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*As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before
making use of them, to satisfy themselves that they would
not be infringing patents.*

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EDITORIAL COMMENT

New Readers

The Purpose of this Issue

IT is no new departure for *The Wireless World* to have what is described as a New Readers' Number. We have done so for several years past and the object has always been to provide an opportunity for making *The Wireless World* more widely known, especially amongst those who are growing up to take an interest in wireless, either as a prospective occupation or as a hobby.

No attempt is made to plan this issue with extra pages or in fact to do anything which might be regarded as a bait to attract readers to this issue in particular ; but the object is to include in it articles designed to stimulate interest and to bring up to date the knowledge of those who may have neglected wireless during the summer months. At the same time, the issue is kept as nearly as possible representative of the general run of issues such as may be expected in the future.

Status of Readers

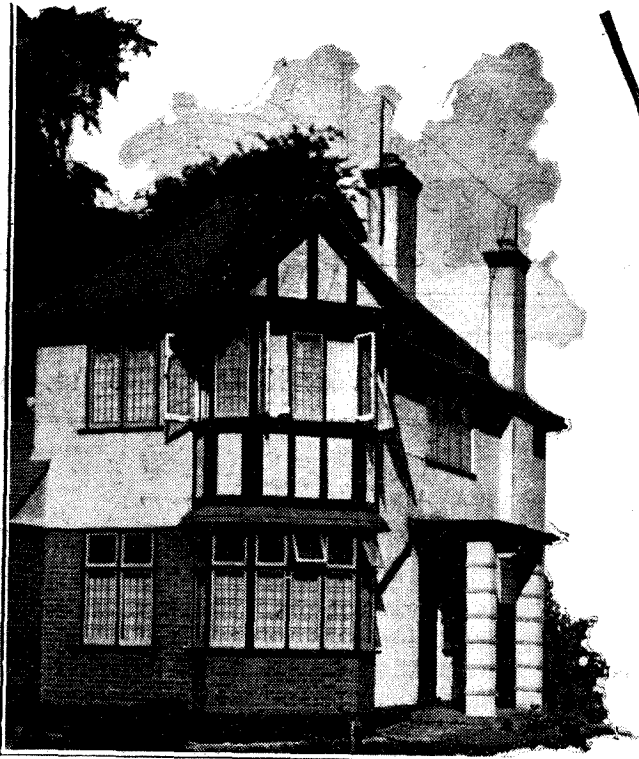
To be a regular reader of *The Wireless World* has come to be regarded in wireless circles, including the professional sphere, almost in the nature of a qualification in itself. The paper has always aimed at catering for those who are seriously interested in wireless, either professionally or as a hobby. We do not expect to number amongst our readers those whose interest is merely superficial. We have never attempted, even in the early days when broadcasting was—so to speak—"a nine days' wonder," to mislead the reader with untenable claims for circuits and designs for receivers which

we have put out. Nor have we supported sensational claims of inventors or manufacturers unless those claims could be substantiated after scientific investigation. It is this policy which has built up for *The Wireless World* its high reputation in wireless circles and has carried the reader with it to the point which justifies the suggestion made above that to be a regular reader is in the nature of a qualification in itself.

Policy Maintained

It will continue to be our aim to devote much of our space to education, paying particular attention to providing news of every technical development as it takes place, and whenever the opportunity arises giving constructional designs which will interpret in a practical form new ideas as they develop. Theoretical articles of a general instructional character will continue to form an important section of the paper and special attention will be devoted to those subjects which require to be reviewed from time to time, in order to facilitate the understanding of practical developments occurring periodically.

The success which, we believe, has in the past attended the efforts of the editorial staff to meet the needs of readers, has been very largely the outcome of the interest which readers themselves have taken in the paper and its activities. It is only by keeping in constant touch with readers and receiving their individual letters that the editorial staff is able to maintain close contact, and we hope that readers will continue, as in the past, to write to us unhesitatingly in regard to their interests and problems ; not forgetting to give us the benefit of suggestions whenever the opportunity occurs.



What To Do This

A DOMESTIC INSTALLATION— NOT JUST A SET

it isn't they ask what it is. And a visitor was astounded when he came into my house and found that my receiver had no built-in loud speaker.

This present state of affairs has a lot in its favour, of course, but in my opinion it has gone too far. Compare the telephone, which is a thoroughly standardised and commercialised product if anything is. The Post Office does not attempt to

Note, *installations* rather than *sets*. But in most of the homes I ever see, anybody who has the bad luck to be laid up for a while is deprived of broadcasting just when he could do with it most.

Suggestion No. 1, then, for a Winter, 1938-9 Great Modernisation Programme, is to see that provision is made for extension loud speakers. Years ago, when moving-coil speakers had to be provided with field magnetising current, there was a reasonable excuse for failing to do so. Now that efficient permanent-magnet loud speakers are available at less than the cost of the older energised models, that excuse disappears.

Even in the room where the receiver is located, the loud speaker is preferably separate. The point is that if the set is near enough for reaching the controls from the easy chair (as, of course, it should be) it is much too near for the best listening. One of the best places is a far corner of the room. The usual position in commercial consoles and radio-gramophones, namely, a few inches from the carpet, is all wrong. Such remnants of high notes as manage to proceed from these instru-

WHILE the Editor is at the front door welcoming new readers to *The Wireless World*, I beg to offer a sub-welcome to this corner of it. For the benefit of the uninitiated I would explain that the purpose of cathode rays in general is to make plain to the eye the workings of radio which would otherwise be obscure. My object, therefore, is mainly to assist readers in understanding the more advanced articles elsewhere in this paper. If the authors had to digress every time to explain the terms they used they would take a very long time to get anywhere. So, on the whole, things are explained here that elsewhere must for the sake of brevity be taken for granted. I admit there are a few exceptions, due to the enthusiasm of the moment. Incidentally, I am always glad for readers to tell me of any subjects which they have particular difficulty in understanding.

After that personal apology, we proceed.

Plenty To Do

Winter, with its vista of long evenings, lies ahead. Now that radio seems to have become a matter for vast mechanised factories, what does the poor amateur do? The answer, with American terseness, is "*Plenty!*"

In the old and almost exclusively amateur days, radio used to be an affair of many bits and pieces strung together with wires. That wasn't commercial. The factories set to work and turned out sets all tidied up into neat boxes, until nowadays people cannot imagine anything else. They get quite puzzled over such a thing as a "playing desk," as a gramophone pick-up and motor unit is generally known. "Is it a gramophone or not?" If you say it is, they wonder why they can't get a tune out of it; and if you say

make everybody take it in the form of a neat, self-contained instrument. You can have the bell fixed just where it is most convenient, even if it means running many yards of wire around the house; and you are not obliged to put up with the lightning arresters where they are visible all the time. Nor are you compelled to go to one particular room in the house when you are rung up; you can carry the 'phone about with you and plug it in. Or, better still, have several instruments scattered around in the most useful places.

I don't know how other people feel about it, but, personally, I have a strongly rooted objection to getting out of bed and padding down into a chilly room to answer or to make a call; and that is putting it mildly if the reason for being in bed is a heavy cold. So an extra 'phone at the bedside is a boon hardly to be esti-

Mealtime music : the dining room is one of the first places to be considered when the question of installing extension speakers comes up.



mated in terms of the comparatively small extra cost.

This is not meant to be a free advertisement for the G.P.O.; it is merely to emphasise that the same arguments apply, even more strongly, to radio installations.

ments are muffled among upholstery and feet. Unlike low notes, they are greatly weakened unless they can travel more or less straight to the ear. Hence my face brightened when I saw loud-speaker firms bringing out models to suspend from the

Winter

By "CATHODE RAY"

less is one of the most important as regards results—the aerial. After many years during which the aerial has been shamefully neglected (if you have any doubt about this, keep your eyes outside the window during your train journey up to Town) it is once more receiving attention, and a number of special types are sold, particularly for improving the proportion of programme to locally generated interference. Even if you do not feel inclined to go so far as an entirely new aerial, can you say that your present one is as neat and efficient as it might be? Could it be made more secure against winter gales? Or prevented from flapping about and perhaps touching walls or trees? Or the average height be raised? If so, it would be as well to do something about it before outdoors seems a less inviting place for wireless work. And remember that "aerial" is meant to include "earth" as well.

Interference Suppressors

The aerial is not the only point where interference suppression can be effective. Fitting suppressors in the mains connection, or to guilty appliances in the house,

may help in giving a noiseless background for reception.

Then I mentioned gramophone playing desks. Sometimes deplorably crude outfits can be seen for playing records. Following the same home-comfort policy as before, the proper thing is a neat unit to have



Courtesy Belling and Lee

A modern aerial, if necessary of the anti-interference type, improves signal/noise ratio and appearance.

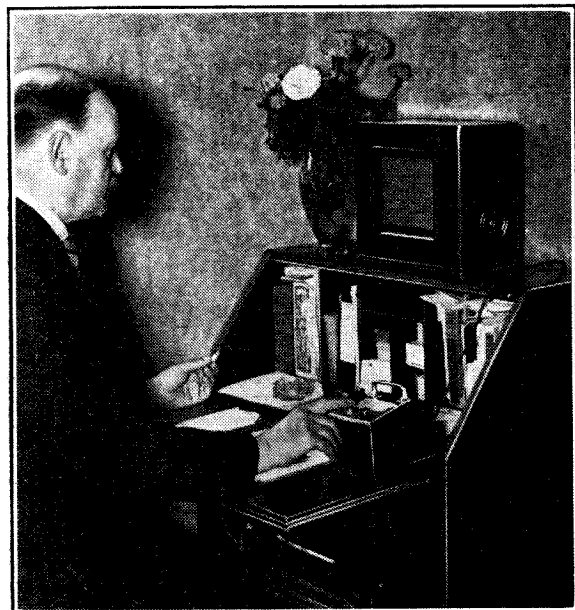
by the chair, comprising motor turntable, pick-up, volume control, preferably tone controls too, and an earthed screened lead to the pick-up terminals on the receiver, to exclude hum.

If you are a quality enthusiast and have finished a really good amplifier for reproducing records and broadcasting on ordinary wavelengths, how about making up an ultra-short wave receiver for the high-quality transmissions that are now sometimes put out when the sound transmitter is not being used for television? I have said nothing about television itself, for television fans are quite busy enough without any suggestions from me.

It is obviously impossible to include constructional details of any of the things mentioned. They are given fairly frequently in *The Wireless World*. My object just now has been to give some idea of how many things can be done towards improving one's apparatus and extending its usefulness, and to stimulate the putting in hand of programmes of modernisation and reconstruction. There are innumerable other things to do; and I haven't even dared to tackle the receiver itself. And as there is always a certain amount of "service" work to be done, a beginning can be made on simple apparatus for this purpose, leading up perhaps to a proper "lab."

In fact, enthusiasm for the winter programme has reached such a pitch that I can no longer refrain from poetry:

"The world is so full of a number of things
That I'm sure we should all be as happy as kings."
(R. L. S.)



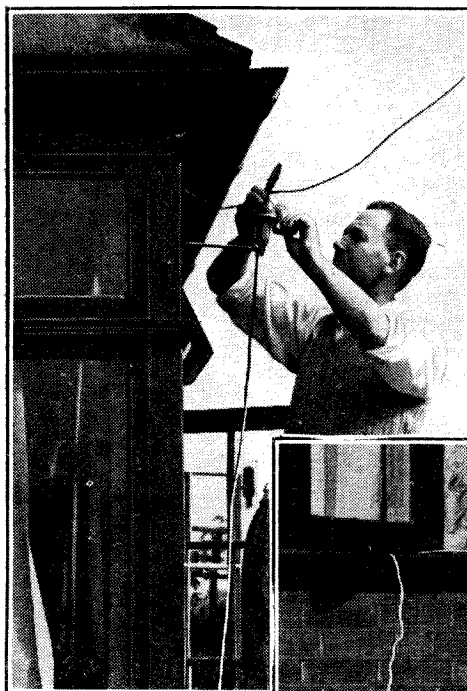
Courtesy Regentone Products
Real luxury: remote control of volume, "on-off" or even of station selection add to the attractions of an extension speaker.

picture-rail in the corner of the room. An excellent position; not in the way, speaking straight to the ear, and unlikely to have objects planked in front of it.

There are various things that can be done to improve loud speakers. Information on heart-shaped baffles, acoustic labyrinths, and other improvements that lend themselves to home construction, have recently appeared in *The Wireless World*.

Extension loud speakers immediately reveal the need for remote control. Volume can easily be controlled at the speaker itself. Simple schemes for switching the receiver on and off can be contrived, or bought at moderate cost. More comprehensive control, including tuning and, perhaps, other things, is generally fairly expensive and involves the design of the receiver itself.

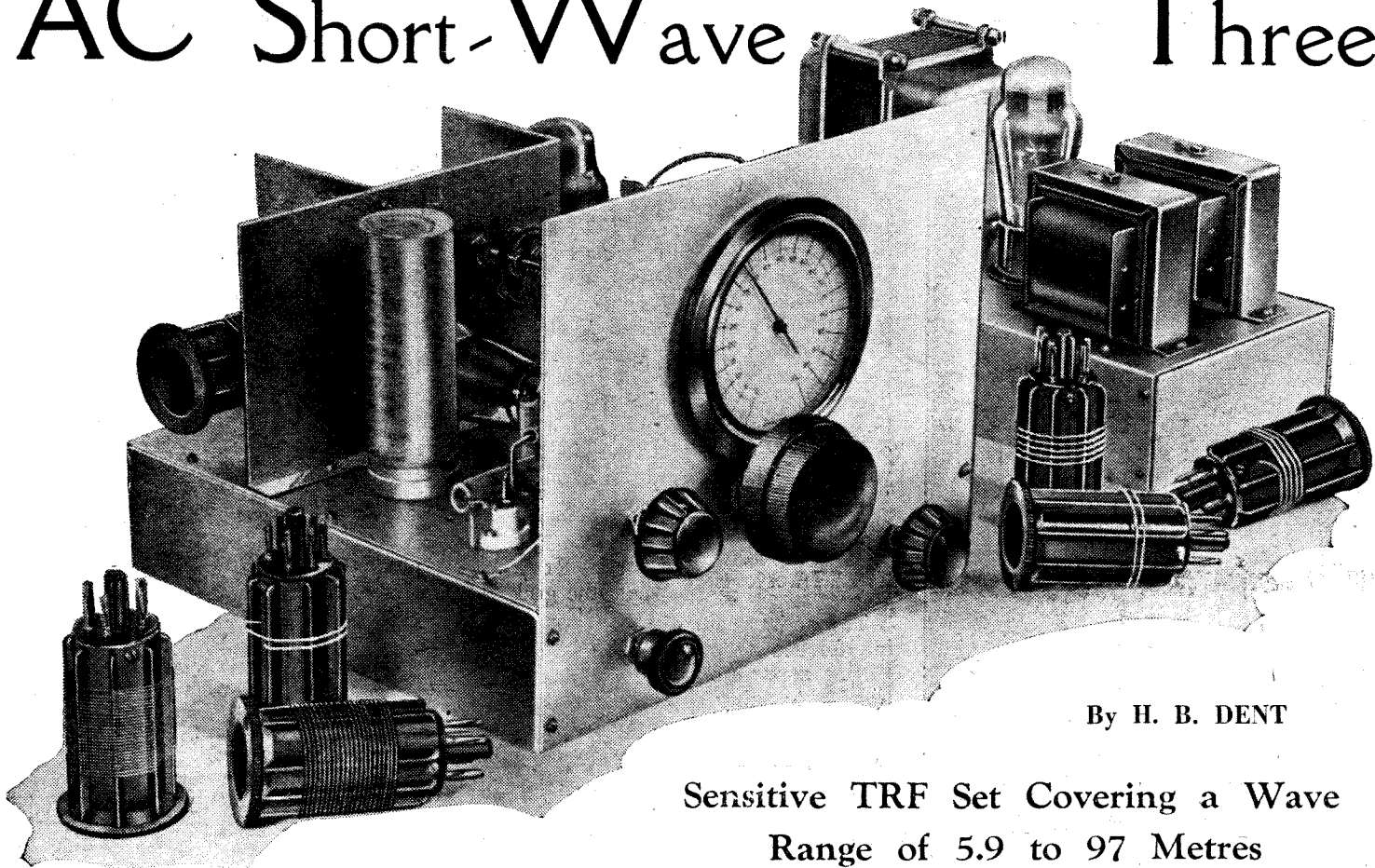
Passing on quickly, for it is impossible to give details of how to carry out all these suggestions, there is another department outside the receiver itself which, neverthe-



Now is the time to overhaul the aerial-earth system.



AC Short-Wave Three



By H. B. DENT

Sensitive TRF Set Covering a Wave Range of 5.9 to 97 Metres

THE design of this short-wave receiver follows very closely the lines of the three-valve battery set which was described in *The Wireless World* of May 12th last. It may, in fact, be regarded as an AC version of that set, for plug-in coils of a similar kind are employed and the same detector and reaction scheme is adopted.

The opportunity has been taken to simplify the coil winding and the grid tapings on both aerial and RF coils are omitted. Simplification is not the only reason for this change, as it was felt that being a mains set a loud speaker would be the best form of reproducer to employ, and consequently greater amplification has had to be obtained from both the RF

and detector stages. Actually the selectivity has not suffered by these changes, and it is as good as can be hoped for in a set having two tuned circuits.

Reaction, of course, helps immensely in this respect, and as any TRF short-wave set relies very largely on reaction for both sensitivity and selectivity, particular attention has been given to the method of

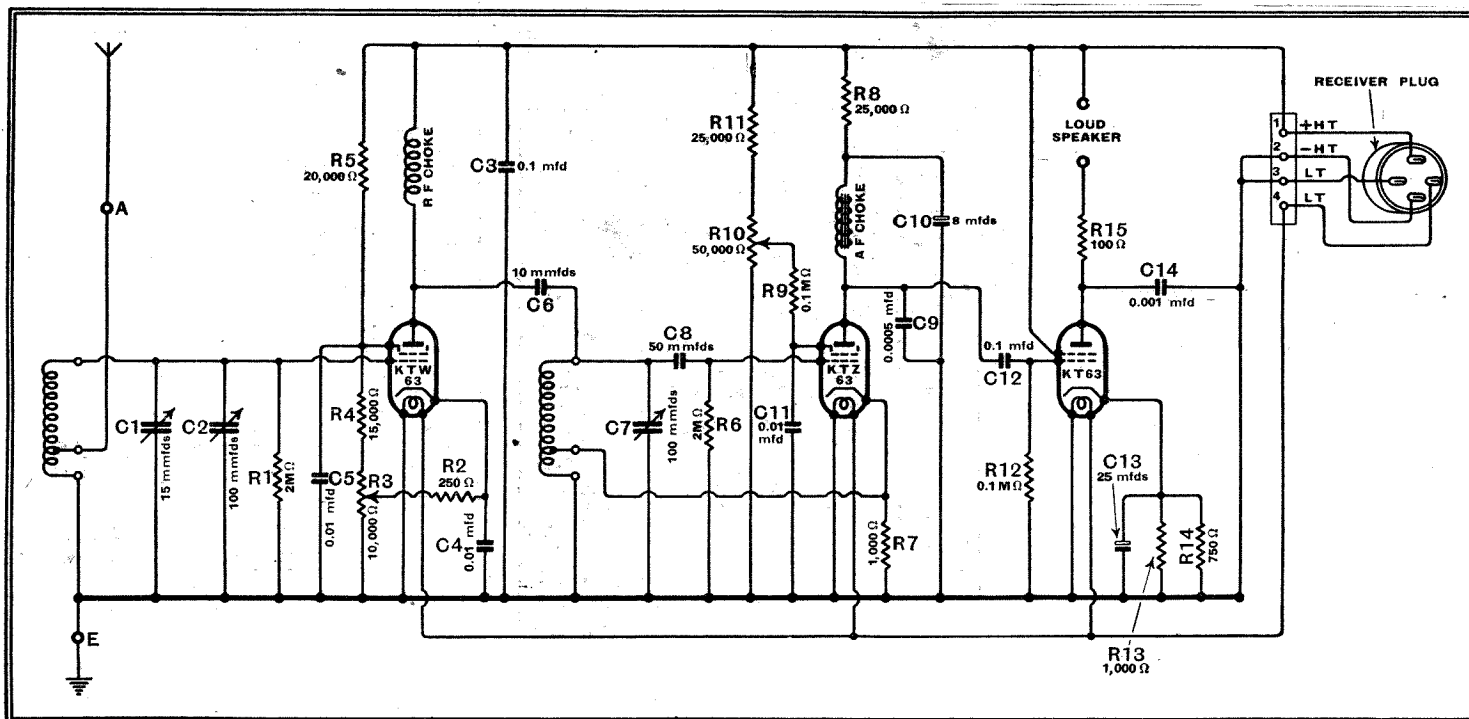


Fig. 1.—Theoretical circuit diagram of the short-wave receiver.