen whether he can stick the pace in his second attempt. I hope he can, because he represents humanising influence at the B.B.C.

The International Union.

The General Assembly, the Council and Committees of the International Union of Broadcasters have been meeting in London all this week. There has been the usual round of festivities. As to the work tackled, there is not much news. As a matter of fact, this Union has less and less to do as time goes on. A few years ago it was entrusted by Governments and Administrations with framing and carrying into effect important wave-length schemes.

But now all this is changed. With the growing importance of broadcasting, Governments are much less inclined to devolve authority; so the Union is more a statistical and less an executive concern than it was. There are indeed suggestions that it should be largely demobilised for reasons of economy.

Licence Revenue.

There are strong rumours that the B.B.C. at long last is making a determined endeavour to get back some of the vast sums of listeners' licence money which the Treasury has been taking the past three or four years. Anyway, it is certain that no move to take more B.B.C. funds would succeed.

NEXT WEEK: Music and Variety

CRAZY HOUR.—A feature programme. (North Regional, Monday, June 18th.)

FROM BIRKENHEAD.—Variety from the Argyle Theatre. (London and North Regionals, Tuesday, June 19th.)

BRASS BAND.—Another popular concert. (North Regional, Wednesday, June 20th.)

REVUE.—A Weston and Lee programme. (London Regional, Friday, June 22nd.)

Big News Developments.

The news department of the B.B.C. is being reorganised. In the autumn there will be full-blown day and night editors, with staffs not unlike that of a small newspaper. For the chief foreign editor the name of an assistant editor of a leading London daily is freely mentioned; while a well-known provincial journalist is said to be favourite for the job of chief home editor. These changes will involve recasting the contract between the B.B.C. and the Press and news agencies.



A charming portrait of Jean Melville, B.B.C. pianist, and her dog "Bunty Bella."

Harry Tate, by Max Kester.

Harry Tate and Company should be good fare for National listeners next Monday, June 18th, when they are to take part in a new sketch written by Max Kester, a

THAT 24-HOUR CLOCK!

AND OTHER NEWS FROM BROADCASTING HOUSE

recent acquisition to the B.B.C. productions staff.

In the same variety programme Mrs. Feather (Jeanne de Casalis, of course) will have a prominent part, since she is to be responsible for organising the whole entertainment, which is described as "A Charity Affair."

Elizabeth Welch, Austin Croom-Johnson and Bern Ecks are in the show, together with the Theatre Orchestra, which will be conducted by Kneale Kelley.

"Sketch Book."

Max Kester is also to be responsible for the production of "Sketch Book," a show of five or six short sketches, ranging from thriller to comedy, which is to be broadcast to Regional listeners on Saturday, July 7th.

"Kentucky Minstrels": New Style.

Realising in good time that Tuesday and Wednesday, June 26th and 27th, may be so summer-like in weather conditions that people will generally be enjoying their wireless entertainment out of doors, Harry S. Pepper has arranged that his "Kentucky Minstrels" show for Regional and National listeners respectively on those days shall be suitable to the open-air mood.

A change? Yes. So what's the matter with describing this next black-faced minstrel show as "Not so Typical"—which is exactly what Mr. Pepper intends to do.

Peter Creswell Out West.

Peter Creswell is to produce his last play in the West Region, where for some time he has been "on loan" under the B.B.C.'s scheme of exchange of programme officials between the Head Office and the provinces, on Thursday, June 28th.

The play is by L. du Garde Peach, and is an episode in Francis Drake's famous attack on the rich treasure city of Nombre de Dios. The play should be particularly enjoyable for those who like radio drama, bearing in mind the success of the Du Garde Peach-Creswell combination in other stories of the sea, and particularly that of the "Mary Celeste."

Children's Hour Appeals.

The closing down or winding up of the various Radio Circles in connection with the Children's Hour programmes seems to have had no effect on the amount of money young listeners are willing to subscribe in the cause of charity.

A recent appeal by Captain Ian Fraser on behalf of blind children brought in about £750, and there is no doubt that some further appeals which are being arranged on behalf of sick and crippled children will have equally satisfactory results.

In the North Region the appeal on behalf of blind children resulted in over 2,500 letters being received, with gifts varying from a few pennies to about £3, and well over £350 in all.

A Holst Memorial Concert.

Within a week of the death on Friday, May 25th, of his great friend Gustav Holst, Dr. Adrian Boult, Music Director of the B.B.C., had arranged a memorial concert, and this will be broadcast in the National programme on Friday, June 22nd.

The conducting of this concert, which will be given by the B.B.C. Orchestra, Dr. Boult regards as an opportunity for a personal tribute to the memory of his friend.

The programme will include excerpts from the dead composer's "Suite de Ballet," three hymns from the Rig Veda, for women's voices, harp and orchestra, the music to poems by Thomas Hardy, Walt Whitman and Clifford Bax, and Hymn to the Waters and Hymn to Veda. The Wireless Chorus, under Chorus-master Leslie Woodgate, will also take part in this programme.

NEXT WEEK: Commentaries

CEREMONY OF THE KEYS.—Relayed from the Tower of London. (National, Tuesday, June 19th.)

TEST MATCH.—In the second Test Match between England and Australia, at Lords, a new idea is to be tried by the B.B.C. Programmes may be interrupted at any moment to "fade in" a short running commentary of the play—"Bradman is out!" etc.—after which the programme will be resumed.

This is additional to the usual summaries of the play, and so forth, at stated times.

July Radio Drama.

Radio drama in July sounds a bit heavy, but the poor must live, and so we are to have what is described as an attractive list of broadcast plays when most of us hope to be in no mood for serious concentration.

The first, "Beauty and the Jacobin," by Booth Tarkington, author of "Monsieur Beaucaire," is down for Thursday and Friday, July 5th and 6th (Regional and National). It is an interlude of the French Revolution which Jack Inglis has adapted for the microphone.

O. H. M.



THIS is a special issue of "P.W." It is special because herein is presented exclusively the details of our Ideal Radio Home—details which will enable every reader to become acquainted with all the latest developments. These have been specially designed by British manufacturers with the sole object of putting radio on the same domestic footing as the other necessities which combine to make the home ideal.

For its news, for its entertainment value, for its invaluable service in keeping people in remote districts in touch with world affairs, it has to be acknowledged that radio to-day has assumed a tremendously important rôle in the home life of the community. Familiarity is apt to breed contempt, and perhaps we do not always realise just how much a part of our lives radio has become. But in all reasonableness it may be said that no home to-day is complete without it, yet does it necessarily follow that a home is complete *with* it?

Frankly, in the light of recent developments and having regard only to the set itself, we think not.

Many Refinements

Readers will be well aware of the fact that it has never been the policy of "P.W." to tackle anything prematurely. But the underlying principle of our activities has always been progress, and when the time has been ripe for the launching of any new idea connected with radio it has been our constant endeavour to provide readers with the very first details.

For some considerable time now we have been watching with more than usual interest the tremendous increase in the number of what might be

which it is hoped that show houses on several of the large housing estates will be equipped on the lines described in this special section, and readers will then be able to inspect our Ideal Radio Home in reality.

But meanwhile, and principally to enable our readers once again to be first, it has been thought best to publish the complete details in advance so that those who are intending to have decorations carried out in their premises may have every facility for taking advantage of the suggestions contained in this special section while the walls, etc., are stripped.

First we should emphasise that the transformation of any house into an ideal home in the radio sense need not necessarily be a particularly costly business. But that will naturally depend on the extent to which you intend to follow our suggestions.

Obviously, to make the equipment of our Ideal Radio Home complete, it has been necessary for us to include a section devoted to the actual receiver. Most of you, these days, will be in possession of a suitable receiver, and you will be concerned only with the various ways and means of making the most advantage of it.

Prices Are Lower

But it is important, in the first case, that the receiver *should* be suitable. The tremendous advances that have been made in the technique of receiver design during the last twelve months have raised the standards of broadcast reception to such a very high level that you would be well advised to give serious consideration to the desirability of renewing your set if it is more than a year or two old.

(Continued on next page.)

What is this "Ideal Radio Home"? Why has POPULAR WIRELESS thought it of sufficient interest to warrant a special section? This first article gives the reasons leading up to such a decision and introduces you to the different features on other pages.

termed, for want of a better description, "radio-refinement" devices.

As each new idea has been submitted to us it has been subjected to exhaustive tests in our research department, with the result that during the last few months we have been able to collate sufficient information to enable us to set about the design of a home which, from the point of view of radio, could be said in every sense to be ideal.

The Complete Details

And now, at a time of year which could not have been more appropriately chosen, the result of our months of scheming is out. "P.W.'s" Ideal Radio Home has now been completely planned. Not content to stop at that, it is with pleasure that we are able to announce that negotiations are at present proceeding as a result of

COMPLETE HOME ENTERTAINMENT

As you will learn from the section devoted to the subject, the prices of commercial receivers at the present time are lower than they have ever been, and it isn't altogether unlikely that the rising tide of industrial prosperity may bring on its swell a steady increase rather than a further decrease in prices generally.

The First Consideration.

If, therefore, it is likely that your set will want renewing in the near future you may be saving yourself money in the long run by deciding to buy now. Certainly the standards of performance of the latest sets are very far removed from those of twelve or eighteen months ago, and if you are in doubt about your existing set it would be time well spent to go along to your local dealer and to hear some of the new models for yourself.

The general survey of the set market which is included in this Section will give you all the help you want on the important question of the selection of a suitable model, and it has been prepared in the usual "P.W." style, with due regard to financial considerations. It has been our endeavour to include models at prices to suit all pockets, and the fact that we have conducted tests with most of the models mentioned should give you added confidence when making your choice.

So much for the set itself—certainly the first and most important consideration in the equipment of any home that is to be fitted up on ideal radio lines.

Using Extension Speakers.

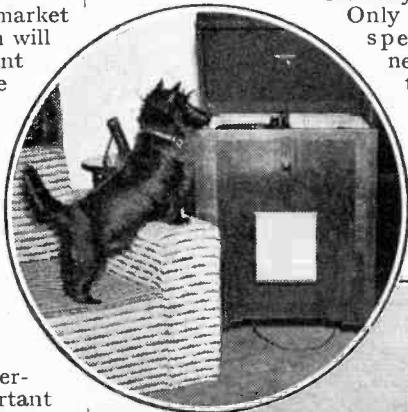
But that is only just the start, and it is rather like the meter in the household electrical system. You wouldn't consider an electrical installation of very much value to you if you had only one light at the meter itself. In this event, you would probably be spending the dark evenings

in the cellar! The idea, of course, is fantastic, yet is there such a very great deal of difference between that and having a radio installation with only one speaker? It would hardly be kept in the cellar, perhaps, but, apart from that, one does not have to think about it for long to appreciate that there is not.

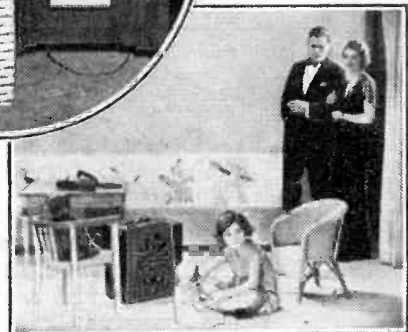
No doubt the reason why so many people put up with the inconvenience of having radio in only one room is because there is a common impression that to have wireless programmes on tap in any room is an expensive business.

You may take it from us that it isn't, and from the details given in the section devoted to the subject you will find that not only is it an inexpensive luxury, but that it is a task which may be quite easily undertaken by any ordinary listener.

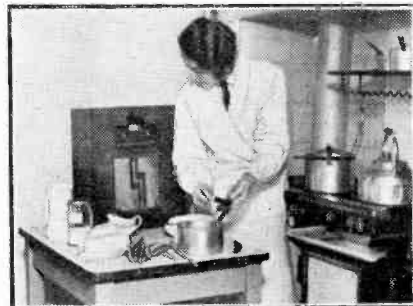
Only one extra speaker is needed for the ideal of radio in every



DURING THE DAY—The Aberdeen terrier listens to a Scottish Regional programme (is it His Master's Voice?), while Betty is reluctant to come to bed, for the Pye portable is providing the Children's Hour.



aerial and earth systems, gramophone records and pick-ups, television—all are factors which require careful consideration in the equipment of any home which is to be ideal from the



MORNING—An H.M.V. portable lightens the work of preparing the day's meals.

radio point of view, and all are dealt with in the pages which follow.

The manufacturers, having concentrated almost exclusively on the design of sets until that stage has been reached where it is difficult to go one better, are now turning their attention to ways and means of extending the scope of service of radio in the home. That their efforts so far have been successful will be obvious from "the highly desirable residence" which may shortly take its place on building estates throughout the country—the residence which has been created by "P.W."

Not Expensive.

When, for little cost, there is so much that can be done towards the attainment of complete domestic convenience in the radio sense, it is a pity that more people have not so far taken advantage of the facilities available. That may be, and probably is, due to lack of information on the subject, but it is an obstacle that is completely removed by the inclusion in "P.W."

of this special Section.

We have collected all the available ideas and have combined them in the design of a home which is ideal in every sense of the word. The rest is entirely up to you. If you get only half-way towards the ideal which is conveyed by this Section, it's a safe conjecture that you will be more than pleased with your efforts, and that you will consider money expended on it money well spent.

It is obvious that as time goes on, radio is destined to play an even greater part in the home life of the community, and that the era is not very far distant when all new houses will be built with due regard to the radio requirements of the tenant-to-be. Why not anticipate that logical development and be ahead of the times by converting your premises now?

room to be realised, and a suitable speaker for the job need not cost a penny more than two pounds at the very most.

As for the cost of wire and so forth—well, that is a matter of a few shillings only. But you will find all the help you want in this respect in the appropriate section.

Obtaining Radio Perfection.

The definition of the word "ideal," according to a reputable reference dictionary, is "a standard of perfection," and perfection in the design of our Ideal Radio Home would certainly not have been achieved without due regard to every possible aspect of broadcast reception. It is for this reason that the scope of our Supplement is so very comprehensive.

Mains interference, battery economy,



NIGHT—After the theatre—Henry Hall on the Marconiphone radiogram.

THE SET:

What shall I choose?

IT need hardly be stressed that the whole success of equipping a home on really modern radio lines is dependent, in the first case, upon the type of set selected. However perfect the speakers that you may choose for extension purposes, it must be remembered that they cannot make a bad set good, and that your time spent in making your home ideal in the radio sense will be virtually wasted unless you have given due attention to the all-important question of the set.

A year or so ago one could not unrestrainedly advocate a wholesale throwing out of the duds, because the prices of

Now, then, is the time to buy. Now is the time to throw out all the relics of the earlier days and to make a fresh start with something really modern. The advice holds good whether you intend to make it or to buy it ready made, for, apart altogether from financial considerations, it is a fact that modern standards of performance are far removed even from those of twelve months ago, and that if you want to enjoy radio at its best you simply must use something up to date.

The Latest Developments.

All the amazing component and accessory developments that have taken place since the last exhibition are now finding their way into commercial-receiver designs, and the result, as may be expected, is a range of sets that has never before been equalled. Veritably, ideal sets for ideal homes!

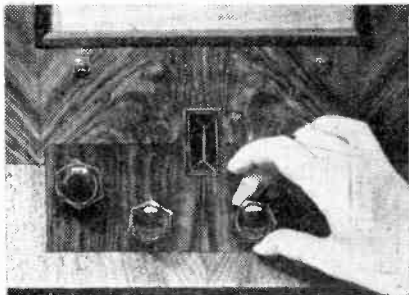
"Tell me the name of the best set," you demand. Easier said than done. There are so many really good sets, and it all depends on so many things: your own special conditions, what you are prepared to pay and so forth. But this article will help you to make up your mind.

have realised that if a set these days is to hold its own it has simply got to conform with modern requirements in these important respects. Naturally, with radio as with anything else, you get what you pay for, and you must not expect that a set costing, say, twelve guineas will be comparable in every respect with an instrument costing twice or three times the price.

Difference in Cabinet Work.

But it is true to say that the distinction between the two would be more in connection with cabinet work and refinements than with the question of performance. That is because all sets these days, whether cheap or expensive, have to come up to a certain standard to be of use for modern requirements, and, however cheap the set you may choose, you can count on it giving complete satisfaction *providing you limit your choice to the reputable makes.*

Bear in mind that all the firms to which we shall refer in subsequent paragraphs (Continued on next page.)



A "close-up" of the controls on a table model H.M.V. receiver which incorporates the "Fluid-Light Tuning" device.

commercial receivers generally were so high as to preclude, in many cases, an entirely fresh start being made with a new receiver. But now, thanks to the enterprise of our British manufacturers, the position is very different, and one need hold back no longer out of consideration primarily for the pockets of readers.

The level of commercial-receiver prices has never been lower, and the quality of the instruments offered has never been better. For a matter of twelve guineas or so you can buy a set which will give an infinitely better performance than one costing twice or even three times the price two or three years ago. But the trouble is that so sweeping has been the downward-price tendency of late that many people are waiting in the hope that before long prices will become still lower.

Prices at Their Lowest.

It is our considered opinion that the prospect of still lower prices is extremely remote. As we have pointed out quite frequently of late, the return to industrial prosperity is almost sure to lead to a gradual hardening of prices, and it may be safely assumed that not for a very long time to come will the general level be appreciably lower than it is now.

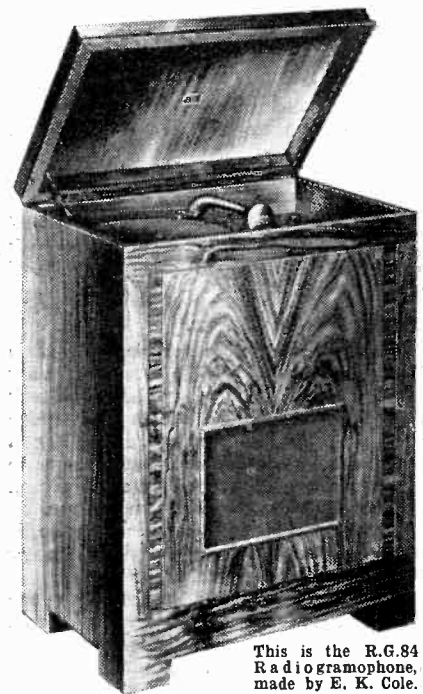
← TABLE MODEL



OR RADIOGRAM? →

But it is easy enough to advance convincing reasons why you should buy a new set. It is when it comes to the actual choice of an instrument to meet your requirements that the real difficulty commences, and it is in this respect that we want, if we can, to give you guidance. In the general survey which is to follow we shall endeavour to give you as much help as possible on the question of set selection—first with regard to broad considerations governing the choice of a set, and secondly in connection with actual makes and types.

Generally speaking, modern standards of efficiency have reached such a high level that it is hardly necessary to dwell upon the aspects of sensitivity, selectivity and quality, for the manufacturers



This is the R.G.84 Radio gramophone, made by E. K. Cole.

THE SET : What Shall I Choose ?

(Continued from previous page.)

are firms whose reputations in the set-making world are beyond reproach; and although, as a result of careful designing and the wholesale introduction of mass-production methods, they have been able to get prices down to rock bottom, they have not allowed the quality of the article to suffer at the risk of damaging their reputations.

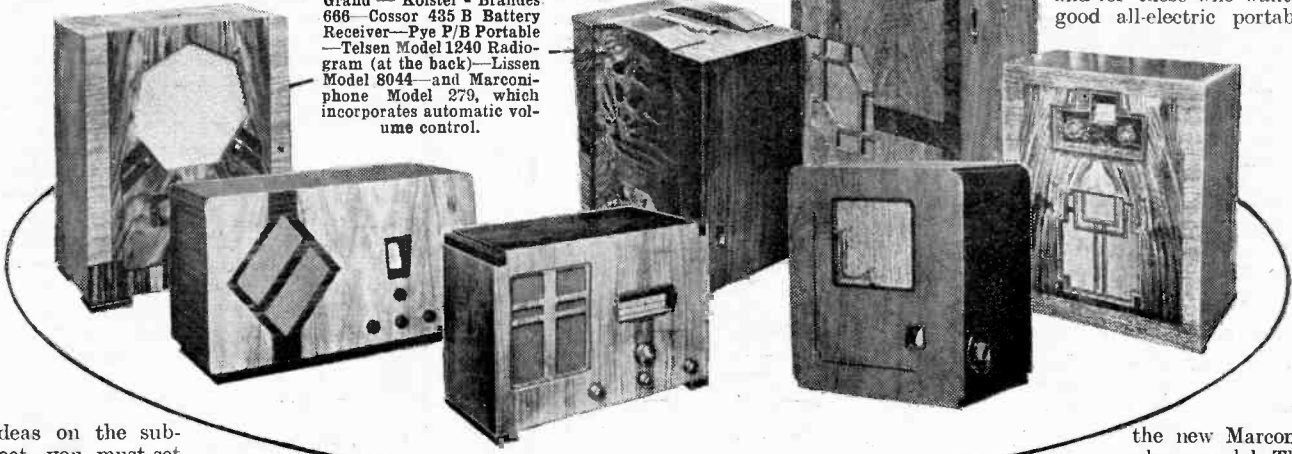
Take, for instance, sets around the twelve-guinea mark. To-day there is hardly one of the leading firms which is not marketing an all-electric set, complete with built-in moving-coil speaker and the latest refinements, at a figure somewhere about this price.

H.M.V., Ekco, Marconiphone, Ferranti, Cossor and Kolster-Brandes, to mention just a few of them, are all doing models which represent amazing value for money.

But before we can concentrate on any particular makes and types of sets it will first be necessary to run quickly through the considerations which should govern the choice of a suitable instrument. Obviously, before you can formulate any definite

A FINE ARRAY !

Reading from left to right, the sets we have grouped for your notice here are: Columbia Superhet Battery Grand — Kolster - Brandes 666—Cossor 435 B Battery Receiver—Pye P/B Portable—Telsen Model 1240 Radiogram (at the back)—Lissen Model 8044—and Marconiphone Model 279, which incorporates automatic volume control.



ideas on the subject, you must set yourself a definite limit on the price that you are prepared to pay.

In this connection, although it is very largely a matter for individual circumstances, our own experiences tend to show that it is not much good hoping for anything any good at any price appreciably below ten guineas.

Battery Sets Are Cheaper.

That, of course, is for an all-electric set. Battery models do work out very much cheaper, and we have heard battery sets at five guineas which are quite passable; but the average figure for a really decent battery instrument seems to be in the neighbourhood of eight to ten guineas, including batteries and valves.

Having set yourself a limit on price, it is then not nearly such a difficult matter to find the very best value for money.

In this connection, unless you are prepared to spend more than eighteen guineas, we definitely advise you not to think in terms of a radiogramophone. A careful survey of the commercial-set

market makes it abundantly clear that there are very few radiograms indeed that can be recommended at prices appreciably below eighteen guineas, and certainly none in the really reputable makes.

It will be helpful, therefore, if you remember that the price of eighteen guineas represents, in a sense, the dividing line between an ordinary table-model receiver and a radiogramophone.

That should simplify your task considerably, for, knowing what you are prepared to spend, it definitely narrows down your choice either to one class or the other.

Table-Model Instruments.

If, for financial reasons, your choice is limited to sets of the table-model class, then elsewhere in this Supplement you will find complete details for converting it into a radiogram. But because you cannot run to the more expensive types of instruments you need not entertain the slightest fears concerning performance, for, as we have previously explained, the distinction these days is much more to do with cabinet work

The range of sets in the all-electric class below the eighteen-guinea mark is rather more extensive than that of battery sets, and, moreover, the question of output in relation to current consumption does not enter into it.

You should definitely look for such features as pick-up sockets, station-named or wavelength-calibrated tuning dials (illuminated, of course), and for automatic volume control. Such things as the provision for the use of a mains aerial, tone control, and perhaps a mains-hum adjuster are not altogether necessities, but, of course, they all serve a useful purpose and should, in consequence, be given due consideration.

Examples having all or at least the most essential of these features are the Ekco models 64 and 74 at 11 guineas and 13 guineas respectively (available for A.C. and D.C.); the H.M.V. model 463, a six-stage superhet with the new fluid-light tuning at 16 guineas, and their model 442, a five-stage superhet, also with fluid-light tuning, at 15 guineas; the Cossor model 435 at £9 15s. (one of the few sets below 10 guineas that is really excellent); the Philco Four-Star Baby Grand model 260 at 14 guineas; and for those who want a good all-electric portable

the new Marconiphone model. The universal sets of

Ostar-Ganz are also worthy of serious consideration.

The Radiogram Class.

For those of you who require something a little more ambitious, an instrument in the radiogram class, there is practically unlimited scope. A figure as low as 18 guineas is all that need be given for a good modern radiogram, and if you are prepared to spend up to 27 guineas you can obtain an instrument that represents the very last word.

Examples to which we would particularly draw your attention are the Telsen model 1240 at 18 guineas, the Ekco model R.G.84 at 21 guineas, the Marconiphone "Lucerne Special" radiogram model 286 at 20 guineas, the H.M.V. Superhet Five-Four-Two Autoradiogram—a magnificent instrument with automatic record changing at 27 guineas—and the Marconiphone model 288, also a superb radiogram with automatic record changing at 27 guineas.

and refinements than with general efficiency.

So much for broad considerations. Next, then, let us pass on to actual makes and types.

When choosing a battery set there are two important points that you must bear in mind: first you must be certain that it will answer your requirements from the points of view of sensitivity and selectivity; and secondly it is important that it should give an output adequate for normal domestic requirements, with due regard to H.T. current consumption.

Modern sets which conform to these requirements and which are worthy of your serious consideration include the new Cossor model 435B, the Columbia model 1006, the Marconiphone model 273, the Ekco model B54, the Lissen model 8044 and, if you prefer a portable, Pye's famous model P/B. These are sets varying in price from roughly five guineas up to fifteen, and, whichever one you choose, you can count on getting absolute satisfaction.

BRINGING THE OUTSIDE IN

If one may judge from impressions gathered on a railway journey from town to any of the suburbs, it would appear that very few people attach the right amount of importance to the aerial and earth system. If the majority of them are as inefficient as they look, it is hardly surprising that one of the present tendencies in receiver design is to provide a greater degree of sensitivity!

It is said—and we believe rightly so—that a good aerial and earth system is equivalent to an extra H.F. amplifying stage; but, quite apart from that, the proportioning of the aerial these days is of considerable importance, because it has such a direct bearing upon the attainment of a degree of selectivity adequate for modern requirements.

The Ideal Arrangement.

It is important, therefore, that we should give due consideration to this aspect of broadcast reception in our special Supplement, for no home can possibly be considered ideal from the radio point of view without a respectable aerial and earth system.

In general, there is no aerial to compare in efficiency with one erected out of doors and as far away as is practicable from buildings and trees. But not everybody is in the happy position of being able to erect an outside aerial, and in these circumstances there are, fortunately, modern ways and means of overcoming the difficulty with very little loss of efficiency. Those we shall deal with in later paragraphs.

Meanwhile, what may be considered to be the ideal aerial and earth system for



An illustration of the Pix Invisible Indoor Aerial. You can't see it? You are not meant to! It is fixed to the picture rail and hides itself away.

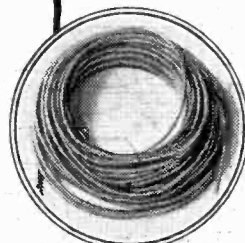
HOWEVER GOOD THE RECEIVER MAY BE IT IS NO MORE THAN A WHITE ELEPHANT WITHOUT SOME MEANS OF COLLECTING THE IMPULSES FROM THE TRANSMITTER. THAT, OF COURSE, IS WHERE THE AERIAL AND EARTH COME IN



THE AERIAL (Electron).

those who are fortunate enough to be able to erect one outside?

The reason why so many existing aerials are unsightly is almost invariably because the support at the end



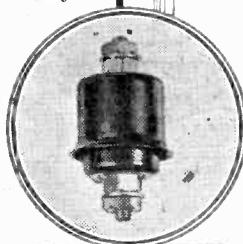
THE LEAD-IN (Electron).

remote from the house was never intended for anything other than propping up clothes lines! That very definitely is not the modern method. We strongly advocate the use of either a decent-looking scaffold pole, 25 feet high or more, or one of the sectional steel masts such as the Laker. The higher

the better is advice to be borne in mind when determining the height of the pole, but for all normal purposes, from 25 to 30 feet is ample.

Then there is the question of wire. Aerials of the past have always been considered best when carried out with 7/22's copper wire, but, again, that is hardly the modern way of doing it. For best results these days there are few things to compare with Electron "Superial"

THE MAST (Laker Steel Mast).



THE "GARD" ARRESTER (Graham Farish).

or Goltone "Akrite," and you may even find that they both work out cheaper than the ordinary copper wire.

As we have already indicated, length is an important consideration, and in all but exceptional cases the horizontal span need never exceed 30 or 40 feet. If your local station is appreciably more than 30 or 40 miles away, then you may find it an advantage to increase the length, but, in general, from 30 to 40 feet may be taken as a good average figure.

Some Excellent Devices.

For the down-lead you can use either the same wire as the aerial, or, if you reside in a district in which the selectivity problem is acute, you may find it a definite advantage to use a screened down-lead, such as the Radiophone "Receptru."

Cases of aerials being struck by lightning in this country are, fortunately, rare. All the same, prevention is better than cure, and we regard it as a sound scheme to incorporate in the down-lead some sort of lightning arrester. The Graham Farish "Gard" is ideal for the purpose, and, moreover, it carries with it a free insurance policy against damage by lightning-Bulgin's, too, are responsible for a lightning arrester that is commendably efficient.

Another Graham Farish product which can contribute enormously to the efficiency of the aerial-earth system is their famous "Filt" earthing device. It incorporates certain chemicals which have the property of attracting moisture so that one can be sure of a good earth even in the driest weather.

For Indoor Aerials.

The ordinary Electron "Superial" is perfectly satisfactory for the erection of an indoor aerial, and it is surprisingly efficient. The same rule of "the higher the better" applies to indoor as well as to outdoor aerials, but try to avoid a down-lead running half-way round the house, as it may have a detrimental effect upon selectivity.

What is certainly one of the most convenient, as well as one of the most efficient, ways of erecting an

aerial inside the house is by means of one of the adhesive tape wires. The Pix Invisible aerial and Amp-lion "Plastape" are notable examples.



THE EARTH (Graham Farish).

... AND THE HOUSE SHALL BE FILLED WITH MUSIC ...

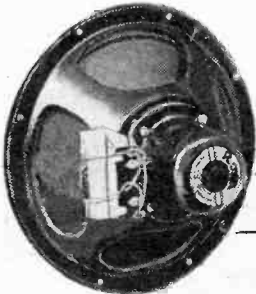
—Extension speakers, of course!

WHY not enjoy your radio programmes in just whichever room of the house you happen to fancy, with the minimum amount of inconvenience and trouble? It is certainly an ideal, isn't it? Yet, thanks to the enterprise of loudspeaker manufacturers and others, it happens to be one of those ideals that can be realised for very little cost.

Any really modern set these days is provided with sockets at the back for the connection of external speakers, and in these circumstances the actual cost of equipping the home for radio in every room need not cost a penny more than £4, including the cost of the speaker for extension purposes. As a matter of fact, that, if anything, is an outside estimate, for we have allowed £3 for the extension speaker, and it is possible to get a perfectly satisfactory one for a much lower figure.

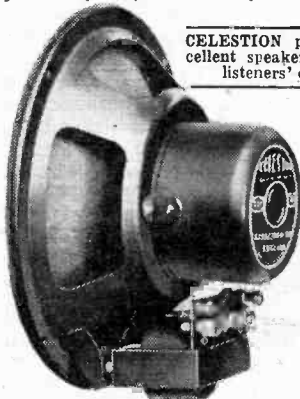
But perhaps it isn't a question of cost so much as of knowing just how to set about it. Well, frankly, it is certainly not a difficult job, and of the two ways of doing it one will depend upon whether or not you happen to be having the house decorated internally.

If you are, then the decorator can make a neat job of it; but, on the other hand, it will take longer to equip your home with extension wiring, with all the actual wires hidden away in the walls, than it will to run them along skirting boards, picture rails, etc., and so it is really a matter for individual decision. Both ways will give you completely satisfactory results, and the



The ROLA speaker in a suitable cabinet makes a fine choice.

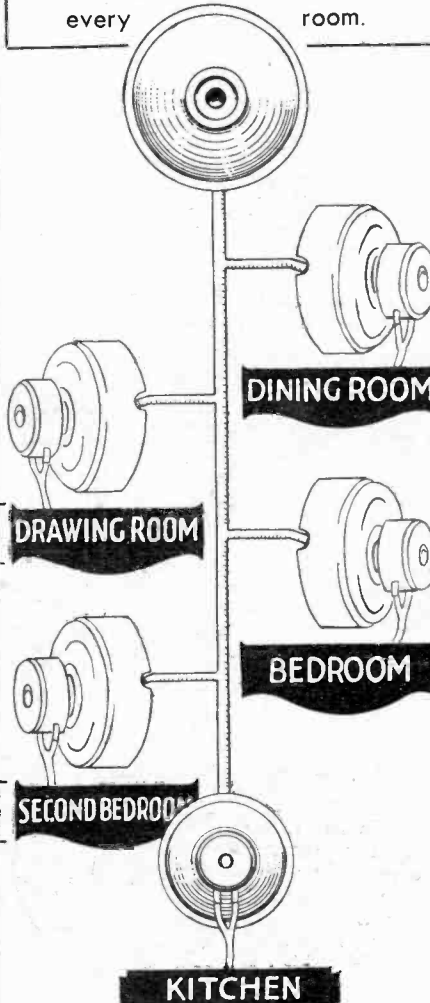
CELESTION provides this excellent speaker for use in the listeners' own cabinet.



convenience of having radio 'on tap' throughout the house will more than compensate you for the trouble of installing the necessary wiring. The best and most convenient way of carrying out extension wiring is with Bulgín wall jacks and plugs and some sort of twin-wire cable. In most cases it will be found that bell wire will be suitable for extension purposes, but that depends to some extent upon the particular set with which it is to be used.

If an output transformer or filter circuit is incorporated in the set between the last valve

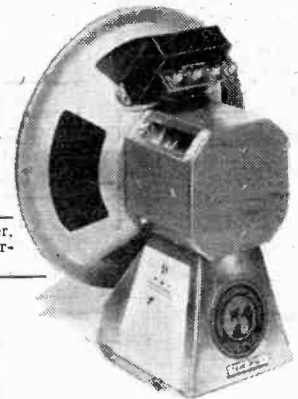
The diagram below shows how Bulgín wall jacks and plugs are used to couple the output of the set to extension speakers in every room.



tension-speaker sockets are connected directly in the anode circuit of the last valve, it is strongly recommended that the wire for extension purposes should be something a little better than ordinary bell wire, since in these circumstances there is the anode voltage on the last valve to be considered.

The Wires are Easily Hidden.

Your local dealer will be able to tell you whether or not your set incorporates an output transformer or filter circuit, and, if it does not, good twin flex would probably be about the best material with which to carry out the extension wiring. Anyway, whatever you choose in this case, make quite certain that the insulation will stand up to the demand that may be made upon it by "stray" high tension.

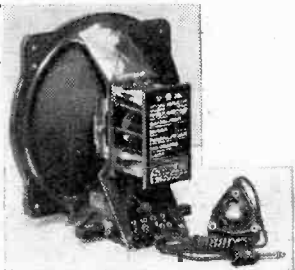


The W.B. Speaker, for matching different outputs.

As we have already pointed out, extension wiring, with the actual wires hidden away, is a task that can only be undertaken if you intend

The new BLUE SPOT has remote control facilities.

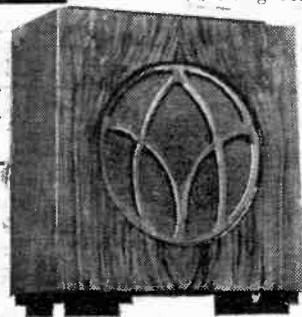
to have the place decorated; but that only applies if you desire the extension wiring on more floors than one, for otherwise the wiring can quite easily be placed under the floor boards.



To carry out the extension scheme with hidden wiring, drill a half-inch hole in the skirting board in a position somewhere near to the set, and remove the floor board nearest to the skirting board in question. You will then find that there is a small cavity between the skirting board and the actual wall, and it is usually just large enough to get a wire down.

It is thus an easy matter to get your wires down from the Bulgín wall jack, which should, of course, be fixed on the skirting board over the hole that you have drilled. (Further details of the procedure will be given in "P.W." next week.)

The AMPLION speaker proves that quality of reproduction and sensitivity are not incompatible with low cost.



and the sockets marked "extension speaker," then the question of the insulation on the wire you use is not of vital importance. But if (taking a rare case), the ex-

IDEAL GADGETS

for the

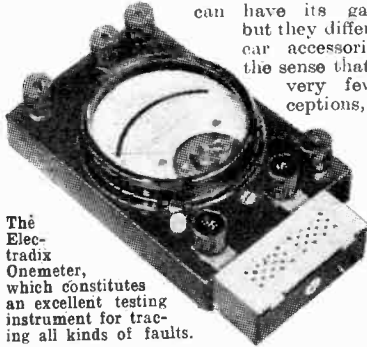
IDEAL

RADIO HOME

Refinements which are more than luxuries, and which add much to your ultimate enjoyment of universal home entertainment.

THE average Englishman is a great one for gadgets! Often enough a motor-car will sell on the strength of the dashboard appearance or on account of some little gadget not to be found on the equivalent model in another make. Yet, in the case of cars, the gadgets are often of little practical utility and the appeal is almost solely one of novelty.

The radio set, too, can have its gadgets, but they differ from car accessories in the sense that, with very few exceptions, they



The Elec-tradix Onemeter, which constitutes an excellent testing instrument for tracing all kinds of faults.

can all serve some definite purpose connected with the attainment of better results from the set itself. That is what makes some of them so very worth while, and, incidentally, it shows up the distinction between car and radio gadgets, for there are few minor things that can be added to a car which will bring about an appreciable improvement in engine performance.

It is that inherent weakness on the part of John Citizen for anything that is novel or ingenious, coupled with the practical utility of the devices in question, that warrants some reference to them in this Supplement. After all, for the attainment of the really Ideal Radio Home, it is essential that no stone should be left unturned; and since, in the case of the majority of the gadgets to which we shall refer, the question of price does not enter into it except to the extent of a few shillings, we imagine that there will be many readers who will be anxious to read about them.

The Varley A.V.C. Unit, for adding to existing receivers having more than one stage of H.F. amplification.



Here, then, are what we consider to be some of the outstanding gadgets for the Ideal Radio Home.

Despite the fact that real fidelity of reproduction is the rule rather than the exception these days, it rarely happens that two people are absolutely agreed on the question of what constitutes the best tone. Some like a slight preponderance of high notes, while others prefer the results to be a tiny bit on the bass side if anything.

For Controlling Tone.

Several of the commercial set manufacturers have overcome the difficulty by making provision in their designs for the tone to be varied, and that is about the only satisfactory way out of it. It is fortunate that the same facilities are available to home constructors, and to those who are using commercial sets in which no provision is made for tone controlling.

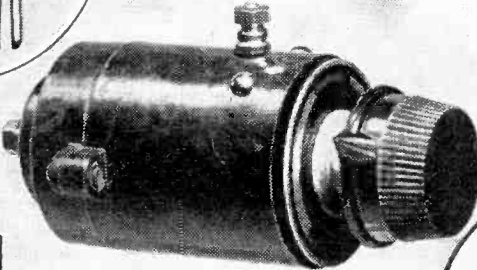
The Bulgin "Controlatone," one of the



The Eleex testing prod, no larger than a pencil, is essential when faults have to be found. On the right, the Bulgin Signal Lamp which can add to the attractiveness of a receiver and prevent the set being left on by mistake.

A useful gadget is the Clix Plug, which ingeniously fits into any type of 5-amp. socket. Its special legs enable it to make good contact despite socket-size variations.

Below is the Bulgin Controlatone, which allows you to increase high or low notes proportionately at will when listening.



really worth-while radio gadgets, can be fitted quite easily to any set, and it enables the tone of reproduction to be varied over fairly wide limits.

Some Useful Units.

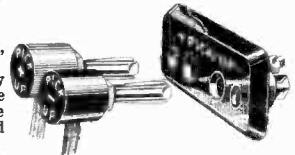
For listeners who indulge in a fair amount of distant-station reception there is a gadget manufactured by Varley which can serve a very useful purpose indeed. It is in the form of an automatic volume control unit which has been designed so that it can be fitted to practically any 2-H.F. set. A.V.C., in theory, does away with fading. In practice, it does not always entirely eliminate fading, but the improvement effected by the inclusion

of A.V.C. is so very marked that one can have nothing but praise for it.

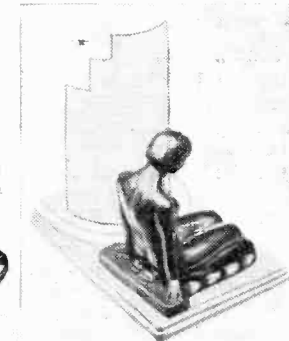
The cost is reasonable, the fitting is easy and the inference is—well, is it not obvious?

While on the subject of gadgets which take the form of units, we should, we feel, be lacking in our duty if we failed to make a reference to the famous Benjamin "Autocontrola."

When adding a pick-up to your receiver, do it neatly and efficiently with these Belling & Lee plugs and sockets.



This is a device which, again in theory, enables you practically to halve your H.T. costs if you are running a battery-operated set. The actual saving depends to some extent upon the class of set to which it is applied. But the fact that it does quite definitely effect a very great saving in H.T. is indisputable and well warrants serious consideration.



In our opinion, anything which tends to reduce the frequency of H.T. battery renewals is very well worth while, and the efficiency of this particular gadget will surprise you. As a

matter of interest, we believe that Graham Farish produce a similar type of unit which is extraordinarily efficient in use.

We make no apologies for bringing in the well-known Elec-tradix "Onemeter," for the simple reason that



The Benjamin Autocontrola effects a large economy in H.T. consumption—sometimes giving a saving of as much as 50 per cent.

no home can be considered ideal without some form of testing instrument. This particular device, which can be made to serve a variety of purposes, may appear to be expensive, but you can rest assured that it will turn out to be a good investment in the long run.

HOW YOU CAN

MAKE THE MOST—AND THE LEAST—OF THE MAINS!

IN the early days of wireless few people would use the mains for the operation of the receiver, for fear that something might "blow up"! It would indeed be a sorry state of affairs if that idea held good to-day.

But fortunately it doesn't. Listeners have long since realised that, providing the proper precautions are taken in the design of the set, there is as great a factor of safety in running the radio from the mains as there is in running any other domestic appliance. As for the advantages—well, they are too obvious to need reiteration here, but it is a fact that there are still few battery sets to compare in performance with those designed for mains operation, particularly those intended for A.C. mains operation.

Suppress at the Source.

Alas! it must not be assumed from that that running the set from the mains is necessarily all honey, so to speak. The bugbear of mains interference is a problem that has to be reckoned with all too frequently, and only comparatively recently have ways and means been available for overcoming the difficulty satisfactorily.

Obviously, it is impossible to consider results in keeping with the idea behind this special section if there is the slightest trace of mains interference. For radio it is bad enough; for television it is infinitely worse, because you can actually see the trouble!

You will notice that in the title of this article we talk of making the most—and the least—of the mains. Well,



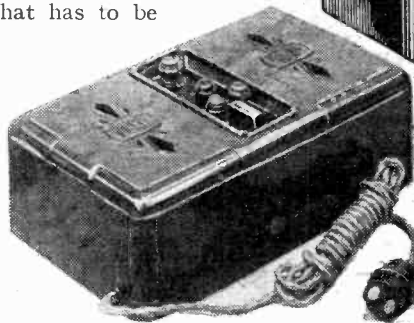
Atlas mains units continue to maintain a reputation which has been built up over many years.

TROUBLE-FREE RADIO AT A TURN OF A SWITCH

first to a brief discourse on the "making the least" aspect, i.e. the elimination of mains interference.

Before you can set about cutting out the crackle you must first endeavour

If you are troubled by faulty or noisy mains, try the effect of a Belling-Lee Disturbance Suppressor, a drawing of which is seen on the right.



An Ekco power unit such as the one shown on the left ensures an even supply of power to the receiver.

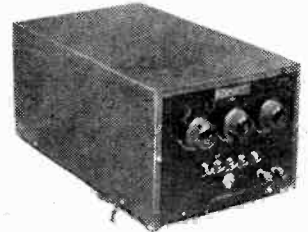
to determine the source from which the trouble is coming. So switch on the set, wait until the crackle makes itself manifest and then remove the aerial. If the noise persists, it is reasonable to suppose that the trouble is arriving via the mains. (This is assuming that the possibility of a fault in the set itself has been eliminated.)

For Different Types of Interference.

In these circumstances the course to be followed is an easy one. Several firms at the present time are responsible for surprisingly efficient mains-suppression devices, and with the one that we have in mind—the Belling & Lee Disturbance Suppressor—it is simply necessary to connect the device

between the receiver and the supply point on the wall or skirting board. Obviously, it is one of those tasks that should be carried out with the mains

Perfect smoothing and variable voltages on three of the four H.T. +appings are features of this Heyberd A.C. mains unit.



switched off, not only at the set itself, but at the supply point also.

If the trouble is arriving via the aerial the Belling & Lee Suppressor should be connected across the mains between the main switch and the distribution fuse box.

Whereas it is not possible to guarantee a complete cure, it will in practically all cases reduce the trouble to negligible proportions.

That, then is the way to make the least of the mains. Now for ways of making the most of them.

The most compact and convenient way is either to buy or to build a self-contained receiver with the power pack and everything included.

But not everybody will be wanting a new receiver, and so it is opportune that we should say something about the battery eliminator.

You will find in practice that it will pay for itself over and over again.

Choosing an H.T. Unit.

When buying an H.T. eliminator choose one that will give a current output adequate for the set with which it is to be used. Ekco, Atlas and Heyberd, to mention a few of the firms whose products are thoroughly reliable, all state the outputs of their products, and it is thus only necessary for you to determine the H.T. consumption of your set.

This can be done either by measurement or else by a consideration of the characteristics of the valves employed in the set.

But be sure, if you do not choose one of the makes that we have mentioned, that you buy a mains unit that can be relied upon.

YOU MUST HAVE PERFECT LINKS FOR THE PERFECT CHAIN

FEW people realise to the full the vitally important part that is played by the accessories in a wireless receiver. Almost invariably one finds that listeners are apt to regard them as a sort of necessary evil, and if any economies are to be effected in the radio equipment of the home it is ten to one that it will be the accessories that will come under the axe.

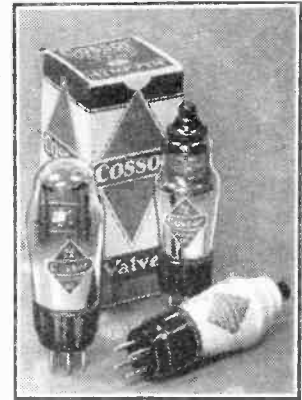
Actually, of course, the accessories are as important as the set itself, and it is useless to expect good results—results to do justice to an ideal radio-home—from inferior valves, batteries and speakers. Bear in mind that they all

Valves, Batteries, Accumulators—all must play their respective parts in the final attainment of that perfect performance after which every listener strives.

specially intended for extension purposes in which the impedance can be matched up by means of a selector switch. These are ideal for the purpose, but in any case, whichever make of speaker you choose, you will always find the manufacturers willing to give you advice as to the model most suitable for use.

But the attainment of perfect quality does not end with the selection of a suitable speaker. This applies

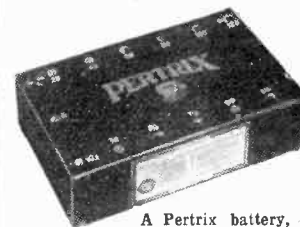
Cossor valves for every purpose continue to enjoy great popularity with constructors and listeners.



particularly to battery-set users, for so much is dependent in this case upon the use of batteries capable of giving a current output commensurate with the requirements of the set.

If your set takes anything up to a total of 10 milliamps, then the ordinary standard types of batteries should be adequate. But if the total consumption exceed 10 milliamps, it is really imperative that you should select the super-capacity type. For sets taking appreciably more than this figure, nothing short of a triple-capacity battery can be considered suitable if it is to last for any length of time.

Finally we come to the question of valves. It is impossible to gauge the reliability factor of any valve simply by looking at it, and in consequence the reputation of the maker can be your only guarantee. Valves for use in our own laboratories are



A Pertrim battery, and one of the Tungram range of mains valves. probably subjected to infinitely more "wear" than those in any ordinary receiver, and when we tell you that our stocks include the products of Cossor, Hivac, Tungram and Dario, we can leave you to draw your own conclusions.

the only one capable of giving results up to present-day standards. But as to whether your set will be capable of working a moving-coil speaker is a matter depending almost entirely upon the type of output valve in use.

If it is a battery set, then your choice will be limited to a speaker of the permanent-magnet type, and in general there are few, if any, speakers of this type that will give satisfactory results unless the last valve in the set is capable of giving an output of at least 500 to 700 milli-watts. With battery sets, unless Q.P.P., Class B or one of the other economy output schemes is used, a valve to give an output of this order may incur a severe drain on the H.T. battery.



Two novel accumulators. Above is the Exide indicator model with a moving hand showing the state of charge. On the left is a Block L.T. battery of sturdy construction and high capacity.



With regard to a speaker for extension purposes, it is, of course, of great importance to see that its impedance—or the impedance of the transformer primary if it incorporates one—will match up with the last valve of the set with which it is to be used.

One or two of the reputable speaker manufacturers are now marketing speakers

Above, the famous Ever Ready H.T. battery, giving 108 volts. On the left is a new Hivac Q.P.P. valve of ingenious design.



play equally important parts in the chain of events from the aerial to the listener, and that according to the old adage, the strength of a chain is determined by that of the weakest link.

It is our intention in this present article to give you some general guidance upon the selection of accessories, since they play such a vitally important part, and although it is impossible to lay down any hard and fast rules, there are certain things that should be borne in mind when deciding upon make and types.

First, a few words on the subject of loudspeakers generally and on extension

In expensive mains and battery types are available in the Dario valve catalogue.

speakers in particular. With very few exceptions it may be said that the moving-coil type of speaker is



TELEVISION, TOO TO COMPLETE THE EQUIPMENT OF THE IDEAL RADIO HOME.

UNTIL such times as the findings of the Television Committee, which is at present sitting, are made known, the future of television in this country is to an extent in the balance. But the transmission of pictures, in like manner to the transmission of sound 12 or 13 years ago, has got to have its beginnings somewhere, and if the present television standards are not exactly perfect, does it follow that all

differently if cost had entered into the question to any appreciable extent. But thanks to the enterprise of the Peto-Scott Company, Ltd., the way is open for the home constructor to participate in television broadcasts for something under four pounds!

That, incidentally, once again demonstrates the advantage which home constructors have over all others, for there are few commercially-built television viewers which can be bought for appreciably under twenty pounds.

The viewer to which we refer, and which is available from the Peto-Scott

Company in kit form, is of the disc-type. The kit, which is supplied in such a form that the construction of a viewer resolves itself into a straightforward job of assembly, costs 75 shillings, and although it requires careful handling, in operation it is capable of commendably good results.

As for the type of set from which to work it—well, in general it may be said that it will function satisfactorily from any type of receiver in which a

case, the tremendous fascination to be derived from the reception of pictures by wireless is well worth the small extra cost!

It is fortunate that the scope of this viewer is not limited only to mains users. The motor by which the actual disc is driven is available in either mains or battery type, and it is of interest to note that the kit can be completely assembled in about half-an-hour.

Very Satisfying Results.

The disc-type receiver for which the kit is supplied by Peto-Scott is undoubtedly the cheapest way of making a start at television. In a sense, it is a "bare-bones" kit, but nevertheless it is capable of very satisfying results, and moreover it can be added to as and when the pocket will permit.

For instance, the kit as supplied does not include automatic synchronisation, but it is a refinement that can be added afterwards at a cost of approximately £1. Then again, slightly better pictures are usually obtained from what is known as a flat-plate lamp, and that is another little refinement that can be added for small extra cost. But in our opinion, the "bare bones" kit is good enough to make a start.

It is hardly within the scope of the present article to discuss in detail the assembly and adjustment of the kit, but interested readers are referred to the details in the special Television number of "P.W." dated May 5th.

Television—entertainment's newest recruit—is perhaps nearer to the realm of practical politics than it has ever been before. Bring it into your home. This article tells you how.

interest should be abandoned until the perfect thing is available?

Nobody with any technical standing at all would be so rash as to say that the detail in pictures as at present received is satisfying, viewing the matter strictly in the entertainment sense, but is that the only aspect from which to consider it?

Is the position appreciably different from that of the old crystal-set days, when half a particular broadcast was usually spent in finding the most sensitive spot and the other half in silencing the other members of the household? No! It was the fascination of hearing snatches of music and voices by wireless which provided the entertainment in those days, and the same thing holds good of pictures today.

The 30-line system of television transmission which is broadcast by the B.B.C. at the present time is, under certain circumstances, exceptionally good—sufficiently good, at any rate, not only to justify, in our opinion, a continuance, but an extension of the hours allotted to television broadcasts.

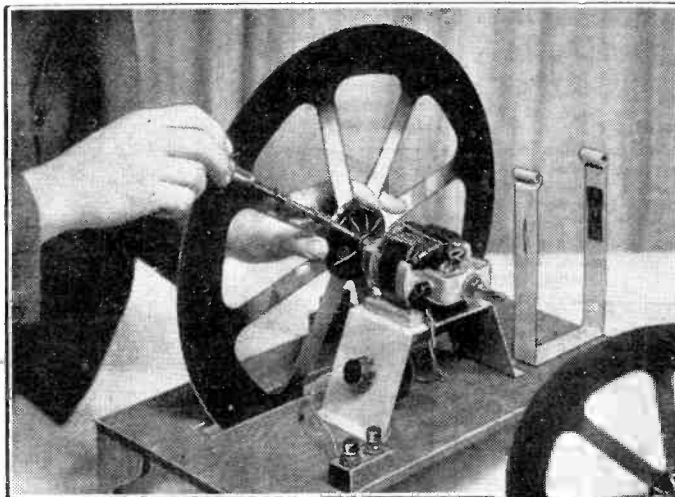
Clearly Recognisable Pictures.

And whereas we feel that for the equipment of the *really* ideal radio home some sort of television viewer should be included, it is only right to point out that it will be a long time before finality is anything like reached.

That does not alter the fact that it is possible even now to obtain pictures which are clearly recognisable, and although the operation of most existing types of viewers is a matter calling for some little care, comparable in a general sense with the finding of a sensitive spot in the old crystal days, we do feel justified in making a reference to television in the description of our Ideal Radio Home.

It might have been necessary to view the claims of a television viewer for inclusion in our Radio Home very

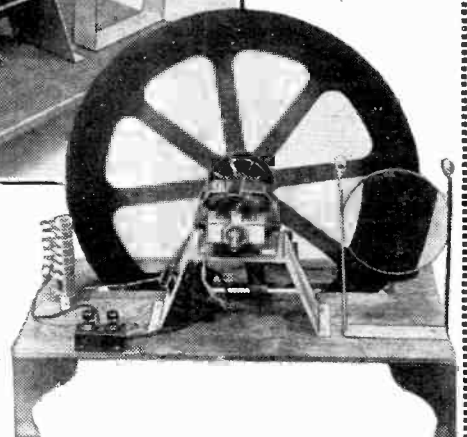
A SIMPLE FORM OF TELEVIEWER



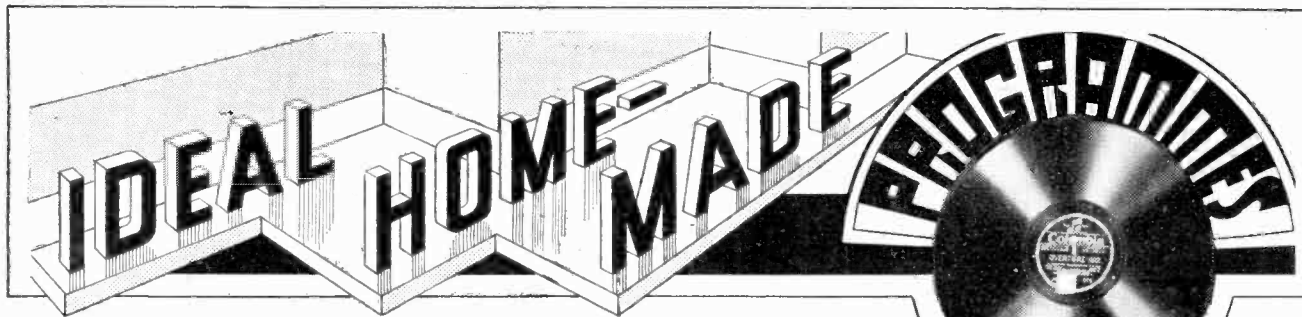
This is the Peto-Scott disc televiewer, which, as can be seen, is a very simple piece of apparatus. The motor can be either of the mains or battery type, enabling both mains and battery-set owners to look-in to the television programmes.

fairly large output valve is used in the last stage.

The H.T. voltage requirements of a set from which to work the viewer are perhaps a little in excess of what would ordinarily be necessary for broadcast reception, but in no circumstances should it be necessary to exceed 200 volts, so that the increase is nothing very much to worry about. In any



The lens on the right of this picture magnifies the image which is produced by a neon tube behind the revolving disc. This disc is provided with a series of small holes which perform the scanning operation.



I AM a confirmed radiogramophone enthusiast. I would not for worlds be without the means of playing my own "radio" programmes when I will and with the items I choose. As a matter of fact, when I am away from my radiogram and have to rely on some radio receiver which has no pick-up provision I am truly miserable.

There is something inherent in all of us that makes us crave for something different from that being given us, and radio programmes are no exception to the rule, however good they may be.

So when the radio programme does not please me, or when there is no radio available, I turn to the gramophone record, and from a selection of numbers that I have myself chosen I pick out the ideal programme to suit the mood of the minute.

Those with radio receivers that are not equipped with pick-ups are missing a very great proportion of the enjoyment that might be obtained, and should lose no time in rectifying the omission if they want ideal programmes.

Two Methods Available.

The home-made record programme can be obtained in two ways: by means of a full-blooded radiogramophone or from a receiver with a pick-up attachment, and either will give perfect satisfaction if properly chosen.

Whether a radiogram (either pedestal

or table model) is chosen, or whether it is decided to have an attachment for an ordinary radio receiver, is a matter of choice. The radiogram is the more compact arrangement, but either will give perfect reproduction if the set, pick-up and speaker are of good quality.

The beauty of the complete radiogram is that it is self-contained, and some types have room inside for a few gramophone records besides the "works" of the outfit. But it is the operating powers of the instrument that count; it must be chosen for its radio and record repro-

gramophone, will enable electrical reproduction to be obtained from the ordinary radio receiver.

The connections for the pick-up to the set are perfectly simple, for most receivers are provided with the necessary terminals or sockets for such an attachment.

Naturally, either a clockwork or electric gramophone motor can be employed, while it is not at all difficult to rig up an automatic record changer like the Garrard, which itself is fitted with a pick-up and volume control if desired.

Where the householder's ambitions go to an automatic changer it is probably best to have a proper cabinet made for it—some sort of radiogram cabinet with a compartment for the records being most suitable—and this can be so situated that it is near the radio receiver which is to be used.

ADVICE BY OUR GRAMOPHONE EXPERT ON THE WAY TO CHOOSE AND MAINTAIN A LIBRARY OF FIRST-CLASS RECORDS FOR CONSTANT HOME ENTERTAINMENT.

duction (selectivity, power and quality) before consideration is given to the furniture side of it—the question of woodwork and record space, if any.

A radiogramophone should be picked with the same care as a radio set, and both radio and record should be heard on it before a decision is made. And here must also be taken into account the question of whether it is a good thing or not to spend that little extra and get an automatic record-changer model.

As regards that, let me say at once that if it is at all possible to stretch the pocket just that little bit more, then by all means do so. The delight of being able to pick out a complete half-hour programme on record, load the machine up and sit down to enjoy it without having to get up to change records and needles needs to be experienced to be fully appreciated. I have a record changer on my radiogramophone—a Garrard that I fitted after the machine was installed—and so I can vouch for the immense benefit that such a refinement confers

When Using a Pick-up.

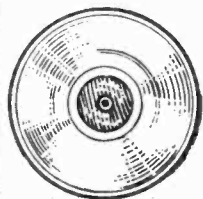
But perhaps the would-be radiogram owner cannot go quite to the expense of getting a fully fledged radiogramophone. Never mind; it will still be possible to obtain the ideal home-made programme by electric reproduction of gramophone records on the ordinary radio receiver, with a pick-up and gramophone motor as accessories.

Excellent pick-ups are obtainable from a number of firms, such as Blue Spot, Marconiphone and others, and when mounted on a simple motor-board in a small cabinet or on a portable gramophone, or even an old type of acoustic

For Home-Made Sets.

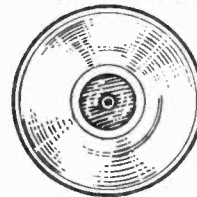
If the receiver is of the home-made variety it is usually quite easy to adapt it so that the whole lot will go into a radiogram cabinet to form a complete unit, with the gramophone motor and pick-up (or the automatic changer) at the top.

With the remarkably low price that records are at present, and with commercial (Continued on next page.)



AN H.M.V. SELECTION SUGGESTIONS FOR YOUR PERMANENT ALBUM

Merric England Selection	New Symphony Orch.	C2196
Boadicea March	Massed Bands	C2550
Song of Songs	Richard Crooks	DA999
Hollywood Party	FlorenceDesmond	B4264
Knightsbridge March	Orchestral	C2656
Legion of the Lost	Peter Dawson	C2507
Sally	Gracie Fields	B3879
The Lost Chord	Enrico Caruso	DB2073
Your Tiny Hand is Frozen	Beniamino Gigli	DB1538
Ave Maria	Yehudi Menhuhin	DB1788
If I am dreaming	Richard Crooks	DA1306
Polonaise Militaire	Paderewski	DB375



A COLUMBIA SELECTION RECORDS YOU WILL WANT TO OWN

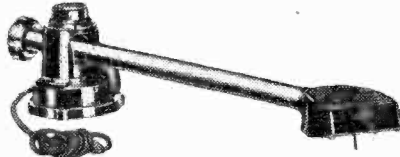
Hungarian Rhapsody, No. 2	New Queen's Hall Orch.	DX9-10
Melodious Memories	Regal Cinema Orch.	9722-3
Carmen Fantasia	B.B.C. Military Band	DX243
Ride of the Valkyrie	Cinema Organ	DX66
Le Cygne	W. H. Squire (Cello)	L2126
Little Irish Girl	Dora Labbette & Hubert Eisdell	DB431
Congo Nights	Thriller	DX272
Columbia on Parade	—	DX299
Prince Igor	B.B.C. Military Band	DX564
Ah, Sweet Mystery of Life	Saxophone and Organ	DB1145
Dizzy	Burns and Allen	DB286
Gay Divorce	Piano Duet	DB1288

WHAT YOU LIKE—WHEN YOU LIKE

radiogramophones such as H.M.V., Columbia, Marconiphone and so on at the reasonable figures that are now current, it is not a difficult task financially to ensure that you get what you want when you want it as regards musical entertainment.

The Financial Side.

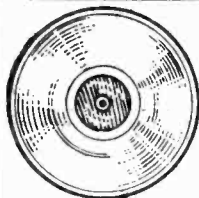
Imperial and Rex records from 1s., Decca at 1s. 6d. and upwards and H.M.V. and Columbia from 2s. 6d. enable a big library to be built up at astonishingly low cost. It takes time, of course, but if it is remembered that you will not always be wanting to listen to ultra-light music, nor to the dance variety, and if you therefore get as well a number of good instrumental and vocal records you will gradually build up a library from which you will be able to pick a number of complete programmes.



The Blue Spot pick-up, with associated volume control, is a firm favourite.

Dance numbers go out of date rapidly, for we get tired of them very quickly, so that, in building up your record library, I do not advise the expenditure of much on dance records. Buy some for the enjoyment of a hit or two while they last, by all means, but do not look upon every dance record as one more in the main collection for future use.

If you do you will be liable to get littered up with dance tunes (especially if you are a dance-tune lover) that have gone out of date, and which you will rarely wish to include in a programme of records.



A DECCA SELECTION

SOME POPULAR NUMBERS TO HEAR MORE THAN ONCE.

Smilin' Through	Olive Groves	F3457
Colonel Bogey	Jack Hylton and his Orch.	F2785
Blue Danube	Alfredo Campoli and Orch.	F2521
Gipsy Moon	Alfredo Campoli and Orch.	F3412
Mrs. Feather, No. 2	Jeanne de Casalis	F3320
Father Sweeps the Chimney	"The Bugginses"	F2027
Songs of Jerome Kern	Fred Hartley and his Quintet	F3859
Songs of Clarice Mayne, No. 1	Clarice Mayne	F2724
The Last Waltz (Selection)	New State Symph. Orchestra	K672
Nursery Rhymes	By Walford Davies	F2019
Firebird	Spike Hughes	F3717
Heard at Hogs-norton, No. 1	Gillie Potter	K650

A varied assortment of popular orchestral items seems to be the best basis for the average collection of records that can be brought out at any time, with, of course, some heavier numbers, some organ solos and some vocal items as a change. Also do not forget the claims of the comedy record, such as those offered by Stanley Holloway, Jack Buchanan & Co., the Hulbert Brothers, Gracie Fields, Will Fyffe and so forth. They are invaluable as leaven to lighten the programme. Thrillers, too, are not to be despised as vivid relief to the normal run of things.

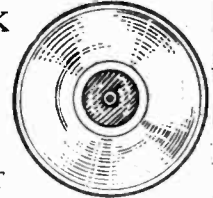
Note the Numbers.

The radio programmes, poor as we may think them at times, will be invaluable in providing names of artists and items that will help in building up your record library.

Listen carefully to the record broadcasts particularly, for there you have the whole task of finding the make of any item done for you. All you have to do is to make a note of the number and make of the record you like and get it the next time you are round at your record dealers.

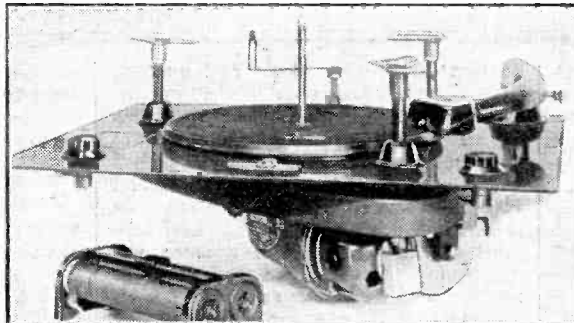
A BRUNSWICK SELECTION

STAND-BY NUMBERS FOR HOME ENTERTAINMENT



Where the Blue of the Night	Bing Crosby	1256
Crazy People	Boswell Sisters	1416
Rhapsody in Blue	Frank Black and his Orch.	123
St. Louis Blues	Duke Ellington and Orch.	116
The Film Stars' Parade	—	01707
OK America	—	109
Mood Indigo	The Jungle Band	1068
Moon Song	Kate Smith	1479
A Radio Party	Impersonated by the Three Radio Rogues	124
Dinah	Red Nichols	01591
Tiger Rag	Duke Ellington	1338
Ol' Man River	Paul Robeson	111

NO MORE RECORD CHANGING



With the Garrard automatic record changer you can play eight 10" or eight 12" records without touching the machine.

As a start for the library I have given a few short selections of varied interest, containing records that will be useful in most cases as the basis of a record library. Some of the actual items you may like, and others may not appeal to you. But if the individual tune does not attract, make a note of the orchestra or artist and have a look through the various catalogues to see what else has been recorded by the same people. You will soon find a number of discs that you will feel you simply must have.

Volume Control and Needles.

And now a few remarks about such things as volume controls and needles. The former will not be of interest to you if you have a full-fledged commercial radiogram, but is of vital importance if the set is home constructed or if a pick-up attachment is employed.

Whether the volume control is incorporated in the receiver or is external to it, the value of the resistance must be chosen with due regard to the advice of the makers of the particular pick-up to be used. The response curve of the pick-

up is modified by the value of the resistance of the volume control, and care has to be taken that this modification is not too great.

Most pick-ups are designed with a definite value of resistance in view—some need as low as 10,000 ohms and others require 50,000-ohm controls. If you are in doubt try a 50,000-ohm control, and then if the reproduction is too shrill add fixed resistances across it.

Remember that the volume control should be "logarithmic," so that it gives smooth, even increase or decrease of volume as the knob is turned; "straight-



A neat bakelite moulding houses the B.T.H. pick-up shown here.

wound" controls are apt to be rather sudden in action.

Needles require careful choosing. You should try as many types as possible before deciding on the best for any particular pick-up. Fibre needles are not usually successful, and the best to try are probably loud-tone and half-tone steel, Columbia "Talkie" and Columbia "Duragold" (these latter are excellent and will play eight to ten records without need of changing).

The "tungstyle" needles are good if the pick-up is not strident in quality, but must be handled carefully. They should be watched for wear and not used for more than twenty to thirty playings as a rule.

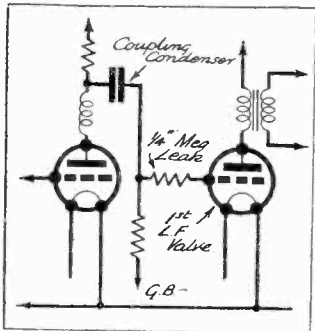
Never take any needle out of the chuck to examine it, and then replace it. If removed it cannot safely be used again.

A PAGE of Recommended WRINKLES

THE USE OF A GRID STOPPER.

WHEN decoupling and other remedies for bad quality have been tried without much success, it should be ascertained that the presence of H.F. currents in the amplifier circuit is not responsible for the trouble.

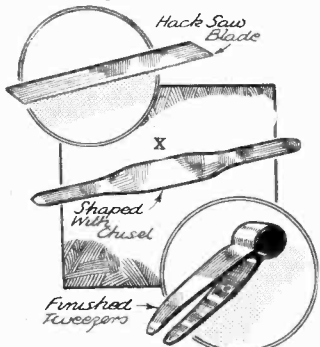
To prevent such leakage a grid leak having a value of approximately 250,000 ohms should be connected in the grid lead of the first L.F. valve. The connections shown in the diagram are arranged for a receiver employing resistance-capacity coupling; but where a transformer is used in this stage the above leak is simply joined in series with the grid lead.



The 1/4-meg. leak keeps out H.F.

USEFUL TWEEZERS.

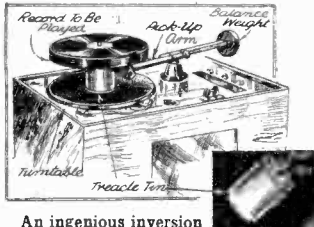
A PAIR of useful tweezers for handling fine wire can be made out of an old hack-saw blade. Heat the blade to a red heat across a gas flame and allow to cool slowly; then cut with a cold chisel to shape as shown in the centre sketch, afterwards grinding off. Heat again at X portion and, while hot, bend to shape as in lower illustration.



The tweezers are handy for gripping small wires, etc.

PLAYING RECORDS BACKWARDS.

TO those who would like to introduce a weird and grotesque novelty into their gramophone entertainments and are handy at fixing up gadgets, here is a very simple method of playing gramophone records backwards. Old dance records which you have become tired of become new tunes, and various instruments, especially the human voice, sound so weird that you will probably roar with laughter.



An ingenious inversion which provides plenty of fun.

It is great fun to run one backwards when you are entertaining some friends. Do not disclose the secret, but tell them you have been sent some records from a friend out in China, or something to that effect.

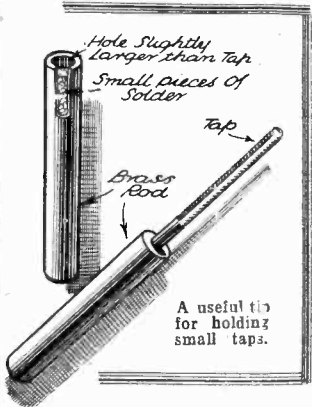
Procure an empty custard or 2-lb. treacle tin, and make a hole in the centre of the bottom of same so that it will slip over the centre spindle of the turntable. Make a similar hole in the centre of the lid, and fix through this a 5-16-in. threaded stud about 2 in. long (this can be procured from nearly any motor engineer), with the head on the inside of the tin and a thin nut on the outside.

Place the tin on the turntable and then slip the record to be played upside down over the stud, with a couple more records on top to weight it down. The pick-up or soundbox is now given a half-turn rotation, so that the needle is pointing upwards, and its weight is counterbalanced with an arm and weight as shown in the sketch, so that the pick-up or soundbox tends to lift upwards.

The turntable is now started and the needle placed in the innermost groove of the record. As the record is played the needle will, of course, move across to the outer edge of the record, and care must be taken to stop the turntable when the record has finished playing.

GRIP THAT SMALL TAP.

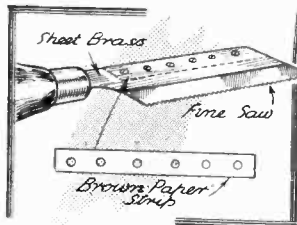
OFTEN when doing jobs you come across the difficulty of gripping a small tap. I overcame this difficulty by drilling a hole slightly larger than the tap in a piece of brass rod. Partly fill this hole with solder and melt it; then, while the solder is still molten, push in the tap, covered with flux. The result is, when cold, the tap can be gripped perfectly. This can also be done with fine drills. The rod can be any length.



A useful tip for holding small taps.

MAKING A FINE SAW.

THE wireless enthusiast feels the need of a fine saw. The particular saw referred to is that generally used by jewellers. The blades can be bought for about 2/6. The frame can be made cheaply from thick sheet brass or steel. The saw blade is measured, and two brass strips made to suit, as in the sketch. They are then clamped together, and tapping holes drilled through both, about a quarter of an inch from the edge. The strips need only be about 1/2 inch wide, or even less. 4 B.A. tapping is a suitable size for the screws. One strip is now taken, and

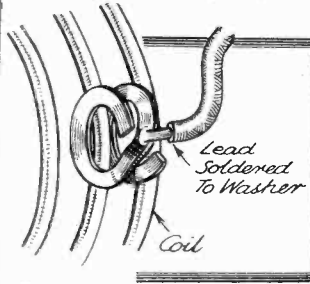


The blade costs only 2/6, or so.

the holes opened out to 4 B.A. clearance size. A strip of 80 of brown paper should be cut so that the thickness is slightly less than the thickness of the saw blade, and inserted at the top to give a better grip. A file handle of suitable size finishes the job, and you have a very handy saw for the wireless bench.

A NOVEL COIL CLIP.

ON short waves aerial connections are usually made to the coils by means of crocodile clips, the coils being air spaced. Unless great precaution is taken the crocodile clip will be found to short out two or more turns, especially if it is a large one. A clip can be made which will not do this and which will also give a firm grip. The clip is made from a split washer, the wire lead being soldered to the washer. The washer can be obtained in the size to fit the wire.



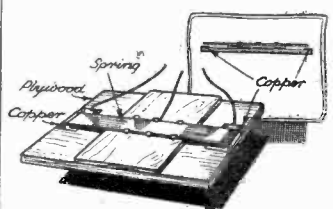
REMOTE-CONTROL SWITCHING.

HAVE you a distance switch which is operated by two push switches? If so here is a novel kind of push which fits snugly under the carpet!

To make it you require the following: One piece of 1/4-in. three-ply wood, 5 1/2 x 2 in.; one piece of 3/8-in. three-ply wood, 3 1/2 x 2 in.; one piece of very strong clock spring, 5 1/2 in. long; two pieces of thin copper or brass, about 1 x 1 in.

Pasten the pieces of copper on to the longer piece of wood, one at each end, then place the other piece of wood in the centre and secure with a couple of screws. Now clean one side of the spring at the ends and put this on top of the 3 1/2-in. length (bright side downwards), allowing 1 in. to project at each end; fasten down by tapping five gimps into the wood on either side of it. (If the pins come through, the surplus can be clipped off with pinners, great care being taken, however, to guard the eyes against flying points.)

The push is now ready for connecting up, the leads being secured by soldering. When you have found the ideal position for placing it under the carpet, it should be covered with a piece of thin rubber (cycle inner tube). It is, of course, operated with the foot, one side for "on" and the other for "off."



It goes under the carpet!

MAINS UNIT HUM.

NO doubt many readers are the fortunate possessors of mains units, and, whether they are A.C. or D.C., the cheaper kind are apt to "hum" slightly. This may be caused by insufficient smoothing, chokes, etc., but the hum can often be cured by earthing the cover. If the unit does not have an earthing terminal on it, the metal cover should be earthed through a large fixed condenser (2 mfd. or 1 mfd. will suit). I had an A.C. unit for quite a long time which had a very strident "hum," but it disappeared completely when the cover was earthed.

When the hum is due to insufficient smoothing it can sometimes be cured by connecting an extra 2- or 4-mfd. condenser between H.T. + maximum and H.T. -.

ONE GUINEA FOR THE BEST WRINKLE!

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

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

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

The best Wrinkle in last week's issue was sent by Wm. C. Nichols, 115, Derrington Avenue, Crewe, to whom a guinea is being awarded.

TESTED AND FOUND?

Being Leaves from the Technical Editor's Notebook

EXTENSION WIRING

WE are expecting great things of this number of "P.W." We hope it will inaugurate a wide-spread movement for the better use of radio in the home.

The majority of listeners do nothing more than buy an all-in type of set and stick it in a convenient corner of a room—not necessarily the one they spend the most time in!

But that isn't the way to make the best of radio. Such a method presupposes that the set will be in action only when the people of the house are all of one mind to gather in that one room and listen to the one or more particular items.

Or perhaps the radio set is often used in much the same way as the old mechanical gramophone. The family is all together; there is nothing to do for the moment: "Let's put on a record!"

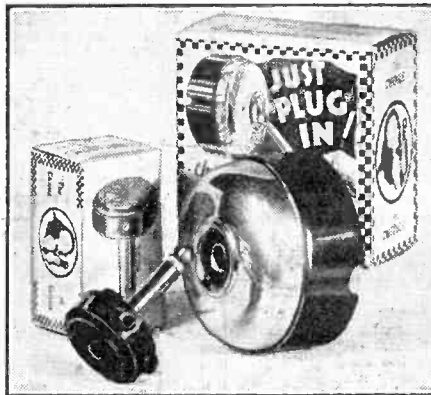
Personally, I divide my listening into two divisions—"attentive" and "background." In the first are talks and plays and other items to which I like to give all my attention.

Regarding the latter, I am aware that there has been a great deal said against using the radio as a background. But I fancy there is more than one kind of background listening.

My background listening mainly comprises music during meals. There is nothing I like better than to have, say, the Commodore Grand Orchestra playing some light music the while I toy with my chop or

"roast and two vegs." And surely that is the main purpose of such music. It is not the kind of stuff one

RADIO IN EVERY ROOM



The Bulgin extension wall jacks and plugs illustrated here make the work of extension-speaker fixing very easy. And, moreover, they need no attention.

wants to concentrate on as one is supposed to do with the Symphony variety.

I also like to have some not-too-loud music in "the background" while reading or when there is company. Though I must admit there isn't always the right kind of music "on tap."

All this is my argument for extension loudspeakers. There are other arguments. Why should one always

THOSE NEW IDEAS

Most readers will have realised by now that the purpose of this "note-book" page of mine is to introduce to "P.W." readers new-components produced by the radio industry.

The descriptions of these new components are accompanied by general remarks with regard to their use, and notes on the results of tests which have been carried out in our research department.

At the same time I am always pleased to do my best to assist any individual reader who has invented or designed apparatus which he thinks has novel or original features.

It has been my experience, however, that in some cases readers have sought to extend the scope of this service quite beyond my original intentions.

I have therefore come to the conclusion that for the future I cannot undertake to accept information with regard to apparatus which has not been protected.

I always have been and continue to be most anxious to assist with advice with regard to new ideas, but at least provisional patent protection must first be obtained, and in this connection I suggest that the services of a good patent agent should be employed.

I also should like to make it quite clear that anything I have to say with regard to such ideas is only an expression of my personal opinion.

have to rush to the same room in order to hear, for instance, the cricket results? Why should someone who is tied to the kitchen or some other room have to miss interesting items?

However, there are others who will be discussing such points in detail in this number, so, having expressed in brief my own points of view, I must get on to the description of some components which have rendered such an introduction to my notes quite relevant.

(Continued on next page.)

AMPLION

Thousands of British homes use "Amplion," because for performance and appearance they are acknowledged as the ideal permanent-magnet moving-coil speaker.



**CABINET
MODEL
M.C.44
63/-**

Ideal for use in any room in your home.

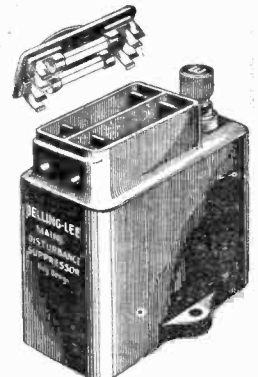
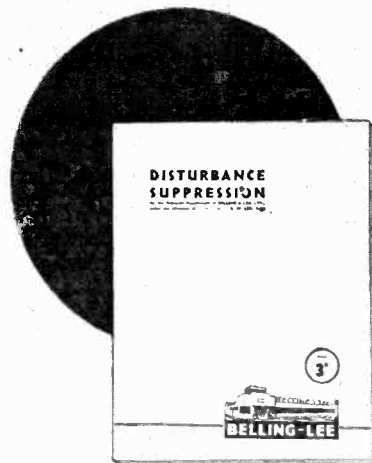
This Cabinet Model M.C.44 is fitted with our famous M.G.22 speaker unit, which has an all-purpose universal transformer which ensures perfect reproduction with all modern receivers.

**M.C.22
(Speaker without Cabinet)
39/6**

SPECIFIED FOR THE "TRU-VOL THREE,"
Descriptive Literature "P" on request.

**AMPLION (1932) LTD.,
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**The Belling-Lee Condenser
Suppressor.**

L1118 - - - each 10/6
Approximate dimensions, 3" x 3" x 1 1/2"
Not a "Cure all" but in about 80 per cent cases effective.

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Does Your Receiver suffer from "Man-Made" Static—buzzing, clicks and crashes made by electric machinery, lifts, electric signs, etc. The book illustrated deals thoroughly with the subject of Electrical Disturbance and contains 25 illustrations and descriptive diagrams. It cannot fail to interest you.

BELLING & LEE LTD
CAMBRIDGE ARTERIAL ROAD, ENFIELD, MIDDIX

TESTED AND FOUND—?

(Continued from previous page.)

They are the Wall Jacks, made by Messrs. A. F. Bulgin and Co., Ltd., Abbey Road, Barking.

Bulgin have probably done as much if not more than anyone else thoroughly to domesticate radio, and they have done this by the invention and manufacture of innumerable refinements such as decorative lights, colour indicators, ornamental and useful radiogram fittings and other such attractive gadgets.

Of course, they have always paid close attention to extension-speaker fittings and systems, and their slogan, "Radio in every room at minimum cost," is probably well known to "P.W." readers.

Their Wall Jacks are, in my opinion, as good as they can be. Neat in appearance, their design and construction are such that they can be mounted on walls, wired up and left to serve their purpose with the comfortable knowledge that they will never require attention.

There are no flimsy springs or contacts in them to go wrong, but strong springs capable of giving unlimited service.

The Bulgin Jack Plugs which go with them are similarly satisfactory, and I can recommend them to all desirous of installing extension-speaker arrangements.

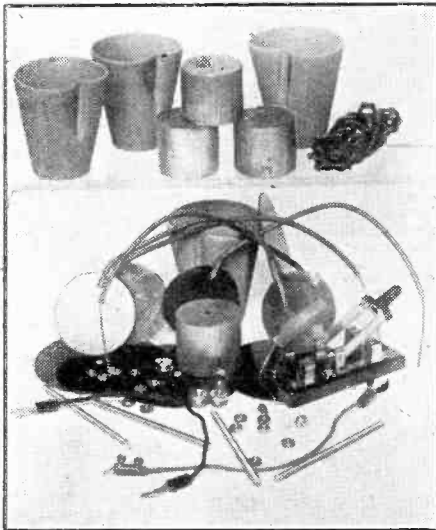
IMPROVED "TONIC" CHARGER

COUNTRY listeners particularly will be interested to learn that the "Tonic" self-generating trickle charger has been still further improved.

The Tonic Charger is made by Tonic Chargers, of 54, Netherend, Cradley, near Birmingham.

It is a substantial primary battery arrangement designed for charging L.T. accumulators. Some time ago, as many readers can doubtless recall, I gave a Tonic Charger an extended test and found it

FOR COUNTRY LISTENERS



The charging outfit seen in this photograph is intended as a primary battery arrangement for trickle-charging L.T. accumulators.

quite satisfactory. It was able to keep a forty-ampere-hour two-volt cell in perfect condition to meet a drain imposed upon it equal to that of the average four-valve set.

The latest improved outfit incorporates even more substantial zincs and porous pots of a new special design.

Interested readers should certainly write to the above address for full details of this useful outfit.

THE LINK BETWEEN

Notes of interest to buyers
By G. T. KELSEY.

WHO wouldn't have an Ideal Radio Home after having read all about it in our special section this week? Talk about "sets" appeal (sorry, but I am afraid I just couldn't resist that one), why, the section is just full of it. Anyway, to let you into a little

secret, this special section idea has filled me with enthusiasm to such an extent that I've now got speaker points everywhere, and, incidentally, I have picked up a few blister points on my hands in the bargain! But isn't it just worth it?

I have fixed all my points to the skirting boards, and if you take my tip you will do likewise, for it is so much easier to secure them to wood than to plaster. But if you want your extension points on more floors than one, as I did, then, of course, you will have to make an attack on the plaster.

But even that is not such a difficult job. It is amazing what can be done afterwards with Keen's cement, and you can buy seven pounds of it for about 9d.

Inexpensive Microphones.

As a matter of passing interest, I have been particularly ambitious in my ideal radio home, for I have also fixed an inter-house telephone! Practical utility, 1 per cent.; novelty appeal, 99 per cent! Still, it works, and one of these days it may come in quite useful if I contract measles and have to be confined to my bedroom.

I picked up some excellent (and inexpensive!) microphones for the purpose at Electradix, and it is a source of great fascination at the moment. Incidentally, if ever you are wanting a microphone, Electradix is a useful name to bear in mind.

A Ferranti 24-Hour Clock.

In the issue of "P.W." dated June 2nd, I drew attention to the fact that Ferranti had adopted the 24-hour clock system in their organisation, and I wondered how long it would be before they introduced the dual figures on the faces of the clocks they manufacture.

I now understand that they have actually been fitting a 24-hour clock to their new season's "Gloria" superhet, and I am told that it has met with great success.

That makes it all the more difficult to understand the reason for the present controversy concerning the B.B.C.'s enterprise in this connection. Personally, I think that the 24-hour system is the logical method of splitting up the day, and I have never experienced the slightest difficulty as a result of thinking of time in this way. But that is purely my opinion.

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AUTOMATIC
LIGHTNING
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EFFICIENT
IN HEAT &
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Fit the new GARD Automatic to your aerial lead-in and your aerial is safe from the fiercest lightning flashes. No need to worry with GARD fitted—no need ever to switch off. Forget lightning, enjoy your radio throughout the storm, GARD permanently safeguards your set—your house itself—for the trifling cost of two shillings.

**EVERY GARD IS
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Exclaimed, "I'm no set designer**



**But for the results dinna fash
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**£120 CASH AND OTHER
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RADIOTORIAL

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

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

All inquiries concerning advertising rates, etc., to be addressed to the Advertisement Offices, John Carpenter House, John Carpenter Street, London, E.C.4.

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

QUESTIONS AND ANSWERS

BRITAIN'S NEW LONG-WAVER.

W. B. (Lowestoft).—"When will the new long-wave station which is going to replace 5 X X start working? We are going to live in Norwich after the end of June, and my neighbours-to-be assure me that the present 5 X X strength is quite good.

"Will the new station give a better strength to Norwich? And will the wavelength definitely be 1,500 metres, as at present?"

The first tests with the new station will probably be undertaken before long, but at the time of writing the B.C.C. cannot give a definite date when these may be heard by the public.

Following their usual practice, it is probable that they will follow the first (engineer's) tests with a short period of public tests, to determine how the station gets over to the general public. (As there is to be no change of wavelength to confuse the issue, but merely the improved transmitter, with a higher power, it is likely that these tests will be of shorter than usual duration—though this has not been officially announced.)

When the public tests have been satisfactorily concluded the station will take over the whole of the 5 X X transmissions.

In the absence of an official forecast it is obviously impossible to foretell the date of opening, but there is a feeling amongst those who ought to know that the new station will be in full swing by the autumn.

The service to the Norwich area will definitely be better than at present. And as already indicated the wavelength has been fixed at 1,500 metres.

EXTRA TAPPINGS ON THE D.C.-B. UNIT.

D. J. P. (Merthyr Tydfil).—"Regarding the D.C.-B. Unit, described in the issue dated May 12th, 1934, would it not improve the circuit if arrangements were included for an H.T. +3 terminal? For instance, to supply H.T. to an S.T.500.

"Would it not also help if on your present circuit comparative output voltages were given for an input of, say, 230 volts or so?"

It is quite possible to include an extra terminal on the arrangement if it is desired to use a third H.T. tapping.

The simple arrangement of a series resistance, with a condenser shunt from the + terminal to the earth line, should be employed; and as the unit is self-regulating, there should be no difficulty from reduced voltage owing to an extra output tapping (or tappings) being embodied in the unit.

For the set you name a suitable value of resistance would be about 50,000 ohms, connected to H.T. +2. Its other (free) end then becomes the additional H.T. + terminal, and this is joined to one side of a 2-mfd. condenser, the other side of which is connected to the H.T. - terminal.

With the right value for the resistance marked X, the maximum tap would give about 150 volts, and the other about 90.

THE WAVELENGTH OF RADIO LUXEMBOURG.

L. C. (Northborough Road, Norbury, S.W. 16).—"I have bought the 'POPULAR WIRELESS Radio Atlas and Wavelength Guide,' and

in it I find you give the wavelength of Radio Luxembourg as 240.2 metres.

"The station announcer gives it as 1,304 metres. Is this a mistake, or is this a different station altogether?"

It is the same station. But Radio Luxembourg did not find the 240.2 metres wavelength (which it is supposed to work on) satisfactory, and it therefore abandoned it in favour of the long wave.

MODIFYING THE "MIDGET PORTABLE" FOR HOME USE.

N. McL. (North Walsham).—"I have just read the article on the 'Midget Portable' ('P.W.' dated May 26th, 1934).

"Is it possible to adapt it to home use with an ordinary aerial and big baseboard? And can you inform me how to do it?"

An ordinary aerial and an earth are easily connected to the set. And the best connection for any district and conditions can be found by winding an extra "aerial" coil over the frame—about 7 or 8 turns over or close to the medium-wave winding, this number of turns being varied experimentally till the best arrangement has been decided upon.

One end of the new winding goes to the aerial lead-in, and the other end to the junction between the medium and long-wave windings of the frame.

Join the earth wire to the I.T. negative terminal. With this arrangement you can use the set as a complete portable again merely by taking off aerial and earth wires and using it as originally described.

(Continued on next page.)

ABOUT YOUR CONTROLS



When two separate tuning controls are provided it is important that they should be kept "in step" when searching for programmes.

Usually the first (left-hand) dial tunes the aerial circuit, and the other the H.F. circuit. And the tuning of one dial is usually sharper than that of the other.

The correct method of searching on a two-dial set of this type is to set reaction at or near zero, and tune with one hand on each dial. Sweep slowly up the tuning scale of the dial which gives the flatter tuning with a continuous movement. And accompany this on the other dial by similar increases, but with slight up-and-down variations all the while, to cover adjacent dial readings.

If you listen carefully you will notice that the set always sounds specially "lively" when the second dial comes into its correct relationship to the first. This is called keeping the dials in step.

RADIOTORIAL QUESTIONS AND ANSWERS

(Continued from previous page.)

Due to the almost direct coupling provided by this scheme on long waves, selectivity on this band will not be up to our usual standard. It could be improved to a large extent by the provision of a pre-set condenser in series with the aerial lead-in, the capacity of which may be .0003-mfd. or .0005-mfd. maximum.

But we note that you say "and big baseboard." Do you mean by that that a similar simple Det.-L.F., without portability, will suit your requirements?

If so, we advise you to build a simple 2-valver from one of the "P.W." sixpenny blue prints—No. 57, the "Sharp-Tune Two."

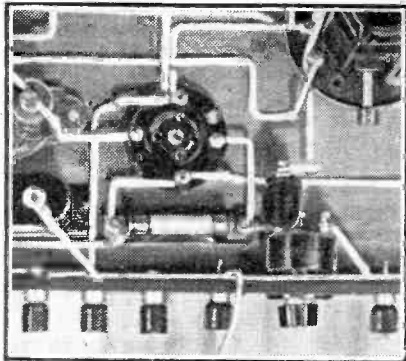
(It is a really simple all-wave set with a special selectivity control, employing ordinary plug-in coils. A special advantage of the set is that it can go down to the short waves of 20 metres or so, if desired.)

Or, alternatively, if you want an up-to-date 2-valver with modern coils, we advise the set to be described in our June 23rd issue, under the title "How to Build a Two-Valve Battery Set."

WHEN A LOUDSPEAKER IS OUT OF THE QUESTION.

"A WEEKLY READER" (Lowestoft).— "There are many occasions when one would like to turn on the wireless—shop, office and even the home—but the loudspeaker is out of the question.

WIRING A RADIOGRAM SWITCH



Sometimes the addition of a radiogram switch results in unsatisfactory working, owing to the leads employed being unnecessarily long. Instead of placing the switch on the panel, it is often better placed on the terminal strip, an arrangement which allows the leads to be short, and so promotes stability.

"Could you in an early number give a set design especially for use with phones with really good quality and a fair number of stations?"

"I should think with even only one valve of the modern type this could be done."

One valve might be sufficient in some cases; but if the set is to be really portable, and not tied down to use with an outdoor aerial, we should much prefer to use two valves.

Since writing your letter to us you have probably received the May 26th number of "P.W." containing the description of the "All-In Midget Portable." That is just the set for your purpose.

It is a really first-class headphone proposition, and, having no need for an outdoor aerial, it can be used simply anywhere without any trouble to provide earth, aerial, etc.


It is not heavy to carry, and certainly not difficult to build or to operate. So we think you should consider it very carefully, for it could not better meet your requirements if it had been designed with them specially in mind.

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TELEVISION

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EXACT TO SPECIFICATION



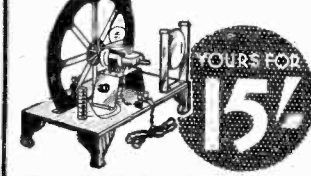
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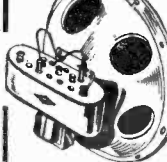


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NEW W.B. P.M.4A MICROLODE PERMANENT-MAGNET SPEAKER, complete with switch-controlled multi-ratio input Transformer. Cash or C.O.D. Carriage Paid, £2/2/0. Balance in 7 monthly payments of 5/9 only

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Suitable for 1001 Receivers, including CLASS B, Q.P.P., Super-Power and Pentode outputs. Instantly adjustable ratios. Cash or C.O.D. Carriage Paid, 29/6. Yours for 2/6; balance in 6 monthly payments of 4/9.

2/6 DOWN

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MIDGET PORTABLE KIT "A" Author's CASH or C.O.D.

Kit of First Specified Components less Valves and Cabinet. **22/-** Carriage Paid.

KIT "B"
As Kit "A" but with set of 2 special valves only. Cash or C.O.D. Carriage Paid, £1/16/0, or 8 monthly payments of 5/-

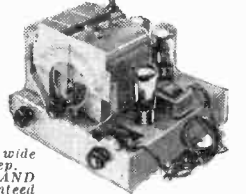
KIT "C"
As Kit "A" but with set of 2 specified Valves and polished Oak Cabinet with Frame Aerial (unwound). Cash or C.O.D. Carr. Paid, £2/17/0, or 12 monthly payments of 5/3

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- Permanent-Magnet M.C. Speaker. • Illuminated Wavelength Scale.
- All Metal Chassis.
- Combined Volume Control and Reaction Control.
- Sockets for Pick-up and external speaker.
- Output 1 1/2 watt; H.T. Consumption only 8 m.a.
- Single-knob station selector control.

Chassis only without valves. Cash or C.O.D. Carriage Paid

47/6



Overall dimensions 10" wide x 7 1/2" high, 5 1/2" deep. Supplied Ready-Built—BRAND NEW—and fully guaranteed in working order by Peto-Scott.

BARGAIN NO. 2. 11 chassis required with set of 4 matched and tested Valves. Cash or C.O.D. Carriage Paid, £4/11/0, or 8/9 Deposit and 11 monthly payments of 8/9.

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BARGAIN NO. 4. Hand-some WALNUT horizontal type CABINET with contrasting inlays, silk-covered fret and ready-drilled for above Bargain Chassis. Inside dimensions: 20" wide x 10 1/2" high x 10" deep. List Price, 30/-. Our Price, 12/6.

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The First and Finest entirely self-contained 'UNIVERSAL' A.C./D.C. SHORT-WAVE ADAPTOR

Can be used on either A.C. or D.C. without any alteration, and also on any mains from 100/250 volts. Simple to connect. Just plug the unit into the mains, connect the aerial to adaptor and take another lead from top of adaptor to aerial terminal of receiver. Suitable for all wave-lengths between 12 and 85 metres. Price £6:6:0 Complete

Fitted with the famous Ostar-Ganz High Voltage Valves. Adaptable to any Mains Receiver. District Agents Wanted—Phone Temple Bar 4985.

THE LISTENER'S NOTEBOOK

Comment and criticism on recent B.B.C. programmes.

OUR enjoyment of the programmes is affected considerably by the sort of weather we are having. The National programmes are less attractive during the warm summer evenings than they are when we have to gather round the fire to keep warm. For once in my opinion, the Regionals are in the ascendant, chiefly because, I think, they offer a variety and a contrast that are unknown on the National. Anyhow, that is an impression I have lately gained after concentrating more than usual on the Regional programmes.

"Mind The Doctor" is the sort of talk listeners should be in no mood for at present. There are, we know, those people who always carry a thermometer about with them, and who regard the "Mind The Doctor" day as a red-letter day. Mind you, I have nothing to say against these talks. They are excellent, but there's no urgency about giving them now. They should be shelved till the cold evenings come along again. It's the same with several other popular items of the winter months. The B.B.C. does not observe the seasons with anything like the care it should. It could be done with telling effect, I think.

Despite this temporary revolt of mine against talks, Sir Vivian Henderson succeeded in interesting me when he discoursed on the "Adult Offender" in the "In Trouble" series. This was his second talk, and was no less informative than the first. Sir Vivian treats his subject sympathetically. This strikes me immediately. He quotes liberally from the classics in support of his argument. His quotations from Priestley's "Good Companions" and Dickens' "Great Expectations" were very apt.

A Voice to Remember

The "Ridgeway Parades" always leave me with feelings of doubt as to their actual merit. They create the impression—quite a wrong one incidentally—that any old thing will do for broadcasting provided there are one or two super numbers included to bolster them up. Master Jackie Bostock was the super of the "Parade" he appeared in. But what a song for a boy!—"I Hear You Calling Me." I

would like to hear young Bostock again before his voice breaks.

The jokes in the show were terribly feeble. Didn't one of the entertainers—introduced to us as Burn X (apologies if he doesn't spell it like this) in Geraldo's Sweet Music Hour—apologise, with a sort of air of unconcern before he delivered a chestnut? The manner, I felt, was deliberately intended to hide a little of the artist's embarrassment. However, there is some consolation in the fact that artists, when they crack a stale joke, feel much the same as we do when we hear it.

Geraldo does what he is down to do. I mean he does play sweet music. In his last entertainment hour, he was very seasonable, and river picnic parties for one would be most appreciative.

A cast of three ought not to be difficult to sort out. Yet in "The Trappers" it was some little time before one could be quite certain which of the three characters was speaking. I think producers should insist on the cast addressing one another by name at the earliest possible moment. And without becoming wearisome this salutation might be repeated at odd intervals throughout.

Which Character is Speaking?

Apart from this blemish the plays were well done. Indeed, they ought to be, for besides being simple, a crisp dialogue carried them along smoothly enough. Also, they came at a suitable time, and demanded just the right sort of non-vigorous listening that doesn't interfere with a man's sleep.

"Peterborough," the last of the microphone impressions of our Historic Midland Cathedrals, concluded a series of remarkable broadcasts. Walter Pitchford has on each occasion talked with a beauty befitting the glory and splendour of these monuments of beauty. It was always easy to fall in to the spirit of these talks. Yet Mr. Pitchford confessed that he was afraid he had failed to do his subject justice. (Not a bit of it, sir. I think you succeeded gloriously.)

I liked all the music that came from Peterborough. Dr. Henry Colman and his Choir (especially his little treble soloist) are to be congratulated on their excellent performance. The singing was perhaps on the thin side and the soloist a little nervous. But the latter is not to be wondered at, considering the greatness of the occasion.

Not least among the beautiful music sung was a composition of Sir Walter Davies'. Mr. Pitchford paid a pretty tribute to this great broadcaster.

C. B.

TECHNICAL NOTES

Some diverse and informative jottings about interesting aspects of radio.

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

The Effect of Using a Screen.

WHEN you place a metal cover over a tuning coil the high-frequency resistance of the coil is increased and, whilst in some cases this may be comparatively slight, in other cases it may be quite appreciable and lead to a definite reduction in the selectivity and signal strength. This can, of course, be overcome to some extent by increasing the reaction; but in general it is better to use more efficient circuits rather than to rely upon reaction as a sort of cure-all.

Reducing the Inductance.

Another thing that happens with a metal screen to a coil is that the inductance of the coil is lessened and therefore more capacity is needed to tune the circuit for a given wavelength.

Inasmuch as the metal cover is relatively near to the coil, you will also get an increase in the fixed capacity of the circuit. This is not in itself very important, but if you are using two or more coils in a set, and these are tuned together by a ganged condenser, it is very important that the metal covers should be fitted carefully and accurately so as not to upset the ganging. If one of the covers, for instance, is not in its proper position, the inductance of that coil will be put "out of line" with the inductance of the others and the tuning will consequently be upset.

An Accurate Fit Essential.

It is very important, therefore, in this case to fit the covers properly and accurately and, if a cover has been removed at any time, to replace it correctly and to test and make sure that the coil screens all match up. It is much better to do this actually at the time, because if you omit to do so and then find later on that the tuning is poor, you may go trying all sorts of other things before remembering that the fault is probably with the coil screens.

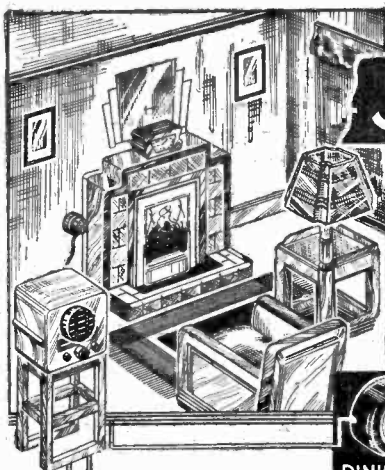
S.G. Magnification.

With a screened-grid valve and an ordinary tuned circuit joined to the anode resistance it is a comparatively simple matter, according to calculation, to obtain a magnification of 100 or even 125. In actual practice, however, the amplification is limited by coupling between the anode and grid circuits. There may, for instance, be coupling between the condenser which tunes the anode circuit and that which tunes the grid circuit. There is also the question of the leakage capacity of the valve to be taken into account, as well as various stray couplings in the wiring of the circuit.

Special Precautions Desirable.

Special precautions in these directions greatly enhance the magnification actually obtained. Adjustments, however, have to be very carefully made, because even very

(Continued on next page.)



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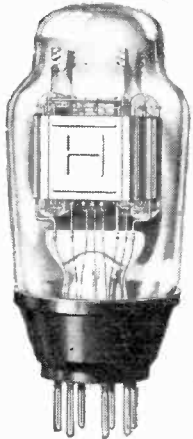
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TECHNICAL NOTES

(Continued from previous page.)

slight stray capacities and magnetic fields will reduce the magnification appreciably. If you are using two stages, then not only must the above-mentioned precautions be taken, but also you want to take special care that there is no coupling occurring through the power unit or batteries.

Class B and Volume.

Readers have several times asked me whether the use of Class B amplification means that the set actually delivers a greater output volume. A lot of people seem to be under the impression that the mere addition of this type of output will of itself increase the volume. Of course, it may do in certain cases, where the volume delivered to the output stage was previously being restricted in some way, and perhaps this is what gives rise to the impression referred to.

Q.P.P. for Small Sets.

But the proper way to look at the question of Class B output is not that it provides an increase in volume, but that it permits a larger volume to be properly handled. It is, therefore, most suitable in sets where there is plenty of high-frequency amplification, so that proper grid-voltage swings are delivered to the "driver" valve.

In small sets it is sometimes better to use quiescent push-pull output, with a pair of sensitive pentodes working together. In this case you get the large magnification of the pentode stage, and in addition the pair are able to handle as much volume as is ordinarily required.

Auxiliary Grid Voltages.

Talking about Q.P.P., by the way, it is extraordinary what a large volume can be handled from a quiescent push-pull arrangement using power valves and a small high-tension battery. It is important, however, if you want to get the maximum output, that the valves shall be working correctly and that the proper coupling is used between valve and loudspeaker.

In this latter connection the grid bias must be of the correct value and the auxiliary grid voltages of the output pentodes must be very accurately adjusted so that each valve will be pulling its weight. If the circuit is out of balance you will get very inferior results. It is, however, a comparatively simple matter to get the circuit in balance by measuring the anode current to each valve.

Small Anode Current.

As I dare say you know, the average anode current taken in a case of this sort is remarkably small; it may be no more than two or three milliamps when no signal is passing. It increases very considerably in accordance with the signals which are passed through, but on the average it remains small, and this is why there is such an economy in anode current and why it is so advantageous with a battery-driven receiver.

Matching Up the Output Stage.

While on the subject of Class B amplification and quiescent push-pull, I should mention that in the matching up of the output stage to the loudspeaker it is

(Continued on next page.)

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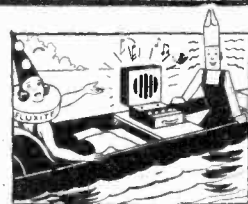
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TECHNICAL NOTES
(Continued from previous page.)

necessary to know something of the loud-speaker impedance. As you know, the impedance of a loud-speaker depends upon the frequency, and will be greater the higher the frequency. Generally, the impedance is taken for a frequency of 1,000 cycles, so that this is a convenient figure to work on. The impedance of a loudspeaker is not always given, but you can obtain it, if necessary, from the manufacturers. Bear in mind that the impedance of a moving-coil speaker is very different from that of a balanced-armature type.

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Radio in the Car.
I said something in these Notes a short while back about the use of radio sets in cars, and several readers tell me that they have installed sets in their cars. A good deal of progress has been made by

British manufacturers in this connection, although in America, where the fashion started, they have gone a long way ahead of us in this direction. Those of my readers who have had experience of long car drives alone will understand how welcome a set in the car can be.

It reduces the tedium of a long journey enormously, and as regards the question of taking the driver's attention from his job I think this is more an imaginary danger than a real one.

An Improvised Condenser.
If you find the need of a condenser of very small capacity whilst experimenting, and you have not any regular condenser handy, you can very easily make one by means of a piece of twisted flex. All you have to do is to connect the two wires to the terminals to which you would have connected the regular condenser, leaving the remote ends open. This dodge is only recommended for temporary experimental purposes and until you are able to get a regular small fixed condenser.

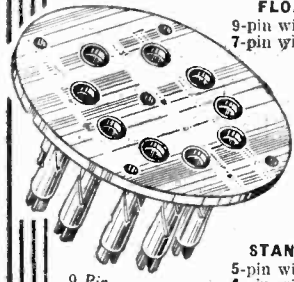
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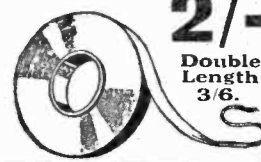
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2. Supply Mains.
3. External.

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In the case of No. 2, trouble may be experienced through the interference being conveyed over the Supply Authorities' distribution system.

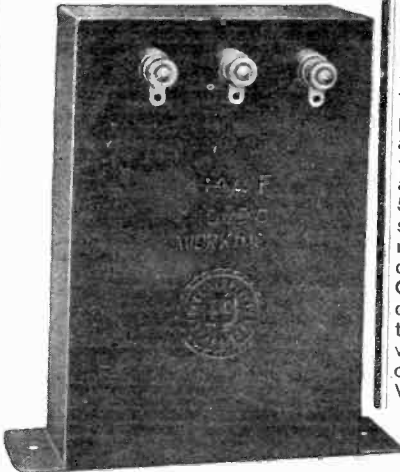
In the case of No. 3, external interference, this is caused by direct radiation, and originates in electric motors, vacuum cleaners, and any other electrical apparatus in which sparking takes place during operation; for example, violet-ray apparatus, or even when switching on or off any kind of electrical plant.

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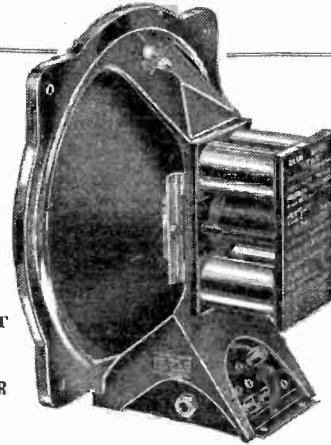
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