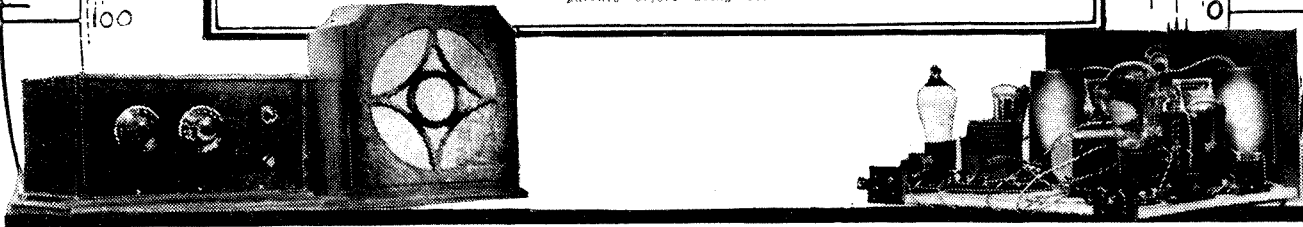


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As some of the arrangements and specialties described in this Journal may be the subjects of Letters Patent the amateur trader would be well advised to obtain permission of the patentees to use the patents before doing so.



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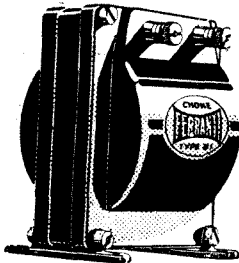
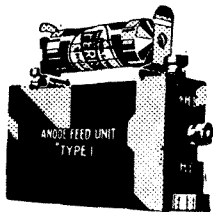
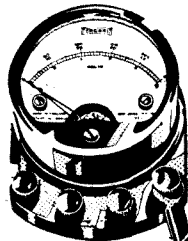
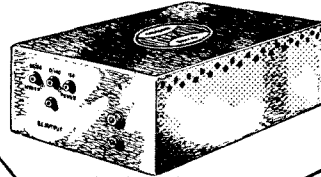
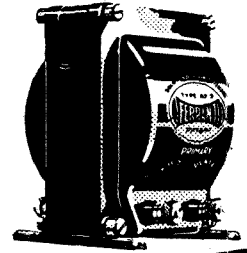
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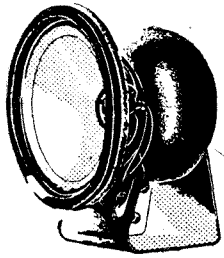
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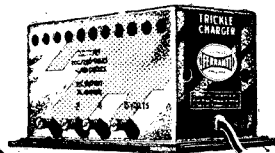
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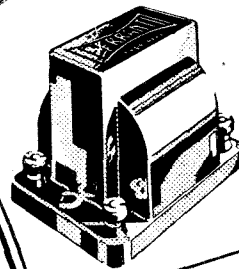
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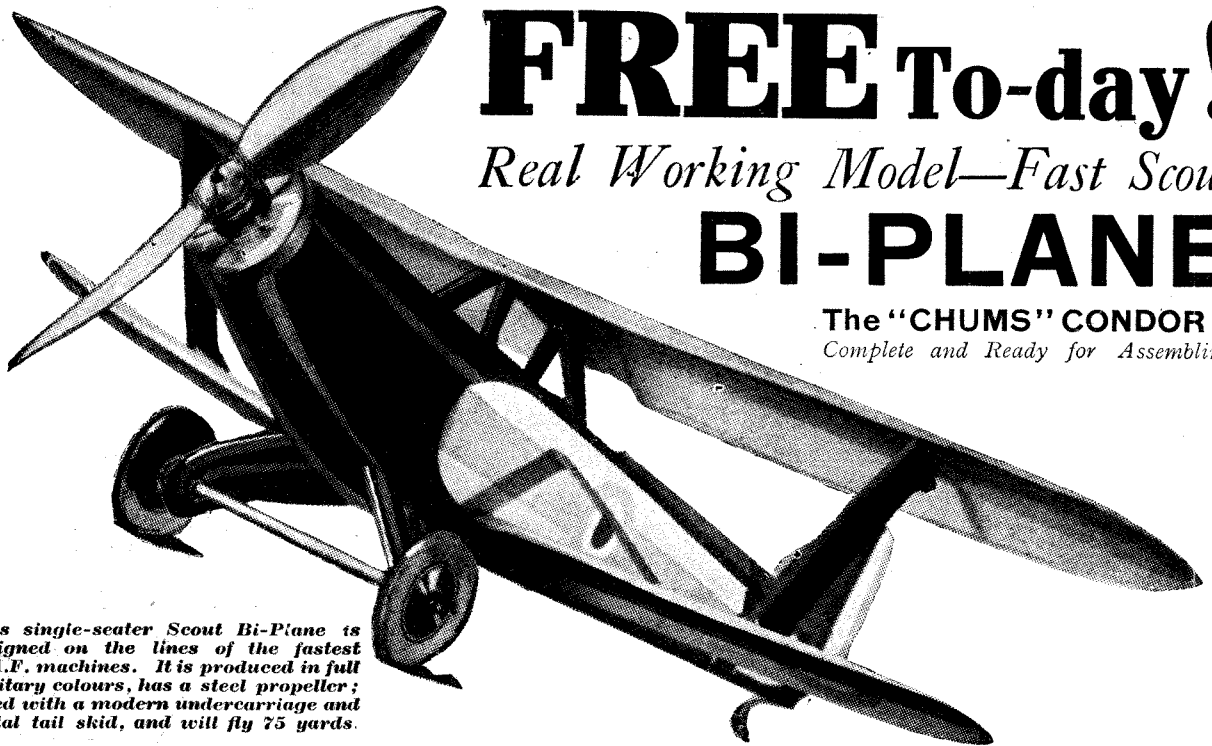


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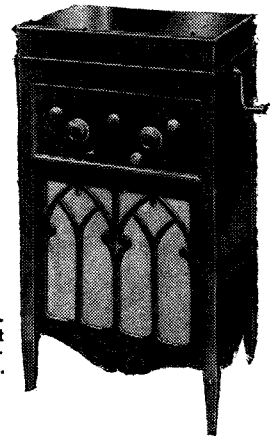
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| 2 Ormond .0005 slow-motion type variable condensers new type R.493, with mahogany finish knobs | 2 3 |
| 1 J.B. Midget type .0004-mfd. air-dielectric variable condenser | 15 0 |
| 1 Ready Radio .00015-mfd. differential reaction condenser | 4 0 |
| 1 Telsen .0001-mfd. differential condenser | 2 6 |
| 2 Colvern special "S.T.300" coils | 2 6 |
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| 2 Lotus 4-pin valve holders type V.H.K. | 1 0 |
| 1 Telsen Binocular S.G. H.F. Choke | 1 0 |
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| 1 Wearite Radio-Gramophone Switch with terminals type 123 | 2 6 |
| 1 Wearite 50,000-ohm volume control type Q.V.C. | 4 0 |
| 1 Ready-Radio 3-point switch | 4 6 |
| 1 Lissen Hypernik L.F. Transformer | 1 6 |
| 1 Dubilier .001-mfd. fixed condenser, type 670 | 12 6 |
| 1 Graham-Farish "Ohmite" 1 meg. Grid leak with terminals | 1 0 |
| 2 Telsen 1-mfd. Condensers | 1 6 |
| 1 Lewcos 20,000 ohm Spaghetti Resistance | 4 6 |
| 10 Bulgin Indicating Terminals | 1 6 |
| 1 "S.T.300" Radio-gram Screen | 2 6 |
| Insulated Wire, screws, etc. | 1 9 |
| 3 Belling & Lee G.B. Wander plugs. | 1 6 |
| 4 Belling & Lee H.T. Wander plugs. | 8 |
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1 Blue Spot 100U Loudspeaker and Chassis	1	19	6	2 Ormond .0005 mfd. slow motion condensers with mahogany finished dials	15	0	0
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All Control Knobs supplied with Pilot Author Kits match the highly polished mahogany finished panel.

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Battery users, whatever your set, there is a Mullard 2-volt valve to suit your purpose. Follow the lead of designers who choose Mullard valves, follow the lead of the great Mullard public who have found the way to better radio.

The valves specified by John-Scott Taggart for the S.T.300 Radiogram are:

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P.M.2DX

P.M.2A

Made in England



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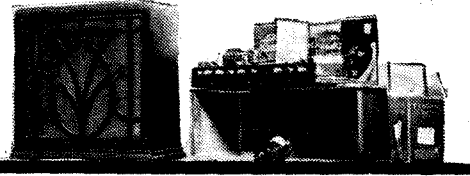
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The WIRELESS CONSTRUCTOR

Published by the Amalgamated Press, Ltd., Fleetway House, Farringdon Street, London, E.C.4.

THE EDITOR'S CHAT



"S.T. 300" EXHIBITION RADIO-GRAM—SEE IT ON "THE WIRELESS CONSTRUCTOR" STAND—AN AERIAL TOUR—RADIOLYMPIA AND THE B.B.C.—HOW YOU MIGHT RUIN A BROADCAST

As is only fitting for this special Exhibition Number, Mr. John Scott-Taggart contributes—for the exclusive benefit of WIRELESS CONSTRUCTOR readers—full details of how to build his new "S.T.300" Exhibition Radio-Gram, a first-rate set which you will be able to examine for yourself on THE WIRELESS CONSTRUCTOR Stand at Olympia.

The "S.T.300" Radio-Gram

Based on the now world-famous "S.T.300" Receiver, this all-battery, complete pedestal type radio-gram is definitely an inexpensive receiver to build. As for its efficiency, it would be superfluous to make any further comments. The mere fact that it has been designed by "S.T." is sufficient guarantee that, in every sense, it is a first-class receiver.

It might be mentioned here, however, for readers who have not yet built an "S.T.300" set (if there are any readers who have been so careless!) that this Exhibition Radio-Gram combines all the advantages of the original "S.T.300" receiver with good volume electrical record reproduction. In fact it embodies everything that a discerning radio critic could desire.

Visiting Readers by 'Plane

We also include in this issue the first details of a novel aerial tour to be made by Mr. Scott-Taggart. As many of our readers probably know, Mr. Scott-Taggart possesses his own aeroplane, and is an enthusiastic aviator.

He will shortly be starting a tour in his 'plane in order to visit readers in various parts of the country and to conduct tests in connection with the design of a new wireless receiver which he has been working on for some time and which will, of course,

be exclusively described in THE WIRELESS CONSTRUCTOR in the near future.

It seems hardly necessary to point out again that this is the Special Exhibition Number of THE WIRELESS CONSTRUCTOR, and consequently readers will find a good many of its pages devoted to the phenomenally large Show at Olympia.

A Record-Breaker

And "phenomenally large" is no exaggeration, for the Exhibition will certainly break all records.

The total floor space booked measures 200,000 square feet—

STILL RAINING!



"Weather will continue fair and warm," said the loudspeaker. But the farmer looked out of the window—and saw the rain still pouring down! No wonder he grumbles!

223

roughly double the size of the space taken last year. There will be about 300 or so stands, besides 50 well-appointed demonstration rooms where the two hundred British Radio Manufacturers displaying their goods will be able to give visitors a practical demonstration of the merits of their receivers, loudspeakers, etc.

Those Demonstrations

One of the drawbacks to past Exhibitions has been the lack of sufficient facilities for demonstrations to potential purchasers. It is all very well to ask a man to plank down £20, £30, £40, or even £50 or £60 for a set, with the assurance that it is perfectly O.K., will give perfect volume, wonderful quality, wonderful selectivity, and wonderful this and that—but the main thing the purchaser wants is to be able to hear the set for himself, and to "twiddle the knobs" under the guidance of competent salesmen.

The organisers of the Exhibition have thoroughly realised the importance of this psychological selling factor, and we are very glad indeed to be able to tell our readers about this large number of demonstration rooms. We hope they will take full advantage of the facilities offered.

Exhibition Facts

Here are a few other facts about this giant Exhibition: The exhibits have been insured for £5,000,000. The B.B.C. are making themselves responsible for the music which will be broadcast all over the hall.

Vaudeville entertainment will also be broadcast from this Olympian studio, and it is quite on the cards that, if you peer through one of the glass panels and catch, say, Tommy Handley's eye, and if you make a sufficiently funny face, you may be able completely to ruin his broadcast!



Making more use of the volume-control—That ignition-capacity rating—So simple, yet so difficult—Positioning the loudspeaker.

THOSE who are keen on good quality, and therefore do their best to avoid distortion due to overloading, may find some interest in the following idea :

When a small power valve is in use, volume often has to be cut down below a satisfactory level if overloading on peaks and on loud passages in the music is to be avoided. So why not sometimes imagine you are a B.B.C. engineer and try continually adjusting the volume control ?

It Prevents Overloading

You will be able to get much louder results, and therefore appreciate the programmes better. When volume is at an average you keep the control turned "up," but quickly "lower" it whenever a noisy bit comes along.

True, you will lessen the contrast between soft and loud passages, but that will not matter. Isn't it just

what the B.B.C. control engineer does the whole time ?

The term "ignition capacity" is still to be found on some radio accumulators. And exactly what it signifies must puzzle many of those who have only recently taken up radio, and cannot for the life of them see why they should want to know the capacity of their accumulator for "setting things on fire."

The term is a legacy from the days of early motoring, when sparking plugs were connected up to a spark coil run by an accumulator. In those days accumulators could not be charged on the car, it was naturally very important to know how long they were likely to last.

Discharge of an accumulator used for ignition took place intermittently, current only being drawn while a spark was taking place. And that is why the ignition capacity is about

double the actual or continuous discharge capacity.

I recently had a perfect brute of a bother to spot. It was weak, rotten-quality results from a set running a moving-coil speaker with an incorporated tapped output transformer.

An Elusive Fault

The speaker had just come off another set, so was assumed O.K. I cut out the H.F. stage, cut out one L.F. stage, changed valves, changed tuning components, changed coupling components—and when there was nothing else left to change, decided it *must* be the speaker.

And it was ! Instead of connection being made to one tap and the common terminal of the output transformer, the wires were taken to two different taps. Beware, it might happen to you !

Positioning Your Loudspeaker

Do you study the position of your loudspeaker ? I have seen some stuck right up to the ceiling almost, and I have also come across them standing on the floor.

Personally, I think the speaker should be arranged so that the cone is just about on a level with the listener's head. Of course, much the same effect can be obtained by tilting the speaker at an angle.

A. S. C.

WAS there anybody who *didn't* hear the relay of the speeches associated with the election of a candidate for the American Presidency at the beginning of last month ?

From my own observations, and from letters I have since received, it would appear that the relay was being "pumped out" at all sorts of places in the short-wave ether. I heard it from W 8 X K, and then, a little farther up the band, from W 1 X A Z, and I must confess that the preliminaries amused me tremendously—so much so that I sat up much later, or perhaps I had better say earlier, than is usually considered to be good for one !

Witty Announcers

There are times when the wit of the American announcers reaches "top-liner" heights, and this was certainly one of them ! Say, folks, I wouldn't have missed it for anything !

My old friend W. H. R., of Plymouth, comes into the limelight again this month with some interesting but

* THE MONTH ON *
* SHORT WAVES *

sad news concerning P L V, P L E, and P M Y, the Tuesday afternoon trio from Bandoeng. According to a letter that W. H. R. has received from the powers-that-be in Java, these transmissions are to be discontinued until better times come along.

Very Sad News

It's all very sad, and I'm thinking of writing to ask them if they have thought of converting their war-loan (if any !).

The same sort of fate befell my favourite station in Honduras, and although he closed down at the beginning of the year, I notice that H R B and the relevant details of his transmission still appear in some of the "official" lists. I suppose it is possible that he has started up again, but I for one can't find even so much as a whisper from him !

Talking of the other side of the big pond, have you noticed how well, W 2 X A D has been accounting for himself just lately ? I have heard him at wonderful strength on several occasions during the past month, and quite early in the evening, too.

As a matter of fact, it's my experience that he is usually beyond all hope of resolving at 11 or 12 o'clock, and if you want to catch him while the going is good you have to do so early !

Reports from W. H. R., of Plymouth, and T. C. D., of Newport, Mon., confirm my own experiences. They, too, have been getting him at real "wake-the-baby" strength !

Out of His Turn !

Among my postbag this month is an interesting letter from J. F. C., of Cambridge, asking if I can throw any light upon the Sunday transmissions from W 2 X V (34'68 metres), who is only supposed to be on the air on Fridays. Sorry, J. F. C., I have no official confirmation of any alteration in schedules.

G. T. K.

THIS YEAR'S RADIO DEVELOPMENTS

— ON SHOW —

AT OLYMPIA



In this special section you will find a complete and co-ordinate review of the 1932 Radio Exhibition at Olympia. It has been compiled by a staff of technical experts in such a way that not only does it make absorbing reading from beginning to end, but the reader is able quickly to find out exactly "what is doing" in any line in which he is particularly interested.

ON Friday, August 19th, at 11 a.m., the British National Radio Exhibition opens its doors at Olympia, London, W.

The occasion is always the official opening of "the wireless season," and the new plans, prepared long in advance, revised and re-trimmed to meet the needs of the 1932-1933 listener, will then be fully disclosed. The cheaper sets, the new and better valves, the more sensitive loudspeakers, the simplified and improved designs, are now prepared for public inspection.

An Invitation

This year THE WIRELESS CONSTRUCTOR welcomes you at Stand No. 8, and there you will find the original model of the S.T.300 Exhibition Radio-Gram, as well as other not-to-be-missed receivers exhibited by our contemporaries, "Modern Wireless" and "Popular Wireless."

Every reader is welcomed to Stand No. 8, and as this is the only opportunity afforded to the Technical Staff of meeting "our friend the reader," we hope the invitation will be as warmly accepted as it is tendered, and that we shall have the pleasure of a chat on radio with you.

As usual there has been much speculation and prophesying about the new exhibits and lines for the forthcoming season. For the good things of previous radio shows are not forgotten, and the triumphs of the past have whetted hopes for the future. What has the 1932-1933 season to show us?

OUR STAND AT THE EXHIBITION

IS

No. 8

You and your friends are cordially invited to come and pay a visit to

THE WIRELESS CONSTRUCTOR

and have a chat about any radio difficulties you may be experiencing.

In the following pages an enormous mass of data and raw material has been winnowed and sifted so that the leading points of the great Radio Show are instantly available to every reader of this journal.

There is no single spectacular new invention, such as the S.G. valve, that by itself promises to revolutionise current radio practice. But, on the other hand, there seems to be no single

phase of radio that does not show some solid advance this year.

With the object of assisting both those who visit the Show in person and those who rely upon reports of it, the review in the following pages has been planned along new and better lines. It is sub-divided into subjects—"short waves," "valves," etc.—so that whatever your immediate interest may be you can "go straight to it," instead of having to dig out the relevant facts from a mass of other detail.

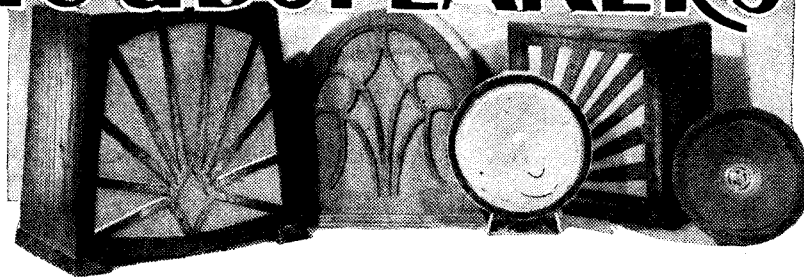
The Complete Synopsis

And each subject is treated interestingly, in the form of an article, with all the necessary references to the various exhibits, instead of the usual stand-to-stand review.

So great is the volume of exhibits at the National Show that such a round of the stands, either in person or on paper, is bound to be tiring.

But this year THE WIRELESS CONSTRUCTOR presents you with a concise and complete synopsis of the leading features at Olympia—and in so doing gives you a clear bird's-eye view of radio progress during the past twelve months.

LOUDSPEAKERS



THE STANDS ON WHICH TO SEE THEM

Magnavox (G.B.), Ltd.	24	Marconiphone, Ltd.	74
Standard Battery Co.	26	Edison Swan Electric Co., Ltd.	75, 230
British Blue Spot Co., Ltd.	35	Ferranti, Ltd.	78
Igranic Electric Co., Ltd.	36	A. Baker	83
Epoch Radio Mfg. Co., Ltd.	41	Ormond Eng. Co., Ltd.	87
British Rola Co., Ltd.	45	H. Clarke & Co., Ltd.	91
Graham Farish, Ltd.	50	S. A. Lamplugh, Ltd.	99
Gramophone Co., Ltd.	55	General Electric Co., Ltd.	105, 109
Lissen, Ltd.	59	Whiteley Electrical Radio Co., Ltd.	108
A. C. Cossor, Ltd.	60	British Thomson-Houston Co., Ltd.	119
Telsen Electric Co., Ltd.	66	Celestion, Ltd.	127
Reproducers & Amplifiers, Ltd.	69	Loewe Radio Co., Ltd.	223
Ultra Electric, Ltd.	73		

WITHOUT a doubt, the progress that has been made in the design of loudspeakers during the last year has been more marked than at any previous time since broadcasting first commenced.

Not only have the increasingly popular moving-coil models reached a state of perfection which would not even have been dreamed of a matter of three or four years ago, but they are now available at prices within the reach of all.

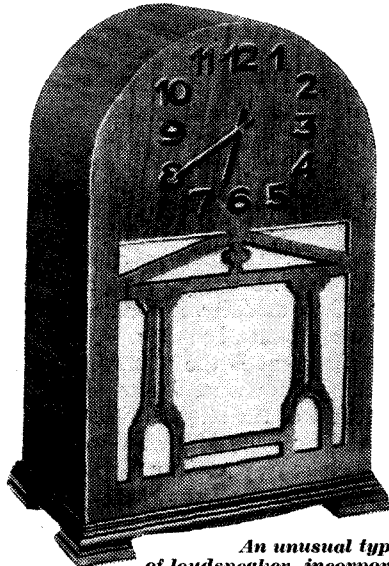
What a difference when compared with even this time last year! And what a difference, too, when considered from the point of view of sensitivity!

Tremendous Advances

Whatever militating effect the drawbacks of high cost and insensitivity may have had in the past, they are certainly factors which need not be taken into consideration nowadays. The modern moving-coil instruments are as good as their predecessors of three or four years ago were bad! And when we survey the loudspeaker field as a whole, we find that exactly the same progress has been made in the design of cone and inductor-dynamic types.

Indeed, the fullness and fidelity given by some of the latest cone and inductor-dynamic types

IT DOES TWO JOBS!

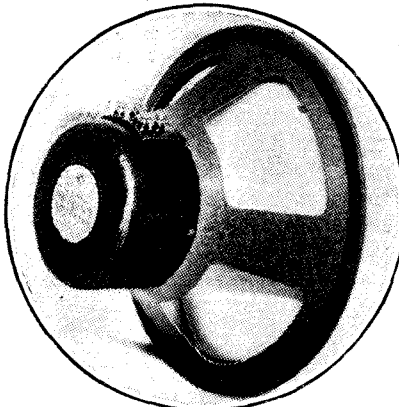


An unusual type of loudspeaker, incorporating an electric clock, and manufactured by A. Baker.

separate them from the moving-coil models by an almost imperceptible margin! Who would have dared to make such a statement even at this time last year?

The moral of all this is plain to see. If you are still harbouring one of those thin, tinny affairs of three or four years ago, throw it out! Sling it on the dust-heap! Sell it for old iron! Do what you like with it, but don't use it for radio!

A FINE INDUCTOR



The Lamplugh Inductor Dynamic Loudspeaker chassis.

After all, the loudspeaker is the voice of your set; and however good your set may be, it is quite useless unless it is given an outlet through one of the modern types of reproducers. Any set, however good, can only be as good as its speaker, and if the speaker is of the antique variety you would do better with a crystal set and a pair of headphones! Drastic words, but very true.

If you are one of the lucky ones that can get along to Radiolympia you will realise the truth of all this. You will be able to hear the latest models for yourself, and that, after all, is the most convincing argument of the lot.

But even if you can't go to the Show, don't let that deter you from making a change if you are still receiving your programmes through a micing machine! Go along to your dealer and hear one or two of the latest types yourself, and you will not want any further persuasion from us.

As for those of you who are fortunate enough to be able to go along to the mecca of radio, you will be astonished at the high quality and low prices of the new models.

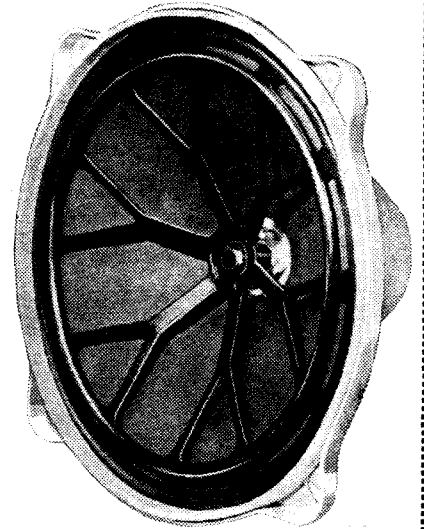
You will find that for an expenditure of anything from about thirty shillings upwards you will be able to become the possessor of a sensitive and efficient moving-coil instrument that will knock

spots off its predecessor of two or three years ago, costing possibly twice or even three times the price.

Take, for instance, the range exhibited by Messrs. Bakers. There you will find an excellent mains-energised speaker selling complete with baffle case and transformer for 24s. Even for the permanent-magnet model of this particular speaker the price is only increased by 13s., and again that includes the baffle case and transformer.

The same high standards and low prices are evident on almost every other stand where loudspeakers are exhibited. One can obtain a moving-coil instrument in the British Rola range at prices ranging from £1 15s. to £2 9s. 6d., which prices include a transformer for single, push-pull or pentode output.

MADE BY MAGNAVOX

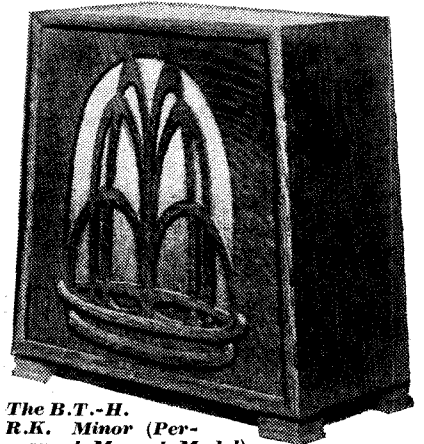


This excellent example of a modern moving-coil speaker comes from one of the oldest loudspeaker firms.

Then what about the new and greatly improved models that have been produced in the Celestion range? Who would have dreamed at the Show last year that within the short space of almost twelve months an excellent permanent-magnet moving-coil chassis, complete with input transformer, would be available for the remarkably low price of 27s. 6d.? That is only one of the low-priced, but high-performance, speakers that is to be seen in the Celestion exhibit.

On the stand of Messrs. Clarke & Co., of Manchester—who are newcomers to the loudspeaker industry—the same sort of thing is exemplified in their permanent-magnet chassis, a very good speaker indeed for the price of £2 2s., which includes the necessary input transformer. Messrs. Cossor, too, are setting the pace with their mains

THE R.K. MINOR



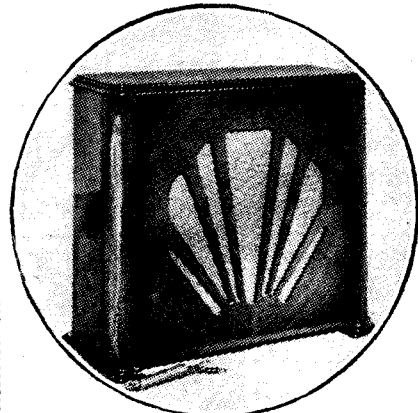
The B.T.-H. R.K. Minor (Permanent-Magnet Model) in cabinet form.

Why Not Take Your Power from the Mains?

energised "Utah" speaker, which is the identical model that is incorporated in several of their all-electric sets. Isn't that significant?

This welcome tendency towards low priced moving-coil instruments will be evident almost

VERY ATTRACTIVE



The Loewe "Varitone" Loudspeaker is housed in an oak cabinet of attractive appearance.

everywhere you turn. You will find them among the ranges exhibited by Epoch, G.E.C., Lamplugh, Magnavox, Reproducers & Amplifiers, Wates, Ultra, Whiteley Electrical, and quite a number of others.

In the range exhibited by Messrs. Reproducers & Amplifiers, for instance, one need not stop to expound the merits of their well-known "Challenger" model, and yet it is available for 35s., complete with a specially designed input transformer of Ferranti make.

Then, again, on the stand of the Whiteley Electrical Company you will find exhibited their two-guinea P.M.4 model—a very good permanent-magnet speaker, and only one of several high-quality speakers that are included in this range.

It would be difficult to imagine anything more pleasing, both from the points of view of reproduction and appearance, than the two speakers in the "His Master's Voice" range. The Universal and the Super-Power speakers—both permanent-magnet instruments—represent the very last word in modern loudspeaker design, and they are well worth hearing.

One must also include in this class the Ferranti M.1, the Blue Spot model 32 P.M., the Ultra type 95, several of the speakers in the G.E.C. range, or in the ranges exhibited by Messrs. Lissen, Epoch, Bakers, Celestion, Reproducers & Amplifiers, and so one could go on.

Permanent Magnets Prove Popular

Marcouphone, too, are setting the pace with their 136 moving-coil speaker—a permanent-magnet instrument of superb performance and appearance.

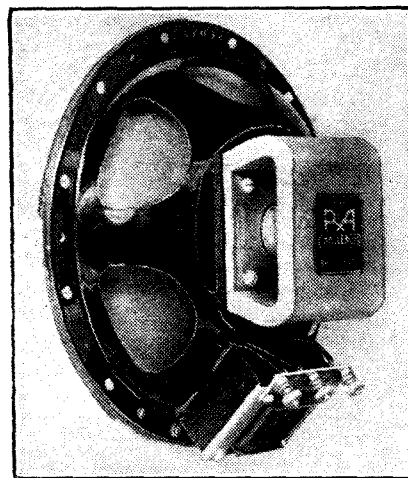
There is the new "Varitone" speaker manufactured by the Loewe people—a clever idea which enables you to adjust the tone to suit your own requirements—and there are cheap but good cone models to be seen on the stands of such people as Graham Farish, Telsen, Blue Spot, Lissen, Celestion, Wates, and numerous others.

Whatever may be the primary purpose of your visit to Radiolympia, do not fail to hear some of the new speakers, and if you are still harbouring one of the "has-beens," dump it and buy a new one! You will then begin to enjoy radio as it really should be!

Among the latter there is a useful model for D.C. mains. A trickle charger for A.C. mains is also included in the range.

Quite a number of these units, all of which are of particularly attractive appearance, are designed for fitting into portable sets. They are of such a

COMPLETE WITH TRANSFORMER



One of the many types of permanent-magnet moving-coil loudspeakers made by Reproducers & Amplifiers, Ltd.

size that they take the place of an ordinary H.T. battery, thus transforming the set into a mains driven one.

It is only natural that D.C. units should not be seen in such numbers as those of the A.C. type. But in spite of the fact that A.C. mains are spreading fast throughout the country, those who have direct current mains are well catered for.

Neat D.C. apparatus is to be found among the Atlas mains units on the stand of Messrs. H. Clarke & Co., Ltd. One of these models is provided with an ingeniously conceived switching arrangement.

This switch ensures that the maximum voltage shall be available even when widely differing amounts of current are being taken from the unit. It is for 200- to 250-volt mains.

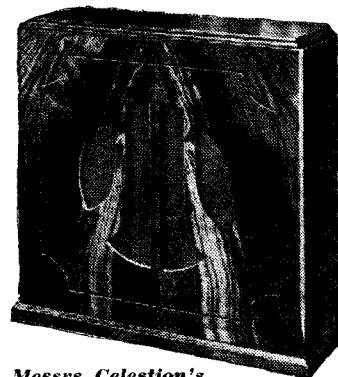
All the A.C. models make use of Westinghouse Metal Rectifiers, and a number of them are designed to provide trickle charging for the accumulator when the set is not in use. Super-power models are available for sets with a very large high-tension consumption.

Fully Guaranteed

A full guarantee for twelve months is given with every unit, A.C. or D.C., and they are all stated to agree with I.E.E. Regulations.

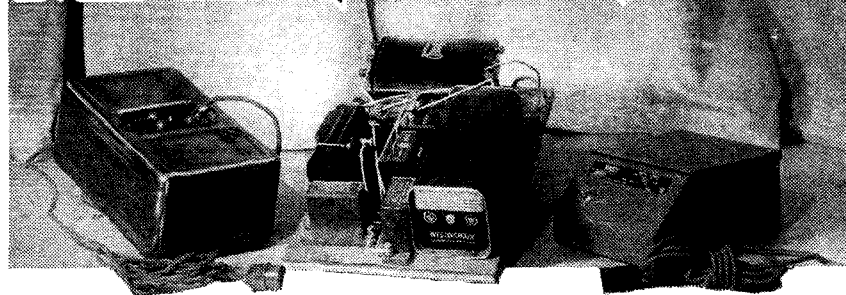
The trend of design, so far as rectifiers for the alternating current apparatus is concerned, is

IN CABINET FORM



Messrs. Celestion's latest Model P.P.M. moving-coil loudspeaker.

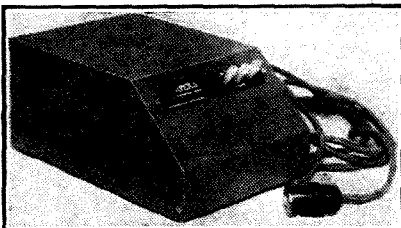
MAINS UNITS



ONE doesn't have to walk far round the Show before displays of mains units are spotted. There they are, in all shapes and sizes and prices; in fact, manufacturers appear to look upon them now as very important lines—as indeed they are.

The question of the power output of an H.T. mains unit is an important one to bear in mind

TROUBLE-FREE H.T.



Economy and efficiency are combined in this mains unit made by H. Clarke, Ltd.

WHERE TO FIND THE SPECIALISTS

	Stand
F. C. Heayberd & Co.	13
E. K. Cole, Ltd.	25 & 65
Tannoy Products	44
Lissen, Ltd.	59
Lotus Radio, Ltd.	64
Glimax Radio Electric, Ltd.	81
Radio Instruments, Ltd.	90
H. Clarke (M/C), Ltd.	91
Forno Co.	100
General Electric Co., Ltd.	105 & 109

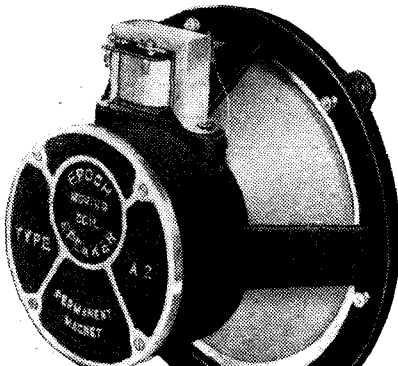
when choosing a model. The maximum current required by the set with which the unit is to be used has to be remembered, and a margin of safety allowed.

In spite of this the millamp. requirements will in many cases be quite moderate. Some of the finest of small mains units are to be found on the stand of E. K. Cole, Ltd., of Southend-on-Sea.

They are there among a most comprehensive range of Ekco units with millamp. outputs ranging from 12 to 25. Some are combined H.T. units and L.T. chargers, while others are designed for delivering H.T. only.

Build Your Own Set, and Get Better Results

A POPULAR SPEAKER



The type A2 permanent-magnet speaker, manufactured by Epoch, Ltd.

entirely towards metal rectifiers and right away from valve rectifiers. While metal rectifiers are just about as popular with radio users as with manufacturers, there are nevertheless still many who prefer the valve.

These will be particularly interested in the Lissen stand. Lissen, Ltd., have two A.C. models using their new process rectifying valves, one of these models has three fixed output tapplings, while the other has three tapplings also, but two of them are continuously variable.

There are also two D.C. models with similar tapping arrangements to those of the A.C. models.

A feature of the D.C. units is an indicator lamp connected in the earth lead, which is said to give a visible indication of incorrect mains connections, also any defect or short circuit in the receiver.

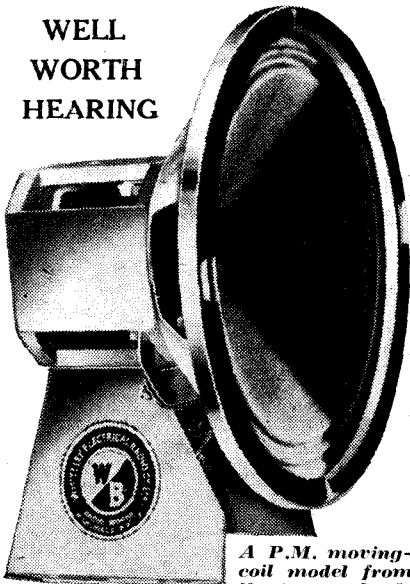
Two trickie chargers are also among the exhibits of this firm, one of which has an incorporated switch that changes the accumulator over from the set to the charger and back again when necessary.

The mains units on the stand of Messrs. Arthur Preen & Co., Ltd., all employ metal rectifiers. There are three of them, and any model may be obtained on the deferred payments system if desired.

One of the models is of particular interest in view of the vogue, becoming popular at the present time, of building all mains sets without the necessary power providing components. It is a unit with three tapplings and a maximum output of 25 milliamperes, and also provided with a raw A.C. output of 4 volts 4 amperes for the heaters of the indirectly-heated valves.

Of the other two units, one is a plain high-

WELL WORTH HEARING



A P.M. moving-coil model from the famous loud-speaker firm of Whiteley Radio, Ltd.

tension one, while the other combines an I.T. trickie charger with the high-tension unit.

Before having inspected many of the stands, one soon comes to the conclusion that there are definite attempts to improve the appearance of mains units.

In this connection the models on the stand of Messrs. F. C. Heayberd & Co. are very interesting. They are an entirely new and strikingly designed range, of which a bright aluminium-finished case is one of the outstanding features. Neatly mounted plugs and sockets with variable resistance knobs are arranged on a bakelite panel which is recessed into the top of each unit.

Safety fuses are a feature, and all complete units are fitted with switches for alternative outputs. We mention complete units because this firm also supply kits of parts for the making up of units at home.

One A.C. unit has an output of 60 milliamperes at 250 volts, which should be ample for even

extremely large sets. A large D.C. model is also available.

Another stand where units of pleasing appearance are to be seen is that of Messrs. Radio Instruments, Ltd.

When arranging an ordinary set to work from the mains, there is no reason why it should not be done completely while one is about it. To those who hate dry batteries in all forms whatever, the Tamoy display will specially appeal because units that supply G.B. from the mains as well as H.T. and trickie charging are here to be seen.

Two remaining items which we ought to mention, since they are bound to be of interest to many, are the special conversion unit of the G.E.C. for converting existing "Music Magnet 4" sets to mains operation, and a useful little unit on the stand of the Blue Spot concern. It costs half-a-guinea, and is known as a "Mains Disturbance Eliminator."

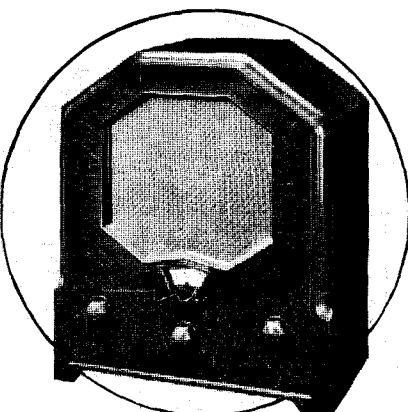


KIT SETS FOR HOME CONSTRUCTORS

ONE of the most convincing proofs of the ever-increasing popularity of home construction is to be found in the number of kit-sets that are being exhibited at Radiolympia this year.

Almost all of the firms whose names have been associated with kit-sets for home-constructors in previous years are showing new and improved models, and in addition, it is significant that several newcomers are now included in the list.

FROM "OSRAM"



The latest model of the Osram "Music-Magnet" kit set ready for action.

Based upon the fundamental principles of the law of supply and demand, the inference is fairly obvious, for in the somewhat difficult times from which, fortunately, we are now recovering (optimists ever!), it is quite evident that the home-constructor field would not be even more adequately covered unless there was the demand to justify it.

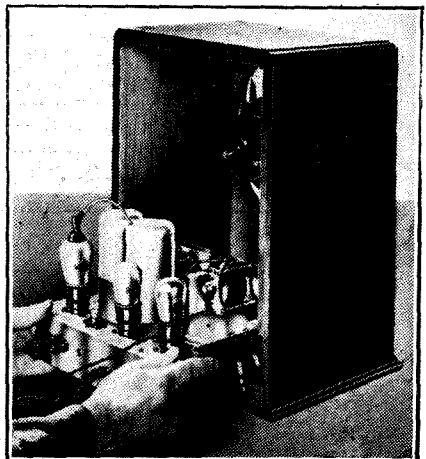
And when you come to think about it, it's a very natural state of affairs, isn't it? It's very nice to have an instrument that will provide you with the greatest value-for-money entertain-

SOME STANDS TO VISIT

Graham Farish, Ltd.	50
Six-Sixty Radio Co., Ltd.	52
Lissen, Ltd.	59
A. C. Cossor, Ltd.	80
Telsen Electric Co., Ltd.	66
Ferranti, Ltd.	78
General Electric Co., Ltd.	105 & 109
Ready Radio, Ltd.	106
Radio for the Million	155 & 248
Peto-Scott & Co., Ltd.	247

ment in the world, but it's even nicer to have made that instrument for yourself, and thereby to have become familiar to some extent with the way in which it works.

THE "MELODY MAKER"



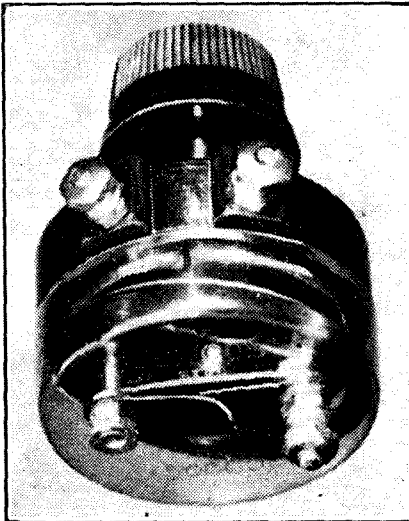
A first-rate kit set-made by Cossor's-that needs no introduction.

Visit Olympia and See all the Latest Sets and Gadgets

Well, home-constructors, you've got a treat in store at Olympia *this year!* Even if you didn't go any farther than THE WIRELESS CONSTRUCTOR stand (to which, by the way, you have a very cordial invitation), you would find enough to interest you for hours.

In this connection, the first thing that will probably strike you in connection with the new season's kit-sets is the fact that with very few exceptions they are nearly all built up around

SMOOTH CONTROL



The Leucos Potentiometer has a very smooth action, and forms an ideal volume control.

the popular S.G., det., and power or pentode output circuit.

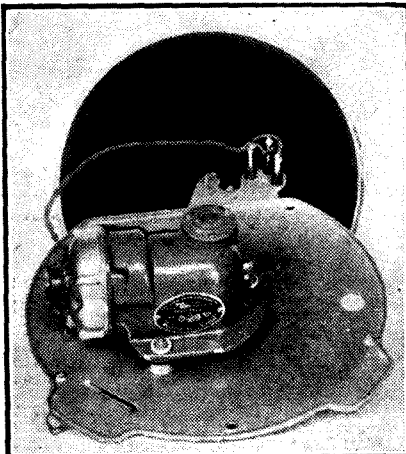
A typical example is the new Cossor "Melody Maker." In this new model—the 335, as it is called—the S.G. valve is of the variable-mu type, and it is followed by a leaky grid detector and transformer-coupled L.F. stage.

We feel that Messrs. Cossor are to be congratulated upon the very thorough way in which the constructional folder dealing with this set has been prepared.

The position of every component is clearly indicated, and for the type of set the wiring is remarkably simple. With recollections of the previous Cossor Melody Makers, we have no doubt at all concerning the efficiency of this, the latest model.

For those who are interested in band-pass circuits,

REALLY SILENT



Messrs. Garrard & Co. are responsible for this excellent electric turntable. It is available for A.C. or D.C. mains.

the Ferranti kit-sets will be of particular appeal. They are both band-pass screened-grid three-valvers, but one is intended for battery operation, and the other is for A.C. mains. The circuit in each case consists of S.G., detector, and one transformer-coupled L.F. stage, and an output transformer is included.

One of the most interesting of all the kit-sets on show this year is one that you will find exhibited on the G.E.C. stand. We refer to the new Osram "Thirty-Three Music Magnet."

The circuit is somewhat unusual, inasmuch as it is only a three-valver and yet it employs two screened-grid valves, one for H.F. amplification and the other for detection.

The makers claim that this particular combination has been found to conduce to the highest degree of sensitivity and selectivity, since the screened-grid detector enables a high stage gain to be obtained with a minimum damping of the preceding tuned circuit. There is certainly a lot to be said for the scheme.

The Osram "Thirty-Three Music Magnet" kit includes an attractive bakelite cabinet into which is built a loudspeaker, and there is adequate room inside the cabinet for the necessary batteries.

Straightforward Circuit

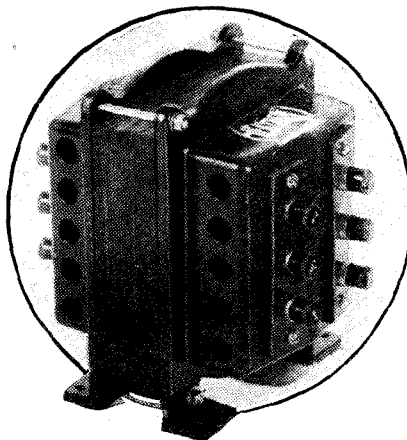
One of the few exceptions to the present S.G., detector and L.F. tendency is to be found on the stand of Messrs. Graham Farish. Almost every, one, by now, will have heard of their "Amazing" three-valve kit, as it is called, and it is one of the most delightfully simple arrangements that could possibly be imagined.

The circuit is of the more or less straightforward detector and two L.F. variety, but the set has several novel features, and for what it is, it gives very pleasing results.

With the facilities at their disposal, it is not in the least surprising that Messrs. Lissen should have turned up with something really good in the way of kit-sets.

The Lissen "Skyscraper" kit has every appearance of being a very well thought-out design. The circuit, consisting of S.G., detector and

HEAYBERD'S LATEST



Designed to work with the new Metal Rectifiers, these transformers have additional windings for supplying L.T.

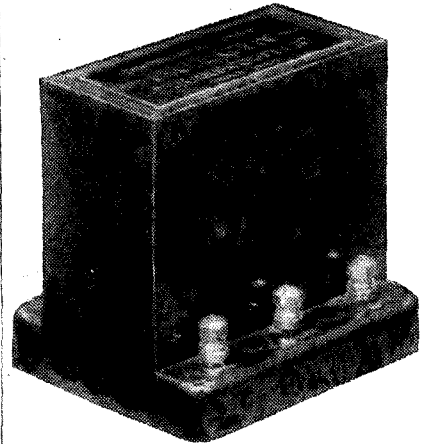
pentode output, is built up around the new Lissen screened coils, and special attention has been given to the question of high-quality reproduction. A visit to the Lissen stand for the purposes of seeing this kit-set will be time well spent.

The Peto-Scott people are responsible for rather a good idea in putting over their two new kit-sets. They have gone to the trouble of preparing elaborate constructors' envelopes for the "Selective Family Three" and the "Keystone A.C.3," and every possible detail is given. The envelopes are available for a small charge, and it appeals to us as a very commendable idea.

Almost everyone who has visited previous Radio Exhibitions will have seen some reference to the term "Radio For The Million," either on the stand itself, or else on one of those natty little paper bags that are distributed free of charge by the people in question for the benefit of visitors with handfuls of literature!

"Radio For The Million" is a slogan associated

BUILT BY BULGIN



The "Transformer" is an L.F. coupling unit incorporating a parallel-fed transformer, coupling condenser and anode resistance.

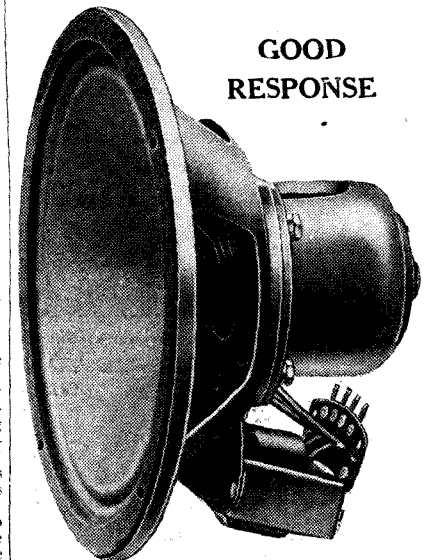
with what, in previous years, has been a very popular kit-set indeed. You will see it again at Olympia this year under the descriptive title of the "Stationmaster Three." This new "Radio For The Million" effort is even better than the previous models have been, and it is now available in four separate kit forms.

You can have the battery model A for £5 11s. complete, or for an extra charge of £1 19s. you can have the kit and valves and a special all-in type of cabinet with which is included a Celestion speaker movement. Then, again, the kit is available as an all-A.C. job, either with or without cabinet.

So many and varied are the kit-sets for home-constructors at Olympia this year that we should require the whole issue to ourselves in order adequately to describe them! That, unfortunately, is not possible, but before we bring this section to a close, we feel that we must make at least some reference to two other fine kit-sets that are exhibited.

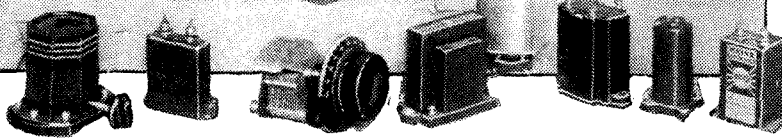
We refer to the new Ready Radio "Meteor S.G.3" and the Six-Sixty type 3-32 Chassiset. They are both in the front rank of modern kit-sets, and we strongly advise you to make a special point of visiting the stands in question before you leave Olympia. You will not be disappointed!

GOOD RESPONSE



The Ormond P.M. moving-coil speaker has a remarkably good characteristic, and is supplied complete with coupling transformer.

CONSTRUCTORS' COMPONENTS

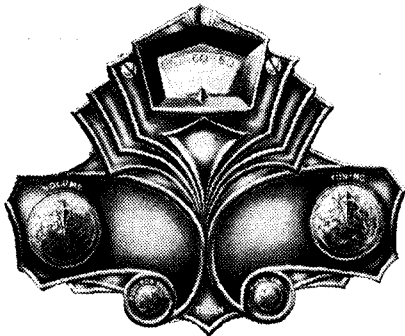


A RECEIVER can only be as good as its component parts. In fact, the components make or mar the set.

A condenser having high dielectric losses, a badly designed tuning-coil, an L.F. transformer possessing a low primary inductance, or one which saturates when a small current passes through the winding—any one of these may prevent an otherwise sound receiver design from giving its maximum efficiency.

We all want our sets to be "one hundred per cent," but we can only achieve this degree of perfection by exercising discrimination in the choice of the various parts, eschewing any which are not sound both electrically and mechanically.

THE TELSEN TELORNOR



A useful tuning unit which has a very fine oxidised silver escutcheon plate carrying volume and tuning controls, together with wavechange and on-off switches.

Experience teaches, and we would point out the fallacy of purchasing components of the "cheap and nasty" type—usually unnamed. This "penny wise pound foolish" scheme is a false economy and in most cases ends in the throwing away of the "junk" component and replacing it with a good one manufactured by a reputable firm.

We are fortunate in this country in having firms whose salesmanship is based upon the production of high-grade apparatus and the consequent goodwill of their customers.

Those who visit the Radio Exhibition at Olympia will see for themselves the excellent workmanship employed in the components displayed on the various stands.

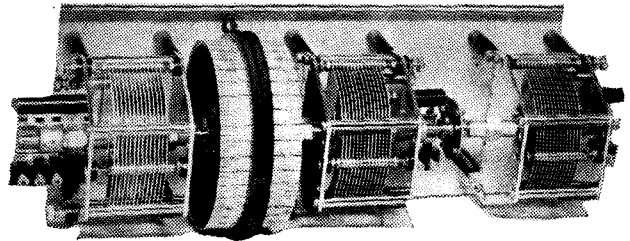
The British radio trade is second to none, and the only difficulty with which the constructor is

likely to be faced is to know which particular components to choose from so many good ones.

Unfortunately, this is a matter upon which we are unable to guide the constructor, because it is solely a matter of individual preference. But we can indicate some of the lines exhibited by the

FROM A FIRM FAMOUS FOR THEIR CONDENSERS

A drum-drive gang-assembly, manufactured by Sydney S. Bird & Sons.

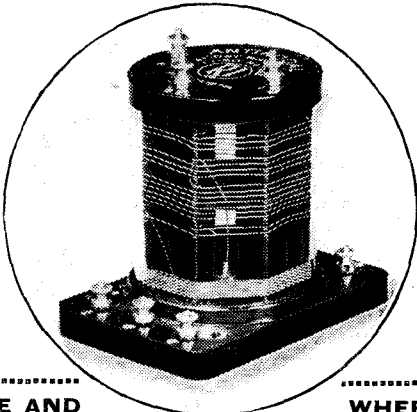


different firms that are likely to be of special interest to set constructors.

When commencing to build a set one's thoughts turn first of all to the panel and to the terminal strip and terminals on the back of the baseboard.

What are the essential features of a good panel? It must be a perfect insulator—capable of being drilled easily and without chipping. It must be true to size and "cut square." And, above all, the finish must be above reproach, because the appearance of the completed receiver largely depends upon this.

R.I. ANTINODAL COIL



Among the firms specialising in panels and material for terminal strips may be mentioned the British Ebonite Co. This firm employs ebonite only of the highest quality for its panels, which, incidentally, are available in every conceivable size at competitive prices.

There is also the British Hard Rubber Co., and visitors to this stand should make a point of inspecting the various examples of "Permeol," a non-discolouring ebonite in black-polished and mahogany and walnut finishes.

"Permeol" has a deep mirror-like polish and is guaranteed to keep its colour even under strong sunlight.

Terminals may seem to some to be quite a small item, but there is a big difference between a poor terminal and a good one. For instance, for convenience in connecting up the aerial, earth, battery leads, etc., it is desirable—often essential—that each terminal should be clearly marked.

Terminal Specialists

Messrs. Belling & Lee are showing a comprehensive range of terminals, sockets and other handy devices, such as fuse holders and battery cords. The type "B" terminal is but one of a number of types. It has a non-rotating name and is bakelite insulated. The type "M" is similar, but is smaller and not insulated. Messrs. J. J. Eastick, A. F. Bulgin, and Lectro Linx are also exhibiting terminals of every type among their other components.

Next we come to an unromantic, but nevertheless essential, component, viz., the valve holder. At first glance there would appear to be very little in the manufacture of a valve holder. But suppose we stop for a moment and think.

What about the spacing of the sockets? Any valve holder must be capable of fitting any valve and the valve pins must make perfect electrical connection with the sockets of the valve holder. Just imagine the accurate workmanship needed.

Representative valve holders will be found on the stands of Messrs. Benjamin Electric Co., Bulgin, Lissen, Graham Farish, Telsen, etc.

There are rigid and non-rigid types. Others are suitable for horizontally mounting the S.G. valve. For the detector valve the non-rigid or sprung valve holder will offset any microphone tendencies on the part of the valve, but elsewhere in the set rigid holders will serve quite well. At the same time, there is no objection to using the sprung type throughout.

Aren't there a lot of parts which have to be collected together in order to build a set? H.F. chokes, switches, tuning and reaction condensers, extenders, L.F. transformers, and chokes, grid leaks, fixed condensers, resistances...

H.F. chokes can be divided into two categories. Those for use in the anode circuit of an S.G. valve when parallel feeding is employed, and those for reaction purposes. The same type of choke is equally suitable for both purposes, but the S.G. choke should be one possessing a high inductance valve and a low self-capacity, otherwise the efficiency of the H.F. stage will suffer.

Something New

The Sovereign people are marketing a novel component called the "Vario-choke." It is

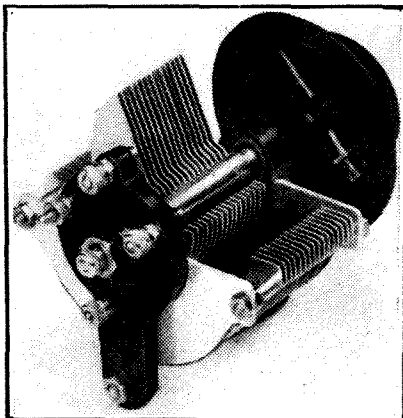
THE PEOPLE TO SEE AND

	STAND
C. F. & H. Burton	1
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Dubilier Condenser Co. (1925), Ltd.	84	A. F. Bulgin & Co., Ltd.	151
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A FAMOUS FORMO!



With its cleverly arranged switching and smooth action the Formo is a deservedly popular extender.

particularly useful in S.G. circuits and comprises an H.F. choke together with a semi-variable compression condenser in one unit.

Among the other chokes are the new Peto-Scott—which is made in super-het, broadcast, and short-wave types—also the Ready Radio, R.L., Telsen, Dubilier, Lissen, Lewcos, Tunewell, Burton, etc.

For such items as fixed condensers, grid leaks and resistances we have Messrs. Dubilier, Graham Farish, T.C.C., Telsen, and Loewe. Every type and value to fulfil the needs of the constructor will be found on these stands.

On the Telegraph Condenser Co.'s stand will be found fixed condensers of every possible type, including high-voltage condensers, for mains circuits. Loewe's have a complete range of small tubular condensers and vacuum resistances.

The Graham Farish "Ohmites" are of special interest to those who pin their faith in R.C. coupling, and there is a range designed for heavy duty, such as for biasing purposes in mains sets.

Colvern for Coils

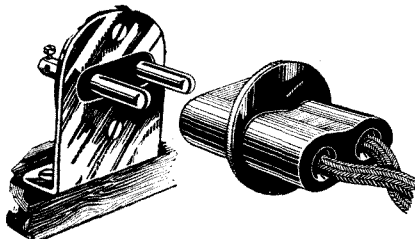
One of the first names which comes into one's mind in connection with coils is Colvern. Colvern's have been associated with tuning-coil design for years and are showing a new dual-range coil known as the T.D. among their other numerous types. Colvern coils can be obtained fully screened and with "ganged" wave-change switching.

Messrs. Tunewell have produced a hand-pass filter coil giving a constant peak separation of 10 k.c., and the coils are matched to within 1/2 per cent. The set consists of three coils, and these can be tuned with a three-gang condenser, thus ensuring true one-dial control.

In addition there are the well-known Telsen, Wearite, Lewcos, and Varley ranges, also the Lotus and Formo dual-range coils. Both Messrs. Wright & Wearie and Lewcos are in a position to supply complete kits for super-het. receivers.

The British General Manufacturing Co. are marketing a range of hand-pass filter coils covering wavelengths from 200-2,000 metres. A point of interest in connection with the aerial unit is that

ALWAYS SAFE



Known as "Type 1012," this new Belling Lee connector gives complete protection from the mains supply.

the aerial tapping is automatically changed from one coil to the other when the wave range is changed. The overall resonance curve gives a 10-k.c. separation.

The tuning coil is only one half of the tuning circuit, the other half being the tuning condenser, or extender, as the case may be. Those constructors whose chief aim lies in the direction of automatic wave-changing will find much to interest them on the Telsen, Formo, and Cyldon stands.

Messrs. Telsen, for example, are featuring the "Telexor," a completely shielded and enclosed tuning control incorporating a self-wave-changing device and an illuminated slow-motion dial.

Among the conventional type variable condensers are the Polar, this well-known firm including in its range several examples of ganged units, notably the "Uniknob" two-gang, selling at 19s. 6d.

Also we have the Formo dual-gang, retailing at 16s. 6d., complete with disc drive and escutcheon. Jackson condensers in every type, the Cyldon range of single and ganged units, Ormond condensers and disc drives, not forgetting the new friction control model with a slow-motion movement of 55-1. Lastly, but by no means least, the Lotus double- and triple-"gang" units with their illuminated dials, and the British Radiophone Company's accurately matched assemblies.

Now we come to transformers and L.F. chokes. Starting at the Ferranti stand, we see a comprehensive array which includes the famous A.F. 5, and A.F. 3 models, and the popular A.F. 10 transformer. Smoothing output chokes, and transformers, push-pull transformers—all these are shown in every type.

Quite New

Other representative examples which should not be missed are the R.I. "Parafec," the Bulgin "Transcoupler," the "Slektun," Telsen, Igranie, Climax, and Lissen.

No receiver, when more than two valves are employed, is complete without some form of volume control. Among the various excellent specimens shown at the Exhibition are the Wearite, Q.V.C., Bowyer-Lowe, Log-Law, Colvern, Watmel wire-wound, Igranie, and Clarke's Atlas.

Some constructors prefer to design their own mains receivers or to build their mains units themselves. They are adequately catered for by such firms as the British Westinghouse Co., whose dry metal rectifiers are so popular, apart from Messrs. Heayberd, Ferranti, Climax Radio, who supply mains transformers and chokes of all values and voltage ratings.

We would draw the attention of the radio-gam enthusiast to the Garrard electric and clockwork

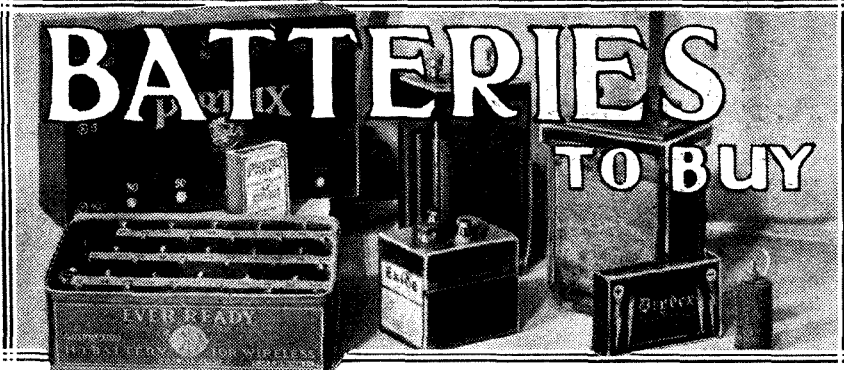


Introduced quite recently, the Vario-choke provides variable H.F. by-passing, and is very easily controlled.

turntable motors, especially the Senior Induction motor, which is supplied to the B.B.C., and to the Waters' electric gramophone motor.

And now you will ask what about a cabinet to house the set in. Well, our suggestion is that you make your way across to the Carrington stand, where you will find an imposing array of "Camco" cabinets, including the "Popular," a radio-gram cabinet priced at £3 15s.

Then on the Osborne and Gilbert stands are further specimens of the cabinet-maker's art. The Osborne Jacobean radio-gram cabinet selling at £5 10s. and the various speaker cabinets are well worth seeing.



It would be a pretty safe bet that the majority of visitors to the Show make use of batteries of one sort or another on their receivers. If not high tension, then grid bias or accumulator—although, strictly speaking, the latter is not a battery unless it consists of two or more cells joined together.

But not many will worry about this subtle distinction, for, as a matter of fact, a stroll round the lanes of Olympia soon reveals that most of the accumulators on show are single cell or 2-volt ones.

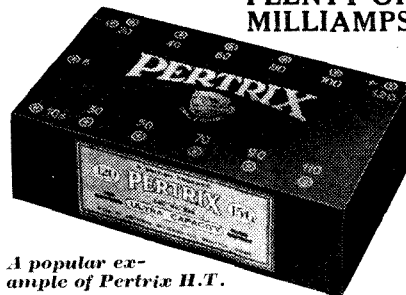
So far as portables are concerned, there would seldom be any point in having other than 2-volts.

And, as a matter of fact, some of the most interesting accumulator models are those intended for use in portable sets.

Such accumulators can be divided definitely into two groups. The unspillable acid type and the jelly type.

The first has a specially designed container

PLENTY OF MILLIAMPS



A popular example of Pertrix H.T.

which prevents the acid running out, no matter in what position the cell is held. In the other type, which is of fairly recent introduction, the electrolyte is in the form of a jelly that is set around the plates.

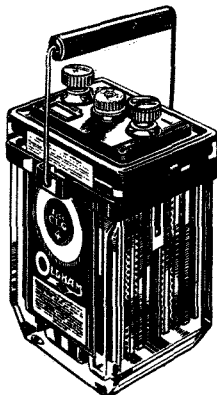
A good variety of both is to be seen on the stand of Messrs. Oldham & Son, Ltd. The unspillable acid types are in two ranges, one for suitcase type sets and the other for transportables.

WHERE TO FIND THEM.

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Lissen, Ltd.	59
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Ever Ready Co. (G.B.), Ltd.	63
Marconiphone, Ltd.	74
Edison-Swan Elec. Co., Ltd.	75 & 230
Fuller Accur. Co. (1926), Ltd.	76
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Siemens Elec. Lamps & Supplies, Ltd.	88
General Elec. Co., Ltd.	105 & 109
Britannia Batteries, Ltd.	126
National Accumulator Co., Ltd.	244
C. A. Vandervell Ltd.	246

All Roads Lead to Olympia!

FOR YOUR L.T.



Experience and reputation are behind this Oldham accumulator.

accumulators this year is the charge tell-tale. This is a means of showing the specific gravity of the acid, thus indicating the condition of the charge in the cell, and may take the form of small coloured beads or some kind of float.

Both methods are made use of by the National Accumulator Co., Ltd., for Dagenite batteries. Some of their cells employ one method, some the other, and all the various models are obtainable with or without tell-tales.

This firm is also showing L.T. accumulators of the "mass" type with an improved method of fixing the lugs into the lid. By means of it, the possibility of acid leakage and twisted plates is obviated, and it also makes a great improvement in the appearance of the accumulator.

So important is the battery side of the radio industry that there are some firms whose real interest in radio begins and ends with batteries. For instance, there is the Ever Ready concern, ever popular with battery users.

The latter are much higher than the former, and a somewhat different layout is employed for the plates and cases. On this stand there is also a range of "Lively 'O'" high-tension and grid-bias dry batteries.

Turning now from storage batteries that "won't be upset," we find that the slow discharge, glass-container type is undoubtedly the most widely used. Quite a representative display of these is to be found on the stand with which we have just been dealing.

A particularly ingenious and, at the same time, really helpful scheme that is to be seen on quite a number of L.T. accumulators this year is the charge tell-tale. This is a means of showing the specific gravity of the acid, thus indicating the condition of the charge in the cell, and may take the form of small coloured beads or some kind of float.

They specialise in batteries of all sorts, and their display is a most comprehensive one, batteries suitable for every set made being on show. Those who work radio sets overseas will be specially interested in the inert type of dry batteries which are intended for shipment abroad.

Of course, where high-tension batteries (and also G.B. batteries, which, after all, are really only small H.T. batteries) are concerned, we must look for advancement and improvement more in efficiency and internal processes than in outward appearances.

Many Months' Research

Illustrative of this point are the new Siemens' "Full-O-Power" Cadet dry batteries. The range of ordinary "Full-O-Power" batteries requires no introduction, but, as the makers say, "A Full-O-Power" quality battery at competitive prices seemed to be an impossibility, but after many months of research and preparation this object has been achieved."

The 9 and 11-volt G.B. cells are also quite a feature of the display on the stand of Siemens Electric Lamp and Supplies, Ltd.

The question of the discharge rate is largely dependent upon capacity and is very important when you are choosing a battery. You should have a good idea of what your set is liable to take before you buy an H.T. battery.

Some people think that only small sets can be run from batteries, but it is surprising what big discharge rates some of the batteries have. For instance, there is one that will give 45 milliamps. economically.

It is included in the display of Britannia Batteries, Ltd. The Pertrix range of batteries, made by this firm, is very comprehensive and many different capacities are available. L.T. accumulators are also shown on this stand.

Among the exhibits on the stand of Messrs. Lissen, Ltd., is a good range of batteries. Lissen is, as a matter of fact, quite a household word where high-tension batteries are concerned.

Another name worthy of mention in connection with batteries is Grosvenor, and a complete range is available in this make.

The Marconiphone Co., Ltd., are now making H.T. and G.B. batteries, and a selection of these is to be seen on their stand at the exhibition this year.

This section would not be complete without

some mention of the wet Leclanché cell H.T. batteries on the Standard Battery Co.'s stand. These batteries can be obtained in quite a number of capacities, and are supplied in any voltage desired.

Although the high-tension accumulator is, perhaps, not quite so popular as it was at one

AN OLD FRIEND

A good battery is a short cut to good results.



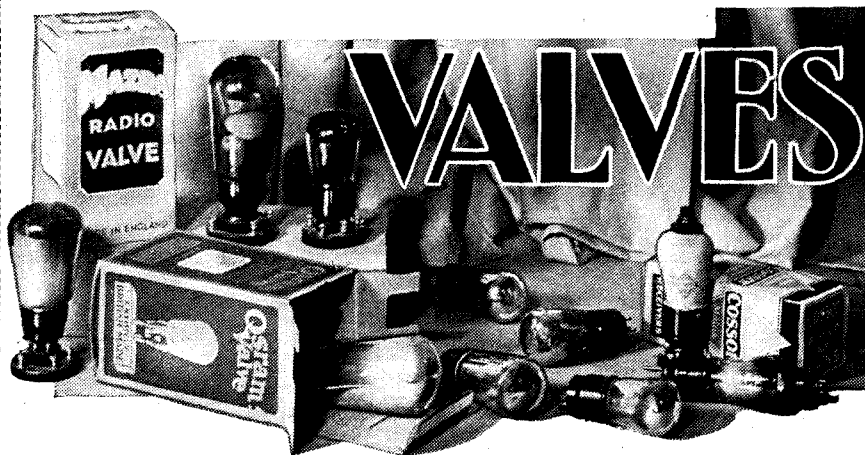
time, it still has many adherents. A number of these accumulators are to be seen on the stands this year if one has the time to pick them out.

Leakage Eliminated

Leakage across the tops of the cells, often a source of trouble with H.T. accumulators, is completely eliminated in the Oldham design, for each cell is air spaced from the next one. The cells are available in two sizes.

Another H.T. accumulator worth mentioning specially is the Dagenite, for the cells can all be obtained provided with charge tell-tales in the same way as with many L.T. accumulators.

C. A. Vandervell, Ltd., are also showing H.T. accumulators among their range of C.A.V. radio batteries. Non-spillable accumulators for portable receivers are shown in sizes and capacities to meet all requirements, and then there are the new "Acton Glass" models for 1933. These accumulators are provided with quite a number of new features, including special terminal grease chambers.



THE nearer anything gets to perfection, the less startling and rapid are developments, which after a while take the form mostly of steady improvements along existing lines. There is certainly no reason why valves should be an exception to this, and consequently we must not expect always to find something on the lines of the S.G. or pentode valve introduced at the show.

Nevertheless, there are quite a lot of interesting things at the show in the valve line, and a number of new models with greatly improved characteristics have been introduced. All the valve manufacturers are showing complete sets of their ranges of radio receiving valves, and some have a number of interesting transmitters among their exhibits.

Messrs. Cossor, Ltd., as usual, have a really fine show. On their stand you will find "tubes" of all shapes and sizes and a type for more or less every purpose you can think of.

A most comprehensive range is also to be seen on the "Six-Sixty" stand. This firm has a well-established name for valves, and they certainly live up to it at this show.

Perhaps the most interesting valves are the improved variable-mu S.G. types. These valves, although only recently introduced, have certainly "caught on," and a surprising number of the complete all-mains sets at the exhibition incorporate them.

There is an indirectly-heated model as well as a battery model amongst the half-dozen new valves that Lissen's are putting on the market. The A.C. type can be obtained metallised or plain, as desired.

This metallising process for valves is one of the improvements that have taken place recently. In the case of the Lissen battery-variable-mu valves, metallised bulbs are used entirely.

The remaining new Lissen valves are all indirectly-heated A.C. mains types. They include a valve suitable for detection and early stages of low-frequency work; an ordinary screened-grid high-frequency amplifier; an output valve for normal purposes and a pentode output valve.

The latter is capable of handling a really large volume, much greater than that normally required for household use. So there should be little chance of overloading

A MODIFIED MULLARD



The new 904 v. is a high-mag. indirectly heated valve of great merit.

WHERE TO SEE THEM

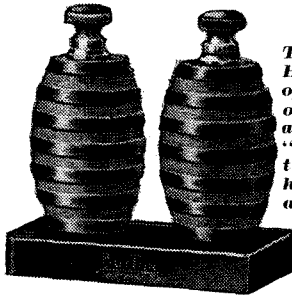
	Stand
Six-Sixty Radio Co., Ltd.	52
Lissen, Ltd.	59
A. C. Cossor, Ltd.	60
Marconiphone, Ltd.	74
Edison-Swan Electric Co., Ltd.	75 & 230
Mullard Radio Valve Co., Ltd.	79
General Electric Co., Ltd.	105 & 109
Standard Telephones & Cables, Ltd.	107
Claron Radio Valve Co.	120
Loewé Radio Co., Ltd.	223

Varied Items for Home Constructors

it normally, even on peaks. It is known as the A.C./P.T.

A matter of only two or three years ago it was an accepted thing that similar battery valves should be obtainable in the 4- or 6-volt classes as in the 2-volt class. But since then, with the increasing popularity of 2-volters, makers have concentrated on improving these, while other voltage battery valves have been left alone.

BURTON'S BARRELS



The Burton H.F. chokes of the binocular type are wound on "barrels," to ensure high inductance with low self-capacity.

Of course, it was realised that 4- and 6-volt valves were quite unnecessary, and that it was only a matter of time before they were forgotten. There is hardly any sign of the four and sixers at the show this year.

They are not even listed, for instance, in the ordinary way amongst the Osram range. This range includes a fine assortment of 2-volt battery valves, A.C. mains valves, both directly- and indirectly-heated, and rectifier valves.

Mention of rectifier valves reminds us of a noticeable feature at the show. It is that whereas mains units make use almost entirely of dry metal rectifiers, all-mains receivers nearly universally employ valve rectifiers!

We must not leave the Osram range made by the G.E.C. without mentioning the D.C. indirectly-heated mains valves. These are rated at 16 volts each and take $\frac{1}{2}$ amp. The Marconi range of valves is, as usual, about the same as the Osram. Their variable-mu S.G. valve has been greatly improved.

Immediately one arrives at the Mullard stand it becomes apparent that they have "done something" to their valves. And after an inspection one finds that it concerns the steps taken in the constructional design to render all types absolutely free from "microphony."

S.G. and detector valves in the battery range have an improved system of electrode supports and a special device which effectively restricts filament vibration. So far as indirectly-heated A.C. valves are concerned, an entirely new method of assembly has been developed, called "Rigid Unit Construction."

The name well explains the idea of the scheme; extra supports and stouter ones are provided to ensure that no electrode vibration can take place. The cathode and heater form one short stiff unit of round section; grids, anode and screen (if used), are all of specially stiff construction. The various supports are cross-braced in such a way that, while permitting longitudinal expansion, they render sideways movement impossible.

Two particularly interesting Mullard valves are the P.M.12A., an S.G. specially designed to work well on 100 volts H.T. so as to be particularly useful for portables, and the new low-consumption battery pentode.

Another particularly interesting collection of valves is that of the Clarion people. They are exhibiting the usual extensive range.

Masterpiece of Compactness

Among valves worthy of special inspection are the Loewe multi-stage valves and the Micromesh of Standard Telephones and Cables, Ltd. The latter, which are entirely new, are claimed to be

more efficient than any other valves at present available. At the moment only three types are on the market, but others are to be added later.

The multi-stage Loewe valves are a masterpiece of compactness, for within the bulb there are three separate valves in the one vacuum, and the coupling components between these valves are also included in the bulb. Two models are made, one for A.C. mains operation and the other for battery working.

Efficient and Economical

On the Mazda stand, the Ediswan Electric Co. are showing their complete range. This includes an extensive collection of battery valves, among which are some particularly efficient and economical examples.

Then there are the A.C. mains valves, including both directly and indirectly heated types, and lastly the indirectly heated D.C. valves.

Among this galaxy are a number of entirely new valves, as well as some greatly improved ones of the old range.



At this time of the year particularly one hears a lot about the advantages of all-electric radio, and it is rather pointless to deny that from the point of view of convenience there are certain advantages which are not to be found in sets of the battery-operated types.

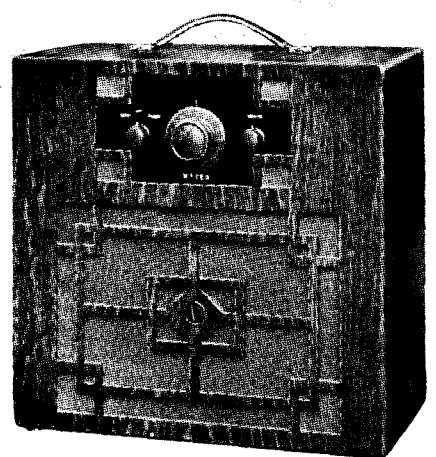
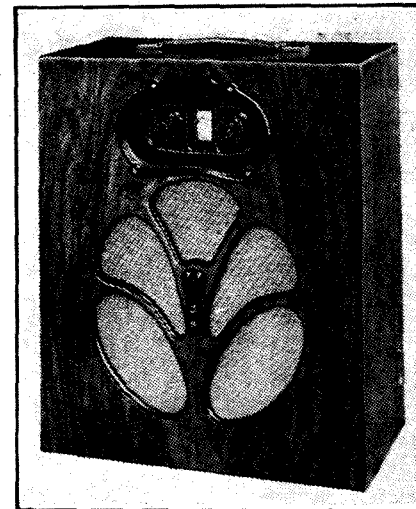
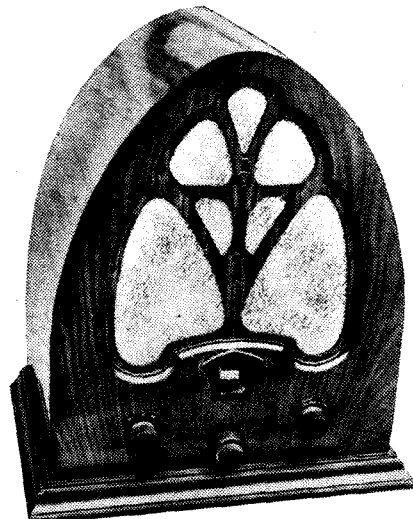
But whatever the advantages may be, it is necessary to remember that a large percentage of the listening public are not provided with mains of any description (other than, possibly, gas!), and that in consequence there is, and will be for many years to come, a market for well-designed battery-operated receivers.

Fortunately, the manufacturers are alive to that fact. And fortunately, too, they have not neglected the development of battery-operated receivers in premature anticipation of the perfection of the Grid system.

The all-electrification of the country is bound to come sooner or later, and when it does mature we shall certainly not have cause to regret it. But it is such a tremendous undertaking that for many people at least we can forget all about it for years to come. And for those people, what has Radiolympia to offer this year?

In many respects, this year is unique in the

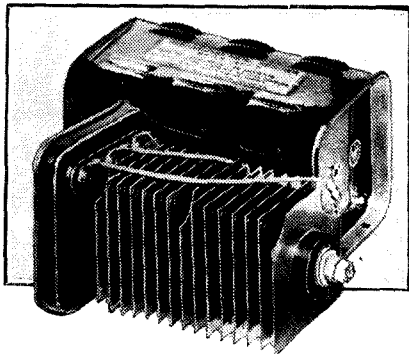
A REMARKABLE RANGE OF RECEIVERS TO CHOOSE FROM!



The Standard Battery Co. produce the handsome set above, which is of the three-valve battery-run type.

A screened-grid stage, followed by a detector and pentode, is the arrangement employed in the Lissen three-valver—the first of the three models illustrated. It is known as the L.N.5019. In the centre is the notable H.M.V. Super-het. Portable Six.

**HIGH TENSION—
HIGH WORKMANSHIP**



The Westinghouse Metal Rectifier is only a few months old, but it certainly isn't shy of publicity!

history of radio exhibitions, from the point of view of all those who are interested in battery-operated receivers.

Valves, components, batteries, loudspeakers—all have been the subject of astonishing improvements during the last twelve months or so. Battery-operated sets have never been of such a high standard as they are now, and not only have we proof of this in the numerous models that are to be seen at Olympia, but it follows as a natural outcome in the progress of development.

What is more, whatever the advantage our overseas competitors may have had on us in the past in matters of appearance, the argument doesn't hold water to-day.

But the proof of the pudding, after all, is in the eating. If you are one of the fortunate ones that can get to the Show, you will see for yourself the astonishing improvements that have been made.

Good News For The "Mains-Less"!

One of the first things that will probably strike you is the fact that several of the firms who have previously confined their activities almost wholly to the production of all-electric receivers are now producing battery models. That is good news for all who are not equipped with a mains supply, especially when two such notable names as Marconiphone and H.M.V. are included in the list.

The reputations of these two firms as the manufacturers of high-class all-electric receivers is quite common knowledge, and it is obvious that their entry into the battery-operated receiver market will have been made with something good.

In the case of the Marconiphone Company, apart from a battery-operated portable which is not a new line, you will see exhibited a new self-contained two-valver of excellent design which sells complete with batteries and valves for the remarkably low price of £4 19s. 6d. The model "248," as it is called, has a total anode current consumption of slightly less than 5 millamps, which is a remarkably low figure for such a well-designed two-valver.

Another notable achievement is that of H.M.V., who have produced a handsome-looking six-valve portable receiver for the low price of 17 guineas. Again it represents an outstanding performance when it is considered that the total anode current for this set is only 10 millamps.

For those who are interested in the de luxe

**REMEMBER "THE
WIRELESS CONSTRUCTOR"
IS AT STAND No. 8**

types of battery-operated receivers there is something of outstanding interest to be seen on the stand of the British Blue Spot Company. It is one of the latest productions of this enterprising company, and it consists of a four-valve receiver (2 variable-mu screened-grid valves, a detector, and super-power), built into a truly artistic pedestal cabinet. At the price of 16 guineas this particular model—in which is built a moving-coil loudspeaker—is, in our opinion, remarkably cheap.

The tendency all-round this year seems to be heavily in favour of entirely self-contained receivers, and it is a development that we are glad to observe. Two excellent examples of this

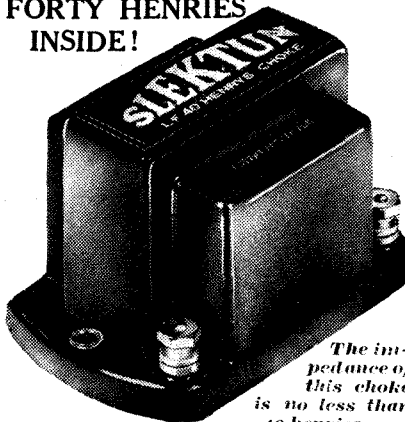
STOP AT THESE STANDS

Standard Battery Co.	26
British Blue Spot Co., Ltd.	35
Kolster-Brandes Ltd.	54
The Gramophone Co. Ltd.	55
Lissen, Ltd.	59
A. C. Gossor, Ltd.	60
Lotus Radio, Ltd.	64
Marconiphone, Ltd.	74
Pye Radio, Ltd.	80
H. Clarke & Co. (M/C), Ltd.	91
Sovereign Products, Ltd.	152
Loewe Radio Co., Ltd.	223

neater, tidier and more compact idea are to be seen on the stand of Messrs. Lissen, Ltd.

One of them—a two-valver designated the L.N.8021—is scarcely bigger than a medium-

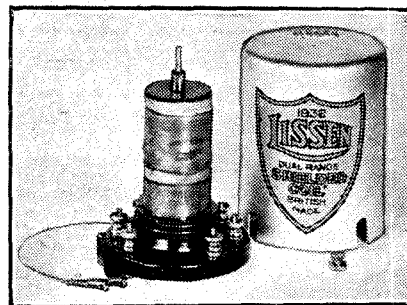
**FORTY HENRIES
INSIDE!**



The importance of this choke is no less than 40 henries.

sized loudspeaker cabinet, and yet, by skilful design, the cabinet contains not only the speaker and the set, but the batteries as well. The controls, which, incidentally, are very simple to handle, are neatly arranged along the bottom of the front of the cabinet.

CAREFULLY COVERED



Lissen, Ltd., are responsible for a modern, dual-range coil with a close-fitting metal shield.

The reputation which Messrs. Pye Radio have established for themselves with their famous portable receivers is too well known to need repetition here. Among the six models included in their new season's range there are one or two of interest to the "batteries-only" listener, and we feel that it is only necessary to add that they are every bit up to the Pye standard.

If, as you walk round the Exhibition, you happen to come across the Kolster-Brandes stand, you will find a whole range of interesting battery-operated receivers. As a matter of fact, if it's battery-operated receivers that you are after it is well worth making a special visit to this stand, because there are at least half a dozen models exhibited that will interest you.

Newcomers With The Right Idea

The Sovereign stand, too, is another one that is well worth a special visit. Although Messrs. Sovereign are newcomers to the battery-operated set industry, the new range of sets that they have produced is fully representative of the high standard that is evident throughout the Show.

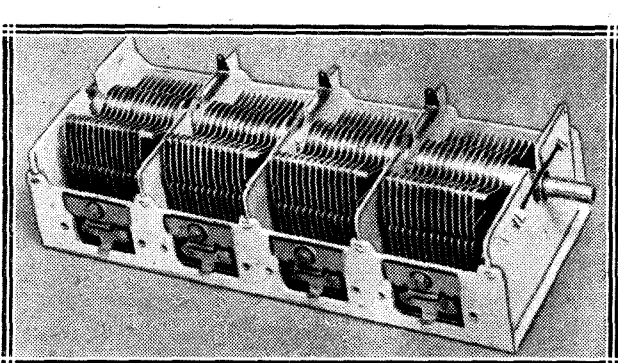
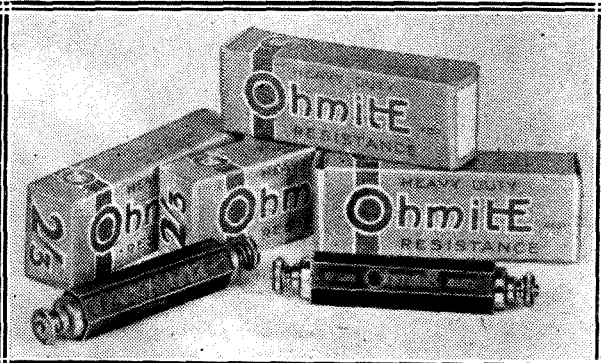
The "Doric," for instance, which is a chassis-built three-valve screened-grid, detector and pentode set, has every appearance of being an exceptionally attractive proposition. It is completely self-contained in a walnut cabinet of pleasing design, and the price of 10 guineas includes batteries, valves, and a permanent-magnet moving-coil loudspeaker!

At the other end of the price scale, the Gossor model 221 is an excellent proposition, and, for a two-valver, it is one that it would be difficult to better. When it is considered that the price of £4 4s. includes the set, the speaker, the valves, and an attractive table-model cabinet, there is not much doubt about the remarkable value.

For those who are interested in portable radio, a visit to the Wates' stand is strongly recommended. There you will see among other battery models, an efficient three-valve portable which is available for the modest sum of 5 guineas. The outstanding feature of this model is the fact that it has an extremely low millamp consumption, and the makers claim that the high-tension battery should last from six to nine months.

So many and varied are the models on view that it is quite impossible to deal with them all in the space of a single article. We have endeavoured to give you just a general idea of the prevailing tendencies, and if you are fortunate enough to be able to get along to the Show you will find dozens of other models to interest you.

COMPONENTS TO GET FOR THE UP-TO-DATE SET!



The Ohmite resistances made by Messrs. Graham Farish will be much sought after; while an excellent example of ganged condensers is displayed by British Radiophone with the four-in-hand shown above.

ALL-MAINS receivers form one of the most interesting subjects of the Show this year. They are there in almost bewildering numbers, and they are all different in some way or another.

Of course, the general trend of design is along certain well-defined lines, but, at the same time, there is some exclusive distinguishing feature to be picked out on almost every stand showing mains sets.

In describing the general developments in mains receivers, we will at the same time point out some of the interesting ideas that are peculiar to certain makes.

Metal chassis are used on nearly all the sets, and an interesting point in this connection is the use, in some cases, of iron or steel. In the Ultra range cadmium-plated steel is used for the purpose, and some of these sets are provided with an ingenious coloured-star system of station identification.

The Wates "Futura Six" set, featured in the display of the Standard Battery Co., makes use of iron for the chassis. An interesting point about this radio-gram model is that the baffle board is set back at the top so that the sound is deflected up towards the listener.

Some Interesting Chassis Work

Other stands where interesting chassis work is to be seen amongst the mains receivers are those of Cossor and Messrs. Gambrell, Ltd. The latter firm makes use of one chassis assembly only, a 7/8 valve super-het, and receivers employing this unit are also on show at the stand of Messrs. Halford Radio, Ltd.

Mains receivers are nearly always purchased for use as "home" receivers, and as such are very often to be operated by those with little radio skill. It is therefore only natural that considerable thought should be given to keeping the controls as few, and as easily understood, as possible.

All the instruments in the new range of mains sets by Philips Lamps, Ltd. (which, by the way, are now to be handled by Messrs. Philips Industrial) have only two controls. One is for tuning and wave-change switching, and the other for volume control and on-off switching.

A station indicating dial that is a great help to those not used to tuning a set is to be seen on several of the Ekco mains receivers exhibited by E. K. Cole, Ltd. An outstanding feature of these receivers is the "cabinet" work, which is of very attractive moulded bakelite.

Changing Records Automatically

While dealing with simplified control, mention must be made of the H.M.V. radio-grams on the stand of the Gramophone Co., Ltd. Their record-changing device has now been out some time, but an improved model is shown which enables



the instrument to play eight records continuously, repeat a single record indefinitely, or be used as though it had an ordinary turntable.

Instruments with super-het. circuits are well represented on this stand, and, as a matter of fact, it is remarkable the number of all-mains super-hets. that are at the show. A special feature is made by Messrs. Ferranti, Ltd., of their new 7-valve super-het.

This instrument makes use of band-pass tuning and has a six-valve circuit, the seventh valve being a rectifier. Each instrument before despatch is subjected to a special shock-test to ensure there are no loose connections or similar faults in it.

Another firm exhibiting an interesting super-het. mains set is Messrs. Oliver Pell Control, Ltd., who make Varley apparatus. This firm is also exhibiting a smaller mains set in which the loudspeaker is mounted facing upwards in the top of the cabinet, a lid acting as a deflector for the sound. Moving-coil speakers are almost universally employed, except on a few of the smaller sets. One outstanding exception is the G.E.C. four-valve A.C. receiver, which employs an inductor type. Their D.C. four-valve set, however, has the usual moving-coil speaker, and incorporates a heterodyne filter to reduce station interference.

Small Sets for the Mains

Mention of small sets reminds us that the more modest purchaser is well catered for.

Among the particularly interesting small receivers are the Atlas ones on the stand of Messrs. H. Clarke & Co., Ltd., which are available for A.C. or D.C. mains; and a two-valve instrument that covers long, medium and short waves is exhibited by Standard Telephones and Cables, Ltd. This set, incidentally, also incorporates a moving-coil-type speaker.

Mains voltages, frequencies and types vary greatly from one part of the country to another, but the difficulty is somewhat overcome by the number of makers who provide their sets with taps for different voltages.

In the case of Lissen A.C. receivers this is carried as far as it possibly can be. Provision is made so that they can be used on any voltage between 100-125 and 200-250. The question of A.C. or D.C. is not quite so easily overcome.

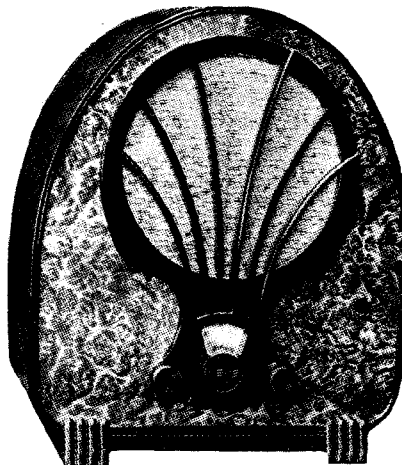
Before the advent of D.C. indirectly-heated valves, the D.C. mains user was at a disadvantage compared with those who had A.C. mains. But now the D.C. user is well catered for.

Among the Kolster-Brandes selection of mains receivers there is a good range of instruments for D.C. working. There are also interesting D.C. as well as A.C. sets on the Lotus stand.

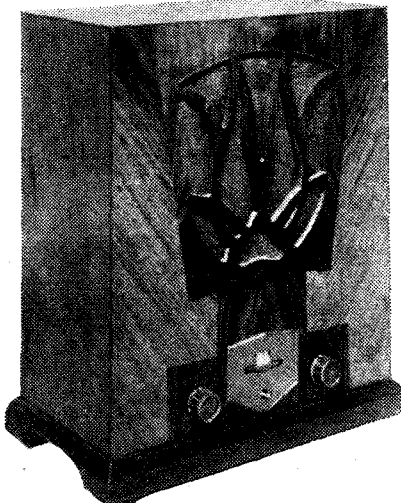
Those interested in compact apparatus will find the Loewe mains sets rather fascinating. There are two A.C. models, one with and one without incorporated loudspeaker. These receivers

THE MAIN STANDS FOR MAINS SETS

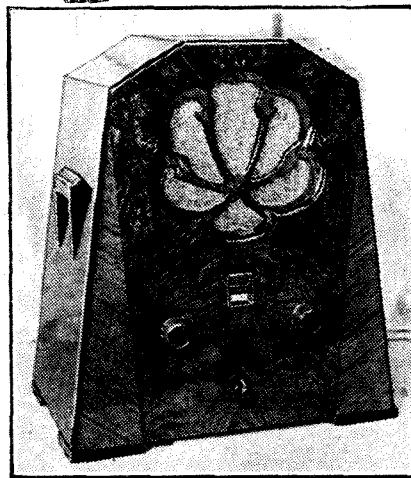
Gambrell Radio, Ltd.	21
E. K. Cole, Ltd.	25 & 65
Standard Battery Co.	26
British Blue Spot Company, Ltd.	35
Kolster-Brandes, Ltd.	54
The Gramophone Co., Ltd.	55
Lissen, Ltd.	59
A. C. Cossor, Ltd.	60
Lotus Radio, Ltd.	64
Telsen Electric Co., Ltd.	66
Marconiphone, Ltd.	74
Edison Swan Electric Co., Ltd.	75 & 230
Ferranti, Ltd.	78
Pye Radio, Ltd.	80
Olmax Radio Electric, Ltd.	81
Radio Instruments, Ltd.	90
Philips Lamps, Ltd.	104
General Electric Co., Ltd.	105 & 109
Standard Telephones and Cables, Ltd.	107
Halford Radio, Ltd.	117
Varley (Oliver Pell Control, Ltd.)	160
Loewe Radio, Ltd.	223



THE LOTUS "BUD"

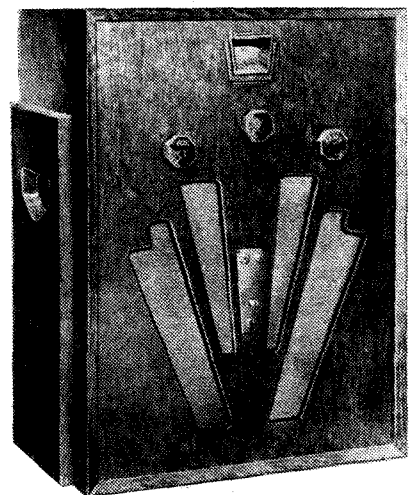


Ready to "bloom" into the finest quality reproduction.



Above is one of the Philips two-control all-mains receivers of striking design, and, below it, the new Ferranti.

LINE OF A NEW LINE



A battery driven "Marconiphone" set with striking speaker fret.

Visit "The Wireless Constructor" at Stand No. 8

have three stages and each employs one of the multi-stage metal coated Loewe valves.

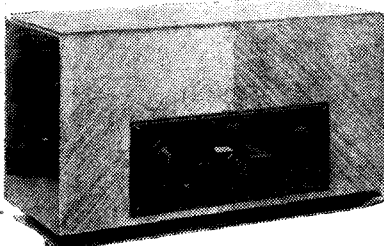
Of course, the name of Pye is extremely well known where mains sets are concerned, particularly in connection with transportable instruments. Their stand, as ever, is one of the most interesting and they are introducing a number of new receivers.

And that leaves us with one more firm we must mention—Marconiphone. On their stand are three new lines in mains receivers and radio-grams. Two of them are six-valve models, while the third is a three-valver which may be had in either A.C. or D.C. form.

Of the six-valvers, one is an ordinary receiver, while the other is a radio-gram using an improved model of the automatic record change.

The circuit used in both cases is a super-het, one with band-pass tuning, and with variable- μ valves in the intermediate positions.

UNUSUALLY NEAT DESIGN



Unobtrusive, but very effective, is the "rectangular" design of this receiver.

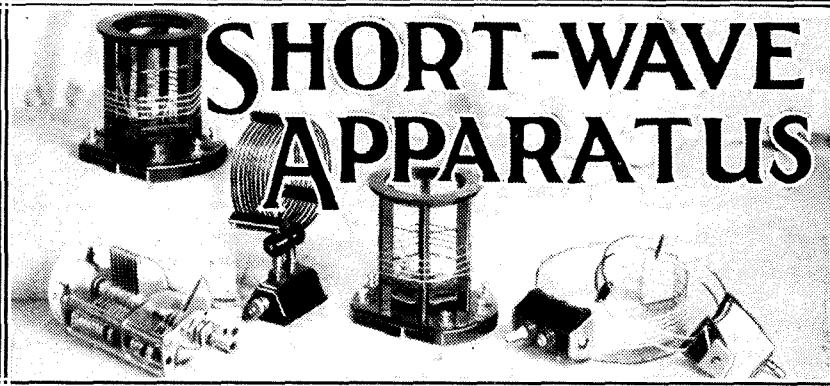
Enough said! The sooner you can get to Olympia to see for yourself, the better! And if you are unable to get to the Show itself—well, do not let that deter you from making a start at this fascinating pastime.

For the benefit of such readers (and for those who can go, too!) we are going to try and give you some idea of the outstanding short-wave features of the Show in the following notes.

Since we started off with a reference to the increasingly popular scheme of the adaptation of existing sets, perhaps the "old hands" at the game will forgive us if we make this the subject of our first review.

WHERE TO SEE S.W. APPARATUS

	Stand
Hustler, Simpson & Webb, Ltd.	30
Igranic Electric Co., Ltd.	36
Lissen, Ltd.	59
Telsen Electric Co., Ltd.	66
Wright & Weaire, Ltd.	82
Ormond Eng. Co., Ltd.	87
Radio Instruments, Ltd.	90
H. Clarke & Co. (M.C.), Ltd.	91
Tunewell Radio, Ltd.	96
Fermo Co.	100
Ready Radio, Ltd.	106
Wilkins & Wright, Ltd.	118
Wingrove & Rogers, Ltd.	129
A. F. Bulgin & Co., Ltd.	151
S. S. Bird & Sons, Ltd.	158
Jackson Brothers	204
Automatic Coil Winder & Electrical Equipment Co., Ltd.	206
Colvern, Ltd.	245
Peto-Scott & Co., Ltd.	247



SHORT-WAVE APPARATUS

SLOWLY, but quite perceptibly, short-wave reception is claiming more and more enthusiasts, and, as is only to be expected, the range of short-wave apparatus on show at Olympia this year is more comprehensive than it has ever been.

There are new coils, new condensers, new chokes, new adaptors, in fact everything that the short-wave enthusiast can possibly want; and although almost without exception the new lines are vastly superior to those with which the season commenced last year, it is gratifying to observe that, generally speaking, prices are very much lower.

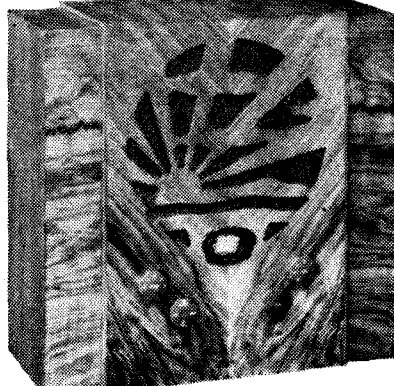
Within Your Reach.

This year, more than ever before, short-wave reception is within the reach of all. No longer is the short-wave either the happy hunting ground of the privileged few. Nor is it in any sense of the word a pastime limited only to the serious-minded amateur.

You can tune the short waves in on your set! You can hear America and Australia and dozens of other countries besides with apparatus that need not cost you a penny more than thirty-five or forty shillings!

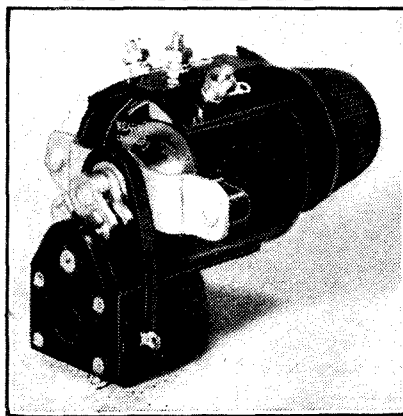
Does it sound interesting? Does it appeal to you to be able to roam round the world at will unconcerned with heterodynes and other parasitical troubles that occasionally have such an unhappy knack of "dishing" distant reception on the ordinary broadcast waves?

YOUR FAVOURITE "PYE" ?



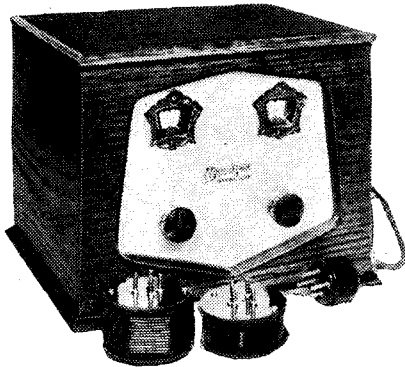
The distinctive rising-sun speaker-grille is a well-known feature of Pye receivers.

A USEFUL GADGET



A combined Volume Control and On-off Switch by Wearite.

JUST PLUG IT IN



A Short-Wave Adaptor from Messrs. Hustler, Simpson & Webb.

A short-wave adaptor, for the benefit of newcomers, is a self-contained single-valve short-wave unit that enables you to receive stations in all parts of the world on your existing broadcast set. It does not require any extra battery connections, nor does it involve any alterations to the wiring of your present set.

The idea was first introduced by "Popular Wireless" over four years ago, and since that time it has been adopted commercially in every country in the world.

Several of these little units are on show at Olympia, and the prices are all in the neighbourhood of thirty-five to forty shillings. Without a doubt it is one of the most satisfactory schemes of all for the newcomer, because, apart from the question of initial cost, it represents an extremely simple way of participating in the world's programmes.

Easy and Efficient.

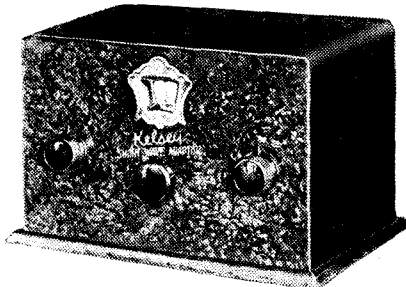
A picture of a typical adaptor—incidentally, a 1932-3 version of the original "Kelsey" adaptor—is shown on this page. It is the product of the Peto-Scott Company, and it is one of the various models that you will see exhibited on their stand at Olympia. It is remarkably simple to use, and in practice it is very efficient.

Then there is the Aerodyne adaptor, produced by Messrs. Hustler, Simpson & Webb, a unit working on exactly the same principle, but slightly modified in design.

The short-wave adaptor exhibited by Messrs. Telsen is rather away from the usual run of things. Fundamentally, it functions in exactly the same way, but a screened-grid valve is used for detection in place of the usual triode.

(Please turn to page 306.)

THE NEW KELSEY ADAPTOR



The Unit that converts any set to short-waves. It is made by Peto-Scott, Ltd.

WITH PICK-UP AND SPEAKER



by
A.
JOHNSON-
RANDALL

How does one dispose of used gramophone needles? I have in mind the ordinary steel variety. You change the needle every time you play a record. The needle is placed in the cup, which in time gets full, and then—I suppose the best scheme is to dig a deep hole and bury them. It is almost as big a problem as that of disposing of old safety razor blades.

Really Ingenious

Speaking of needles reminds me of an ingenious "gadget" marketed by British Goldring Products, Ltd., of Finsbury Pavement, E.C.1. It is a needle cup which automatically feeds one needle at a time whenever the centre cylinder is pressed down. The outside cylinder holds the used needles.

This and the Bowyer-Lowe pick-up are the only new components of interest to radio-gram enthusiasts that I have come across lately. By next month the Show will have come and gone, and no doubt I shall then have quite a number of the new season's products to talk about.

Mr. Bowyer-Lowe is a first-rate engineer of long experience, and he was in radio in the very early days. I have in my cupboard at the moment a number of condensers and a set of super-het. intermediates which bear his name and are seven or eight years old.

Not Expensive

The name is now coupled with that of A.E.D., and the firm have produced a pick-up selling at 30s., and styled the Mark III.

The makers state that their object

in designing the pick-up was to make the response a complement of the response of the average moving-coil speaker.

Low Note Compensation

Hence, given a straight-line amplifier—that is, one which magnifies all musical notes the same amount—the overall response of the pick-up, amplifier and speaker should theoretically be a level curve.

Since, however, there are certain deficiencies in the bass response of a record due to factors connected with recording, the pick-up is designed to give the usual compensation on the lower musical notes.

According to the makers, the frequency range of the Mark III pick-up

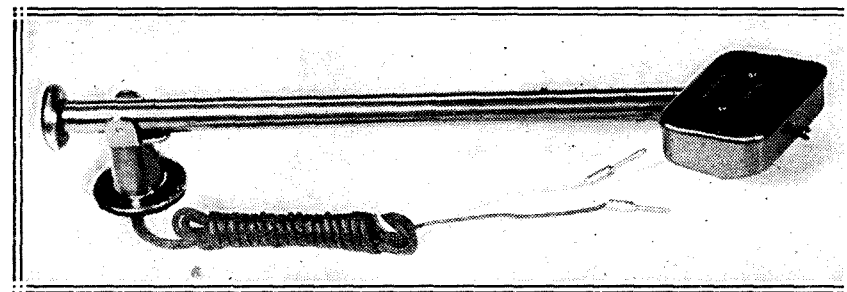
playing desk, comprising an electric motor and turntable, together with a Mark III pick-up, volume control, needle cups and motor switch, the complete unit being contained in a walnut cabinet. The unit is priced at £6 19s. 6d.

Do you use a switch or a plug and jack for changing over from radio to gramophone? Curiously enough, I have noticed a disinclination on the part of constructors to employ jack-switching. Most of them show a preference for a change-over switch. I wonder why?

Those Handy Jacks

The ordinary switch has no disadvantages, but, on the other hand, a jack is an easy method of switching,

A BONNY ADDITION TO A FAMOUS FAMILY



This fine pick-up is the new Bowyer-Lowe A.E.D. Mark III model. It is a beautifully finished job, and has a very creditable performance. Supplied complete with connecting cord, it can be fixed to almost any motor board in a few minutes.

is 25–6,000 cycles, the top cut-off being sharp in order to reduce needle-scratch.

I cannot confirm these figures at the moment, because I haven't yet had a chance to carry out the necessary tests, but the Bowyer-Lowe-A.E.D. pick-up looks good and sounds good.

The firm also lists a compact

and the simple operation of inserting the pick-up plug can be made to move a number of jack contacts.

For instance, a common form of jack is one which permits a circuit change-over in addition to making or breaking the L.T. lead to the filament (or filaments) of any valves which precede the gramophone part of the equipment.

"S.T." to MAKE GREAT

WE are able to announce in this number a scheme which should prove of incalculable benefit to readers of this magazine.

Mr. John Scott-Taggart is proposing to start almost immediately on a great tour of the country with a view to meeting readers both in the smallest villages and the largest towns.

To cover the maximum ground in a reasonable time, our famous contributor will make use of his own plane, which he will fly himself. As he is a distinguished inventor, it is not altogether surprising that he should be up-to-the-minute in his method of transport.

How Readers Will Help

The object of the tour is primarily to test out in different parts of the country, and *on readers' own aeri-als and in their own homes*, a great new set on which Mr. John Scott-Taggart has been at work since December.

Not only will the designer carry out tests on experimental models and try out "semi-final" circuit arrangements, but he will seek the general advice of readers themselves, who, after all, will be the final users of the set.

Characteristic Generosity

Mr. Scott-Taggart is that rare example of engineer and physicist whose high professional diplomas and international reputation do not deter him from placing his experience and inventive skill at the disposal of every keen wireless amateur. Although his advice has been sought by the leading radio, valve and gramophone concerns on both sides of the Atlantic, and his inventions purchased by many of them, he has with characteristic generosity acknowledged, both publicly and privately, the help he has derived from discussions with groups of readers.

Here is great news for As part of the preparation new set, Mr. John immediately proceed-Great Britain. He will test his experimental homes and on their—back in his own lab-finish- ing touches to the finest set of



"AERIAL" TOUR ^{OF} COUNTRY!

Wireless constructors! Tensions for his impending Scott-Taggart is almost on a flying tour of consult readers and models in their own own aerials. And then oratory—will come the what promises to be recent years.

This tour, which will be an "aerial" tour in both senses of the word, will more closely cement the friendly relations between "S.-T." and his great circle of readers.

Mr. Scott-Taggart's record of solid technical achievement—quite apart from his popular technical journalistic work—is apt to be forgotten as one reads, for example, his intimate, provocative and witty Armchair Notes. We shall, no doubt, be duly reminded of it when the results of this tour are seen in his new set.

Paying a "Flying" Visit

Great Britain as a whole will be covered by Mr. Scott-Taggart's tour. Details will be given of the scope of the flight when it has been completed. Obviously, only a fraction of the large number of readers of this journal can be visited. Mr. Scott-Taggart possesses a record of those who have offered him their aerials for test purposes.

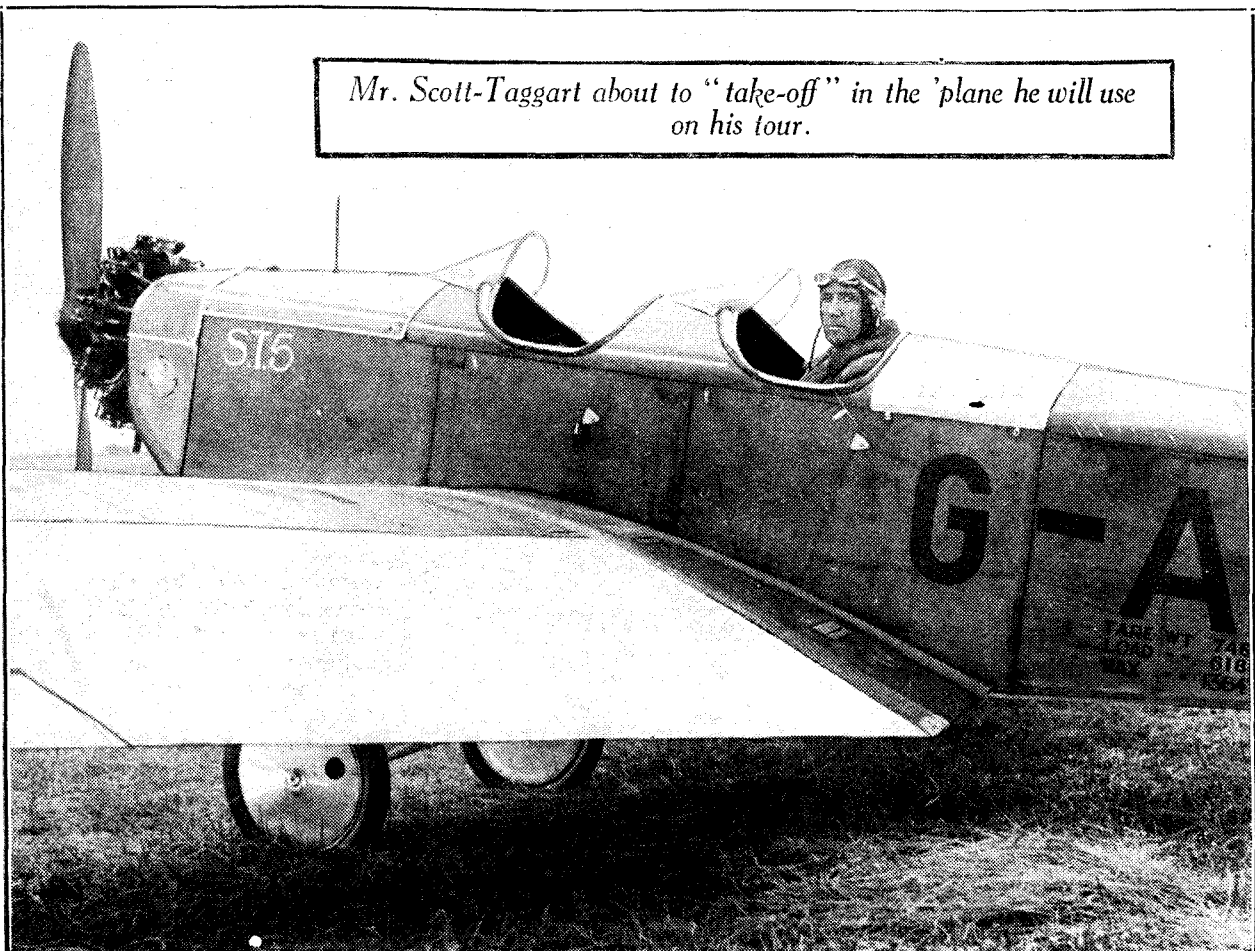
But any of these or other readers who live near to an established aerodrome, or who have a house near a large flat field suitable for a 'plane to land on, are invited to write to us, marking the envelope "Aerial Tour," and indicating local facilities. Mr. Scott-Taggart will select a list of readers on whom to pay an evening's "flying" visit and due notice will be given in each case.

How to Spot the 'Plane

It may interest readers to know that the 'plane which Mr. Scott-Taggart will fly is distinguishable by the fact that it is a monoplane, the registration letters G-AAHW being painted on the underneath of the wings. To identify the machine it is only necessary to look for the last two letters—HW.

Although his tour will involve expeditions into towns, if you live in suburbs or the country Mr. Scott-Taggart may "drop in" on you! So write *now*.

Mr. Scott-Taggart about to "take-off" in the 'plane he will use on his tour.



QUEER QUERIES

Some details about unusual radio faults and some suggestions that may help you to better radio reception.

By P. R. BIRD.

An S.G. Valve as Detector

THIS month's postbag has been an unusually well-assorted one. Here is a sample:

"It makes me real tearing mad," writes a very vitriolic soul from Sunderland, "the way these radio shops know nothing about it. I went into four different places I know, and not one of the *experts* (very sarcastically underlined!) could tell me how to re-wire for an S.G. valve as detector."

At this point the letter gets thoroughly libellous about certain radio shops, and then it suddenly diverges to switching for a pick-up. After this it goes into short-wave "overlap," and then the question of pentode output connections is unexpectedly brought forward with considerable vigour. Finally, without any warning, we are back to the vexed question of using S.G. valves as detectors.

Asking for Information

An impassioned plea for more information on this point concludes the letter; but in a slip of folded paper, evidently added as the result of an uneasy afterthought, the bold question is asked once again, and underlined: "*What are connections for S.G. valve as detector?*"

It is impossible to answer all the questions and side issues raised—and possibly some of the much maligned dealers will be in the heartiest agreement with me on *that* point!—but it certainly would appear to be advisable to explain the change-over to an S.G. valve as detector if apoplexy is to be avoided! And as many other readers have queried the point recently, the alterations in wiring are given below:

In such cases the detector is re-

moved and the original wiring to the plate terminal of the detector valveholder undone, and connected by a flex to reach to the terminal on the bulb of the S.G. valve which is to be used as the new detector.

By No Means Difficult

A separate H.T. + flex lead should then be fitted to the original "plate" terminal on the valveholder, and the plug from this will go into the H.T.B.—usually at anything between, say, 30 and 65 volts. This original "plate" terminal should also be connected to one side of a 1-mfd. (or so) condenser, the other terminal of which joins to earth.

And that completes the alterations needed.

* * *

Another letter comes from a Gloucestershire reader who has the knack of finding queer radio happenings and describing them vividly. This one was certainly a bit of a teaser to trace, and shows what little things can cause a lot of trouble.

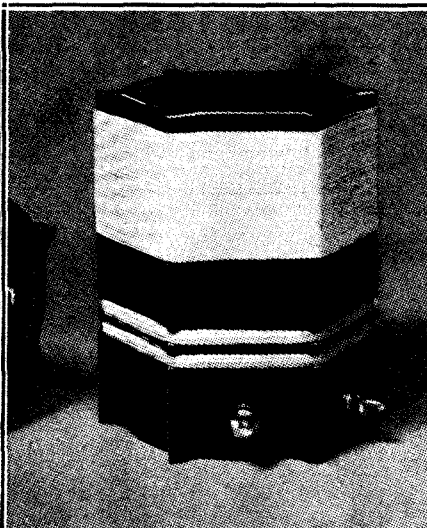
He says:

"It was a 3-valve set, using a high-tension accumulator, which gave an occasional 'click' for no apparent reason.

"The invaluable milliammeter soon showed that there was a leakage of high-tension, and every two or three seconds the meter would kick up to 5 milliamps, with the switch in the 'off' position!

"Valves were removed, everything

MAKING YOUR OWN COILS



"S.T.300" builders who wish to make their own coils are reminded that they should be constructed strictly according to the specification in last month's "Wireless Constructor" if inefficiency is to be avoided. This photograph gives you an idea how the completed aerial coil should look.

except H.T. and earth was disconnected, but still the leakage went on. Suddenly the leakage became continuous, and the pointer remained steadily at 5 milliamps.

"Disconnecting the earth wire stopped it, but directly it was connected again the leakage continued. So the set was moved from the shelf where it usually resides, to the workbench, and connected up once more, but with a dry battery this time, as the

HOW IS YOUR SET BEHAVING NOW?

If you are troubled by a radio problem, remember that "The Wireless Constructor" Technical Queries Department is fully equipped to help you.

Full details of the service, including scale of charges, can be obtained on application to the Technical Queries Department, "The Wireless Constructor," The Fleetway House, Farringdon Street, London, E.C.4.

SEND A POSTCARD, on receipt of which the necessary application form will be sent by return.

LONDON READERS, PLEASE NOTE. Application should not be made by telephone, or in person at The Fleetway House or Tallis House.

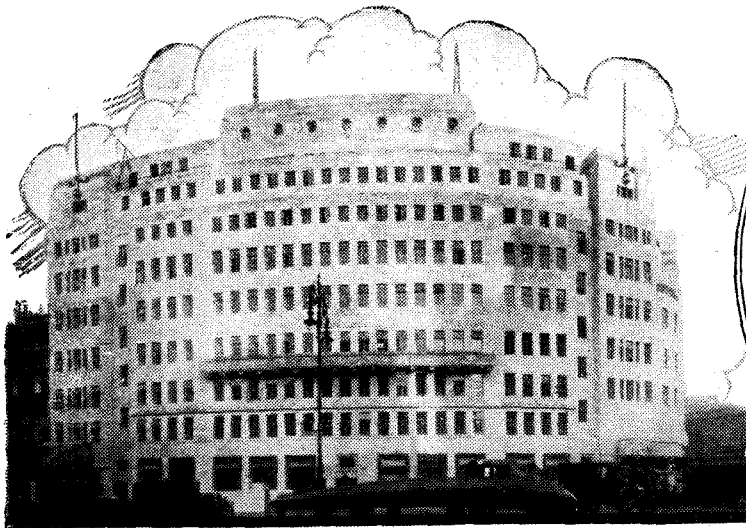
H.T. was not in the usual containers but just several loose ten-volt units standing about on a box beneath the shelf.

"Everything was all right now; no leakage at all. So once more the set was put back on its shelf, and directly the earth was connected the leakage showed up again. The dry battery was tried and the leakage was gone, so evidently the trouble was connected in some way with the high-tension accumulators.

A Scrap of Paper Causes the Trouble

"All this took a lot longer to do than it has taken to write; the set was transferred several times from its shelf to the workbench and back again before I got on the track. Eventually I started trying all terminals and connections of the high tension, when suddenly the leakage stopped, and only by pushing and jerking the ten-volt units about could I get it to start again.

"To cut a long story short, I found the wall was a little damp and a tiny scrap of wallpaper which had peeled off hung so that it touched one of the H.T. terminals; it was scarcely noticeable until looked into closely. What a simple thing to cause so much trouble!"



B.B.C. NEWS

Topical notes regarding British Broadcasting Stations and Programmes.

By Our
Special Correspondent

Empire Doubts and Delays

IT is more than strange that in this year of the Ottawa Conference and general awakening of Empire consciousness the B.B.C. should continue so silent about its new permanent short-wave service announced to begin next December.

I have called attention to this before; not on the technical side, because that, as usual, is well in hand. There is hardly ever any fault justifiably to find with Mr. Ashbridge and his devoted band of engineers.

No, the trouble appears to be administrative. There seems to be a serious hold-up somewhere; otherwise we should have had long ago an appropriate blast of publicity turning the situation to good account.

When I ask, within a few months of the transmission of the first programme, "Who is to be in charge?" all I get is, alternatively, "No statement to make" or "Undecided yet." Whispers reach me of internal struggles between rival candidates; of strenuous endeavours of present departments to hang on to the Empire work at all costs; and, lastly, and worst of all, of doubts and hesitations on policy as between Europe and the Empire overseas.

Well, if the matter does drift over the summer and there is still nothing done when Parliament meets in October, I forecast a pretty new row for the B.B.C. A wonderful chance for new prestige and achievement is being allowed to waste away.

More Adult Education

So the highbrows at B.H. have won a signal victory after a series of reverses spread over the early part of the year!

The Central Council for Broadcast

Adult Education has been granted a reprieve by the B.B.C. There was a possibility of its work being closed down this year, but the B.B.C. has now agreed to continue financial support until April, 1934, the attitude thereafter being left open.

The reprieve is probably due to the accession of the former secretary to the Council, Mr. Siepmann, to the post of Talks Director to the B.B.C. It means, of course, that a great deal of the more theoretical and less acceptable parts of the present transmissions will go on for at least two years more.

Which is a pity, and will be re-

CONTROLLING TECHNIQUE



This picture, which was taken in the "Broadcasting House" of the German State Broadcasting Co., shows the panel where music, speech and noises from different studios can be blended before transmission. It provides a striking comparison with the rows of metal-panelled control units favoured by the B.B.C.

flected as such when the Parliamentary Investigation of Broadcasting takes place in 1935, three years hence. But perhaps B.H. will have seen the danger signals by then and have cleared away this impediment to better programmes.

The Case for Wrexham

About a year ago, Mr. E. R. Appleton, the able and popular Director of B.B.C. interests in Wales and the West Country, suggested to his head office in London that there should be set up in Wrexham, North Wales, a collecting studio through which appropriate material from North Wales could be sifted for transmission not only from Cardiff and West Regional, but also from other transmitters such as North Regional and Daventry.

If adopted, this suggestion would have done a great deal to assuage the growing bitterness against the B.B.C. in North Wales. Apparently at first it looked so much as though the idea would be adopted that a hint of it got out.

Then, alas for Wales, there came the visit of inspection of Sir Charles Carpendale, Controller of the B.B.C., whose main idea is economy, and who is reputed to have little time for minorities.

The result is now pretty definite that the B.B.C. will not have a collecting studio at Wrexham, or indeed do anything more for Wales than in the past. Personally, I am glad that there is to be no more Welsh on Daventry; but I think a thundering mistake has been made to turn down the Wrexham proposal.

I wonder how the collecting studio at Sheffield can be justified if Wrexham cannot. An attitude towards

B.B.C. News—continued

Wales as a "conquered country of helots" is likely to bring trouble in its train.

Sir Henry Wood—the Annual Struggle

No sooner is Sir Henry Wood safely and triumphantly started on his thirty-eighth season of Proms. than

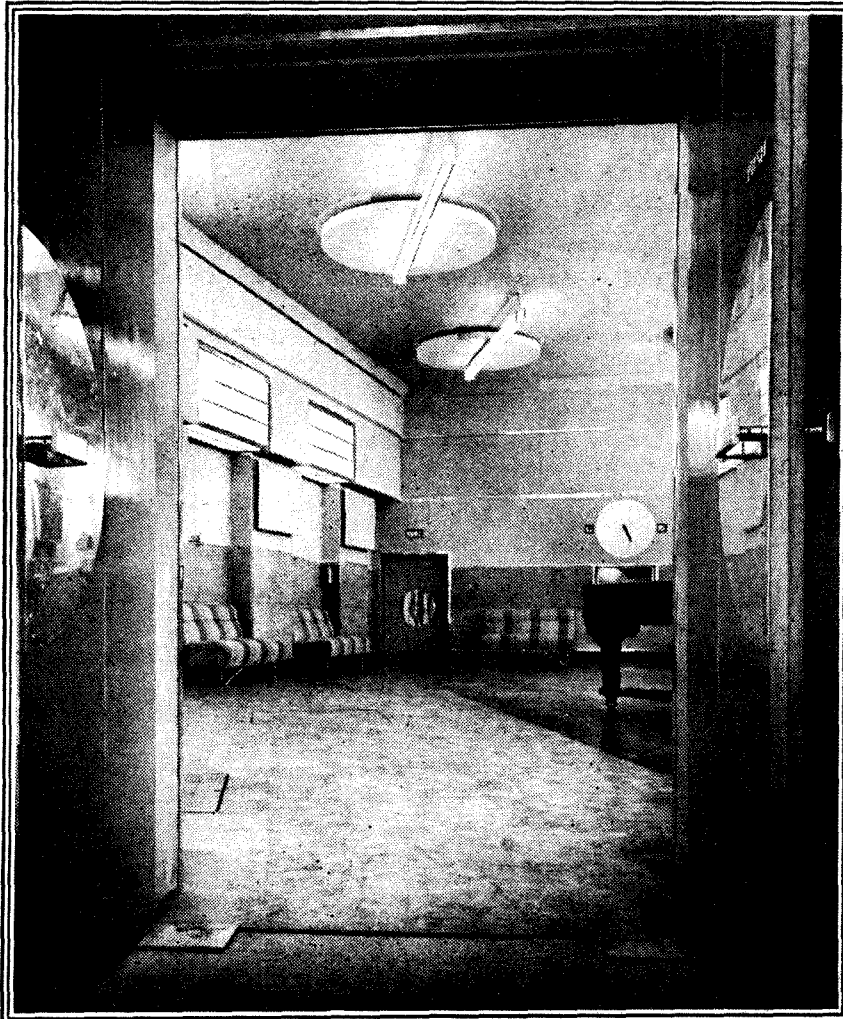
to continue, in the hope that something really big might be done ten years later on the half-century anniversary! Instead of this bold and noble attitude there are not lacking those who would throw out the great man at the earliest chance.

Fortunately, however, Dr. Adrian Boult is on the side of the angels in

old microphone personalities will disappear.

Among those who are for the high-jump I am told the following are prominent: Gerald Barry, Vernon Bartlett, Miss Sackville-West (Mrs. Harold Nicolson), Desmond Mac-Arthy, Ernest Newman, and Sir Walford Davies.

RIGHT AT THE TOP OF THE TREE



Some of the finest bands and orchestras are heard from this studio of Broadcasting House. It is specially reserved for such transmissions, and is situated right at the top of the building above all the other studios and offices. Incidentally, it is the only studio to be provided with daylight, and the lighting is so arranged that no player throws a shadow across the music of another.

there begins the old discussion of whether or not it is to be his last under B.B.C. auspices. Of course, the right line to take would be to do everything possible to make it easy for Sir Henry to go for at least two years more, making his fortieth season as glorious an affair as it should be.

Then, if Sir Henry persists in getting younger, he should be urged

this business, and as long as he is Music Director for the B.B.C. I don't think we need fear any such catastrophe as others would unwittingly invite.

The Talks' Shake-up

I hear the new Talks' Director, Mr. Charles Siepmann, is making drastic changes this autumn. Many

New Blood

In broadcasting circles these changes are regarded as signifying the completion of the taking over from Miss Matheson by Mr. Siepmann. It is not known yet what the new blood will be like, but it is believed that it will be definitely more highbrow and aloof from the contagion of popularity than the corps it replaces. Will that be an advantage?

Vernon Bartlett has been suspect of undue internationalism; too much League of Nations for the liking of either Sir John Reith or Sir Charles Cappendale.

No doubt all broadcasters are human enough to have some defects, even if it is a belief in peace; and while admitting the desirability of change, I would like to feel we shall not be saying a final farewell to these old friends of the microphone.

They should be welcomed back in due season. Also, while I am on this subject, I would mention again that it would be a graceful act on the part of the B.B.C. occasionally to arrange for "old-timers," such as Rex Palmer, to broadcast.

The Ten Years' Anniversary

The plans of the B.B.C. for a real "bumper week" of programmes to mark the tenth anniversary of their history in November are all to the good. I heartily congratulate those concerned.

From November 13th, for a week, the programme builders will be let loose to do their best regardless of expense.

Stars are already being booked all over the world. There will be gala performances of all kinds. This, if carried through in the generous spirit now envisaged, will be a real feather in the cap of the B.B.C., a great advertisement for Britain and a great boon to the wireless industry as a whole.

I, for one, shall look forward with unusual eagerness to details of this "sky's the limit" week.



The "S.T. 300"

EXHIBITION

RADIO-GRAM

The phenomenal and sweeping success of the "S.T. 300" gave rise to an insistent demand from all over the country for a radio-gram of the same type, combining super-efficiency with complete ease of construction and control. Here it is!

Designed and Described

By

JOHN SCOTT-TAGGART,
A.M.I.E.E., F.Inst.P.

It is not long ago that British family life centred round the piano. Mother played it, father sang at it and the children were glued to it.

For good or ill, those days are dead. We no longer fear and worship the tyrannical idol of wood and ivory which spelt a false respectability in an age of snobbish make-believe.

In these days when all are poor and there is a more sincere outlook on life, there is a gravitation towards a policy of buying things because

they are useful, not because they pander to our pride.

Unlimited Choice

Although there will always be many true lovers of music who will remain faithful to the piano, the majority of us have neither the inclination nor the time to do more in the musical line than to sing in our baths. We want our music ready-made; wireless and the gramophone place at our service the finest bands and orchestras in the world,

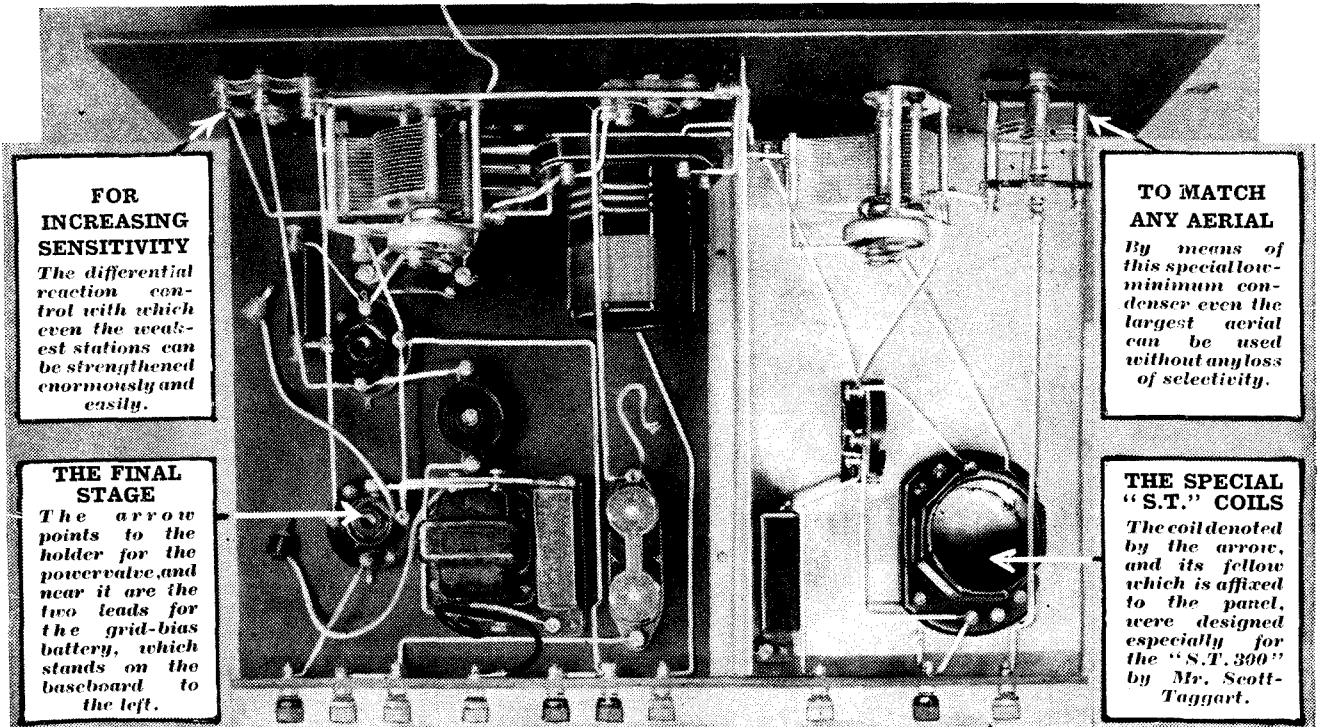
the full-throated songs of the greatest singers, and—occasionally—the flap-doodle of the greatest talkers.

But we like it. We do not yearn for the five-finger exercises of the child next-door. We want the massed bands of the Brigade of Guards.

I take no sides in the matter myself. I merely record a drift—or, rather, an avalanche—in the public taste.

In theory, I believe the growth of materialism and the mechanisation of life is a tragedy. In actual

EFFICIENTLY WIRED—BUT NO SOLDERING REQUIRED



FOR INCREASING SENSITIVITY

The differential reaction control with which even the weakest stations can be strengthened enormously and easily.

THE FINAL STAGE

The arrow points to the holder for the power valve, and near it are the two leads for the grid-bias battery, which stands on the baseboard to the left.

TO MATCH ANY AERIAL

By means of this special low-minimum condenser even the largest aerial can be used without any loss of selectivity.

THE SPECIAL "S.T." COILS

The coil denoted by the arrow, and its fellow which is affixed to the panel, were designed especially for the "S.T. 300" by Mr. Scott-Taggart.

The "S.T.300" Exhibition Radio-Gram—continued

practice I design wireless sets, fly aeroplanes and shave with an electric razor.

And so it is with most of us. The dying notes of the piano cannot easily be heard above the booming of the competing cinema organ. Meanwhile, the radio-gramophone is firmly and surely elbowing its way into the house.

It is not surprising in these circumstances that a demand for an "S.T.300" radio-gram should have sprung up, both by those already with sets and those who, when embarking on the construction of a new receiver, desire to combine with it a thoroughly effective electrically-reproducing gramophone.

To-day I am satisfying that demand.

The complete outfit is cheap. It is, in my opinion, as cheap almost as it possibly could be.

Selected Components

The very best apparatus is used throughout. Slight economies may be effected here and there, but, unless I have previously used and recommended other apparatus in earlier forms of the "S.T.300," the inexperienced reader will be very well advised to keep to the design.

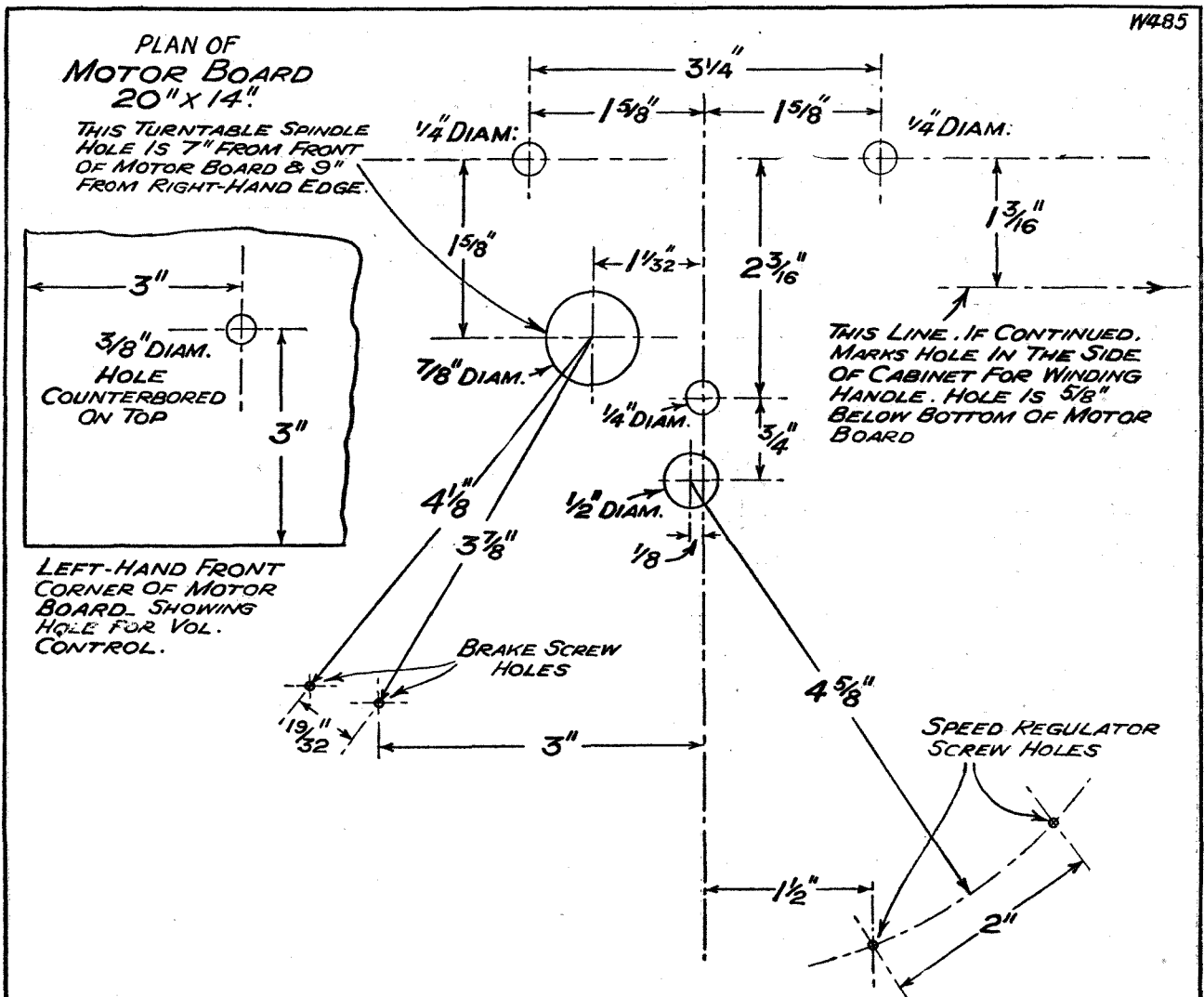
The cabinet chosen is handsome without being sumptuous. The reader may choose other types, but will be at a disadvantage when it comes to

a question of rapid construction, as the special guide—in so far as concerns the cabinet—refers only to the one used.

The Rapid Construction Guide System which I introduced with the "S.T.300" has proved so extremely popular that I have adopted it again.

The problems of "Where do I start?" "What do I do next?" and "Where should this thing go?" are solved for the most inexperienced tyro. In fact, the whole constructional details are given so minutely (after a considerable amount of trouble on my part, incidentally!) that I can only add here a few general remarks.

RECORD REPRODUCTION IS CONTROLLED FROM THE MOTOR-BOARD



All the dimensions required when preparing the board on which the motor, pick-up, volume-control, etc., are mounted, can be obtained from this diagram. On another page a full-size sketch showing the motor-fixing holes is given.

A FULL LIST OF THE RECOMMENDED COMPONENTS

(All components with controls on the panel should preferably be bought with mahogany-finish knobs.)

Mahogany-finish panel, 18 in. × 8 in. (Permol, or Becol, Peto-Scott, Ready Radio, Wearite, Burne-Jones, Goltone).

1 Strip of ebonite for terminal strip (Goltone), 16 in. × 1½ in.

1 Baseboard, 16 in. × 10 in. × ¾ in. (laminated wood).

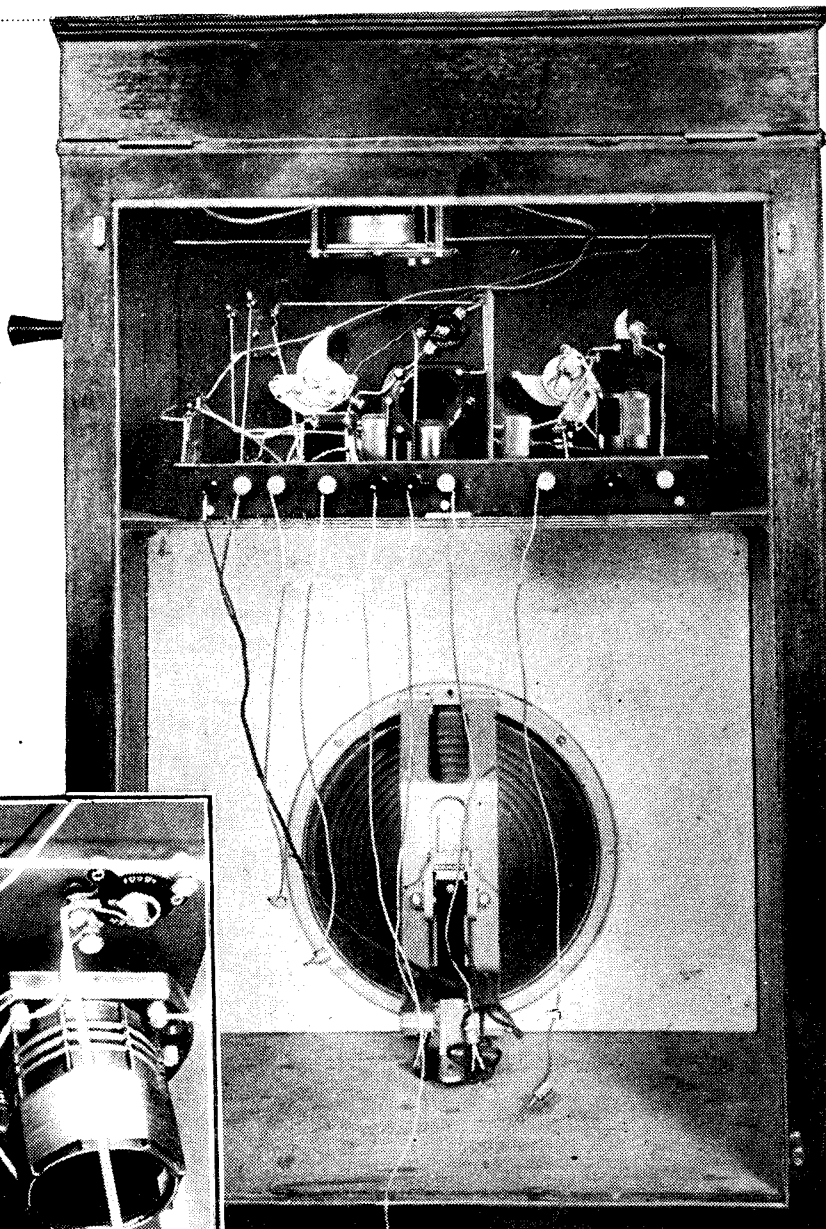
1 Radio-gramophone oak cabinet (Peto-Scott; specify this radio-gram type when ordering).

2 .0005-mfd. variable condensers, slow-motion type (Ormond new type R.493, or Lotus, Telsen, Polar No. 2).

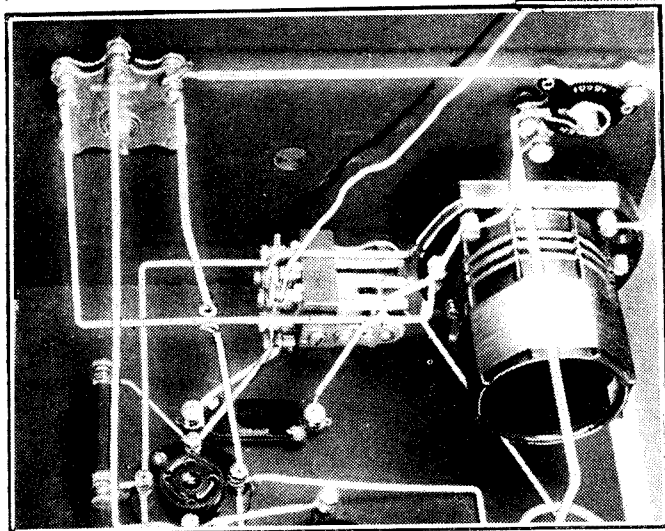
1 Midget-type .00004-mfd. variable air-dielectric condenser (J.B. Midget, or Peto-Scott, Ready Radio, Wave-master).

1 .00015-mfd. differential reaction condenser (Ready Radio, or Telsen, Polar, J.B., Igranic, Dubilier, Cyldon, Formo).

1 .0001-mfd. differential condenser (Telsen, or Ready Radio, J.B., Polar, Cyldon, Lotus, Igranic, Wave-master).



For the left-hand picture the condenser was removed to show the switch wiring. Above is a general view from the back, showing the flexible lead arrangements.



2 Special "S.T.300" coils (Colvern, or Wearite, Telsen, Tunewell, Goltone, Leweos, Sovereign, Cordo).

1 Horizontal-type valve holder (W.B. "Universal," or Parex).

2 Four-pin valve holders (Lotus type V.H.K., or Graham Farish, Telsen, Wearite, Bulgin, W.B., Parex, Formo, Clix).

1 S.G. H.F. choke (Telsen Binocular, or Leweos type II, Ready Radio, R.I. Dual-Astatic, Sovereign Senior).

1 Reaction-type H.F. choke (Leweos, or Lissen, Peto-Scott, Telsen, Ready Radio, Varley, Goltone binocular, Lotus, Parex, Wearite, R.I., Magnum, Sovereign, Watmel, Atlas, Graham Farish, Tunewell).

1 Radio-gramophone switch (Wearite type I.23, with terminals).

1 50,000-ohm volume control (Wearite type Q.V.C., or Colvern, Magnum, Igranic, Sovereign, Clarostat).

1 Three-point switch (Ready Radio, or

Lissen, Tunewell; other types tested have proved unsuitable for this set).

1 L.F. transformer (Lissen Hypernik, or Varley Nielel, R.I. Hypermite, Ferranti A.F.3).

1 .0001-mfd. fixed condenser (Dubilier type 670, T.C.C., Lissen, Telsen, Ferranti, Igranic, Formo, Goltone, Sovereign, Graham Farish).

1 1-megohm leak with terminals (Graham Farish Ohmite, Dubilier, Loewe, Igranic, Ferranti with holder, Mullard).

2 1-mfd. condensers (Telsen, or T.C.C., Dubilier, Helsby, Hydra, Sovereign, Formo, Lissen, Igranic).

1 20,000-ohm Spaghetti (Leweos, or Bulgin, Sovereign, Varley, Telsen, Magnum, Igranic, Graham Farish, Peto-Scott, Goltone, Ready Radio, Lissen).

10 Indicating terminals (Bulgin, Belling & Lee, Eelex, Igranic, Clix).

1 "S.T.300" radio-gram screen, 10 in. × 6 in., as per drawing. A standard "S.T.300" screen may be used with extra notch. (Magnum, or Ready Radio, Peto-Scott, Wearite, etc.)

1 Sheet copper foil, 10 in. × 7 in.

Insulated wire (Lacoline, Quickwyre, bell-wire), screws.

3 G.B. wander-plugs, one+ and two- (Belling & Lee, Goltone, Eelex, Clix).

4 H.T. wander-plugs, H.T.-, H.T.+1, H.T.+2, H.T.+3 (Belling & Lee, Eelex, Goltone, Clix).

1 B.T.-H. Minor pick-up and tone-arm.

1 Blue Spot 100U chassis (See Accessories List).

1 Garrard No. 20 spring motor, complete. (Specify "long handle" when ordering.)

Builders may desire to try to get hold of a full description of the "S.T.300" (Feb. and June CONSTRUCTOR), as the set part is very similar. A radio-gram switch, however, is incorporated, providing "radio," "off" and "gram." No soldering is required, by the way, in any part of the outfit.

As the switch is wired before the tuning condenser above it is fitted, the wiring to it is very much easier than would appear from the drawings or photographs of the completed set.

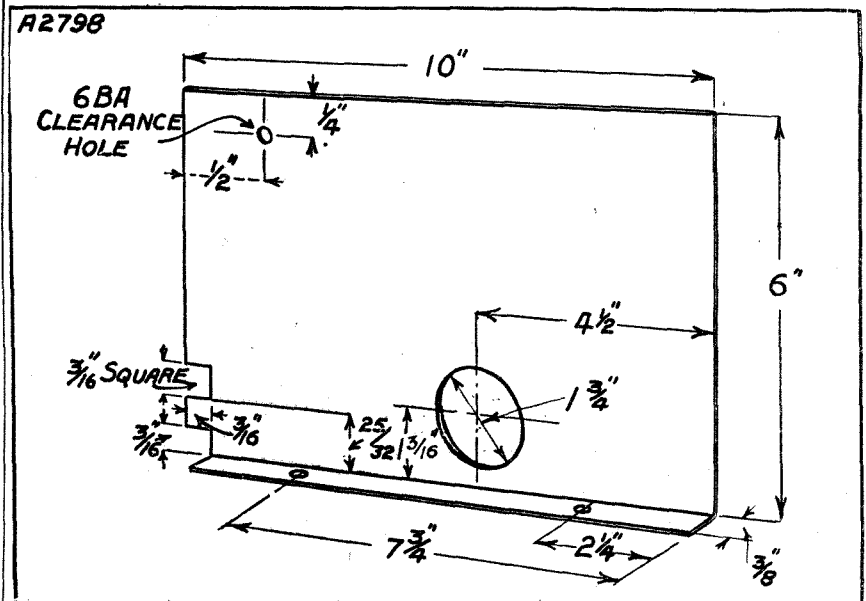
It Prevents Noises

Readers will note from the circuit that I leave the grid leak permanently across grid and filament. This results in a consumption of current from the grid-bias battery, but only while the gramophone is in use.

I had to choose between letting the set emit noises in questionable taste during switching operations or permitting the passage of about three millionths of an ampere through the bias battery. The bias battery will certainly die of old age before it is run down!

By the way, you may note that a clear corner of the radio-gram switch has been left for the H.F. leads. I have a great reverence for H.F. points, and you will find in all my

PREPARING THE ALUMINIUM SCREEN



Don't think that "any old measurement will do" for the all-important screening plate. All the dimensions have been worked out in detail for your guidance, and they should be followed absolutely if the maximum efficiency is to result. The hole for the S.G. valve is especially important.

designs I bear this in mind. Where wires are ever close to each other you will find them at earth potential.

Follow the Guide

There are numerous reasons for doing things in a certain order or way as given in my guide. It would

SUITABLE ACCESSORIES

- Valves. Cossor 220S.G., 210H.F., 220P.A.; Osram S.22, L.2/B., L.P.2; Mullard P.M.12A, P.M.2D.X., P.M.2A; Mazda S.G.215, L.210, P.220; Marconi S.22, L.2/B., L.P.2.

No significance whatever attaches to the order of makes. The above list is for most sensitive radio reception. Readers are strongly advised to write to the makers for advice, as types are changing and improving at this season. A larger output valve (if the 2,000-ohm type, e.g. P.M.202) will give louder output from strong transmissions and records.

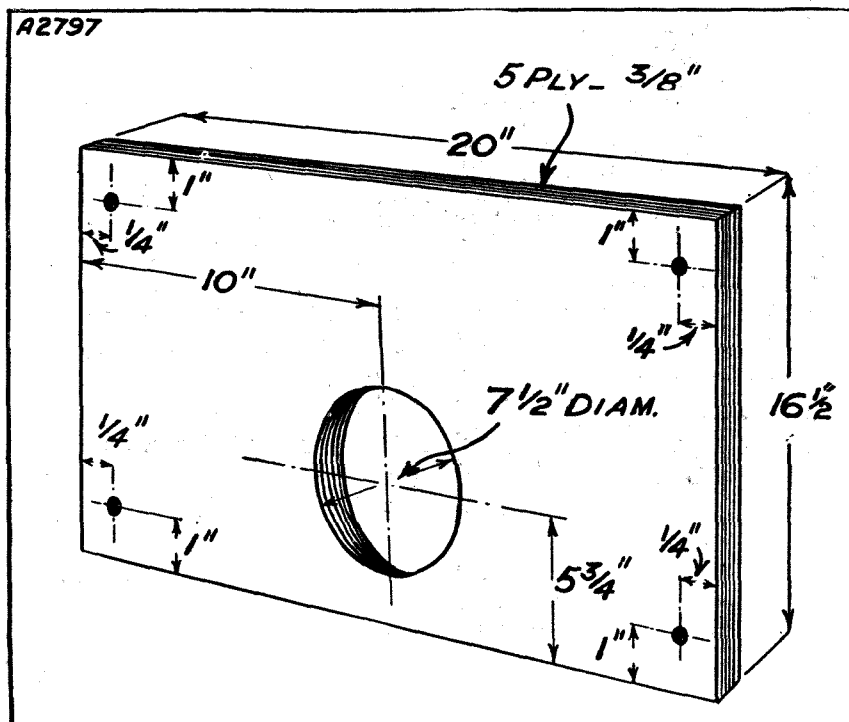
- Loudspeakers. Blue Spot 100U., or H.M.V. Celestion, Marconiphone, W.B. Epoch, R. & A., B.T.-H., Igranich.

Batteries. The larger the better is a standard rule. (Full 120 volts is desirable.) Lissen, Pertrix, Ever Ready, Drydex, Siemens, Magnet, Marconiphone, Cossor.

Grid-bias Battery. 9-volt. (See above makes.)

Mains Units. Should be capable of giving 25 milliamps. at 120 volts, but readers are advised to ask advice of one or other of following makers: Atlas, Heayberd, R.I., Tunewell, Lotus, Tannoy, Regentone, Formo.

BUILDING THE BAFFLE



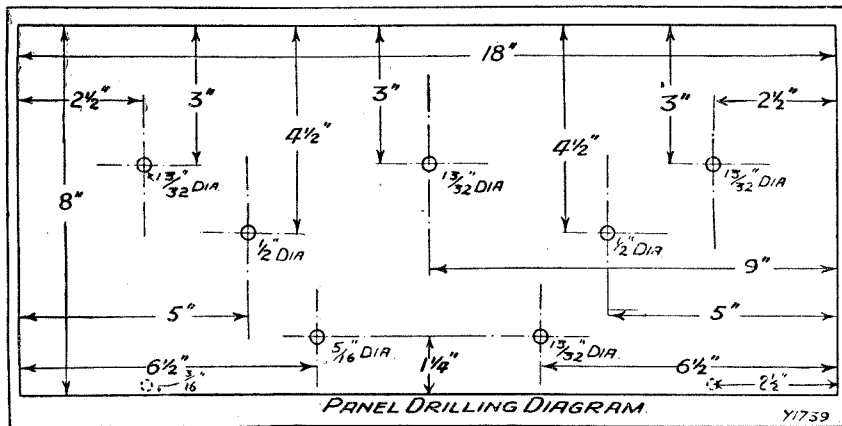
Not the least important part of your radio-gram is the baffle-board to which you will eventually fix the speaker. If you cut and drill the board as shown here it will exactly fit in the lower half of your cabinet and provide a very tidy-looking result. Note the positions of the holes for the four fixing screws.

take a great deal of space to explain each practical point. You will find many of them out by trying a different order!

If you come to Olympia you will be able to inspect the radio-gram for yourself and see how very easy it is to make.

One important point about it is that the same cabinet will house any set with a panel measuring

TAKE PARTICULAR CARE WITH THIS



Remember, the panel is the one part of the set that you have always to look at! So be sure that the holes for the various controls are drilled in the right places first time. Thanks to the symmetrical arrangement of the components and the controls, you should have no trouble with this.

18 in. by 8 in.; so you will not be tied to a small panel size. Any new set will readily slip in from the back.

In the case of the present receiver, the panel is larger than the baseboard, in order to fill the "frame."

A Few Warnings!

And now some warnings! The set has such a silent background that after using the gramophone you may quite likely forget to turn the radiogram switch to "off." One is so used to ordinary gramophones that this mistake is often made by radiogram owners.

Second warning: Do not imagine that the "S.T.300" will work equally well with any kind of transformers, wave-change switches (other types than those given will probably lead to instability, etc.), and S.G. chokes. Beware of faulty spaghetts and dud grid leaks. Examine all valve holders in your hand and try valves in them.

Third warning: Remember that a cheap speaker should never be bought unless heard in comparison with others; on the other hand, you may care to trust my judgment in this matter, where I have actually used a particular speaker in a set. This does not imply that no others are equally good.

Regarding the Valves

Finally, about valves. The only point you need to consider is whether you will sacrifice a little strength on weaker stations in order to get extra loud volume from records. If so, I advise a power valve of about 2,000 ohms impedance.

For smaller volume and greater radio sensitivity a small power

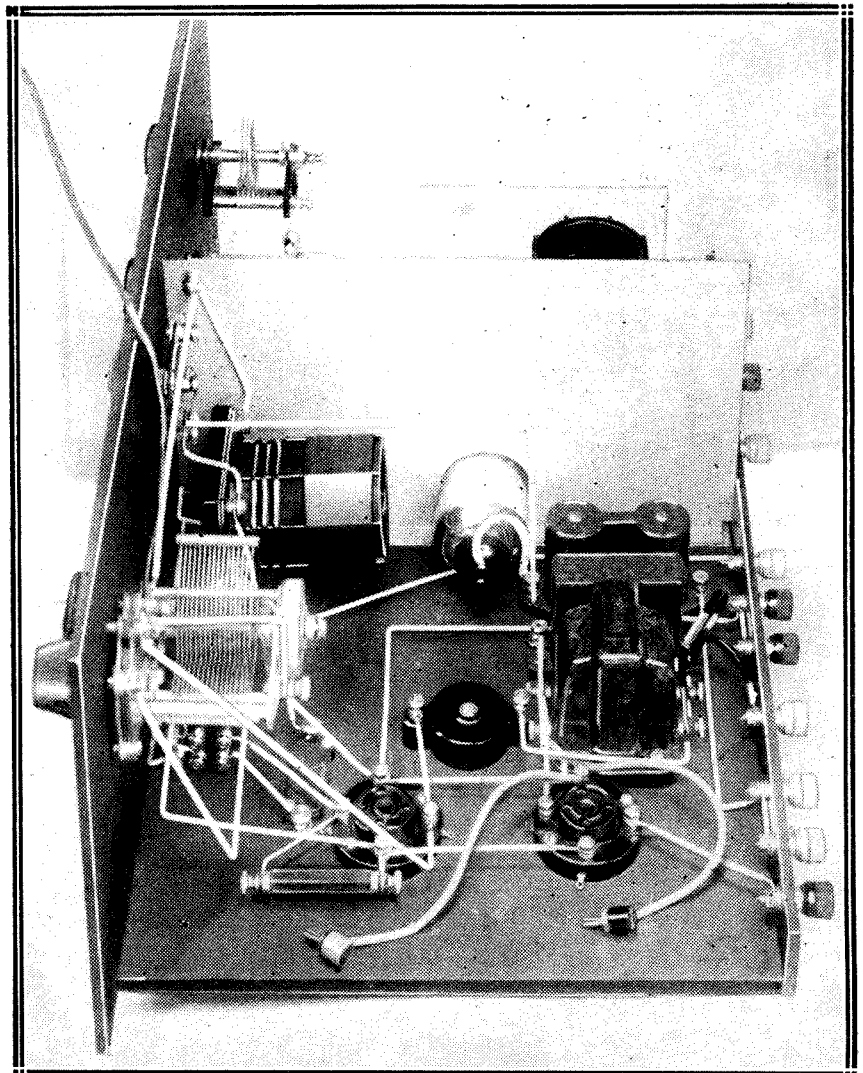
valve (i.e. about 3,600 ohms impedance) is advised.

RAPID CONSTRUCTION GUIDE
 This is another of Mr. Scott-Taggart's famous lists for the speedy and easy construction of his sets. Every detail of the steps to be taken in building the "S.T.300" Exhibition Radio-Gram is here given. Tick off each step as taken.

BUILD THE SET PART FIRST AS FOLLOWS:

- (a) Mark out and drill panel (or buy same).
- (b) Mark out and drill terminal strip (or buy same).
- (c) Prepare holes in baseboard for anode-coil supporting pillars.

THERE'S A PLACE FOR EVERYTHING



An excellent photograph of the L.F. end of the set, showing the simple layout and the unusually direct wiring. In the foreground, and below the condenser, you will notice the all-important radio-record change-over switch, which is so arranged that there is no annoying "rasping" when the knob is turned.

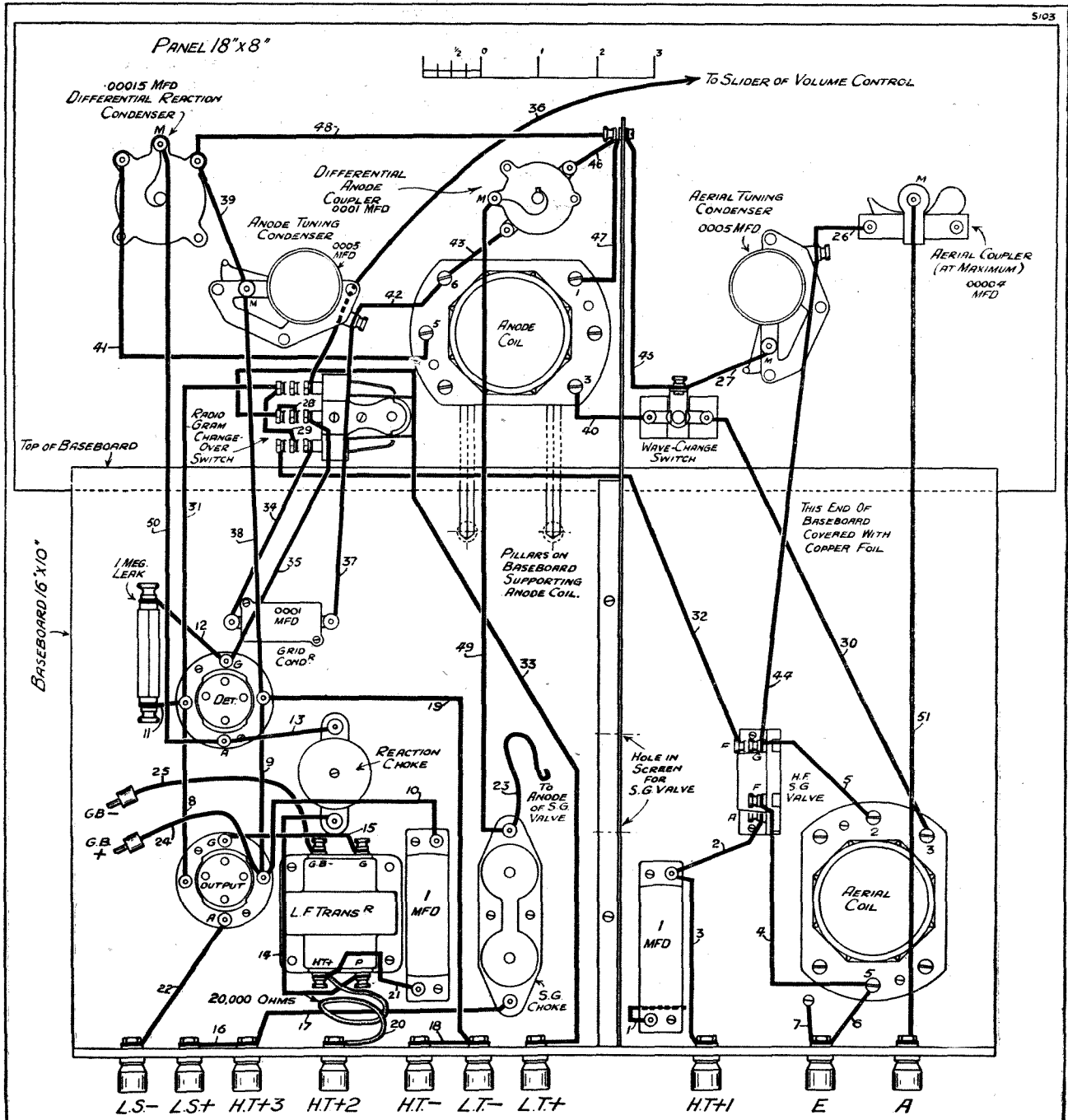
The "S.T.300" Exhibition Radio-Gram—continued

- (d) Prepare notches in vertical screen (unless bought ready-prepared). Position and sizes of notches need only be approximate.
A standard "S.T.300" screen may be used if extra notch is filed.
- (e) Fix terminal in vertical screen.

- (f) Lay copper sheet on baseboard, and screw down screened-grid valve-holder, the screws going through into the baseboard. (As its size indicates, the copper sheet covers the whole of the baseboard up to where the vertical screen will come; the "L.F." side of the baseboard is not covered.)

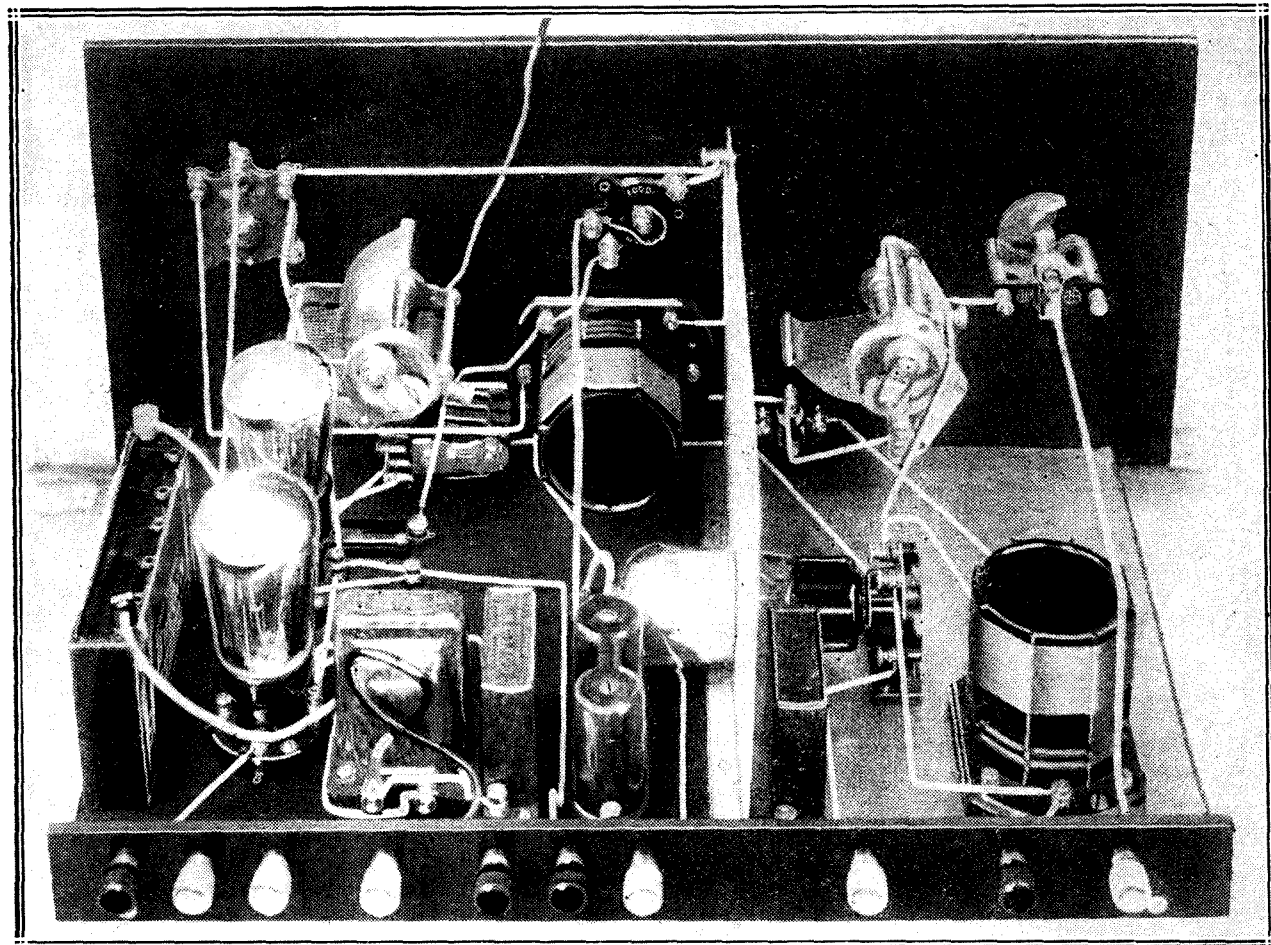
(In my set I removed, for this purpose, the unused terminal C on the W.B. universal valve-holder, discarding the bent metal socket.)

FOLLOW THE NUMBERS—THEY LEAD TO SUCCESS!



Can you possibly imagine a wiring diagram that would be easier to understand? All you have to do is to follow the numbers and then you are bound to get it right, for in addition to this comprehensive diagram there is Mr. Scott-Taggart's Rapid Construction Guide to help you. It should be virtually impossible for you to make a mistake.

The "S.T.300" Exhibition Radio-Gram—continued



THE STAR SET OF THE YEAR

This view of the receiver part of the instrument will soon convince readers as to the simplicity of the construction. The set is divided into two sections by a vertical screen, the right-hand end accommodating the S.G. section, and the left-hand end the detector and power-amplifying stages. When the radio-gram switch is over to "Gram" the detector valve becomes an L.F. amplifier, so you will see that there has been no waste.

- (g) Clean copper sheet (with emery paper) where it will later be held down by ledge of vertical screen. Clean patches of copper sheet where connections with wires (1) and (7) will be made.
- (h) Screw down 1-mfd. Mansbridge-type condenser on copper sheet, wire (1) having been previously bared and cleaned, and then tucked under the condenser. Wire (1) is thus pressed in contact with a cleaned patch of copper sheet.
- (j) Prepare holes through copper sheet and into baseboard for fixing vertical screen. (Vertical screen is not screwed down at this stage.)
- (k) Fix aerial coil, screened-grid choke, the other 1 mfd. Mansbridge-type condenser, L.F. transformer, reaction choke, detector valve-holder, output

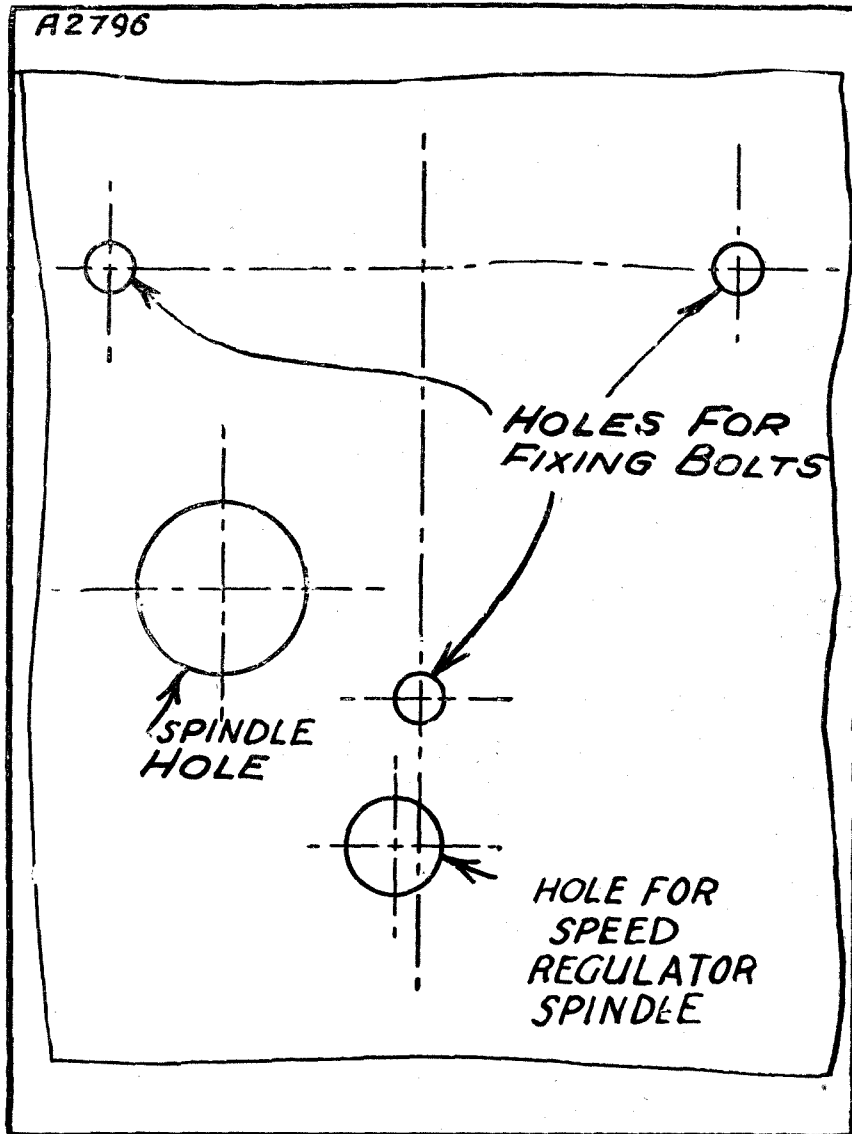
valve-holder, grid condenser (-0001 mfd.).

- (l) Screw terminal strip to edge of baseboard with three screws and fit terminals loosely.
- (m) Wire baseboard components with stiffish insulated wire (bell-wire will do, or one of the advertised varieties). To save the reader time I have numbered the wires in their most convenient order for connecting. Use the following list to find the wires quickly on the layout drawing, and if in doubt as to their shape consult the photographs. The set is almost identical with the original "S.T.300" (February or June issues of THE WIRELESS CONSTRUCTOR), except for the radio-gram switch, so readers may consult the perspective drawings in the original description. You

need not read the wording after the number of the wire if you can find the wire without. But tick off the numbers on this list as you complete each connection.

1. One terminal of 1-mfd. condenser to copper sheet (a bare wire is simply tucked under condenser, as explained already).
2. Other side of condenser to screening-grid terminal (marked A) on S.G. valve-holder.
3. H.T.+1 terminal to the 1-mfd. condenser.
4. Upper filament F of S.G. valve-holder to No. 5 terminal of aerial coil.
5. Aerial coil terminal No. 2 to control grid (marked G) of S.G. valve-holder.
6. Aerial coil terminal No. 5 to earth terminal.

THE MOTOR-MOUNTING TEMPLATE



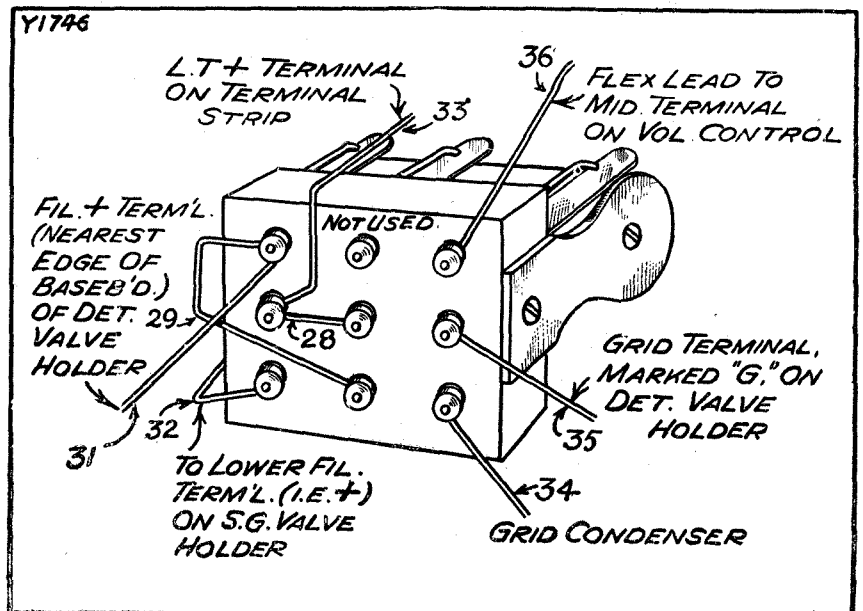
9. Detector valve filament negative to output valve filament negative.
10. Output valve filament negative to one side of neighbouring 1-mfd. Mansbridge-type condenser.
11. Detector valve filament positive to one side of 1-megohm grid leak.
12. Other side of grid leak to detector valve grid terminal (marked G).
13. Detector valve anode terminal A to reaction choke.
14. Other side of reaction choke to L.F. transformer terminal P.
15. Output valve grid terminal G to grid terminal G on L.F. transformer.
16. L.S.+ terminal to H.T.+3 terminal.
17. H.T.+3 terminal to S.G. choke.
18. H.T.—terminal to L.T.—terminal.
19. L.T.—terminal to detector valve filament negative.
20. This is a 20,000-ohm Spaghetti wire joining H.T.+2 terminal to H.T.+ terminal on L.F. transformer.
21. L.F. transformer terminal marked H.T.+ to 1-mfd. condenser.
22. L.S.— terminal to output valve anode terminal (marked A).
23. Piece of insulated wire (preferably flexible) connected to S.G. choke. The loose end goes to the anode terminal on the screened-grid valve when set is finished.
24. Grid-bias positive flex to output valve negative.

The above sketch is a full-size drilling template for the fitting of the clockwork motor to the motor-board. With its aid you will have no difficulty in making the necessary holes at exactly the right places.

7. Earth terminal to earthing screw on copper sheet. (This earthing screw is simply a brass screw going through the copper sheet into the baseboard; this earthing of the copper sheet is essential.)
8. Detector valve filament positive to output valve filament positive (the positive terminals in both cases are those nearer the edge of the baseboard).

The diagram to the right clearly shows all the connections to the radio-gram on-off switch. As this switch is wired before the tuning-condenser that comes above it, the wiring to it is very much easier than would appear from the drawings or photographs of the completed set.

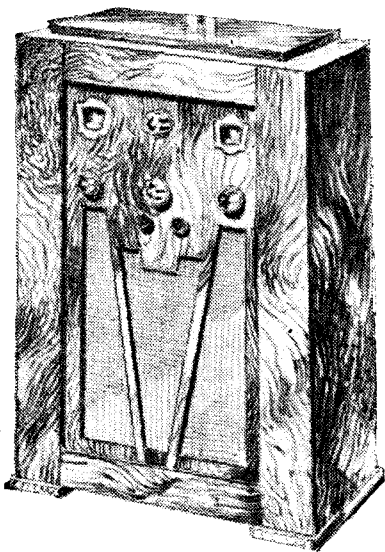
SHOWS WHICH SWITCH IS WHICH



30 STATIONS GUARANTEED

with the METEOR S.G.3

A new chassis-type 3-valve Kit set covering ALL wavelengths - long medium and ultra short. The guaranteed reception of 30 stations is based on its performance under the very worst conditions. You may well expect to get double this number of medium and long wave stations as well as many on the ultra short wave band. The selectivity, too, is of the highest and the quality so superb that in order to do full justice to the set we have fitted the cabinet with a new moving coil speaker as used in receivers costing over 20 guineas.



"METEOR" S.G.3 KIT

Complete Kit, together with three Mullard Valves **£5:7:6**

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"METEOR" S.G.3 CABINET MODEL

Beautiful walnut cabinet, fitted with Mullard P.M. Moving-Coil Speaker, and complete with Kit and valves.

£8:17:6

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For the constructor who wants something better!

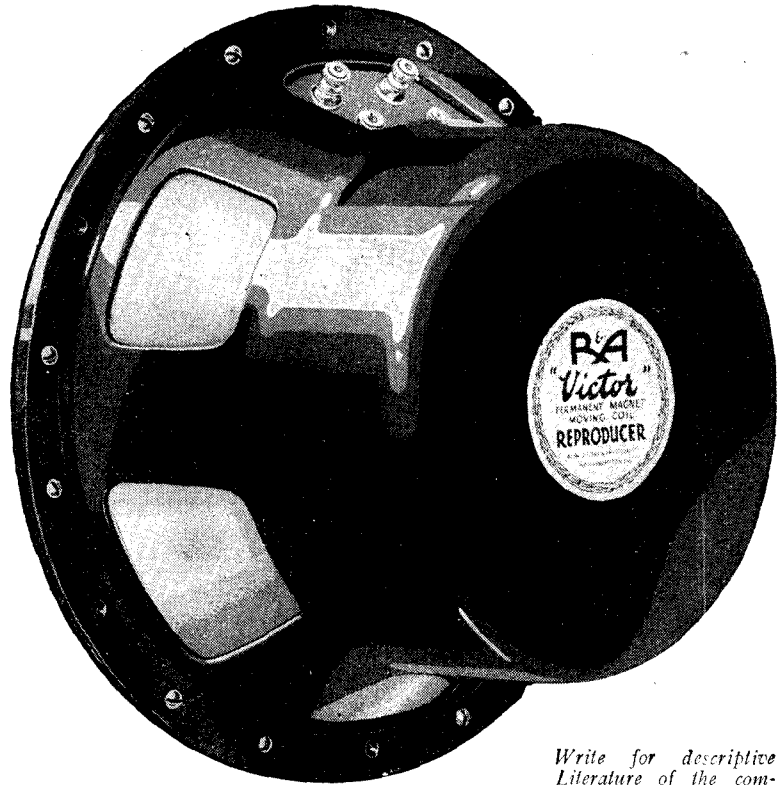
To **READY RADIO LTD.**,
Eastnor House, Blackheath, S.E.3.
Please send me my **FREE** copy of the
"METEOR" S.G.3 Book.

Name.....
Address.....

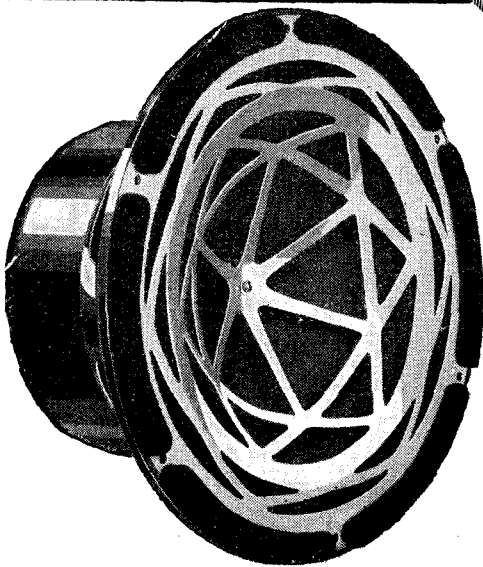


Go to your radio dealer, or send coupon for your **FREE** copy of the **METEOR S.G.3** book, describing and giving complete building instructions for this wonderful set.

**On Stand
69**
GRAND HALL · OLYMPIA
**a new
development
in
Moving Coil
Reproducers
will be exhibited —**



*Write for descriptive
Literature of the com-
plete range of R. & A.
Reproducers.*



The **R & A**
"VICTOR"
**PERMANENT MAGNET MOVING COIL
REPRODUCER DE-LUXE**

The R. & A. 'VICTOR' is a de-luxe reproducer in every sense of the word. Quite apart from its unique design, its massive construction and its flawless finish, the reproduction of speech and music from the lowest to the highest frequency is a revelation. Moreover, its transformer with 6 ratios permits accurate matching of the speech coil with every type of power valve, including pentodes.

If you are interested in quality reproduction, we invite you to a demonstration on our Stand No. 69, Olympia. We should like your candid opinion of the 'VICTOR,' and to this end we invite you to state briefly on a sheet of notepaper your impressions, after having inspected it and heard its performance.

We will present a 'VICTOR' in de-luxe Cabinet, or cheque for 5 guineas, at entrant's option, to the writer who sends what, in our opinion, is the most apt, comprehensive and *impartial* criticism limited to 100 words, provided the entry form at the foot of this page is attached thereto.

Criticisms must reach us not later than the 5th September, and the result will be published in the 'Wireless World,' 16th September issue.

The staff and employees of R. & A., Ltd., and the company's Advertising Agents are excluded from this invitation.

BRIEF SPECIFICATION.

The 'VICTOR' P.M.M.C. Reproducer-de-Luxe has a Cobalt Steel Magnet giving a flux density of 8,000 lines per sq. centimetre. Average speech coil impedance 5.5 ohms. The magnet and 6-ratio transformer are totally enclosed, and the cadmium-plated grille and armoured construction eliminate all possibility of damage to diaphragm and magnet. Dimensions, 10 $\frac{3}{4}$ " x 5 $\frac{3}{4}$ " deep.

**REPRODUCERS & AMPLIFIERS, LTD.,
FREDERICK STREET, WOLVERHAMPTON.**

*This portion to be attached to
your criticism of the 'VICTOR.'*

Post to reach us not later than 5th September.

(WIRELESS CONSTRUCTOR)

70%
including
6 RATIO TRANSFORMER

The "S.T.300" Exhibition Radio-Gram—continued

25. Grid-bias negative flex to G.B.—terminal on L.F. transformer. THIS CONCLUDES THE BASEBOARD WIRING.

The next step is to fit components to panel, but you should fit radio-gram switch loosely and omit fitting anode

NOW FIX ANODE TUNING CONDENSER.

37. Grid condenser to anode tuning condenser fixed plates.

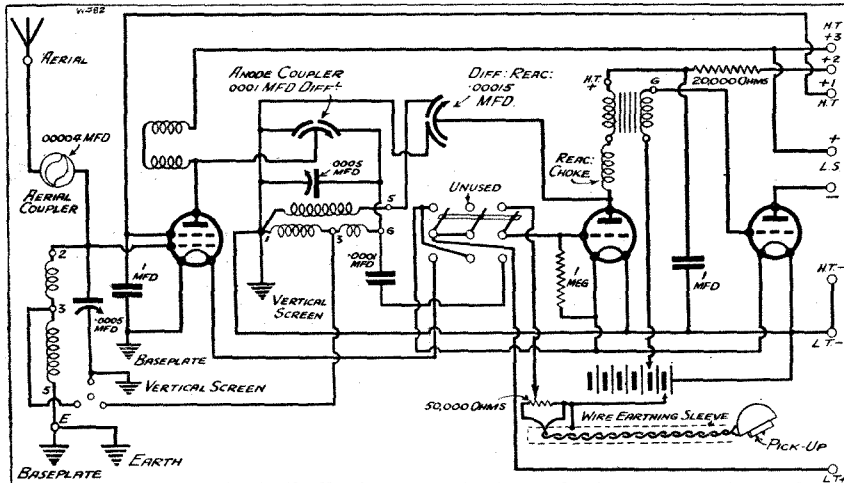
38. Detector valve filament negative to anode tuning condenser (moving plates terminal).

in manner shown in sketch, February WIRELESS CONSTRUCTOR, but method is really obvious; the pillars are supplied with the coils). Then place coil in position, and fix it to baseboard by tightening up the screws from underneath.

40. Anode coil terminal No. 3 to wave-change switch (keeping wire close to panel where specially provided nick in screen will come).

41. Anode coil terminal No. 5 to differential reaction condenser (one set of fixed plates).

BASED ON THE WORLD-FAMED "S.T.300"



Readers will immediately recognise the similarity of the circuit to that of the famous three-valve "S.T. 300" set. The difference lies in the special control switch which, besides changing from radio to gram, switches the receiver on and off. The H.F. valve is automatically cut out of circuit when records are being played.

tuning condenser. Then do this panel wiring:

- 26. Aerial coupler (00004 mfd.) fixed plates terminal to aerial tuning condenser (fixed plates terminal).
- 27. Aerial tuning condenser (moving plates terminal) to top terminal of wave-change switch.
- 28. Viewing radio-gram switch as in sketch, left middle terminal to centre terminal.
- 29. Top left-hand terminal of switch to bottom middle terminal.

NOW SCREW PANEL TO BASEBOARD (THREE SCREWS).

- 30. Aerial coil terminal No. 3 to wave-change switch.
- 31. Detector valve filament positive to radio-gram switch.
- 32. Radio-gram switch to low filament terminal F on S.G. valve-holder. (For all connections to radio-gram switch see sketch.)
- 33. Radio-gram switch to L.T.+ terminal on terminal strip.
- 34. Radio-gram switch to grid condenser (0001 mfd.).
- 35. Radio-gram switch to detector valve grid terminal (marked G).
- 36. A 16-in. flexible lead from the radio-gram switch. Loose end is later connected to volume control.

39. Anode tuning condenser (moving plates terminal) to one set fixed plates of reaction condenser.

FIX ANODE COIL IN POSITION. First attach pillars to coil former

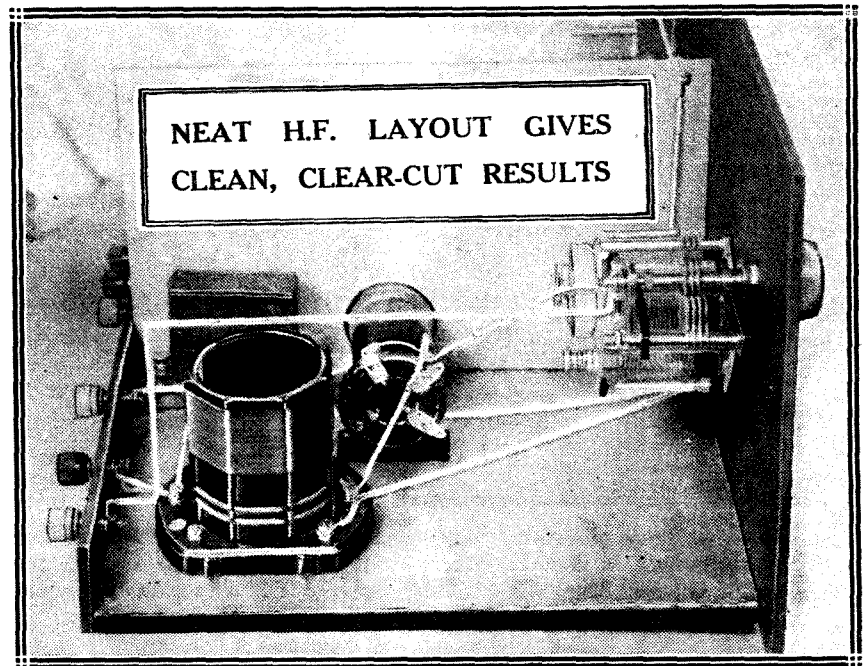
The Last Few Wires

- 42. Anode tuning condenser (fixed plates terminal) to anode coil terminal No. 6.
- 43. Anode coil terminal No. 6 to anode coupler (one set fixed plates).
- 44. Control grid terminal G of S.G. valve holder to aerial tuning condenser (fixed plates terminal).

NOW FIX VERTICAL SCREEN.

The middle fixing screw of terminal strip may be slacked off, if necessary, while fixing screen.

- 45. Top terminal of wave-change switch to terminal on vertical screen.
- 46. Anode coupler (one set of fixed



The H.F. section of the receiver, which has been very carefully planned. The designer writes: "I have a great reverence for H.F. points." Note how well the vital leads are spaced.

The "S.T.300" Exhibition Radio-Gram—continued

- plates) to terminal on vertical screen.
47. Anode coil terminal No. 1 to terminal on screen.
48. Reaction condenser (one set fixed plates) to terminal on vertical screen.

NOW PASS FLEX 36 UNDER ANODE TUNING CONDENSER and under wire (48). It is desirable that the flex should not touch the

51. Aerial terminal to aerial coupler. THIS FINISHES THE SET PART.

- (n) Remove screws from lower end of lid support and lay lid gently back.

The horizontal board to which the gramophone motor is attached is known as the motor-board, and this should now be marked and drilled. To do this, first mark the position of the turntable spindle hole, which is 7 in. from the front edge of the board

DRILL THESE HOLES IN MOTOR-BOARD.

Mark positions of screws for fixing brake and speed indicator plate.

FIX MOTOR TO BOARD BY MEANS OF THE THREE BOLTS, keeping the rubber washers between the motor and the under-side of the motor-board.

- (o) Attach speed regulator arm to speed regulator spindle which protrudes through motor-board. The turntable should not be fitted at this stage.

- (p) Fit pick-up and tone-arm support. Instructions for doing this are supplied by the makers of the pick-up, but in addition a hole should be drilled in the centre of circle "P," referred to by the pick-up manufacturers, to allow the pick-up leads to pass through the motor-board.

- (q) Remove the motor-board (complete with motor, etc.) from the cabinet temporarily, and fix volume control in position on it, terminals pointing to back of board.

- (r) Twist together the bare ends of the following three wires: (a) one red lead from the pick-up; (b) the black lead from the pick-up; (c) a 20-in. length of single flexible insulated wire which you provide. Attach this junction to volume control terminal nearest pick-up. Attach a grid-bias negative wander plug to the other end of the flex.

Connect other red lead from pick-up to the volume control terminal farthest from pick-up.

- (s) Mark hole for winding handle on the inside of cabinet. Its position is $7\frac{7}{16}$ in. back from where the front edge of motor-board will be and $\frac{5}{8}$ in. below under-surface of motor-board. A small pilot hole should then be drilled from inside of cabinet, the final hole being drilled from outside.

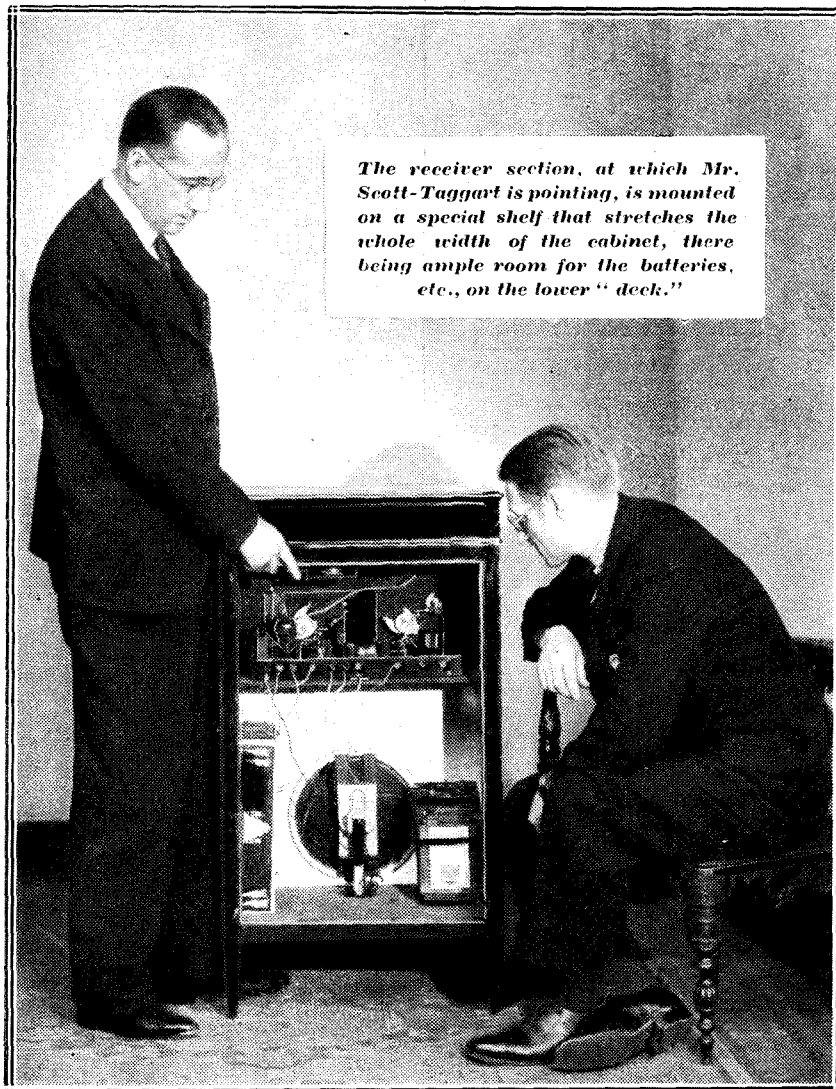
- (t) The ledge on which the set will rest should now have one or more holes drilled in it for screws which will later be screwed up into the bottom of the set.

FIT SPEAKER UNIT TO BAFFLE-BOARD

(four symmetrically-placed screws being enough).

(Please turn to page 308.)

CONNECTED UP READY FOR ACTION



The receiver section, at which Mr. Scott-Taggart is pointing, is mounted on a special shelf that stretches the whole width of the cabinet, there being ample room for the batteries, etc., on the lower "deck."

fixed plates of the anode tuning condenser. Free end of flex is later connected to volume control.

49. S.G. choke to anode coupler (moving plates).

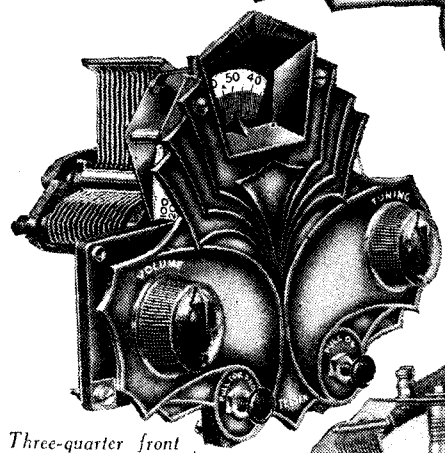
50. Detector valve anode terminal A to reaction condenser (moving plates).

and 9 in. from the right-hand side. Then lay the template I have prepared on the board so that the centre spindle mark is on the right spot.

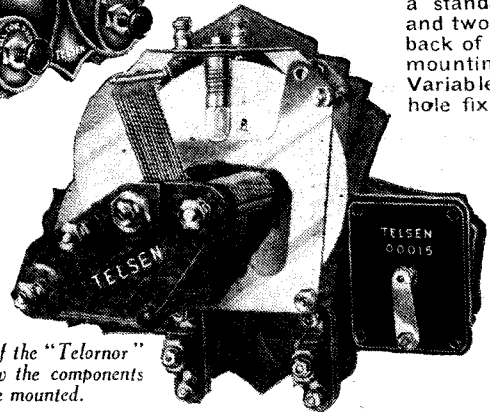
Prick through the positions of the other holes before removing template. Also mark the hole for the volume control.

TELSEN TELORNOR

gives your home-built set the dignity and beauty of line of a commercial Radio Receiver.



Three-quarter front view of the "Telornor."



Back view of the "Telornor" showing how the components can be mounted.

THE Telsn "TELORNOR" consists primarily of a variable ratio disc drive tuning control, and is supplied with an attractive escutcheon plate finished in oxidised silver. The tuning control knob is off-set on the escutcheon plate, which is also pierced to accommodate a standard Bakelite Reaction Condenser and two switches. A small bracket on the back of the chassis frame provides for the mounting of a Telsn .0005 Logarithmic Variable Condenser, or a standard "one-hole fixing" condenser with $\frac{1}{4}$ in. spindle

No. W.206.

7'6

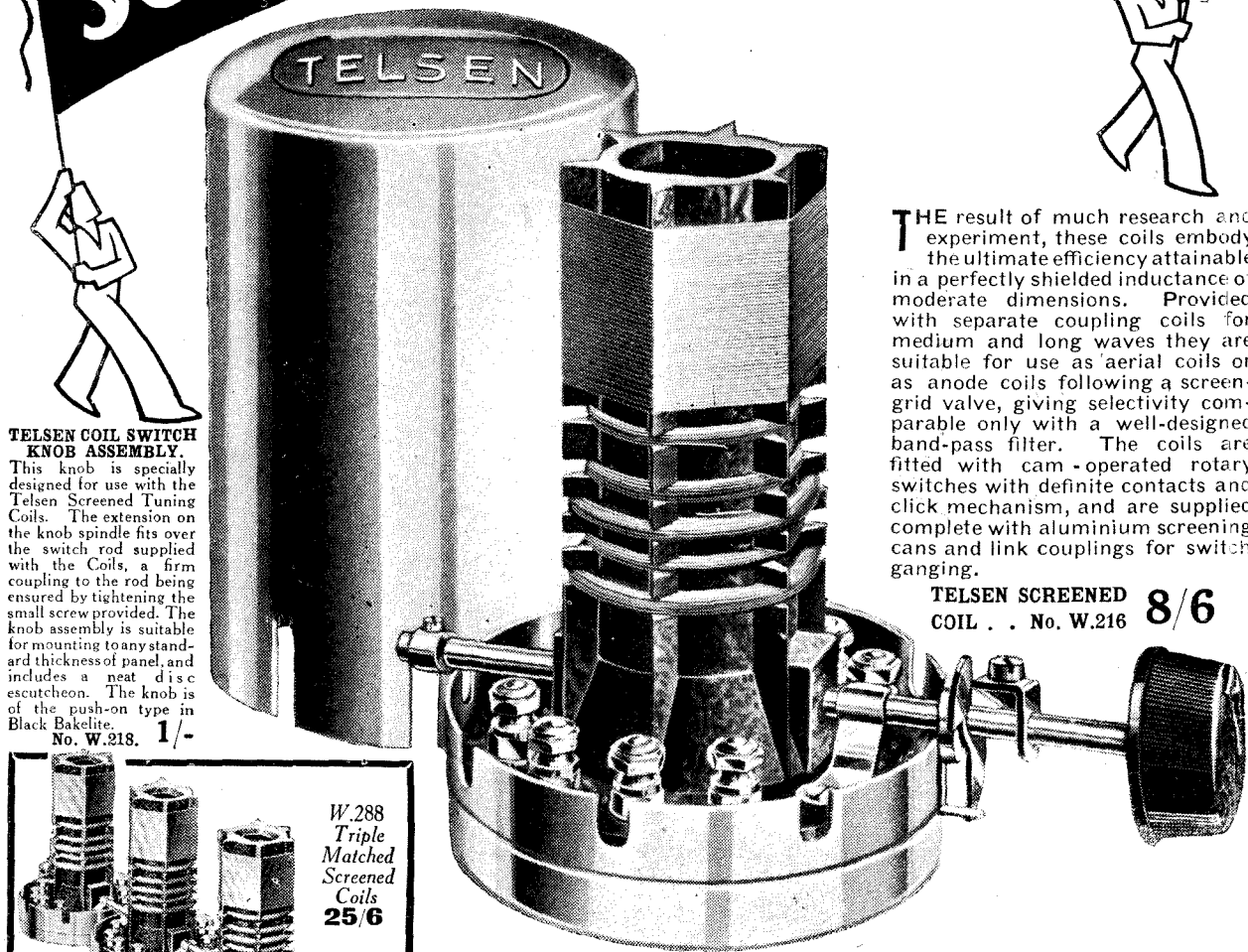
TELSEN

RADIO COMPONENTS

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ANNOUNCEMENT OF THE TELSEN ELECTRIC CO. LTD., ASTON, BIRMINGHAM.

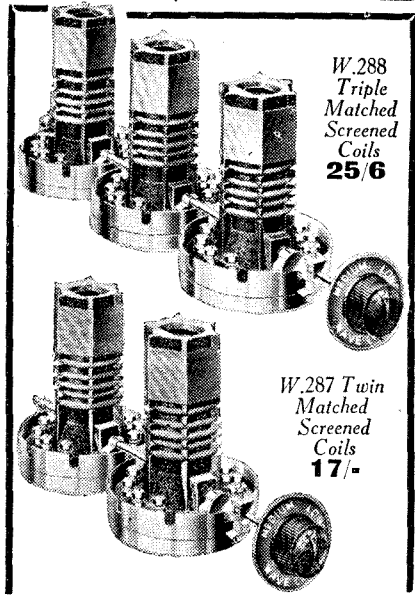
TELSEN SCREENED TUNING COILS



TELSEN COIL SWITCH KNOB ASSEMBLY.
This knob is specially designed for use with the Telsen Screened Tuning Coils. The extension on the knob spindle fits over the switch rod supplied with the Coils, a firm coupling to the rod being ensured by tightening the small screw provided. The knob assembly is suitable for mounting to any standard thickness of panel, and includes a neat disc escutcheon. The knob is of the push-on type in Black Bakelite. No. W.218. 1/-

THE result of much research and experiment, these coils embody the ultimate efficiency attainable in a perfectly shielded inductance of moderate dimensions. Provided with separate coupling coils for medium and long waves they are suitable for use as aerial coils or as anode coils following a screen-grid valve, giving selectivity comparable only with a well-designed band-pass filter. The coils are fitted with cam-operated rotary switches with definite contacts and click mechanism, and are supplied complete with aluminium screening cans and link couplings for switch ganging.

TELSEN SCREENED COIL . . . No. W.216 8/6



TELSEN COIL SWITCH COUPLING ASSEMBLY

When it is desired to mount two or more of the Telsen Screened Coils in a line parallel to the panel, and to control the wave-change switching by a single knob on the panel, this switch coupling assembly will be found indispensable. The link arms of the coupler are fitted over the switch rods of the coils, and adjusting slots are provided in the link bar to allow for the spacing of the coils varying from 3 in. to 6½ in. The whole assembly has a neat nickel-plated finish, is perfectly smooth and positive in action and free from the back lash.

No. W.217 6d.

TELSEN

RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

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A PRACTICAL MAN'S CORNER

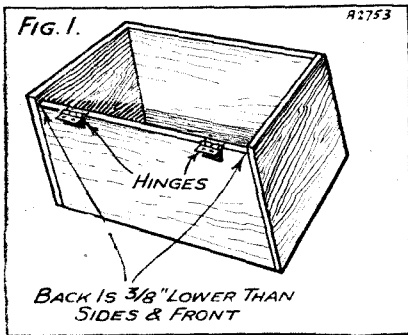
By R. W. HALLOWS, M.A.

Into these pages, month by month our contributor packs a wealth of practical information and advice on constructional work. The regular reader of this "Corner" cannot help picking up a more or less complete training in radio workshop practice, while every month there are wrinkles to read, gadgets to make, or hints to help you.

If you undertake the construction of a radio-gramophone cabinet (as you doubtless will, if you have not done so already), one of the most difficult nuts that you will have to crack will be the finding of some means of making a soundproof lid.

The lid must be soundproof, for if it is not "pick-up" noises will most probably be sufficient to interfere

MADE FROM PLYWOOD



In the accompanying article our contributor explains how a very effective radio-gram cabinet can be made from plywood, and this diagram illustrates some of his points.

seriously with your enjoyment of the reproduction of gramophone records via the loudspeaker.

Soundproof Lid

In commercial instruments close-fitting domed lids are employed, but to make these requires something more than the ordinary handyman's skill with tools; such work calls for the professional cabinetmaker's craft, and is outside the scope of most amateur workers.

After a good deal of experimenting I have evolved a soundproof lid which has the advantages of being

easy to make at home or cheap to have made. After using it for a radio-gramophone in which pick-ups of many kinds have been tried, I can guarantee that it fulfils all the requirements. The noisiest pick-up is completely silenced when the lid is closed.

A Convenient Size

My own radio-gram cabinet is made of $\frac{3}{8}$ -in. thick plywood, with an oak veneer.

Fig. 1 shows the way in which the body of the cabinet is put together, and it will be noted that the top of the back is $\frac{3}{8}$ in. lower than the sides and front. The external dimensions of my own cabinet are $18\frac{3}{4}$ in. in width and 15 in. from front to rear. This is a convenient size, though readers can adapt the dimensions to suit their own designs.

The lid proper is cut from the same $\frac{3}{8}$ -in. 5-ply as is used for the body of the cabinet, and its dimensions are the same—that is, $18\frac{3}{4}$ in. by 15 in. To the underside of the lid is screwed a piece of whitewood $\frac{3}{8}$ -in. thick, as shown in Fig. 2, which acts as a padding.

The padding is flush with the back of the lid, but $\frac{3}{8}$ in. from either side and from the front. The dimensions of the padding piece are thus 18 in. by $14\frac{5}{8}$ in. Make quite sure that you put on the padding absolutely square and see that it fits snugly into the cabinet.

The Completed Job

When the padding has been fixed to the lid it should fit closely into the top of the cabinet, the edges of the lid being flush with those of the end

and sides. The lid is completed by fixing to the edges of the sides and front beads as shown in Fig. 3.

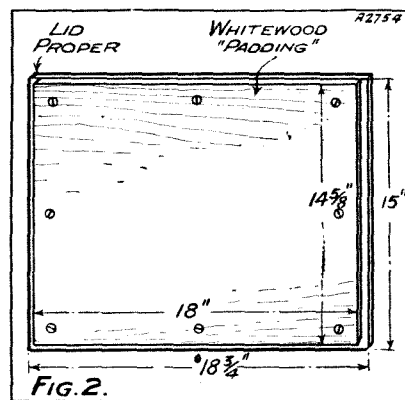
These beads may be of any desired section, ornamental or plain, and they should be $\frac{3}{4}$ in. in depth. When they have been attached to the lid, a groove $\frac{3}{8}$ in. wide by $\frac{3}{8}$ in. deep is left between them and the padding, and into this the top edges of the sides and front of the cabinet fit exactly.

Very Effective

The lid is secured to the back by means of a couple of stout hinges screwed to the padding.

You will not have any difficulty about making this kind of lid, and I am sure that you will be more than

REDUCING PICK-UP NOISE



Care should be taken to make the lid of the cabinet virtually sound-proof. A good method of doing this is to fix a piece of whitewood on the underside, to act as a "pad."

pleased with it when the job is finished. I have given it a thoroughly good trial, and I can honestly say that I could not wish for anything more effective.

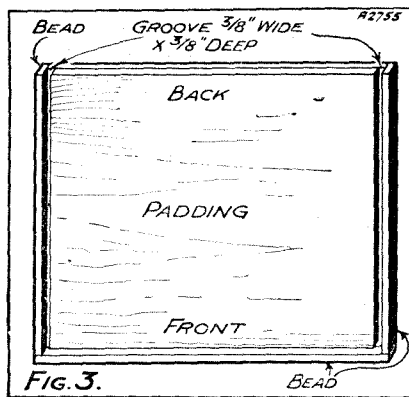
A Practical Man's Corner—continued

The commonest screws that we come across in wireless constructional or repair work are those of the 4B.A. and 6B.A. sizes. Sometimes, though, one has to deal with tiny fellows which present peculiar difficulties of their own.

Some Proposition!

Small screws are met with in relays and similar apparatus, and two of the worst that I have ever encountered secured the rim carrying the glass which fitted over the face of a milliammeter. This had to be removed to enable the zero corrector to be reached,

COMPLETING THE LID



After the whitewood padding has been secured in the lid, the edges can be finished off by fixing front and side beads as shown.

and the first thing to do was to extract these midget screws. With the smallest blade of a jeweller's screwdriver this was not too difficult, but once they had come out I realised that to get them back again was going to be something of a business.

They were, in fact, quite the smallest screws that I have ever come across outside a watch, and out of curiosity I measured them with a micrometer.

Not Very Big!

They were cheese-headed and each was just short of $\frac{3}{16}$ in. over all. So far not bad—but the threaded portions measured slightly under half a millimetre in diameter. Just look at a millimetre on the edge of a ruler and then imagine what sort of a thing a screw is whose diameter is only half as great.

There were clearance holes in the rim of the instrument and threaded holes in the body. These, of course, had to coincide exactly, and this was not too difficult. I simply made use of the point of a fine scriber, "feeling it

into" the holes until they registered exactly. Then came the real business of the day, that of starting these horrible little screws.

Fig. 4 shows how it was done. (I would remark that the screw in the drawing is very much larger than those that I had to deal with; if the drawing were made to scale the reader would hardly see the screw at all!)

Twiddle It In

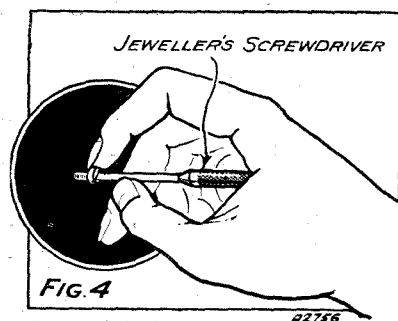
As the drawing shows, the jeweller's screwdriver is held with its body in the palm of the right hand. The blade rests between the second finger and the thumb. The nail of the first finger holds the neck of the screw tightly against the edge of the screwdriver blade. In this way the point of the screw can be inserted into the hole, and it is then started by a slight twiddling movement, if I may so express it, of the thumb against the second finger.

For a long time I have used a spirit lamp for heating the little soldering irons which are most convenient for the great majority of the soldering jobs that come the way of the wireless constructor.

The main drawback about spirit lamps is that they require spirit. I don't know about the reader, but I usually find that my most urgent soldering job occurs at some time when all the shops are shut and both the methylated bottle and the lamp are empty.

A last and quite serious drawback

FOR SMALL SCREWS



Do you ever have difficulty in starting tiny screws? If so, you will find the tip given elsewhere on this page, and illustrated here, extremely helpful.

of the spirit lamp is that it is difficult to regulate the flame to a nicety.

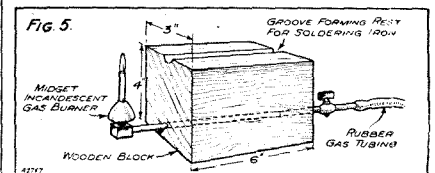
In Fig. 5 is illustrated a heater for the soldering iron with which I am

sure every real constructor will fall in love at first sight.

The ingredients required are a midget upright incandescent burner and the parts of an old gas bracket which contain an elbow, a straight piece about 9 in. in length, and a tap. You also need a nozzle for rubber tubing and sufficient of the same tubing to connect your heater to the nearest gas supply point. The wood block you can probably find in the wood shed or in a corner of your workshop.

A handy size is 6 in. in length by 4 in. in height by 3 in. in width.

A HANDY HEATER



This useful heater for your soldering iron is made from old gas-fittings and a block of wood. The latter forms an ideal rest for the iron during the warming-up process.

Make a groove in the top to hold the shaft of the soldering iron, and near the bottom drill a hole that is a tight fit for the straight portion of your gas bracket.

It's Bound to Happen!

It may happen—it probably will!—that no auger bit in your possession will make such a hole. One is just too small; the other is just too large. In that case use the larger one and then proceed as follows:

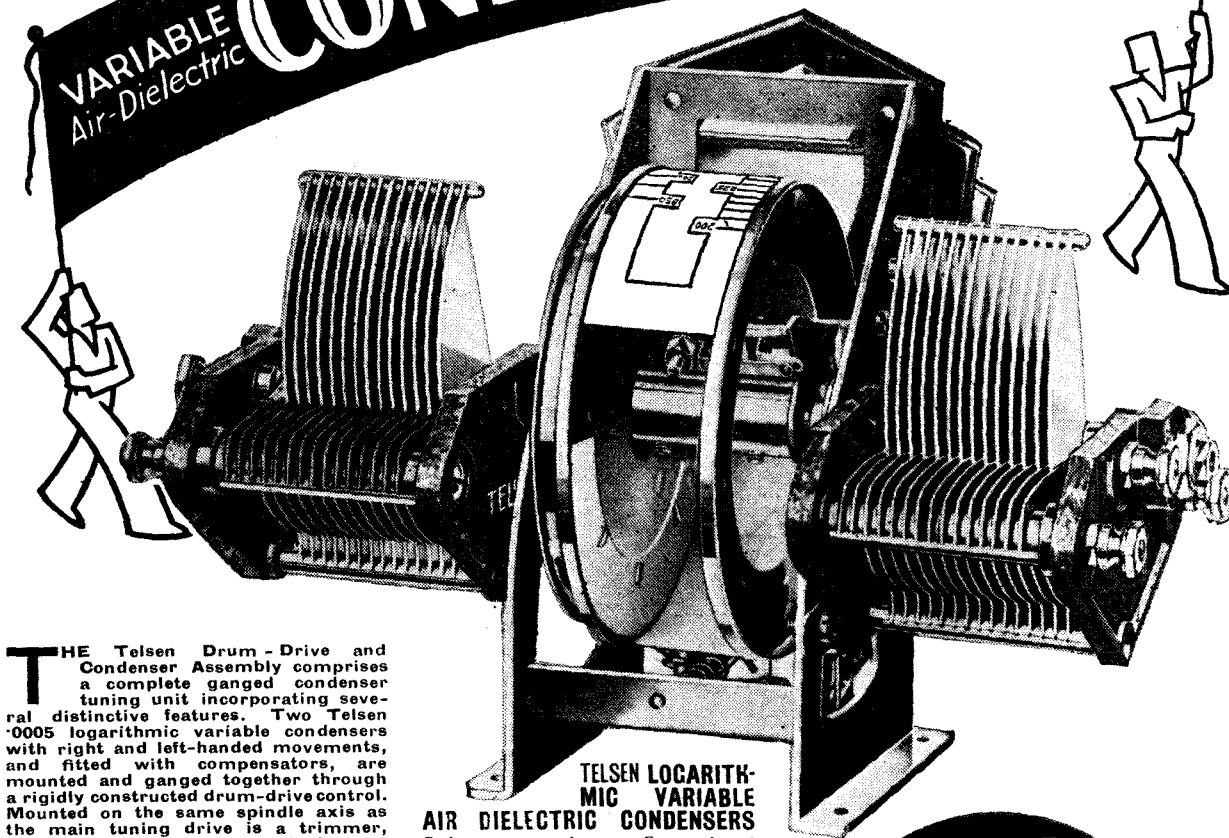
Into the bottom of the block drive two countersunk screws so that their points emerge an eighth of an inch or so into the hole drilled. Countersink these screws rather deeply. Remove them and file their points flat. Now insert your gas bracket tube and jam it tightly with the blunt-ended screws.

The midget burner can be obtained from most shops which deal in gas fittings. It is intended for use with a tiny mantle about $\frac{1}{2}$ in. in diameter and $2\frac{1}{2}$ in. in height. That part of the burner which contains the globe holder and mantle support is not required. Adjust the air supply to your burner until you obtain a flame that is blue with no trace of yellow. You will then have a perfectly clean means of heating your soldering iron.

TELSEN

VARIABLE CONDENSERS and DRUM-DRIVE

Air-Dielectric



THE Telsen Drum-Drive and Condenser Assembly comprises a complete ganged condenser tuning unit incorporating several distinctive features. Two Telsen '0005 logarithmic variable condensers with right and left-handed movements, and fitted with compensators, are mounted and ganged together through a rigidly constructed drum-drive control. Mounted on the same spindle axis as the main tuning drive is a trimmer, giving a swinging movement of about 10° to the stator vanes of the left-hand variable condenser, thereby enabling perfect matching of the condensers to be maintained throughout the Tuning Range. Two scales are supplied with the unit, one marked in wavelengths and one in graduations from 0-100. The scale is illuminated and has the additional advantage of being easily removable when it is desired to fit one of special calibration. The escutcheon is handsomely finished in oxidised silver, and knobs of the push-on type are fitted. Provision is made for panel and base-board mounting, and a double-ended spanner is supplied free with the unit for fitting the variable condensers. Full instructions for mounting are included with every unit. The drum drive can also be supplied separately for mounting with any standard type of variable condenser.

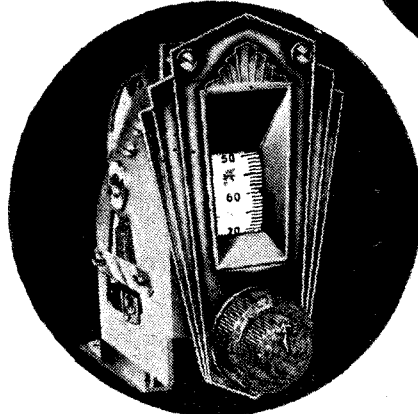
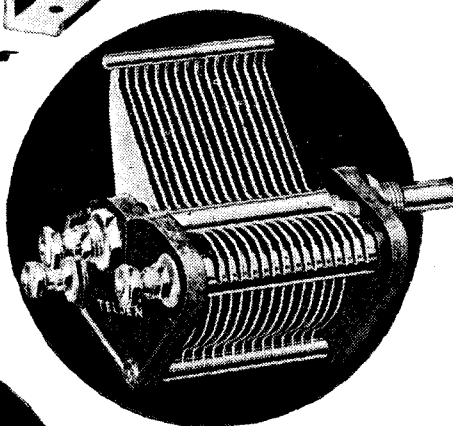
No. W.262. Price

17/6

TELSEN LOGARITHMIC VARIABLE AIR DIELECTRIC CONDENSERS

Built to give years of service. Frame is braced by three solid pillars, and the effective clamping of the vanes, each held at three points, makes distortion impossible. The rotor is also built into a rigid unit, the vanes being held at both ends. Generous bearings obviate backlash or end-plate. Models No. 260 and 261 left hand and right hand movements respectively. Incorporate a compensator (max. cap. 60 mfd.) for balancing out stray capacities, thus greatly facilitating ganging.

Model No.	Cap.	Price	Model No.	Cap.	Price
No. 130	'00025	4/6	No. 260		
			(Left hand movement with trimmer)	'0005	5/-
No. 131	'00035	4/6	No. 261		
			(Right hand movement with trimmer)	'0005	5/-
No. 132	'0005	4/6			



TELSEN DRUM DRIVE

Follows standard practice generally, but embodies several detail refinements, among which may be instanced the cord drive, arranged to reduce wear to a minimum and to prevent over-run, and the rocking stator trimmer, which gives a variation of 20°, and visual indication of setting. For use with Telsen screened coils, an extra scale, marked in wavelengths, is supplied free of charge. Illustration shows escutcheon, handsomely finished in oxidised silver.

No. W.255. Price

8/6

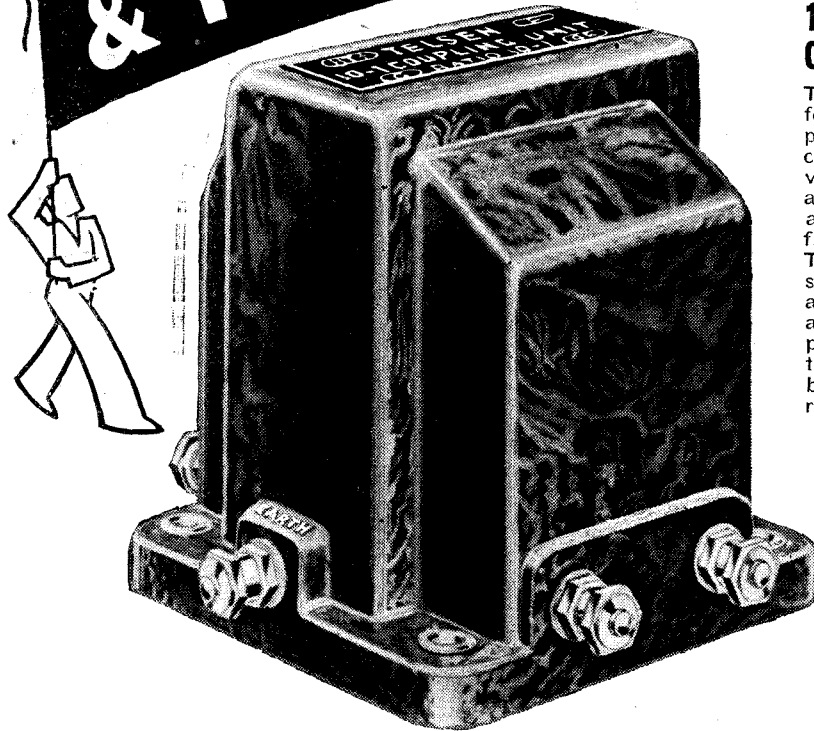
TELSEN

RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

ANNOUNCEMENT OF THE TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM.

TELSEN 10-1 & 1-1 COUPLING UNIT



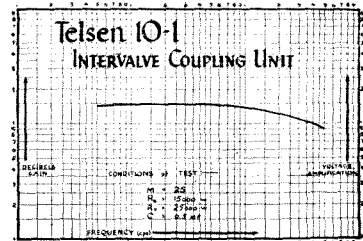
TELSEN 10-1 INTERVALVE COUPLING UNIT

This is a filter-fed transformer using a high permeability nickel alloy core, which enables a 10.1 voltage step-up to be attained while preserving an exceptionally good frequency characteristic. The response is compensated in the higher frequencies for use with a pentode valve, this combination giving an amplification greater than anything previously achieved, equal to two ordinary L.F. stages, but with better quality of reproduction.



12/6

No. W.215.

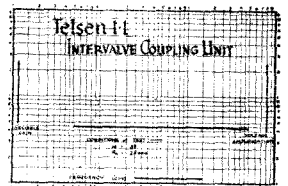
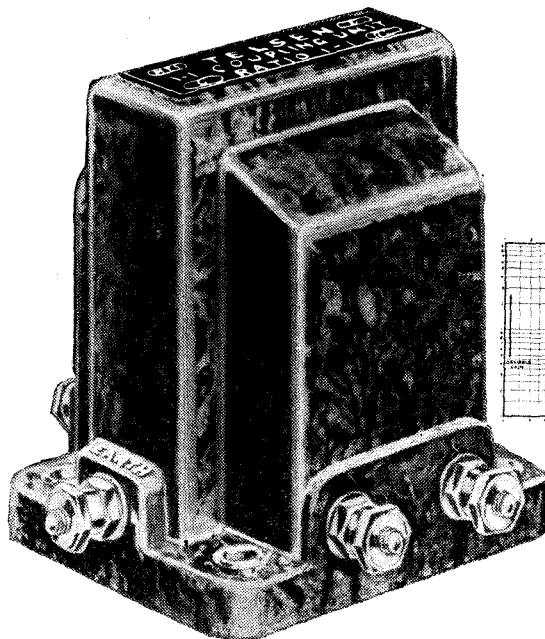


TELSEN 1-1 INTERVALVE COUPLING UNIT

This is a modern development of the one time deservedly popular R.C. units. It incorporates a low pass filter feed in its anode circuit, thus effectively preventing "motor-boating," "threshold howl," and other forms of instability arising out of common couplings in eliminator and battery circuits. Used with an H.L. type valve it will give an amplification of about 20 and a perfect frequency response, at the same time consuming negligible H.T. current.

7/6

No. W.214.



TELSEN

RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER



WE have just passed the worst listening season of the year. Long, light evenings which beckon us to tennis, swimming, hiking, or whatever one prefers, are anathema to wireless waves.

Many a set built during the summer will disappoint its owner without just cause. Already the nights are getting longer, but it takes time for the darkness to do its work. Signals from foreign stations do not reach their loudest the moment the sun sets. With the sun settling down at 10.20 p.m. in June there has not been much chance of getting good results from abroad.

Even now in August the evenings are still light. And so many continental stations—contrary to what one would expect—put up their shutters at 10 p.m. Saturday and Sunday, of course, is a good time for tests, as the foreigners stay up later then. Week-end whoopee works wonders with wireless waves!

New Set Brewing

My new "big" set, which has been brewing for some months, is shortly to be "released." The semi-final experimental work on it has had to be done with the sun shining until late and foreigners requiring the utmost in signal-getting powers to bring them in.

I think if all sets for home-constructors were designed in the summer, the standard would be very much higher. At any rate, I have been "on my toes" all the time.

Incidentally, I have received Madrid

or Katowice at will on the set—5 kilocycles separation—with Katowice about four times the received strength of Madrid.

* * *

A reader points out an error in these notes. Mr. Whetter's postcard from St. Austell ("The 'S.T.300' is a wash-out") becomes a "letter" in a later paragraph. Sorry. The amplification must have occurred through mixing up "whetter" and "letter."

As a matter of fact, I prefer letters

You need not be a technical expert to enjoy "S.T.'s" pages month by month.

His ready pen runs easily from dogs and deckchairs to bedstead-aerials and valve holders.

In fact, there are very few subjects with which Mr. John Scott-Taggart does not deal in his own inimitable way, in these diverse and informative jottings from his notebook.

to postcards, especially if written in the heat of the moment. Since the St. Austell postcard arrived, my postman has not been quite the same. I feel that I have sunk in his estimation.

* * *

What do you think of this for a letter? "I have built the 'S.T.300.' I am amazed at the results. I cannot express my delight at the results obtained. My astonishment—" and so on. Of course, I began to purr until the letter ended: "Results are slightly better than a good crystal set, but the crystal does not bring in spark stations." Then I re-read the letter. Its meaning had changed. The letter comes from Pontypridd—where all the

news in the papers seems to come from.

A Question of Valve Types

The idea of keeping valve type-names the same, but altering the characteristics, is something I find hard enough to accept with joy. A manufacturer has been turning out a Z.Z.201 valve with a mutual conductance of, say, 6 milliamps. per volt, and then completely alters the whole design, reducing the conductance to 2 milliamps. per volt. Instead of altering the type number, *he keeps it the same!*

The result is that both types are floating about shops and laboratories, confusing the public and designers. I have no quarrel with the idea of altering types or withdrawing some from circulation. The fallacy of regarding static characteristics only has been specially emphasised by me for about six years. Recently I pointed out in these notes that detectors were enjoying a fraudulent reputation through their good static but bad dynamic characteristics when in a set.

But this reluctance to alter the type number is definitely a tendency in the wrong direction. If you had a dog called "Nebuchadnezzar," and lost it, would you be satisfied if someone returned an entirely different dog, even though it also answered to "Nebuchadnezzar" and fitted in the same kennel?

"Give a Dog—!"

Talking about dogs, one of my readers, who is very satisfied with his

Transmissions Which Tickle the Birds

"300," asks in a postscript whether I mind his calling his dog "S.T." I have taken the precaution of asking him to send me a photograph of the dog.

* * *

Regular followers of these notes will have realised that I have light-hearted moments in dealing with every day's post. A few readers are rude (which is good for me), many are helpful, and nearly all good-humoured. Some are amusing and some confusing, but I feel that you and I are getting to know each other. These armchair notes were started with that idea, and I only hope you will read them regularly, because very often there are remarks which are a sequel to earlier ones.

The "Inkstrain" Changes Its Name!

For example, I have heard again from Señor Carlos, of Setubal, Portugal. He is the man, you remember, who shipped to a Liverpool warehouse a "silver inkstrain" with a request that in return I should send him out an "S.T.300" kit, "eliminator," etc., etc. Well, I expressed in these columns a little doubt about accepting this "gift." Now Carlos writes:

"I have just now gone through your article, 'From My Armchair,' on the July number, and have had a good laugh from your appreciate joke full of humorism." He allays my apprehensions considerably by adding: "If you do not like it, it remains in Thos. Cook's hands free to go where some helst, as I now understand you want to see first before accepting it, fearful supposing for a chagrin."

Unfortunately, readers have given me no advice on what to do. The position is rendered more obscure because the "inkstrain" has in this second letter become a "reliquium" (or is it "reliquium"?). Is it a relic? Señor Carlos adds: "If you will have the reliquium valued, I will sincerely take it as a fair play."

He's a Good Sport

Well, I certainly take Señor Carlos' proposals as a fair play. I must confess I have been rather fearful supposing for a chagrin, but, if it does fail to come up to expectations (which have grown pretty big by now), I can always send it some helst.

Carlos is a good sport and I have

sent to Liverpool for the article in question. Readers, I hope, will see a photograph of it next month. Meanwhile, what is a silver inkstrain? Is it used on one's desk—or kept on a chain in the garden?

* * *

I am writing this in my garden, by the way, and in a deckchair, not an armchair. A thrush keeps "landing" on the guy wire which supports the far end of one of my aerials. I know this particular thrush well (for one thing, his left wing-tip is lower than the right), and although he always sits a few inches from the insulator, he never sits on the aerial side! Is he scrupulous about not increasing

HERE'S GOOD NEWS!

"S.-T." SAYS—

"I have been working on my new set since December last. I hope you will tell all your friends to look out for it and to save up for it!"

"I should not advise readers at this stage to add another L.F. stage to the 'S.T.300,' because my new set will create a good deal more interest, unless I am mistaken—even than the 'S.T.300.'"

"As regards results, I can promise considerably more than for the 'S.T.300.'"

"The new set, which has been brewing for some time, is shortly to be released."

"I am not only unwilling, but unable, to alter the 'S.T.300.' It still represents the best I can do in a set of the S.G.3 type."

the aerial capacity—or afraid of getting a shock?

Birds do not—in my experience—care to sit on a transmitting aerial during actual transmission. It apparently tickles their toes. A precaution taken by some radio listeners is to fix corks spaced out along their aerials. This, of course, is not to prevent toe-tickling when oscillation is indulged in, but to prevent birds from injuring themselves by flying into the wire.

Incidentally, I wouldn't mind huge corks being fitted to some of our big wireless transmitting aerials. I once nearly flew into an aerial near Romford during foggy weather. And this morning I received from the Air

Ministry a pink urgent "Notice to Airmen, No. 39," informing me that: "High radio masts are in course of erection at Washford Cross (1½ miles S. by W. of Watchet, North Somerset), and, when erected, will be approximately 500 feet high. Position: Lat. 51° 10' N., Long. 3° 21' W." This is "Western Regional" going up, although the notice does not say so. (Passing thought: It would be rather an ironical end to my wireless activities to fly into, say, a Brookmans Park aerial.)

* * *

These paragraphs, by the way, are jotted down at odd intervals. I don't say to myself: "Now I must write my Armchair Notes." I mention this because I may start off with a remark at the beginning and later events may compel me to add to it. Take Mr. Whetter.

Mr. Whetter Recants

Last night I got a letter from him. He is pleased I published his famous declaration: "The 'S.T.300' is a washout." But he recants. He bought the set from a London firm ready wired. He tried it. It *was* a washout. The obvious thing that night seemed to be to tell me so—on a postcard.

Second thoughts prompted him to have a look at the set. (Readers' letters in this magazine may have helped.) He found the connections to one coil were wrong and also a "dry" soldered joint (i.e. a bad contact.) These were remedied, he sold the set, and the customer (at St. Austell, Cornwall) received 46 stations *in daylight*—and on an aerial of 50 feet, badly screened!

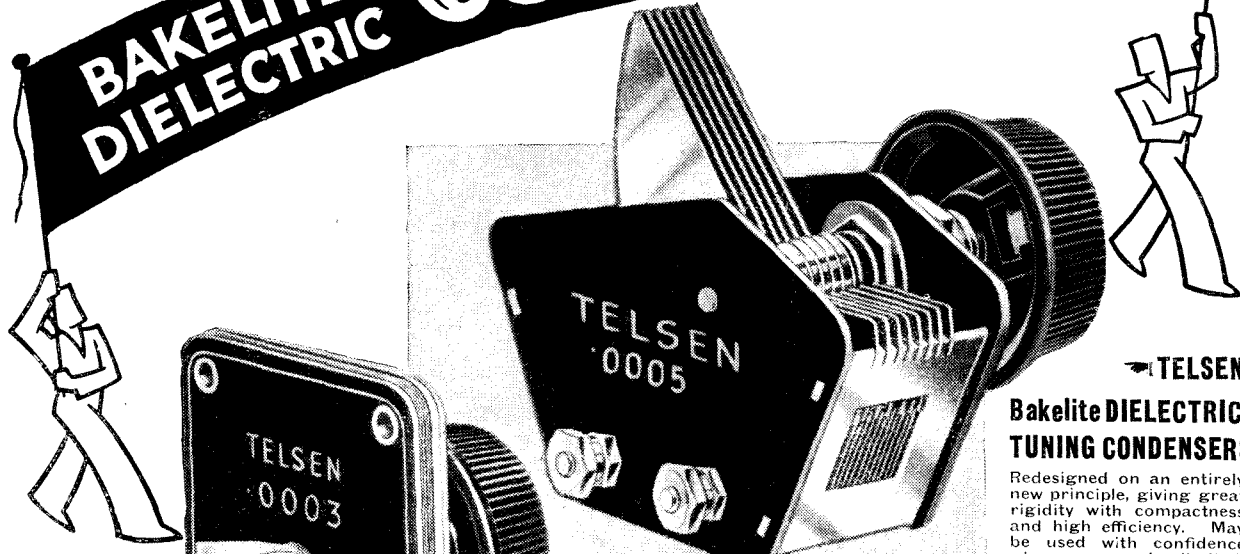
As this is a good deal more than I can do, I have crossed Mr. Whetter off my list of S.N.U.'s. But I find it hard to blame him for his annoyance. A bit of good, honest abuse is good for the complexes, even if it doesn't improve the set. And, as I have said before, it is good for me. Pats on the back are encouraging, but they are not the only means of propelling a designer forward.

A Careless Manufacturer

Mr. Whetter is one of many innocent sufferers from manufacturers' carelessness. Unless the trade is careful it will kill the goose that lays the golden egg. There will, however, always be some faulty components

TELSEN CONDENSERS

BAKELITE DIELECTRIC



TELSEN

Bakelite DIELECTRIC TUNING CONDENSERS

Redesigned on an entirely new principle, giving great rigidity with compactness and high efficiency. May be used with confidence where space is limited. The well-braced vanes are interleaved with a minimum of highest quality solid dielectric, ensuring complete accuracy of tuning. Supplied complete with knob.

Capacity No.
'0005 - W.193
'0003 - W.194

2/6

TELSEN AERIAL SERIES CONDENSER

This component forms an ideal volume and selectivity control. The internal construction permits of an extremely low minimum capacity. Keyed externally on the spindle is a switch arm which connects with a contact on the fixed vanes when rotated to maximum position. This short circuits the condenser for maximum volume. The rotor movement is limited by definite stops. The vanes are interleaved with the finest quality solid dielectric, and solidly constructed throughout. Supplied complete with knob.

Capacity '0003 - - - W.205

2/3

TELSEN REACTION CONDENSERS

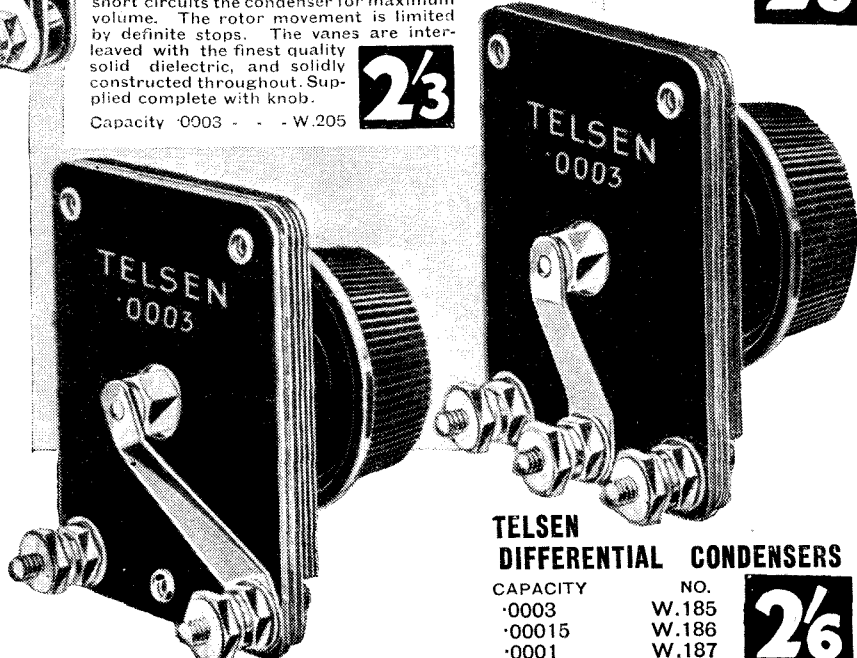
Improved type, of great rigidity and precise construction. The Rotor Vanes are keyed to the spindle, and fitted with definite stops. The vanes are interleaved with finest quality solid dielectric. A strong nickel silver contact makes connection to the rotor, and a positive connection is made to the stator vanes. Complete with knob.

Capacity '0003	No. W.188
" '00015	" W.189
" '0001	" W.190
" '00075	" W.191
" '0005	" W.192

2/4

2/6

TELSEN
RADIO COMPONENTS



TELSEN DIFFERENTIAL CONDENSERS

CAPACITY	NO.
'0003	W.185
'00015	W.186
'0001	W.187

2/6

GOOD RADIO IS A JOY FOREVER

ANNOUNCEMENT OF THE TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM.

The **TELSEN**

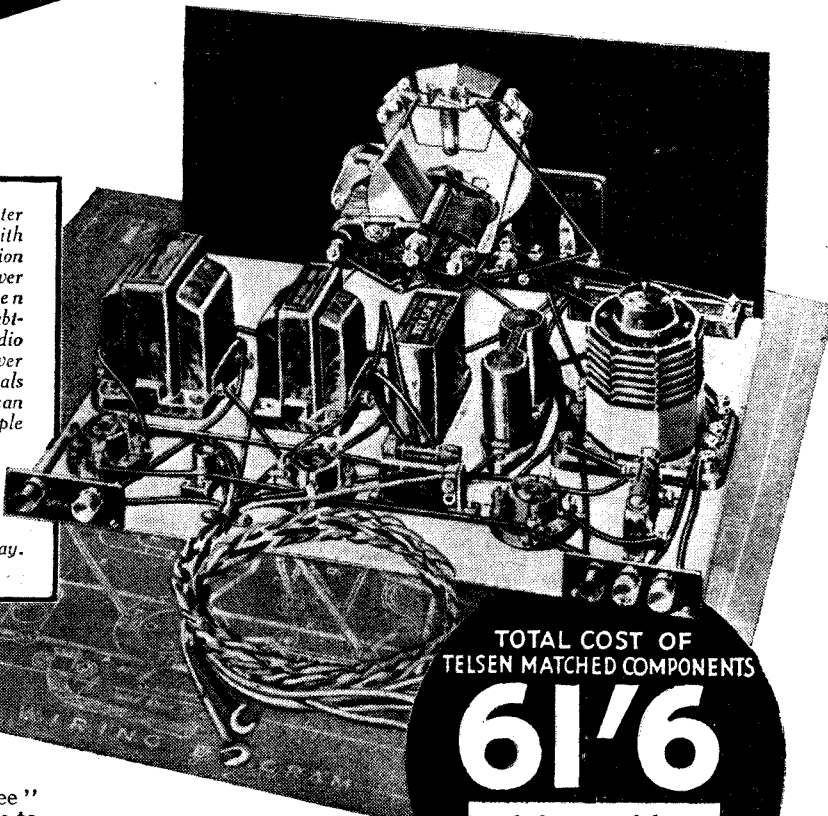
AJAX 3



Bigger . . . better . . . packed with valuable information from cover to cover—the new Telsen Radiomag is undoubtedly the finest radio sixpennyworth ever offered. For it appeals to all—and all can profit by it. In simple

language, illustrated by photographs and diagrams, and complete with 3 full size 1/- blue prints, it tells you how to build the latest circuits—how to modernise your existing set . . . how to rectify little faults . . . how to get the best out of your set in every way.

Get a copy NOW!



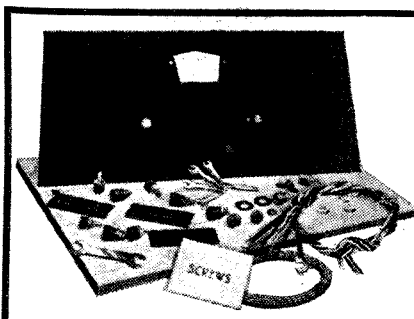
TOTAL COST OF
TELSEN MATCHED COMPONENTS

61'6

including panel, base-board, terminals, battery cords and all accessories.

A HIGHLY efficient "Straight Three" circuit, as easy to operate as it is to build, giving an exceptionally brilliant all-round performance, with a low initial and upkeep cost, the range, power, selectivity and general quality of reproduction setting a new standard for receivers of this type. Free full size 1/- blue print, together with full constructional details are contained in the new issue of Telsen Radiomag, which also gives full particulars of the improved and now all-embracing range of Telsen Radio Components at the still lower prices made possible by Telsen's enormous sale. Now on sale at all radio dealers and newsagents. Price 6d.

CONSTRUCTORS' OUTFIT "TELORNOR"



Contains all the sundry requirements for the construction of the Telsen Circuits using the "Telornor." Of these the "Triple" 3, the "Ajax" 3, and the "Nimrod" 2, are excellent examples. All are supplied neatly packed in a carton together with instructions.

Cat. No. 220

3/6

Included in the Outfit are the following components:

Specially cut and drilled crystalline. 14" x 10" Base-board. 8-way Battery Cord. Complete set of Wander Plugs, suitably engraved, and Spade Terminals. Terminals for Aerial, Earth and Loud Speaker.

Engraved Terminal Strips. An ample supply of 22 S.W.G. Tinned Copper Wire and necessary Sleeving for wiring up the set. A double-ended Spanner for mounting the single-hole fixing components.

A 4-way Spanner, for tightening up all Terminal Nuts. All the Wood Screws and sundry other small accessories contributing to the complete assembly of the finished Receiver.

TELSEN

RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

ANNOUNCEMENT OF THE TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM.

—And a War-time Wangle on a Mangle!

sent out, and there is a great need for "service stations" where readers could go if they failed to get expected results. Meanwhile, many "S.T.300" builders have helped less-experienced amateurs and there are many able retailers who take a personal interest in their customers' sets.

A Good Motto!

Mr. Whetter—and any others whose first experiences of sets have been unhappy—should have the motto someone (I don't know who or when) has put on my wall. It is one of those wooden poker-work things, and reads: "When you're down in the mouth, remember Jonah: he came out all right."

* * *

I see there has been a discussion in the papers about how wireless would affect things in the next war—assuming there be one. Wireless-controlled aeroplanes and aerial torpedoes would rain destruction on the whole civil population.

I do not know whether we shall come to that. Some people think it would be a very good thing if the civil population (especially Cabinet ministers) were attacked first and bore the brunt of wars they helped to start.

On the other hand, Cabinet ministers are at present trying to confine warfare to the war zone. This is not an unreasonable attitude to expect them to take up. My own plan—which I have not hitherto seen suggested—is that the next war should be fought out at Wembley.

Good-bye to Brookmans Park

But to return to war-time radio. How would we feel on hearing that Frankfurt had been bombed, as it was in 1918? Or Toulouse—if the war were with France? Wouldn't you think of his old gong and say: "Well, he did his best"? And wouldn't some people cheer up if Slaithwaite or Brookmans Park were bombed? (Without casualties, of course.)

Would broadcasting cease on a declaration of war? Toulouse would go on, of course, and probably Fécamp, but what about our sets? In 1914 the handful of us who were licensed to experiment in the art were at once rounded up and our gear sealed and carted off.

I remember the Post Office in-

spector's dilemma when he found that I had wound an inductance coil on one of the rollers of our washing mangle. He stroked his chin at the thought of taking away a complete mangle weighing several hundred-weight. A bedstead aerial—curiously popular in 1914—was allowed to remain after disconnecting the wire to its frame.

But five million sets would present the P.O. with a real problem. Warehouses would have to be built to accommodate them. Our H.T. batteries, of course, would deteriorate. And, I suppose, the Post Office

Association Football League," I knew I might be "in for it," and braced myself to meet the shock.

Common Sense and "Brass Tacks"

Mr. F. Gill, the honorary secretary of T.H.A.D.H.H.A.F.L., is a worthy representative of his county. He specialises in "frankness," believes in "candid expressions of opinion" and has a voracious appetite for "brass tacks." His letter was immediately and respectfully marked S.N.U.*; but after the first paragraph I realised there was also valuable

EVERYBODY'S DOING IT NOW!



And still it goes on—this enthusiasm for building the "S.T.300." Here is the latest "S.-T." recruit—none other than Newton Wayne, the well-known variety and broadcasting star—who has installed the set in his home.

wouldn't charge our accumulators to stop them sulphating.

* * *

Yorkshiremen—from Lord Snowden downwards—are noted for their plain speaking. When, therefore, I got a letter headed "The Huddersfield and District Half-Holiday

"local" information in the letter and sound, constructive common sense.

*It occurs to me that I have not previously explained "S.N.U." It refers to a choice list of Still-Necked Unbelievers. From this list which I keep I propose to draw when future demonstrations are being considered. Qualifications for membership will be given next month.

Spreading Judicious Rumours About the Bacon!

Huddersfield, I suppose, is the worst town in England from the point of view of B.B.C. interference. North Regional and North National, with aerials 500 ft. high and 50 kilowatts behind each, are ether-shakers more troublesome locally than Brookmans Park with its 200-ft. aerials.

Huddersfield is so close to Slaithwaite ("Pole Moor") that, as Mr. Gill says, the "S.T.300" is insufficiently selective for that town to get a large number of foreign stations. The immediate environs of a B.B.C. station require something extra-special in the way of sets; needless to say,

these pages shortly, and, unless I am very much mistaken, it will create a great deal more interest even than the "S.T.300." It will not be a three-valve set. That is all I can say at this stage.

As regards results, I can promise considerably more than for the "S.T.300," which set, however, will undoubtedly remain in considerable popular favour.

Eight Months' Work

My original plan of only about a couple of "big" sets per year is being adhered to, and I am not merely unwilling, but unable, to alter the "S.T.300." It still represents the best

the holder is passed as A.I. Far more trouble is caused by faulty holders than is generally suspected.

The unfortunate thing is that bad contacts on coils, switches and valve holders often merely weaken signals. If the signals were absent, one would be more pleased; a search would then definitely be made. As it is, beginners probably leave things as they are.

* * *

A reader complains that he gets interference from a bacon-curing establishment next to which he lives. I presume the interference is electrical, in which case I suggest he writes to (a) the establishment itself; (b) the B.B.C.; (c) the Post Office, London.

If he fails to get satisfaction, I can only suggest that he (a) convert the whole neighbourhood to vegetarianism, or (b) judiciously spread rumours regarding the quality of the bacon. The establishment will then close down. By that time, however, the lady next door will probably have installed an electric hair-drying machine. * * *

Night-watchmen and others can be kept well entertained up to 1.30 a.m. or thereabouts by several stations. Barcelona, Madrid and Valencia are great favourites and come in with a roar on my new set. Valencia always seems to be talking about cameras, but these are not photography talks. The Camera referred to means their Parliament, I believe.

Barcelona's Bootlace Boost!

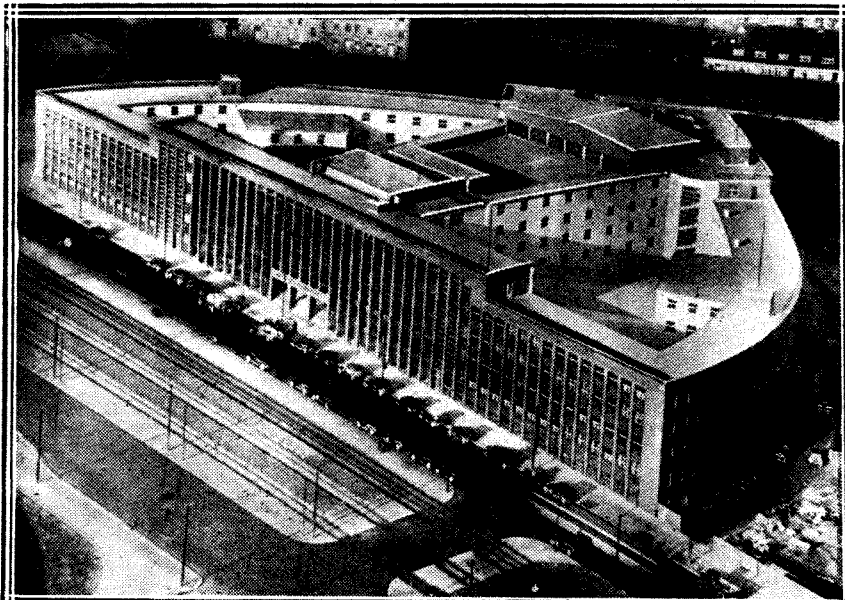
Fécamp will entertain one in English after midnight, but Spaniards keep going after Fécamp closes down. (Fécamp, as you probably know, is where Benedictine liqueur is made, although the announcers never shew it.)

Barcelona will advertise anything from a bootlace to a traction-engine. Last night they were trying to persuade me to drink Rossi Blanco (not the liquid for whitening tennis shoes, but a vermouth).

—AND NEXT MONTH
THERE WILL BE MORE
OF THESE ENTERTAINING
NOTES FROM THE
PEN OF

John Scott-Taggart

THE "BROADCASTING HOUSE" OF BERLIN



English listeners are developing quite a friendly feeling for some of the foreign stations. "How should we feel," says "S.-T.," "on hearing that Frankfurt had been bombed, as it was in 1918? Or Toulouse—if the war were with France?" Certainly the organisation behind the fine example of German architecture which you see here is doing much, by its daily programmes, to promote international understanding.

something considerably more expensive and complicated to make.

Mr. Gill has vastly improved results by adding another L.F. valve to the "S.T.300," as I suggested some months ago. This has, as I indicated it would, improved *selectivity* as well as signal strength. He is now satisfied and says that no commercial receiver under four times the price can equal the results in his district.

Look Out For It!

I do not, however, advise readers to follow Mr. Gill's lead at this stage, because I have developed a new set which I recommend readers to look out for. It will be described in

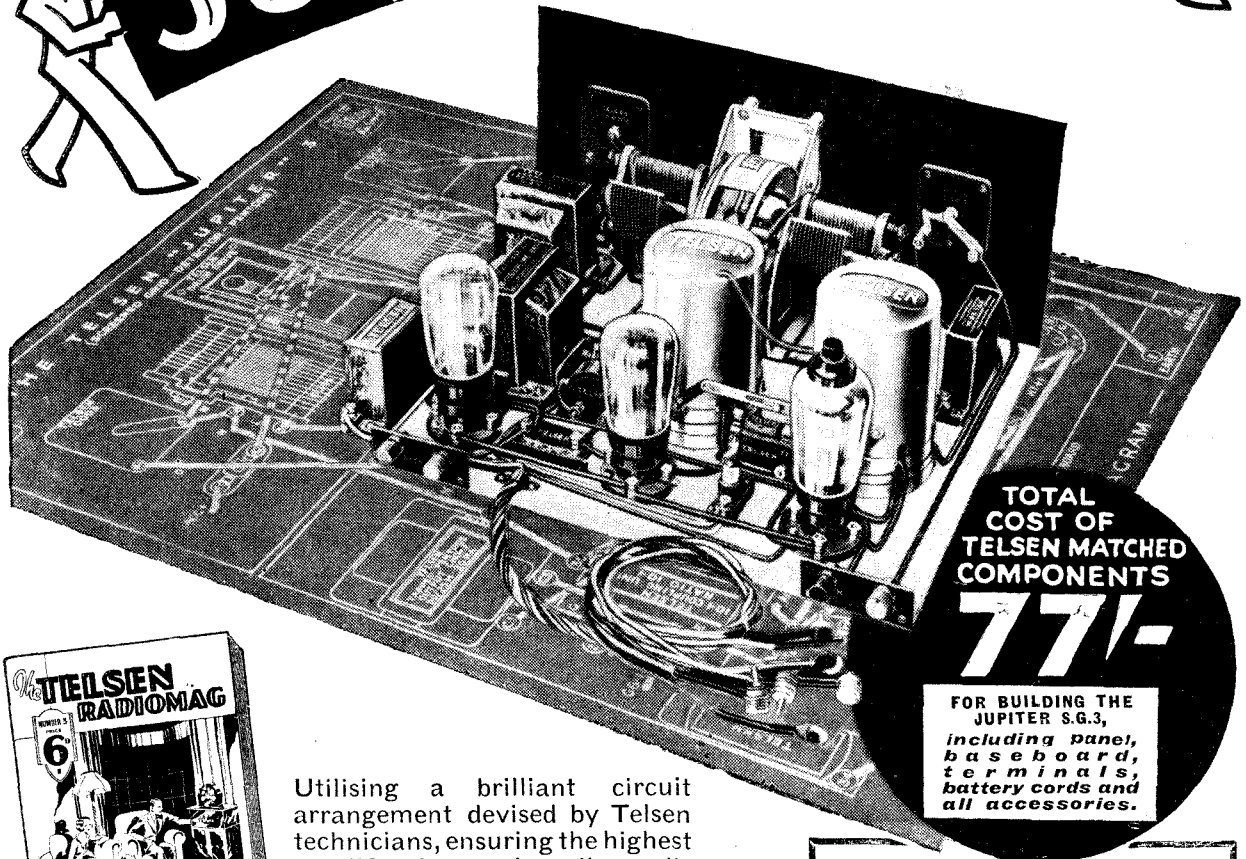
I can do in a set of the S.G.3. type.

As regards the new set, I have been working on it since December last. To all intents and purposes the work is now complete. How successful it has been will shortly be revealed. I hope you will tell your friends to look out for it and to save up for it!

* * *

How many constructors examine their components before using them? Coils are well worth examining for badly-soldered joints, although I cannot recommend the beginner to put things right. It is better to return the coils. Valve holders should always be carefully scrutinised before use and a valve fitted into it before

The TELSEN JUPITER S.G.3



TOTAL COST OF TELSEN MATCHED COMPONENTS

77/-

FOR BUILDING THE JUPITER S.G.3, including panel, base board, terminals, battery cords and all accessories.



Utilising a brilliant circuit arrangement devised by Telsen technicians, ensuring the highest amplification under all conditions, with extreme selectivity, exceptionally wide range and superb quality of reproduction. Free full-size 1/- blue prints of

this and other Telsen circuits, together with full instructions and a wealth of interesting and valuable information, including particulars of the improved and now all-embracing range of Telsen Radio Components at the still lower prices, made possible by Telsen's enormous sale, are contained in the new, bigger and better issue of the Telsen Radiomag. Get a copy NOW—price 6d. from your radio dealer or newsagent.

TELSSEN

RADIO COMPONENTS

CONSTRUCTORS' OUTFIT —DRUM DRIVE AND CONDENSER ASSEMBLY

This is an invaluable accessory to the Constructor building up any of the Telsen Circuits employing the Drum Drive and Condenser Assembly (e.g. the "Jupiter" S.G.3). The various components and accessories included are shown in the illustration above.

Cat. No. 219

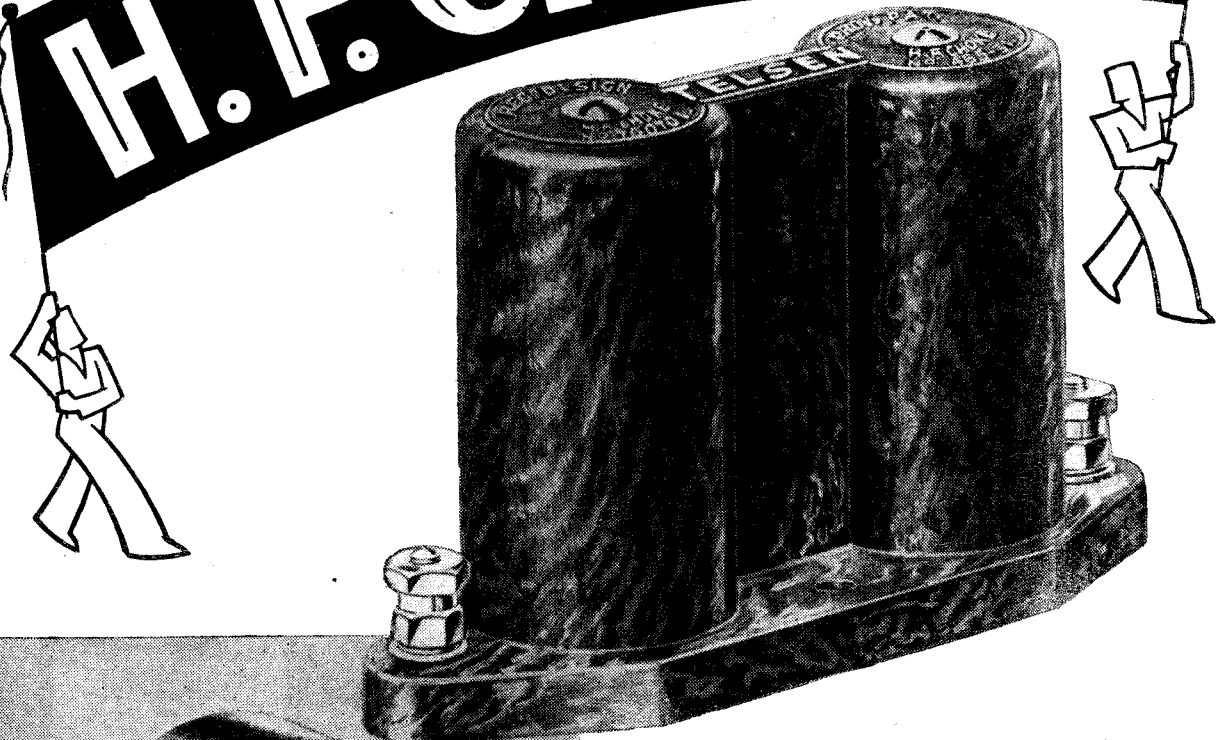
3/6

GOOD RADIO IS A JOY FOREVER

ANNOUNCEMENT OF THE TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM.

TELSEN

H.F. CHOKES



**TELSEN
BINOCULAR H.F. CHOKE**

In H.F. amplification the performance of a choke is of supreme importance. The Telsen binocular H.F. Choke is called for wherever the highest efficiency is required. It has a high inductance of 250,000 microhenrys, low self-capacity, and a negligible external field, due to the binocular formation, making it the ideal choke for a high class circuit.

5/-

No. W. 74.

**TELSEN
STANDARD H.F. CHOKE**

The Telsen Standard H.F. Choke utilises the minimum baseboard space. It is designed to cover the whole broadcast band, has very low self-capacity, and is highly suitable for reaction circuits. The inductance is 150,000 microhenrys and the resistance 400 ohms. It has proved very popular and has been incorporated by set designers in many of the leading circuits.

2/-

No. W. 75

TELSEN
RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

ANNOUNCEMENT OF THE TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM.

AS WE FIND THEM NEW APPARATUS TESTED

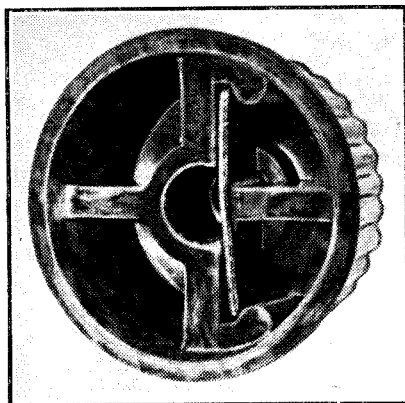


Under this heading we publish reviews of apparatus submitted by radio manufacturers and traders for examination and test in "The Wireless Constructor" laboratories.

Non-Slip Knob

THERE are various methods of securing the control knobs of small variable condensers, resistances, etc., to their spindles. Most of them make use of a grub screw, which sometimes engages in a slot and at others is held in position by the friction between the metal surfaces of the screw and spindle.

A NOVEL FIXING



A very attractive control knob with a fixing device that has real non-slip qualities. The manufacturers are Clarke's Ltd., of mains unit fame.

H. Clarke & Co., of Manchester, have adopted a simple and effective scheme which precludes any possibility of slip occurring.

The "Clarke" knob is illustrated on this page, and to fix it in position a flat is made on the spindle with a file and the knob is then slipped on.

No slip can occur, and the method is delightfully simple. The makers state that they supply the knob to set manufacturers in addition to using it on their own components.

A Compact "Transcoupler"

The latest Bulgin products to hand are the "Transcoupler" and Lightning Switch. Dealing first with the "Transcoupler," this is a complete parallel-feed resistance-capacity-coupled low-frequency unit.

Contained in the green bakelite moulding are a nickel-alloy-core L.F. transformer together with a tapped spaghetti-type resistance and the requisite coupling condenser.

The critical constructor should remember that weight and size are not criterions of quality in these days of high permeability alloys. The necessary high-inductance primary winding can be obtained in a transformer of small dimensions provided the winding is subjected to only small anode currents.

The parallel method of connection gives the required isolation of the primary winding from the D.C. current flowing in the plate circuit of the valve, and thus ensures the maintenance of those desirable features which are essential for quality reproduction.

Matching the Unit

The Bulgin "Transcoupler" contains a transformer having a primary inductance of approximately 80 henries at zero current (D.C.). There are two terminals on the base of the unit marked "High" and "Low." Between "Anode" and "High" there is a resistance having a value of 50,000 ohms, and between "Anode" and "Low" the value is 30,000 ohms.

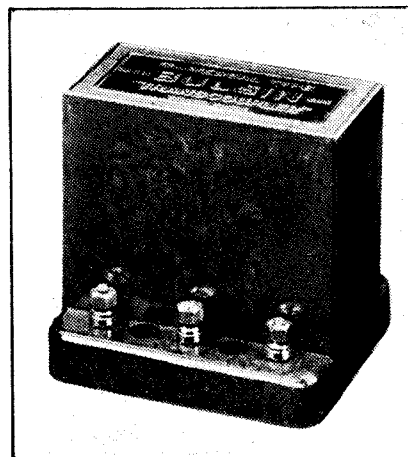
These alternative connections are provided for the purpose of matching the unit to values of different A.C. resistances.

In use the "Transcoupler" gave satisfactory amplification and the high standard of reproduction which is one of the attributes of this form of coupling. The response curve goes down to 50 cycles and is well maintained over the middle and upper registers. Selling at the very moderate price of 11s. 6d., the unit is likely to achieve a considerable measure of popularity.

The second component is the neatest lightning switch we have seen, and it carries with it a guarantee to the value of one hundred pounds against any damage that may occur to the set through lightning.

The switch itself includes an arrester gap and a fuse, in addition to the metal switch arm for direct earthing.

BUILT BY BULGIN



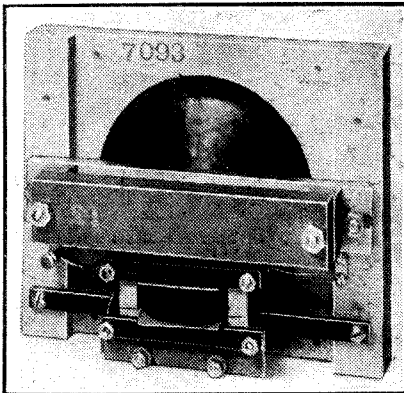
The Bulgin "Transcoupler" is a very neat and compact L.F. intervalve coupling unit. It comprises a small alloy-cored transformer, together with the necessary anode resistance and coupling condenser for shunt feeding.

As We Find Them—continued

The arrestor gap and fuse serve as a protection in the event of the listener forgetting to place the switch on the earth side.

It is a thoroughly practical component, as are all the others in the

TO PUT IN YOUR PORTABLE



The diminutive moving-coil loudspeaker shown in the above photograph is a product of Lanchester's Laboratories, Ltd., and is known as the B.o.B. It is intended for use in portable receivers and has a very creditable performance.

Bulgin range. The price is 2s. 6d., and the makers A. F. Bulgin & Co., Ltd., Abbey Road, Barking, Essex.

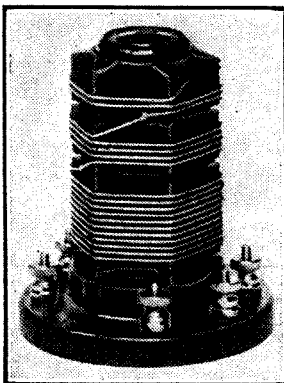
A Triple-Range Coil

We have recently had an opportunity of trying out one of the new triple-range short-wave coils marketed by Messrs. Lissen.

This coil consists of three windings giving wave ranges of approximately 12-25 metres, 19-43 metres, 38-85 metres when tuned by a .0002-mfd. variable condenser. The actual ranges depend upon stray circuit capacities and a very small variable condenser is advisable in series with the aerial.

A considerable amount of thought has been expended upon the

FOR SHORT WAVES



This neat three-range short-wave coil covers all waves from 12 to 85 metres. It is manufactured by Messrs. Lissen.

construction of this coil, particularly in keeping down the dielectric losses in the former, and the increase in the high-frequency resistance of the coil windings, due to the short-circuited turns, does not exceed 10 per cent.

On test we found the coil to function in a highly satisfactory manner and the difference in efficiency—if any—between it and the usual single wave-range plug-in type is certainly not detectable by the ear.

The Lissen unit will be welcomed by those short-wave fans who are weary of the constant coil-changing necessitated by the one wave-band variety.

The B.o.B. Loudspeaker

The B.o.B. loudspeaker is a product of Lanchester's Laboratories, Ltd., Tyseley, Birmingham, and is a miniature permanent-magnet moving-coil instrument retailing at 25s. 6d., including transformer.

The model submitted for test was the standard chassis incorporating a dual-ratio output transformer giving two alternative ratios of 28-1 and 46-1.

The magnets are of cobalt steel, and the shallow cone employed has a diameter of 4 in. The small dimensions of the instrument can be gauged from the fact that the fascia board upon which the chassis is mounted measures only 7½ in. by 6½ in.

Our tests revealed an adequate response to musical frequencies between 100 and 6,000 cycles, with a falling off below 100 cycles and rises at approximately 300, 2,500 and 4,500 cycles. No noticeable peaks could be detected on musical notes and, as would be expected, the reproduction of speech was conspicuous by its clarity and crispness. In this respect it was the equal of any of the speakers we have tested.

Not So Costly

The general balance of tone was surprisingly good. As regards sensitivity, the "B.o.B." was somewhat below that of our standard permanent-magnet moving-coil, but in making this comparison it is only fair to state that the latter instrument is one possessing a massive magnet assembly, and is in a considerably higher price class.

We found the "B.o.B." loudspeaker to function satisfactorily in conjunction with a fully-loaded 2-volt

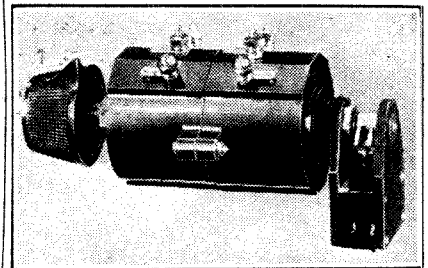
power valve capable of giving an undistorted output of approximately 300 milliwatts.

The instrument is designed to handle up to about one watt undistorted output, and although not possessing the super-sensitivity of some of the expensive types of moving-coils, the results are remarkably good for one so small in size and moderate in price.

Wearite Ganged Control

Simple operation is an essential factor in the design of any large-sized radio receiver if a high degree of efficiency is to be maintained. To reduce the number of controls is by no means an easy task.

IT DOES TWO JOBS



A combined "on-off" switch and volume control, which should prove very useful in the hands of the home constructor, marketed by Messrs. Wearite.

Messrs. Wright and Weaire have tackled one of the problems in a very satisfactory manner by marketing a twin volume control and an "on-off" switch working from one knob.

The volume controls are the Wearite Q.V.C. type, utilising a space-wound resistance element designed to give a square-law adjustment. A roller contact ensures a smooth and effective connection with the element.

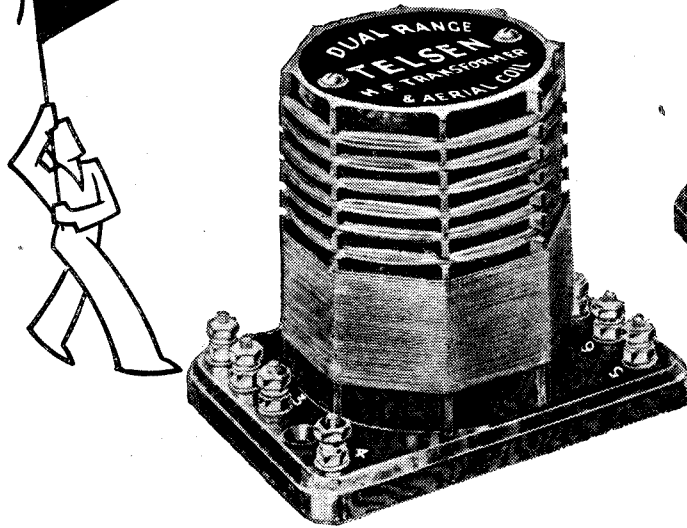
Used With Volume Control

By "ganging" the on-off switch with one or more volume controls the constructor obtains a device with which he is able to switch on the set and then gradually to adjust the volume from a whisper to the required strength for listening purposes. Alternatively he can utilise the single knob as a means of changing from radio to gramophone by employing a slightly different type of switch.

The two controls submitted were rated at 100,000 ohms, and this figure was found correct upon measurement. The movement was perfectly smooth and silent in operation.

TELSEN

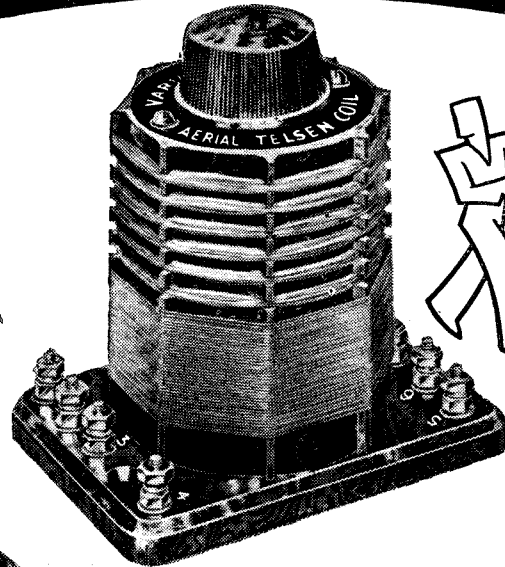
DUAL-RANGE AERIAL COILS



THE TELSEN H.F. COIL

May be used for H.F. amplification with Screened-Grid Valve, either as an H.F. Transformer, or alternately as a tuned grid or tuned anode coil. It also makes a highly efficient aerial coil where the adjustable selectivity feature is not required. No. W.154

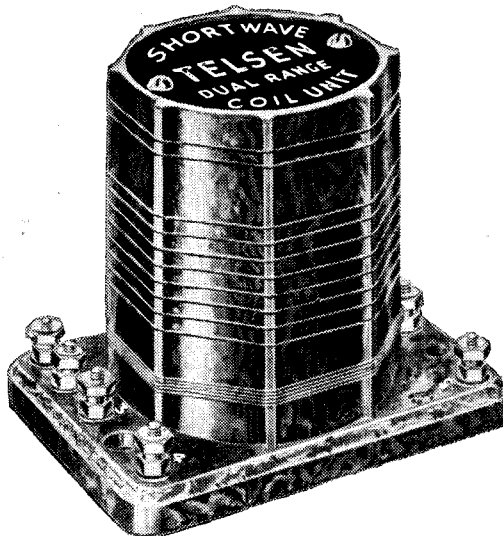
5/6



TELSEN DUAL-RANGE AERIAL COIL

Incorporates a variable selectivity device, making the coil suitable for widely varying reception conditions. This adjustment also acts as an excellent volume control, and is equally effective on long and short waves. The wave-band change is effected by means of a three-point switch and a reaction winding is included. No. W.76

7/6



TELSEN COMBINED DUAL-RANGE SHORT-WAVE COIL UNIT

This unit, for the first time, brings the construction of short-wave receivers into line with the simplicity of modern practice. When tuned by a Telsen .00025 Condenser, a wave range of 20 to 80 metres can be covered by the operation of a switch, as in ordinary broadcast practice. The unit incorporates windings for aerial, tuning and reaction circuits, all coils being wound with stranded wire. The coil is also suitable for use with sets covering all wave-bands with a .0005 Tuning Condenser. In this case the Dual-range feature is not employed. No. W.174

4/6

TELSEN

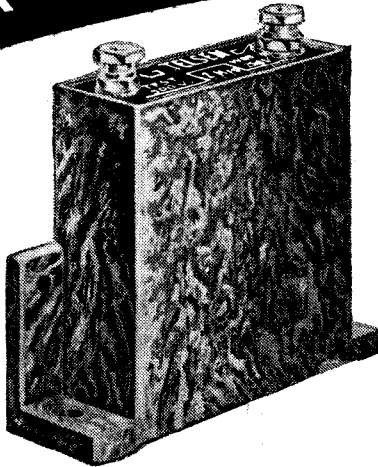
RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

ANNOUNCEMENT OF THE TELSEN ELECTRIC CO. LTD., ASTON, BIRMINGHAM.

TELSEN

MANSBRIDGE AND MICA CONDENSERS

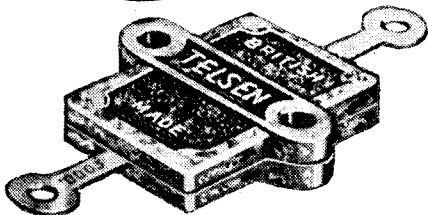


TELSEN MANSBRIDGE TYPE CONDENSERS

These are made by the most advanced processes from the finest materials it is possible to obtain, and subjected during manufacture to a series of stringent tests under laboratory conditions. They are of the true Mansbridge type, self-sealing, non-inductive and hermetically sealed. They are offered in two types, the capacities from .01 to 2 Mfd. in Bakelite cases, and in blocks of 4, 6, and 8 Mfd. in metal cases with soldering tags.



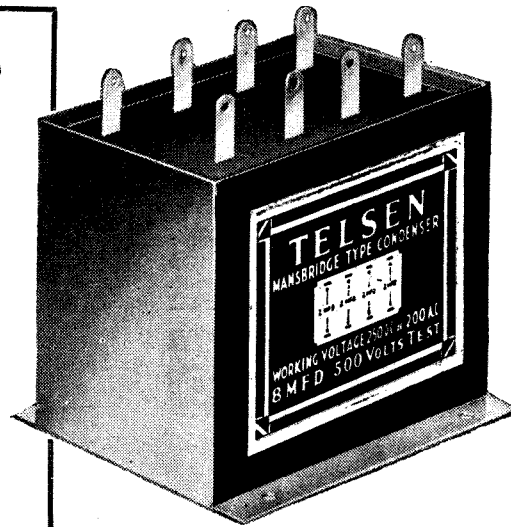
CAP. MFD.	500 Volt Test NO.	PRICE	1,000 Volt Test NO.	PRICE
.01	W.232	1/6	W.239	2/6
.04	W.230	1/9	W.237	2/9
.1	W.231	1/9	W.238	2/9
.25	W.229	2/-	W.236	3/-
.5	W.228	2/3	W.235	3/3
1	W.227	2/3	W.234	3/6
2	W.226	3/-	W.233	5/-



TELSEN TAG CONDENSERS

This type is of extremely compact and sturdy construction. It may be mounted on either insulated or metal panels by utilising the two baseboard screw holes in the neatly designed moulded casing. The tags enable the condenser to be connected to any other component, either directly or by soldering. H.F. losses are negligible. The capacity is stamped on the soldering tag.

CAPACITY.	NO.
.0001	W.207
.0002	W.208
.0003	W.209
.0004	W.210
.0005	W.211
.001	W.212
.002	W.213



TELSEN MANSBRIDGE BLOCK CONDENSERS

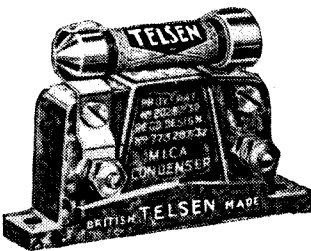
These are contained in metal cases finished in brown and with fixing holes. As with the other types of Telsen Mansbridge Condensers, they are self-sealing, non-inductive and hermetically sealed. Three types, each made having total capacities of 4, 6, and 8 mfd., each type being divided into 2-mfd. sections, so that several arrangements of capacity may be obtained. Neat and substantial soldering tags are provided for each section.

CAP. MFD.	500 Volt Test CAT. NO.	PRICE
4	W.175	5/6
6	W.176	8/-
8	W.177	10/6

CAT. NO.	1,000 Volt Test PRICE
W.178	9/6
W.179	14/6

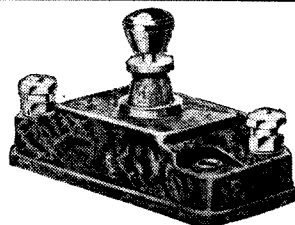
TELSEN "MICA" CONDENSERS

The New Telsen "Mica" Condensers represent an important advance in technique: H.F. losses have been practically eliminated even in the larger capacities. In order to distinguish them from the earlier type, now to be discontinued, the new condensers are enclosed in a redesigned case, which, while possessing all the adaptability of the previous one as to flat and vertical mounting, is of more attractive appearance. Grid-leak clips may, as heretofore, be mounted in series or in shunt and are supplied at no extra charge with capacities .0001, .0002, and .0003 mfd.



CAP. MFD.	NO.
.0001	W.240
.0002	W.241
.0003	W.242
.0004	W.243
.0005	W.244
.001	W.245
.002	W.246

PRICE.	NO.
1/-	.005 W.247
1/3	.005 W.247



TELSEN PRE-SET CONDENSERS

Very low minimum capacity, giving a wide range of selectivity adjustment when used in aerial circuit. Substantially made, easily adjusted and provided with locking ring. High insulation and low loss.

MAX. CAP. MFD.	MIN. CAP. MFD.	NO.
.002	.00025	W.149
.001	.000052	W.150
.0003	.000016	W.151
.0001	.000005	W.152



TELSEN

RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

ANNOUNCEMENT OF THE TELSEN ELECTRIC CO. LTD., ASTON, BIRMINGHAM.



I FEAR that in many respects the radio industry is rather sheep-like. This is probably because of the keenness of competition which exists between most of the individual concerns.

Each fears that someone else is going to get away with a coup, and so as soon as one firm is in production with something which is "different," there is at once a concerted rush on the part of others to bring out similar "lines" and styles of sets.

Therefore, we have the curious condition of an industry tending to panic its own fashions into being, sometimes with different results from what were intended.

An "All-Mains" Scare

For instance, about three years ago certain concerns came to the conclusion that the immediate future of radio was tied to the supply mains. They dropped all their battery sets and thereafter manufactured nothing but mains receivers.

Then came the famous Grid Scheme for Electrical Development. Practically the whole industry went all-mains. Meanwhile, one or two firms continued making and selling battery sets, for in their wisdom they realised that not more than a quarter of the country's households would be fitted with electrical power during the following few years at the then rate of progress.

And they were very right. Even to-day, I believe, far less than half the total number of listeners have access to the mains.

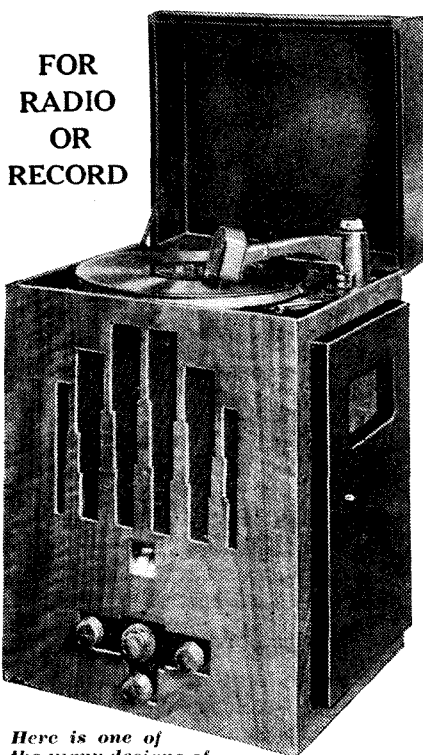
Those few firms made packets of money by not following the prevailing "fashion," and home-construction of battery sets provided enormous business.

However, this year many manufac-

turers are in part going back to batteries, and in the 1932-1933 season you will see nearly as many battery sets on sale as mains sets, or so I believe.

In this careful analysis of the trend of present-day design, Mr. King suggests that two of the outstanding features of the 1932-33 season will be the return to battery-driven sets, and the popularity of the inexpensive radio-gram, to the exclusion of mechanical gramophones.

It is probably the active state of the home-constructor movement which focussed attention on battery sets, for it is an indisputable fact that



Here is one of the many designs of all-electric radio-gram which will be popular in the coming season. Low cost, ease of operation and high efficiency are the characteristics wanted in 1933 sets.

commercial design lags behind home-construction.

The super-het. provides a most striking example of this. During 1931 supers became very popular with constructors, and so this year we find more and more commercial designs appearing.

Not Much Market

But I think, personally, that the lag has been too great this time, and I cannot visualise a particularly big market for

commercial supers during the coming season.

For one thing they are naturally rather large, expensive productions, and there is not enough money about to support a big "de luxe" radio market.

Further, it is dubious whether the ordinary listener, as against the enthusiast who "rolls his own," is attracted by DX reception. I find that the most he wants is a few stations easily and inexpensively obtainable.

I am of the opinion that there exists a keen demand for inexpensive radio-grams, both of the battery and of the mains types.

The sales of mechanical gramophones have fallen right off this year I am told.

"Tied" Speakers

I have often wondered if the industry is wise in concentrating on cabinet types of sets to the exclusion of others.

I do not think listeners as a whole want their loudspeakers tied up with their sets. Certainly I can say definitely that most home-constructors prefer to have set and loudspeaker as separate units.

There is the financial consideration that sets seem to grow obsolete quicker than loudspeakers, and, again, it is often more convenient to be able to

The Sets for 1933—continued

have the set in one position and the speaker in another.

If you want to have the set near to your hand so that its tuning controls are immediately accessible for programme changing, it is unpleasant to have to have the speaker, too, right by you.

A Fortune Goes Begging

I wonder why remote control has never caught on in this country? Or hasn't it been properly exploited? In America nearly all the big concerns are now manufacturing remote-control sets but, of course, they are rather expensive. I expect that is the snag.

There ought to be a fortune awaiting the man who invents a really simple one which could be sold cheaply.

the arm of your chair or in your lap, and when there is speech, or if you want quiet music or desire to listen to somebody talking in the room, you can immediately regulate the volume accordingly.

Another touch of the control and greater or full volume for an orchestra is given.

The extra cost for such a device would be but a matter of a shilling or two, and it could easily be arranged on a plug-in plan so that it could be disconnected and tidily stowed away when not required.

More Scope for Pentode

I wonder if we shall see 1933 sets equipped with such an equipment?

I can safely predict that there will be certain circuit developments in next year's sets.

appeared to overlook until quite recently.

The most noticeable improvements, however, will concern the quality given.

The popularisation of the moving-coil loudspeaker will have been the cause of this; the public now realises that something a good deal better than 1924 quality can be achieved at no great cost.

Few Triple-Banders

So you will actually find moving-coil speakers in very many 1933 outfits, and in the sets themselves such things as parallel-feed L.F. transformers will figure in attempts to obtain better quality reproduction.

I don't think more than a limited number of triple-band sets will appear this season. Although the short waves are getting popular, it is improbable that the trade will be markedly influenced in that direction for some time yet so far as set design goes.

On the other hand, I anticipate good business will be done in short-wave adaptors.

I suppose this is an occasion when I ought to say something about television.

Hitherto I have dodged the subject, and I do not believe I have even mentioned it in any of my previous articles.

Frankly, I do not consider that television has yet entered the field of practical politics. It is still in its experimental stages.

I am sorry that this is so, for vision would vastly increase the attractiveness of broadcasting.

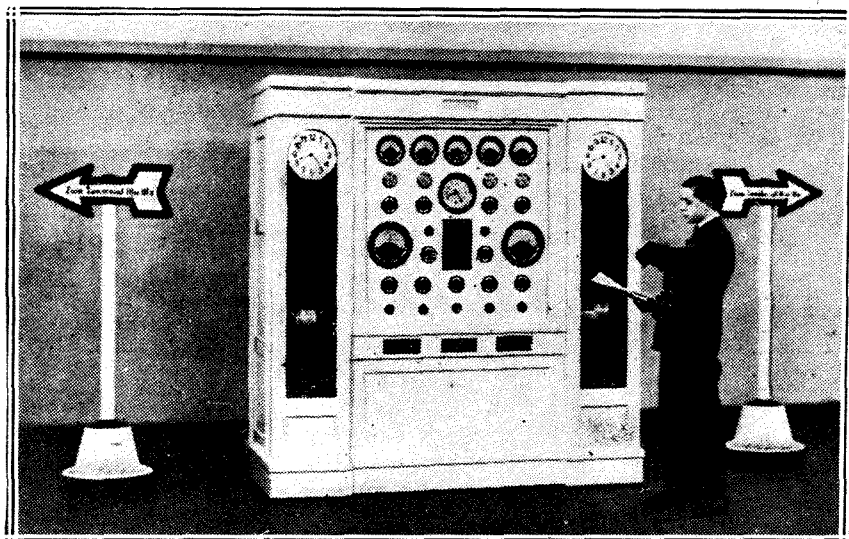
Exaggerated Claims

Strides have been taken, but so many exaggerated claims have been made for these strides that I fear the public will be terribly disappointed with television when at long last it does come.

They have been told that almost everything can be televised effectively, and I expect many truly believe that only minor snags stand between them and perfect radio movies.

When they are confronted with the first inevitably crude results (and that may not be for years) the anticlimax may be such as to put television back a whole generation.

KEEPING A WATCH ON THE TIME!



Correct timing—to the nearest second—is one of the most important considerations of the programmes. In Berlin's home of radio all studios, offices and control-rooms are equipped with electric clocks, and this picture gives an impression of the "brain" which keeps them all in step. The signposts show the way to the studios.

It would have to be more than a mere on-off control—it must also be able to change the programmes from any distant loudspeaker point.

Which reminds me of the distant volume control. A simple thing, but I believe it would be popular with listeners. The idea is merely that a potentiometer or variable resistance volume control is joined to the set by means of a length of flex.

This allows you to adjust the volume exactly to your liking while sitting comfortably at some little distance.

You have the control drooping over

Variable-mu valves will figure in a few receivers, and so will screened-grid detectors. Also, I fancy the pentode will be employed more widely than before.

But hand-passing is not likely to be as prominent as was forecast by many of its advocates.

Quality Will Improve

You will find a considerable increase in selectivity among the average types of sets, for modern ether conditions necessitate good station-separation qualities—a fact which the industry, or section of it,

The LISSEN SKYSCRAPER KIT 3

**POINTS THAT MAKE
IT THE GREATEST
KIT SET EVER
PRODUCED!**

**1 METALLISED
S.G. VALVE**

The Lissen Metallised Screened-Grid Valve employed in the Skyscraper has such a small inter-electrode capacity that it provides an almost perfectly stable H.F. stage, with a magnification figure in excess of 1,000. The extreme range and stability of the Skyscraper is due to this valve and its perfect screening.

**2 PENTODE
OUTPUT**

The Lissen Power Pentode Valve gives to the Skyscraper its brilliant tone, its amazing power—yet it uses no more high tension current than an ordinary power valve. The current consumption of the Skyscraper is less than many ordinary 2-valve receivers.

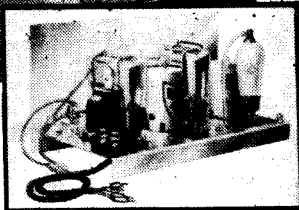
**3 SHIELDED
COILS**

These Lissen Shielded Coils are the result of months of research. They make the Skyscraper exceptionally selective, and one of the few sets free from "long wave break-through."

**4 ALL METAL
CHASSIS**

Notice the most expensive of commercial radio receivers to-day and you will see that they have metal chassis—so does the Skyscraper at half the cost!

The Lissen Constructor's Kit! Up-to-the-minute in design—a year ahead in several of the specially created Lissen parts. What will it do? The metallised Screened-Grid stage is so stable that you can push it to the limits of radio range—the Lissen Economy pentode output valve brings up the volume of distant stations until they sound like the local station. Shielded coils, matched and balanced—metal chassis with modern under-baseplate wiring—hairbreadth tuning with geared ball bearing condensers—all these points and many more combined for the first time in a complete kit ready for assembly. Many sets before this have given you a selection of stations—but never before has there been a home constructor's set to give you the Europe-wide, almost world-wide, range of the Lissen Skyscraper, and the mighty power of its pentode output—never such a set for **getting entertainment value out of radio!** So many alternative programmes are at full loudspeaker strength.



89 1/6

**PUT IT
IN THIS
CABINET—
COMPLETELY
SELF CONTAINED!**

KIT INCLUDING VALVES

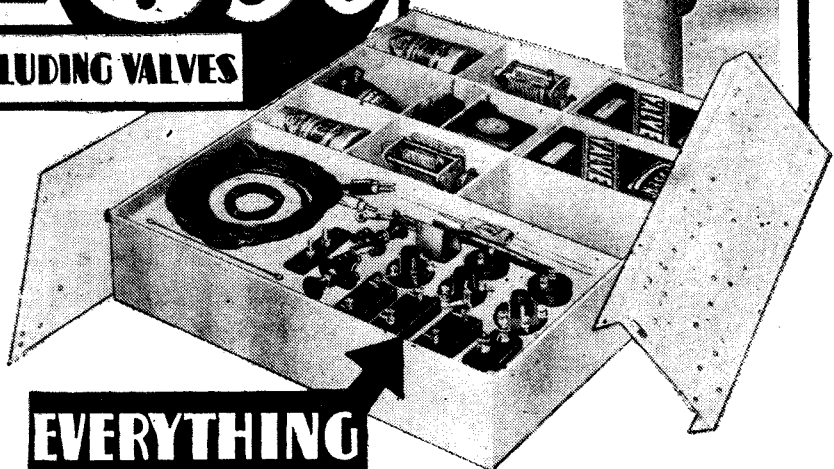
You can buy the Skyscraper Kit, complete with valves, ready to build up and put into a cabinet of your own choice with perhaps your existing batteries and loudspeaker. But, better still, Lissen have provided a beautiful walnut Console Cabinet which contains not only the chassis and loudspeaker, but batteries and accumulator as well . . . making your Skyscraper a real self-contained receiver comparable in appearance with any expensive factory assembled set, and in performance easily outstripping previous receivers.

Price, complete with walnut cabinet and loudspeaker, as illustrated . . . £6 5s.

**1/- CONSTRUCTIONAL
CHART FREE.**

A two-colour, lavishly-produced Chart giving full instructions for building the Skyscraper 3 has been published, price 1/- GET YOUR COPY FREE! Write direct to the factory, or ask your nearest radio dealer to get it for you.

**EVERYTHING
YOU NEED!**



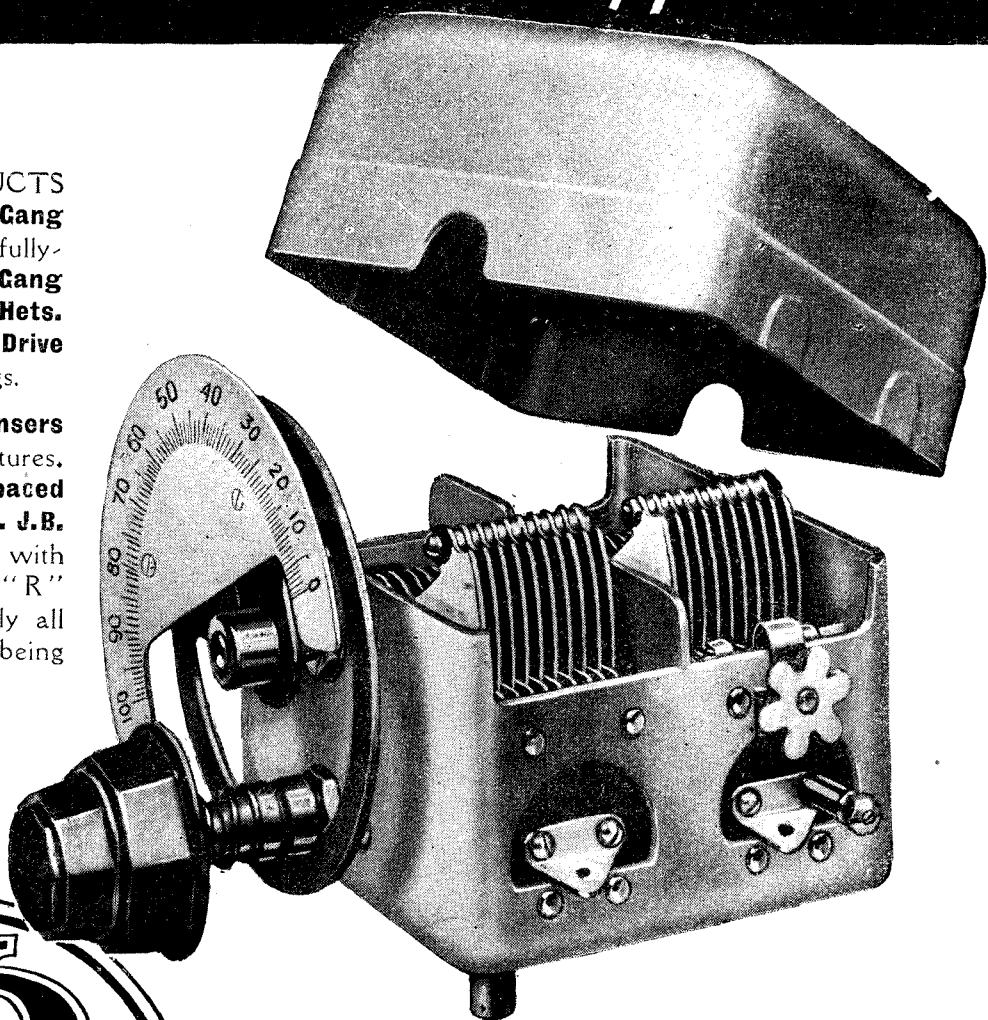
LISSEN LTD. WORPLE RD. ISLEWORTH. MIDDLESEX

NEW J.B. 'UNITUNE' CONDENSER - a triumph of precision

NEW J.B. PRODUCTS include entirely **new Gang Condensers** in semi- or fully-screened types. **New Gang Condensers for Super Hets.** **New Illuminated Disc Drive** for use with above gangs.

New Short Wave Condensers with many novel features. New capacities in **Air-Spaced Differential Condensers.** **J.B. "Illuminator"** for use with J.B. Chassimount and "R" Type gangs. Practically all existing J.B. models are being retained.

STAND No. 204
NATIONAL RADIO
EXHIBITION



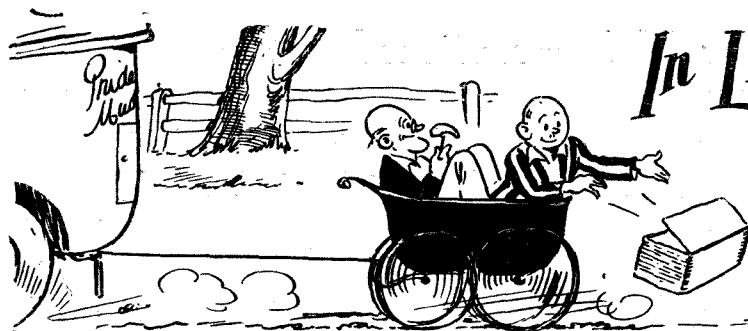
J.B. "UNITUNE" Gang Condenser.

A pre-set trimmer is fitted to one half, while the other half has a trimmer which is operated from the front of the panel. The panel-trimmer control is concentric with the main tuning knob. Capacity '0005. Complete with disc drive and bakelite escutcheon plate.

2 gang - - 18/6 3 gang - - 27/-

PRECISION INSTRUMENTS

Advertisement of Jackson Bros., 72, St. Thomas' Street, London, S.E.1. Telephone: Hop 1837.



In Lighter Vein OUR CRICKET OUTING

By "Wireless" Wayfarer

It is always rather difficult, you know, for a meeting of a wireless club to come to a decision about its summer outing.

When we at Mudbury Wallow were discussing ours everybody seemed to have different views. Captain Buckett was all for a day on the bounding ocean, but the rest of us felt that this might be disastrous even if we went well supplied with Professor Goop's famous "Rich, Red Syrup For Pale Green Sailors." Miss Worple suggested a visit to Stratford, the day to be spent in soul-communion with the Swan of Avon.

A Long Explanation

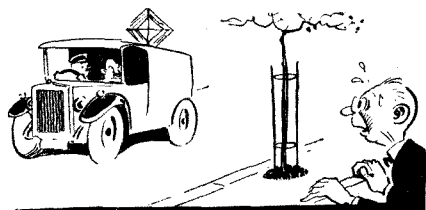
"That sounds good," I cried. "Is it one that you can thoroughly recommend?"

"Is what one?"

"Why the Swan, or whatever you said the name of the pub was."

Shooting me such a glare, Miss Worple went off into a long explanation about the Swan, but was brought up short by Tootle, who thought that

RAIDING SUBURBIA



"... one of Mr. Savitt Sage's plain vans with a frame aerial fitted to its roof."

we might broaden our minds and widen our knowledge by visiting a glue factory or something awful of that kind. Pimpleson was in favour of a ramble afoot; having had some on a previous occasion, we vetoed this idea.

Goshburton-Crump's suggestion was that we might have some good clean fun by borrowing one of Mr. Savitt Sage's plain vans, fitting a frame aerial to its roof, and driving it slowly through the streets of neighbouring towns. Each member, he suggested,

should be given a post-office to look after, and the one who counted the most people taking out licences would win a half-crown sweep on the event.

This was quite brainy, but we thought that there might be some difficulty about borrowing the van. We seemed to be in danger of a dead-

At a recent meeting the members of the Mudbury Wallow Wireless Club unanimously decided on a day's outing to Bilgewater Magna, and a cricket match with the local radio society. Below, that amazing personality, Wireless Wayfarer, tells you of his experiences as a member of that hectic party.

lock when I had one of my usual bright inspirations.

"I know," I cried, "let's take on the Bilgewater Magna Wireless Club at cricket."

"Splendid!" said Sir K. N. Pepper. "We will make it an afternoon match. Let's start from here in the morning, take a roundabout route, and have a picnic lunch on the way."

This was accepted unanimously. It was decided that everyone should contribute ten shillings towards the expenses of food and transport, and as luckily I had just been able to sell to Goshburton-Crump an excellent valve that Tootle had given me without knowing it, I was able to pay my way like a man.

The "Hiker Pushable"

It was arranged that everyone should bring a portable set with him. Some people wanted to go in their own cars, but we eventually fixed on a "charry" as being more matey. Mr. Spoooper, our local garage proprietor, agreed to provide the Pride of Mudbury Wallow for our conveyance, and the town hall was fixed as the rendezvous, zero hour being 10.30 ack-emma.

Wearing my nattiest white flannels and the Old Dartmoorian blazer, I

strolled down the High Street at the appointed hour, swinging a small attaché case in my left hand. On my way I overtook the Professor trundling his Hiker Pushable, and we were soon joined by Tootle, staggering under one of the most unportable things I have ever seen in portables, and Sir K. N. Pepper, whose gardener and chauffeur bore between them another gigantic piece of apparatus.

M.C. Speaker Too

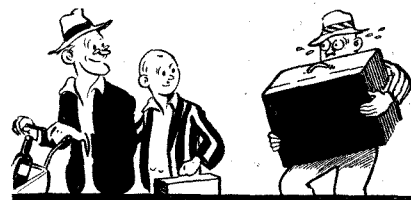
They were all collected on the steps of the town hall. Nobody had brought less than one portable, whilst Goshburton-Crump had two, and Miss Worple no less than three, plus a full-sized moving-coil loudspeaker.

The only thing missing was the Pride of Mudbury Wallow. And that, had we but known it, is exactly what the Pride was engaged in doing round at the garage—missing on all four.

Scouts were sent out to discover what was happening. Meantime I made myself comfortable on the pile of coats and rugs that had been collected on the top step, and the Professor curled up neatly in the basket which Miss Worple's Peke, Tumpsey-Wumpsey, had vacated to snap at Pimpleson's ankles.

I was awakened some time later by the ear-shattering reports which

AN OUTSIZE IN PORTABLES



"... we were soon joined by Tootle, staggering under one of the most unportable things I have seen."

heralded the approach of the Pride.

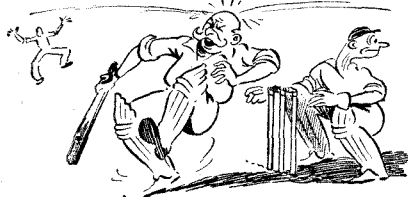
Mr. Spoooper, after superhuman efforts, had got three out of the four cylinders working. With those, he assured us, the Pride would get us anywhere. There was an unseemly rush for seats, in which I took no

In Lighter Vein—continued

part. The Professor and I had talked it over beforehand and we had decided that by far the most comfortable means of travelling was to put the works of the Hiker Pushable into the "charry," to tie the carriage itself on behind, and to ride in that. We climbed with dignity into our seats, Sir K. N. Pepper gave the word and, firing a stupendous salvo, we moved off.

There was a bit of a snap in the air, and, as I had risen unusually early, I was beginning to feel distinctly peckish. So also I found was the Professor. We tried to stop the Pride at the first hostelry that we came to in order that we might purchase a sandwich, but failed to establish

HEADED FOR SIX!



"... an excellent leg-bye for six from a full pitch which bounced on Sir K. N. Pepper's head."

communication with the driver or the passengers.

The outlook was black, when suddenly I saw a way out of our troubles. We were harnessed, remember, to the stern of the Pride, and in that stern was a door into which I had seen the luncheon hampers being packed. Hand over hand the Professor and I hauled on the rope until the bows of the Hiker were touching the stern of the Pride.

A Fine Haul

The door was fortunately not locked and in a matter of seconds we had a magnificent hamper in our little carriage.

The empty hamper we jettisoned. The second one was even better than the first, and as for the third its contents were so superlative that I can find no words to describe it.

Hardly had we taken the edge off our appetites in this way when the Pride slowed down and came to a halt by a clump of trees on a delightful stretch of common land.

"Just the place!" bellowed Sir K. N. Pepper. "Couldn't have a better spot for lunch. By Jove! I'm positively famished."

The others, it appeared, were also distinctly peckish. Everybody told everybody else to get the lunch baskets out. "They are all four in that locker at the back," called Goshburton-Crump.

"All *what?*" exclaimed Tootle, after looking inside the door. From the recess within he produced one minute basket. The only people undismayed were the Professor and myself.

Programmes No Help

They sought to console themselves with wireless, but as the National station was silent and the Regional was doing a talk on "William the Conqueror" for schools, that was not a great success. The Professor and I lay down happily in the shade and indulged in a little nap, from which we were awakened by Captain Buckett's shout that it was time to be getting under way for the cricket match.

We won the toss and batted first. The pitch seemed to be a little bumpy, and within ten minutes five of our wickets were down, the only score being an excellent leg-bye for six from a full pitch which bounced on Sir K. N. Pepper's head. When he had retired hurt, I took his place at the wicket. Captain Buckett was bowled the next ball and the Professor and I found ourselves once more in partnership.

The Bilgewater Magna demon bowler prepared to deliver his first ball to the Professor. The Professor always starts walking out when the bowler begins his run. This fellow took a very long run and by the time that he reached the wicket the Professor was very nearly there, too.

I flung myself flat on the ground as the ball was delivered. It hit the bat which the professor was holding up like a shield and bounced back into the midriff of the bowler with such terrific force that he had to be removed on a stretcher.

The Middle Stump

Things were beginning to look up, for this was the fellow who had taken all the wickets and the rest of their bowling was pretty fair tosh. By a surprising piece of bad luck, though, I was bowled by one of those fluke balls that bad bowlers sometimes deliver. This one, if you follow what I mean, was one of those yorkers

which twist in the air and break both ways at once after bouncing. The rest of the side had similar ill-fortune, and we were eventually all out with the score remaining at six.

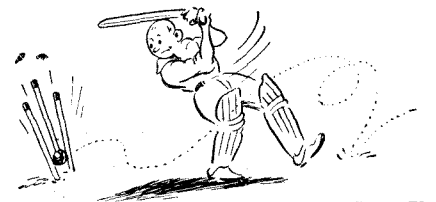
When we went out to field, the Professor pointed out some unsuspected defect in the middle stump at one end and the umpires unhesitatingly agreed to use a spare one which he had luckily brought with him.

At his own request the Professor was put on to bowl the first over. The first ball looked like being a wide, so wide, in fact, that the batsman made no attempt to go for it. It bounced behind the wicket, stopped, then started backwards with gathering speed, and knocked the middle stump out of the ground. In six balls the Professor performed the double hat-trick, a feat probably unparalleled in the history of cricket.

A Good Catch!

In the next over I was fielding beside the Professor in the slips. The batsman did not seem to hit the first ball, but there was a loud and obvious click. I brought off a beautiful catch and out he went. To his intense astonishment, Tootle, who was the bowler, finished off the

"HOW'S THAT, UMPIRE?"



"... one of those yorkers which twist in the air and break both ways at once after bouncing."

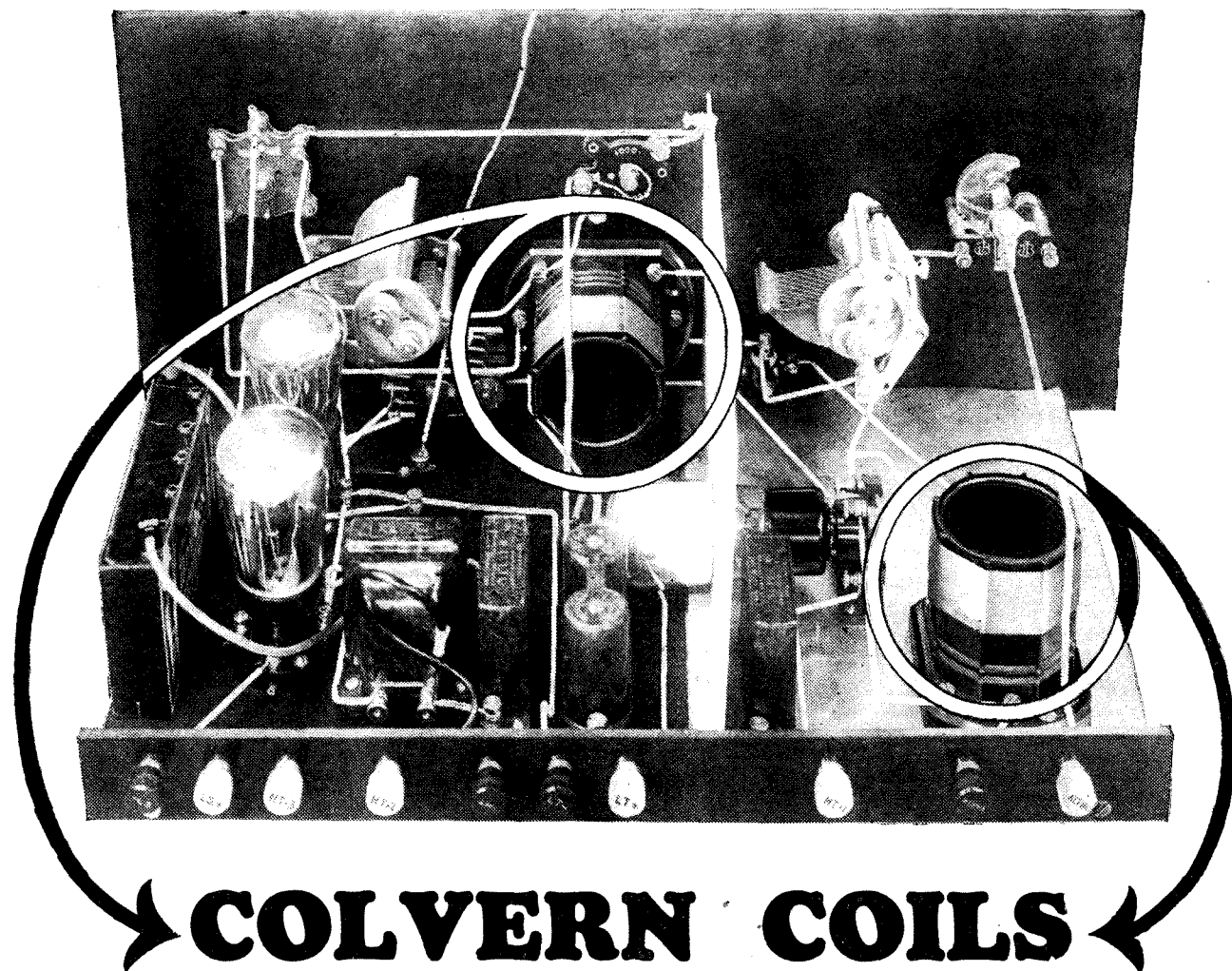
innings, every one of the remaining batsmen being caught at the wicket or in the slips.

Mudbury Wallow thus won this magnificent match by six leg-byes to nought.

"I am thinking," the Professor said to me later, "of patenting that metal stump of mine and this ball, which I also substituted. The stump, though you may not have noticed it, is of the best cobalt steel, highly magnetised, whilst the ball contains a centre of the best Swedish soft iron.

"Don't you think, too, that there is money in the little clicker which I used so successfully during Tootle's over?"

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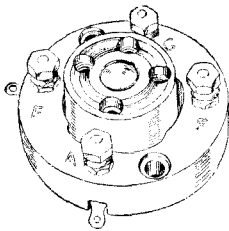
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2 VALVE "BUD" RECEIVER

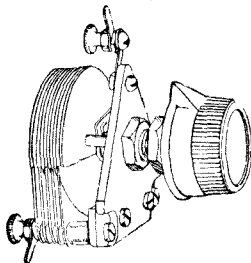
2-VALVE LOTUS "BUD" RECEIVER, an all-electric set—of exquisite tone—incorporating a Moving-Coil Speaker. Gives ample volume and many alternative programmes. For D.C. Model 11 Gns., or 21/9 down. A.C. Model **10 Gns.** or 19/9 down.



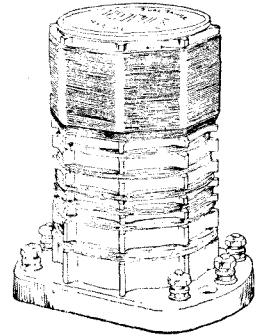
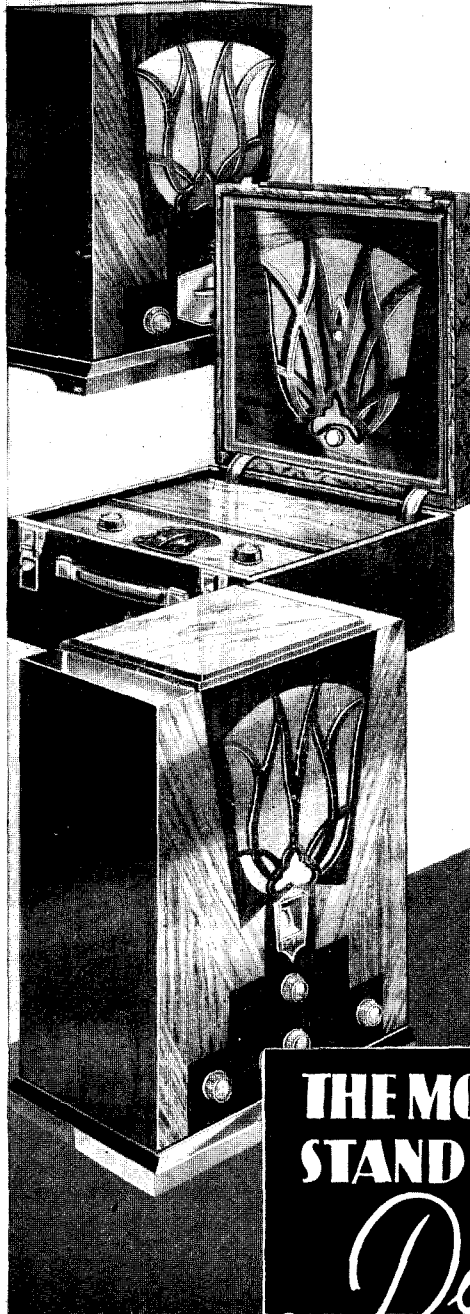
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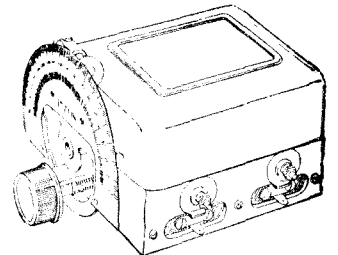
LOTUS REACTION CONDENSER in two capacities, type R.C.13 '00013 and R.C.34 '00034, both at 4/- each. Suitable for all reaction needs, may also be used for series aerial condensers.



LOTUS DUAL RANGE AERIAL COIL. D.R.50. This is a new component giving an extremely high degree of efficiency and selectivity. Price **5/6.** Covers the medium and high wavebands. D.R.60 new Dual Range High Frequency Coil. Price **5/6.**

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LOTUS S.G. 4 PORTABLE. Screen grid, detector, amplifier and power valves. A compact set of ample power and range. Fitted with the world famous Celestion Speaker. Complete with all batteries. Price **12 Gns.** or 23/8 down.



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COMPLIMENTS FROM CONSTRUCTORS

Remember these when "S.T." designs his next set!
More remarkable tributes from all over the country. Whether the constructors of the "S.T. 300" are 14 or 65 years of age, they all say the same thing.

LONDON: "I built your wonderful 'S.T. 300' some weeks back and have had a lot of enjoyment out of it."—A. H. BRAY, Drury Lane, W.C.2. "I am very pleased with your 'S.T. 300.' I have not heard a set like it and I am so pleased I am recommending it to all my friends."—T. TOWNSEND, Wellington Road, Holloway, N.7. "Having just a month ago completed your wonderful set, the 'S.T. 300,' I cannot express fully enough my gratitude for the great number of foreign stations obtainable without interference. This is the sixth set I have had in two years. The others were made by experts, as I did not know the difference between aerial and earth. I followed your rapid construction guide and built the 'S.T. 300' myself."—A. HANNEY, Calderley Grove, Upper Holloway, N.19. "Having made your 'S.T. 300,' I feel I must let you know what wonderful results I get. I get 55 stations—all at extra loud strength. My opinion of the 'S.T. 300' is that whatever set comes along now it could not possibly be in the same class as the '300.'"—W. GARNHAM, Howard Road, Walthamstow, E.17. "I am more pleased every time I tune in. The quality and quantity are amazing."—E. THOMAS, Crofton Park Road, S.E.4. "A wonderful set."—E. GRATTON, Jeffreys Road, Stockwell, S.W.4. "This is my first set. I constructed it from a kit of parts and made it up in a couple of evenings. The set has done all that you claimed for it, and many of my friends with experience of other sets have marvelled at its performance."—P. W. WINNSFORD, Jerningham Road, S.E.14. "I have obtained a splendid performance from your 'S.T. 300.'"—E. HINES, Union Street, S.E.1. "Must congratulate you on the 'S.T. 300,' which I have just built. It is the best set I have had."—C. MEYER, Lambeth Road, S.E.11. "Having built your 'S.T. 300,' and at times working three loudspeakers from it, I think it will be difficult to get one to beat it."—G. SCOTT, Canning Road, Highbury, N.5. "I have just completed my second 'S.T. 300,' and am very pleased with it."—J. BRYANT, Valetta Road, Acton Vale, W.3.

CARDIFF: "Being the proud owner of an 'S.T. 300,' I should like to demonstrate it to P.W.L. of Chorlton-cum-Hardy. It is a fine set."—A. E. WARRINGTON, Castle Street, Cardiff, Cardiff. "The finest I have ever heard."—H. D. GOLDING, Gabalfa, Cardiff.

ABERYSTWYTH: "In the country outside Aberystwyth the only British station that can be relied on ALWAYS is Daventry 5 X X. So I built the 'S.T. 300,' adding a resistance-capacity coupled stage. I had to hold my breath—actual control of selectivity as well as selectivity itself! The handling of the set was a REAL, metaphysically real, pleasure. The energy transfer was amazing, and so were the absolutely silent gaps on each side of 5 X X. There was none of the characteristic loss of quality usual on long waves with dual-wave sets. There was no monkey-chatter on the medium waves—actual proof of band—with control; no loss of quality, and no uncontrollable oscillation (reaction is really silky). The circuit is a winner. North Regional came in like a local station. A sour-dough, wary and disillusioned where 'boost-sets' are concerned, hereby bestows his blessing on the 'S.T. 300'!"—PRE-WRITTELEITE.

WITHAM: "Since I wrote you last I have assembled the 'S.T. 300,' and it is going strong. I have logged most of the stations given in your list."—H. M. CAMPBELL, Rivenhall, Witham, Essex.

ABERDEENSHIRE: "It gives me great pleasure in reporting results obtained with this marvellous set. I have tried most circuits, but the 'S.T. 300' is undoubtedly years ahead of all. Selectivity and quality are superb. The long-wave programmes come in at full volume with the slightest reaction. I prefer the Burne-Jones' 0001-mfd. differential reaction condenser, as it has a bakelite spindle. It is really a great set and by far the best that I have heard and tried. I have much pleasure in congratulating the designer on his splendid achievement."—W. S. COURTS, Constitution Street, Inverurie, Aberdeenshire.

CHORLTON-CUM-HARDY: "I built the 'S.T. 300' the first week that it was published. It is the finest set I have built and I have had a good many."—L. NORMAN, Caldervale Avenue, Chorlton-cum-Hardy.

BLACKBURN: "As a keen amateur constructor since the early days of broadcasting, I have built

up a good many of the more popular circuits from three- to five-valves, but never before have I handled anything with such a wonderful performance. I have had this set in use about eight weeks and must give it full honours for sensitivity, selectivity, power, quality and fascination in handling. I can bring in Hilversum at deafening volume, and clear of North National—and have reserve selectivity in hand! This is a very severe test and the 'S.T. 300' is the first set I have come across that will do it. With a P.M.2A. power valve it does all you claim for it, but with a pentode the volume is tremendous. Two friends had trouble with the 'S.T. 300' (new but dud components—spaghetti and fixed condensers). In each case I had the set working perfectly within half an hour. I should like to thank you for the special interest you are taking in the amateur. It is very gratifying after all these years to find that we have at least got one designer who considers the reader before the manufacturer."—J. W. SMITHSON, Park Villas, Whalley, Blackburn.

BIRKENHEAD: "I am more than delighted with the 'S.T. 300.'"—E. A. TAYLOR, Higher Trammer, Birkenhead.

RUISLIP: "My boy, aged 14, has just completed your 'S.T. 300.' I am just writing to say that I am astonished at the result of this set. I, personally, have been an amateur builder since 1925, but I have met nothing like it at all. I have a five-valve set, but, while I have power, my selectivity is not so good as yours. Last night in 10 minutes, with a short indoor aerial, indifferent earth, and a partly run-down H.T., my boy logged 38 strong stations at Ruislip."—B. C. WHITFIELD, Manufacturing Engineer, Fulwood House, High Holborn, W.C.1.

Another selection of REPORTS from READERS who have built the "S.T. 300."

OLD TRAFFORD: "I can get no end of stations. There is nothing better."—J.W.S., Henrietta Street, Old Trafford, Manchester.

GLASGOW: "A grand total of 64 stations—some not even included in your list. These are all received while Glasgow is working and are clear thereof. Without making use of selectivity controls I can cut out the new Falkirk transmitter by turning 2 degrees either way. I learn that with many other sets at present in use in and around Glasgow the new transmitter has a great spread. But the 'S.T. 300' can be recommended with the fullest assurance."—J.M.M., Great Western Road, Glasgow.

CATFORD: "It is the goods—the best I have tried out. It does all you say."—C. HILSON, Knapmill Road, Catford, S.E.6.

FINSBURY PARK: "The results are amazing. Having had no previous knowledge of wireless, by following your clear directions I found it quite simple to build. Your claims concerning the set are not exaggerated in any way. In fact, the set does more than you claim it to do."—W. G. WALKER, Ambler Road, Finsbury Park, N.4.

SHEFFIELD: "You have been a good friend to us. My wife is just as delighted as I am with the set, and no friend is allowed to go away without knowing who designed the circuit. Please allow me to thank you heartily not only for the 'S.T. 300,' but your bright articles in the CONSTRUCTOR which is now on order every month."—FRED SYSON, Holland Road, Highfield, Sheffield.

SOUTHAMPTON: "Indeed a marvellous set. Stations received up to date number something like fifty. The volume, tone and selectivity are all that one could wish for. London Regional is received absolutely clear of the German Big Boy."—E. G. WHITE, Empress Road, Southampton.

LIVERPOOL: "I bought and made the 'S.T. 300' simply because it was the first 'no compromise' set I had ever heard of. From my two months' experience the 'S.T. 300' sacrifices nothing and is infinitely better than any of the sets I have tried costing upwards of £30."—G. CAMCROY, Little Crosby Road, Crosby, Liverpool.

BLACKBURN: "With all stations working I can get, on an average, 80 stations all on the speaker. Quite a few of my friends have built

this set and are proud of it."—H. HARGREAVES, Sydney Avenue, Whalley, Blackburn.

DORKING: "I am delighted with the whole outfit. After nearly a month, I am still amazed at the capabilities of the 'S.T. 300.' I don't know how you get such results from only three valves."—D. G. HOPE, South Terrace, Dorking.

EASTBOURNE: "The selectivity is wonderful."—HARRY COX, Buxton Road, Eastbourne.

WALWORTH: "The 'S.T. 300' is a real winner."—D. DAVIS, Henshaw Street, Walworth.

FOREST HILL, S.E.23: "I have now built another set exactly to your specification and the results are simply amazing. Up to the present I have logged 75 stations. The circuit is all you contend it to be. I would take the liberty, not only as a wireless fan, but also as sales manager of an important wireless firm, of offering you my heartiest congratulations on this very excellent circuit."—(Name not published by writer's request.)

ROTTERDAM: "Results fine! I have won my great selectivity and my enthusiasm again. Your set is such that one cannot help from being delighted with it."—H. VAN DOORNE, Jerichstraat, Rotterdam.

CORNWALL: "I have built 'S.T. 300' to specification and am very pleased with it. Power is terrific. My aerial is only 40 ft. long and 30 ft. high, and badly screened by trees. I have scrapped a 7-valve super-het. to build 'S.T. 300,' and am more than pleased I have done so."—J. CHRISTOPHER, Gwithian, Hale, Cornwall.

THORNTON HEATH: "Regarding 'S.T. 300,' I am delighted."—S. W. CLARK, Hamilton Road, Thornton Heath, Surrey.

LEYTONSTONE, E.11: "I have built dozens of others, but none to touch the 'S.T. 300.'"—T. CLIFTON, Filbrook Road, Leytonstone.

ASHFORD: "I have built the 'S.T. 300,' and am more than delighted with it."—B. W. SCULL, Lower Vicarage Road, Kennington, Ashford, Kent.

RHONDDA VALLEY: "The best circuit that I have had the good luck to handle."—A. C. COLE, Tyntyla Road, Ystrad, Rhondda, Glamorgan.

HELMSEY: "Though I have built dozens of sets, I have never had anything to compare with your 'S.T. 300.'"—D. FRANK, Helmsley, York.

READING: "The results I get are very good indeed. I have never before so much as put a wire on a terminal—and I am nearly 65."—W. H. WILSON, London Road, Reading.

CATFORD, S.E.6: "I am perfectly satisfied with it in every way, and as my experience of wireless covers 10 years you can be assured that I have constructed many sets. We are never without music from somewhere with this amazing good set."—S. B. HIGH, 110, Brookhouse Road, Catford, S.E.6.

FULHAM, S.W.6: "I have two 'S.T. 300's' and everybody who has heard them is very pleased with the results. I thoroughly appreciate the marvellous performance of 'S.T. 300.'"—R. T. ELDER, Wandsworth Bridge Road, Fulham, S.W.6.

S. BERNONDSLEY, S.E.16: "I am more than satisfied with the 'S.T. 300.'"—L. JESSEY, Erlam Road, S.E.16.

SOMERSET: "I am more than pleased with the results. I do not think a better 3-valve can be obtained than the 'S.T. 300.'"—J. L. BURROWS, Alexandra Road, Bridgwater, Somerset.

ILFORD: "I am delighted with the 'S.T. 300.'"—E. H. FUGE, Clarence Avenue, Ilford.

DEPTFORD, S.E.8: "I must write and say how pleased I am with the 'S.T. 300.' I have heard four of them up for friends after they had heard mine. This is a very good recommendation in itself."—P. R. STONE, Trundley's Road, Deptford, S.E.8.

FARNHAM: "I am using the 'S.T. 300' and am delighted with it."—A. G. JOYNSON, Churt, Farnham, Surrey.

STOCKPORT: "My best set yet."—A. G. MILLER, Milwan Drive, Heaton Chapel, Stockport.

BROCKENHURST: "Since broadcasting began I have been constantly building sets (from 1 to 5 valves), but have not built up a circuit as good as your 'S.T. 300.'"—(Private.)

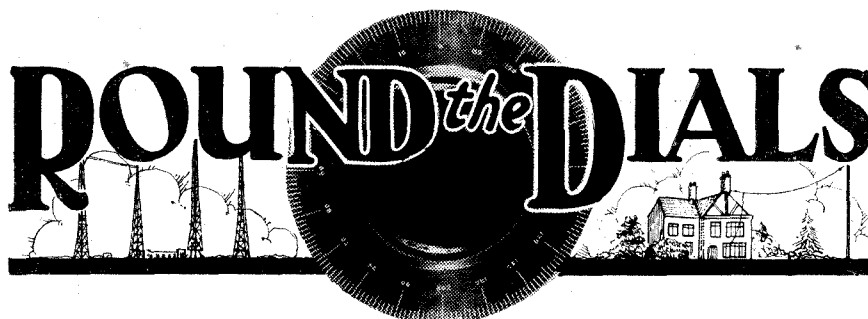
PORTSMOUTH: "I built your 'S.T. 300' as soon as it came out and in one evening I logged over 40 stations. We are delighted with the set."—K. S. AYLING, North End, Portsmouth.

WEST CROYDON: "Two months ago wireless did not interest me, but I saw the CONSTRUCTOR and was immediately converted. I have built the 'S.T. 300.' Thank you for a splendid set."—A. G. GIBER, Whitehouse Road, West Croydon.

RAMSGATE: "I am delighted with the set and am only too thankful I did not build a super-het."—I. G. TAYLOR, Park Road, Ramsgate.

WORTHING: "A wonderful set. I have built many sets, both S.G. and otherwise, but never anything to come within reach of this one. The sensitivity, selectivity, power and tone are marvellous."—S. C. FANCHEN, Montague Street, Worthing.

STOURBRIDGE: "Very many thanks for your very fine set. For purity, selectivity and sensitivity it would be hard to beat. I read that the B.B.C. is going to move 5 X X nearer here. However, this doesn't bother me now I know the capabilities of the 'S.T. 300.' I only completed it this week-end, but its possibilities seem unlimited."—G. E. WILLIAMS, South Road, Stourbridge, Wore.



Practical notes on what stations to look for and how to get the foreigners that are coming over well.

ALTHOUGH this is the time of the year when all the best people try to sit about in deck-chairs, wondering whether or not to have just one more bathe before lunch, some of us have been keeping a close eye on the tuning dials despite the sunshine and other attractions. And it has not proved to be such a dull occupation as one might expect.

For one thing, the atmospherics on long waves have not been too bad. And as it is only atmospherics that spoil some of those fellows, there has generally been a nice selection of stuff from abroad above the 1,000-metre mark.

One of the somewhat disappointing stations of the month has been Eiffel Tower—his strength was generally

good, but the quality seemed spoilt either by Warsaw sitting on top of him or by Moscow just below. This patch round 1,445 metres is one of the places in the European wave-bands that seems to cry out for re-allocation, and it surely cannot be much fun in either Moscow, Paris or Warsaw to have the local so close to another programme—or programmes in the case of Paris.

Warsaw, by the way, has not been doing any too well, which is hardly to be wondered at considering the enormous distance. The strange thing is not that he is off colour now, but that he is such a steady programme during the dark-day months, for his aerial is a good 900 miles from London. Incidentally, Warsaw claims the tallest masts—proper

masts, not towers, etc.—in Europe.

There are two 600-ft. masts at Warsaw, and, of course, the power is on the same generous scale, being equalled, at the moment of writing, only by Prague. Both are 120-kilowatts, and both get over to Britain with remarkable success when the respective distances are taken into consideration. Prague is a little less than 650 miles away, so his appearance early in the evening is a tribute to the advantage of having plenty of kilowatts.

There have been some quick-change foreign programmes in the neighbourhood of Prague—Florence being specially “temperamental,” which, after all, is a prerogative of the sex! Brussels No. 1 has been good, but Munich has had the greatest difficulty in making up its mind whether to come over well or not at all! Vienna, also, has not been sure of itself, some nights being too weak to bother with.

Lower down the dial, Poste Parisien on 328.2 metres has been consistently pleasing. And such old friends as Trieste and Heilsberg have shown that when nation shall speak peace unto nation, reliable reception of aforesaid peace is well within the bounds of practical politics.

Nervous of Lightning?

WEATHER prophets and others—especially those of an apprehensive turn of mind—who watch the thunder clouds will be interested in J. J. Eastick's announcement that their lightning arrester has been reduced in price.

It is really far more than a mere arrester, for its full title is “combined knife-switch, lead-in tube and lightning arrester.” And now its price is to be far less, the old 2s. 9d. giving place to 2s. (this is the type with 6-in. tube), or a little more for the larger type.

This reduction is certainly a timely one, coming as it does at the height of the thunder-cloud season. And there should be many a hearty clap in consequence!

The Big Punch

Did you happen to go to the Carnera v. Gains fight in the open-air stadium at Shepherd's Bush?

If so, you will be interested to learn how one of the biggest punches that day was put over. We do not mean the punch of Carnera, but that of the

POINTS FOR PURCHASERS

Interesting details from manufacturers about recent trade activities.

loudspeakers which relayed every word of the announcements to the audience of 60,000 enthusiasts. It was a successful demonstration of the powers of the new Ediswan 500-watt amplifier, the output valves of which operate in tandem, on the double-channel principle, one output valve taking half the loudspeakers and the other taking the remaining half.

The entire outfit weighs nine hundred pounds complete, the last valves (of the 250/m. type) each taking a matter of 120 milliamps. at an anode voltage of 2,000.

Hardly a dry-battery job, of course!

Those Heston Weather Reports

The Chloride Electrical Storage Co., Ltd., inform us that the A.A. radio station at the Heston Airport, which sends out weather reports on 833 metres, uses Exide batteries. Incidentally, the officer in charge, Mr.

Herbert, is always pleased to hear comments on the usefulness of the transmissions from Heston.

Marconiphone Products

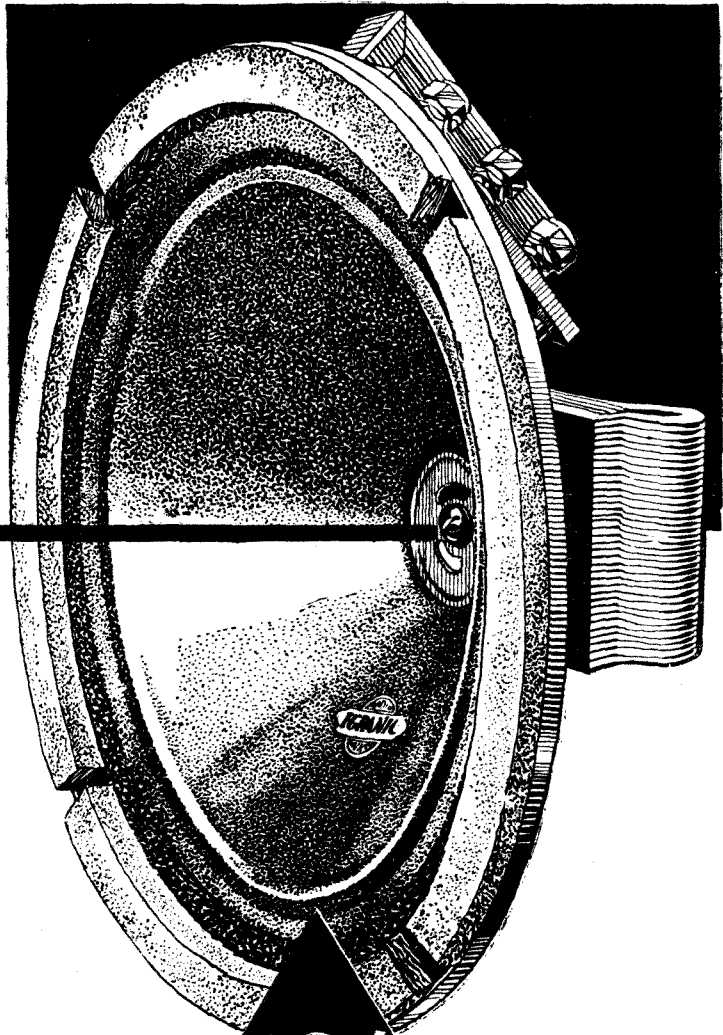
The complete range of Marconiphone instruments is shown in two attractive folders recently issued by the company from the Head Office, Radio House, 210-212, Tottenham Court Road, London, W.1.

Loudspeakers, pick-ups, portables, the Radio-Autogram and the Super-Heterogram—all are listed here.

Readers of THE WIRELESS CONSTRUCTOR are invited to apply for these folders either to their dealer or direct to the above address.

Constructional Charts

We have received from Ferranti, Ltd., some constructional charts of “The Ferranti Screened-Grid Three” and “The Ferranti Battery Model Two,” the charts being full-sized with instructions for assembly and operation. WIRELESS CONSTRUCTOR readers on the look-out for circuits of this kind should apply to Ferranti, Ltd., Hollinwood, Lanes, for details of these receivers.



●

EVERY NOTE
 IN THE REGISTER
 COMES THROUGH
 FAITHFULLY
 VIVIDLY
 AND TRUE

32/6

OLYMPIA
STAND 36

IGRANIC
D.9.

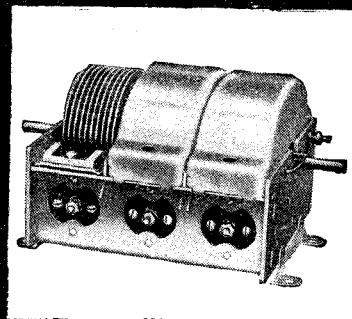
From the top register down to the deep bass of the drum the Igranic D. 9 delivers every note with its true tonal value. Stations which were once mere murmurings come in at full volume — Igranic D. 9 widens the scope of your set. Let your dealer demonstrate that the Igranic D. 9 permanent magnet moving coil loud speaker at 32/6 is the best value that money can buy.

Advt. of The Igranic Electric Co. Ltd., 149, Queen Victoria Street, E.C.4.

**NEW TYPE PERMANENT MAGNET
 MOVING COIL
 LOUD SPEAKER**

CVS—11

POLAR 'STAR' CONDENSERS



SIMPLE
ASTRONOMY
THE LITTLE BEAR
& CASSIOPEIA.

ACCURATE SPACING OF VANES OBTAINED BY PRECISION MACHINE ASSEMBLY

entirely eliminates the possibility of error in spacing—hence this guarantee: Polar "Star" Gang Condensers are guaranteed accurately matched to within $\frac{1}{2}$ of 1%, plus or minus 1 mmfd. And their construction ensures that this accuracy will never vary.

Other outstanding features:

1. Trimmers always at constant value.
2. Strong spring journal bearings.
3. All-Steel frame.

"STAR"
3-GANG
25/6

Prices:

3×'0005	-	-	-	25/6
Special Super-het.	-	-	-	27/6
4×'0005	-	-	-	34/-
Polar Drum Drive	7/6		Polar Disc Drive	5/-

SEND FOR NEW POLAR 36-PAGE FULLY ILLUSTRATED CATALOGUE "C"

STAND 129 OLYMPIA



POLAR CONDENSERS

Wingrove & Rogers Ltd., 188-9, Strand, W.C.2.

P.2.

**HIGH
TENSION
FOR
practically
NOTHING**

41, Stratford Grove West,
Heaton,
Newcastle-on-Tyne.
23/4/31.

**"I find it a
Great Saving"**

"I have handed the particulars you sent me regarding the Unit to a gentleman at Morbell. He is going to have one in September. He is going away from home till then. I am quite satisfied with mine and find it a great saving. I used to purchase two 60-volt Batteries every 3 months, costing 12/6 each, that is an average of 2/- per week. Now it costs me od. per week all told, using 60-amp-hour cells. I am quite willing to let anyone in this district making enquiries, to call and see mine working."

Yours truly,
C. MECROW.

MILNES H.T. SUPPLY UNIT

SUPPLIES H.T. CURRENT FROM YOUR L.T. ACCUMULATOR

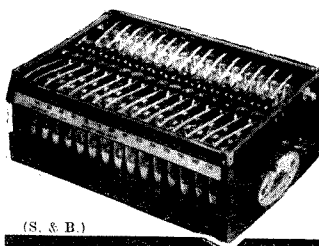
In the Milnes H.T. Supply Unit we have produced the perfect H.T. Supply. It costs you practically nothing to run, but that is not all; it gives better reception than any other method of High-Tension Supply. When you switch off your set, the unit is charged by your L.T. accumulator, and automatically cuts out when fully charged, so that no L.T. current is wasted. You will hardly be able to detect the very slight increase in your Low-Tension consumption. The Milnes Unit is built to give a life-time of trouble-free H.T. supply at low cost, and it does. Users who purchased units nearly five years ago are still getting every satisfaction from the original units.

Write to-day for full particulars to

MILNES RADIO CO.,

TANFIELD WORKS,
BINGLEY, YORKS.

Telephone: Bingley 500.



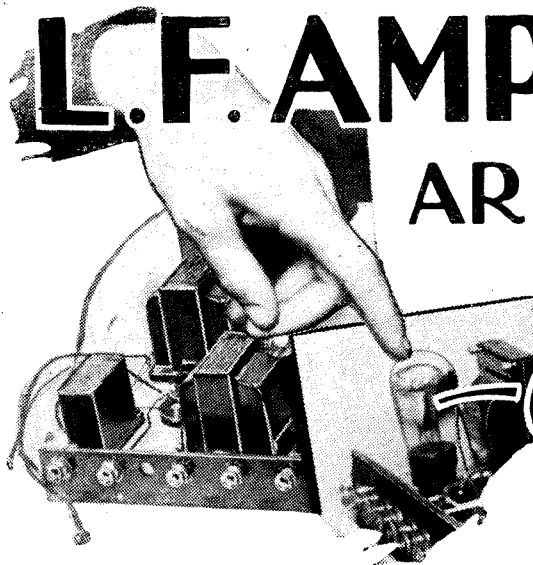
(S. & B.)

PRICES IN UNITED KINGDOM:

90 volt	..	..	£2:18:0
120 volt	..	..	£3:16:0
150 volt	..	..	£4:14:0

L.F. AMPLIFICATION

ARE WE STARVING OUR SETS OF IT?



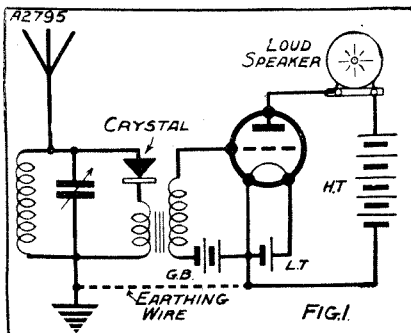
Asks

HERBERT K. SIMPSON

WIRELESS sets are rather like animals, and can vary almost as much. Some are nearly all neck, like a giraffe, and others are nearly all tail, like a lizard.

The neck represents amplification of the received oscillating currents before rectification, and the tail can be used to describe all amplification after rectification.

OUT OF DATE NOW!

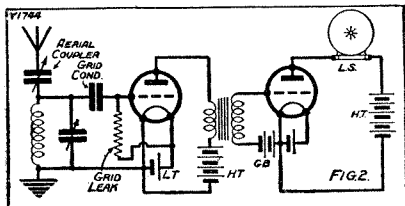


An iron-core transformer as the connecting link between a single stage of L.F. and a crystal detector. The transformer feeds stepped-up voltages to the grid of the amplifier valve.

Which system is best—high-frequency (or "H.F.") amplification, or the low-frequency ("L.F.") type?

Each method has its own merits and disadvantages. In each case the

WITH VALVE DETECTOR



A valve acts as detector here and the primary of a low-frequency iron-core transformer is included in the anode circuit.

A really practical article in which the reader is taken, step by step, through all the phases of low-frequency amplification, from the crystal-detector set to "parallel feeding" of L.F. transformers.

currents amplified are not altered in general character at all; they are simply magnified.

The H.F. currents produced in the aerial circuit are magnified by one or more H.F. amplifying valves, the final currents being then applied to a detector, which, nowadays, is a valve. The output of the detector is no longer "H.F.," but is "L.F.," i.e. the currents are similar to those of the ordinary household telephone.

Types of Receivers

The output of a detector is not normally great enough to work a loudspeaker, so we strengthen up the currents by one or more L.F. "stages"—a stage consisting of one valve and its associated apparatus.

Wireless sets may consist of (a) a simple detector—this type is only suitable for headphones; (b) a detector with one or more stages of H.F. amplification in front—this increases range and signal strength; (c) a detector followed by one or more stages of L.F. amplification—this gives loud signals, but has no great range; (d) a detector preceded by H.F. and followed by L.F. amplification.

Well-Balanced Sets

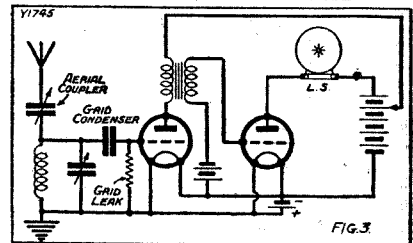
The beginner who proposes to build a set can do one of two things; either follow the circuit of a designer of national repute who may be trusted to produce a well-balanced set for

universal use, or he may rummage amongst a number of different designs and apply certain tests to them.

I propose to give some of my own opinions, as I believe every constructor should be able to pass his own judgment even on sets designed by leading experts.

In the first place, I believe that one stage of H.F. amplification is essential

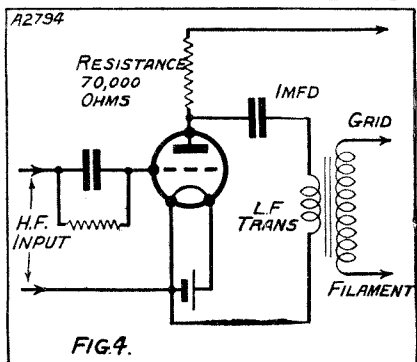
READY FOR WORK



This is just the same circuit as Fig. 2, but shows how for practical purposes we can use the same L.T. and H.T. batteries for the two valves.

in all well-balanced sets. Just as a giraffe has a long neck so that it can reach up to nibble leaves off trees,

FOR PARALLEL FEEDING



In this arrangement the primary of the transformer is fed with L.F. currents through the 1-mfd. condenser. There is no steady anode current through the transformer primary and so steady magnetisation of the core does not take place.

L.F. Amplification—continued

so a wireless set requires an H.F. stage to "reach out" for the weaker foreign stations.

This stage, incidentally, provides greater selectivity so that two birds are killed with one stone.

A Protest

I propose to leave H.F. amplification to my next chat, but I want to add my protest against the welter of "det. and 2 L.F." sets which have been offered to—and, in some cases, foisted upon—a public ignorant of wireless principles. I have in mind

built set, simply handled and cheap to make. It filled a niche. It has given good results. But to keep on appealing to a natural desire in all of us for extreme cheapness and simplicity, when that cheapness and simplicity will not deliver the goods, is a short-sighted policy.

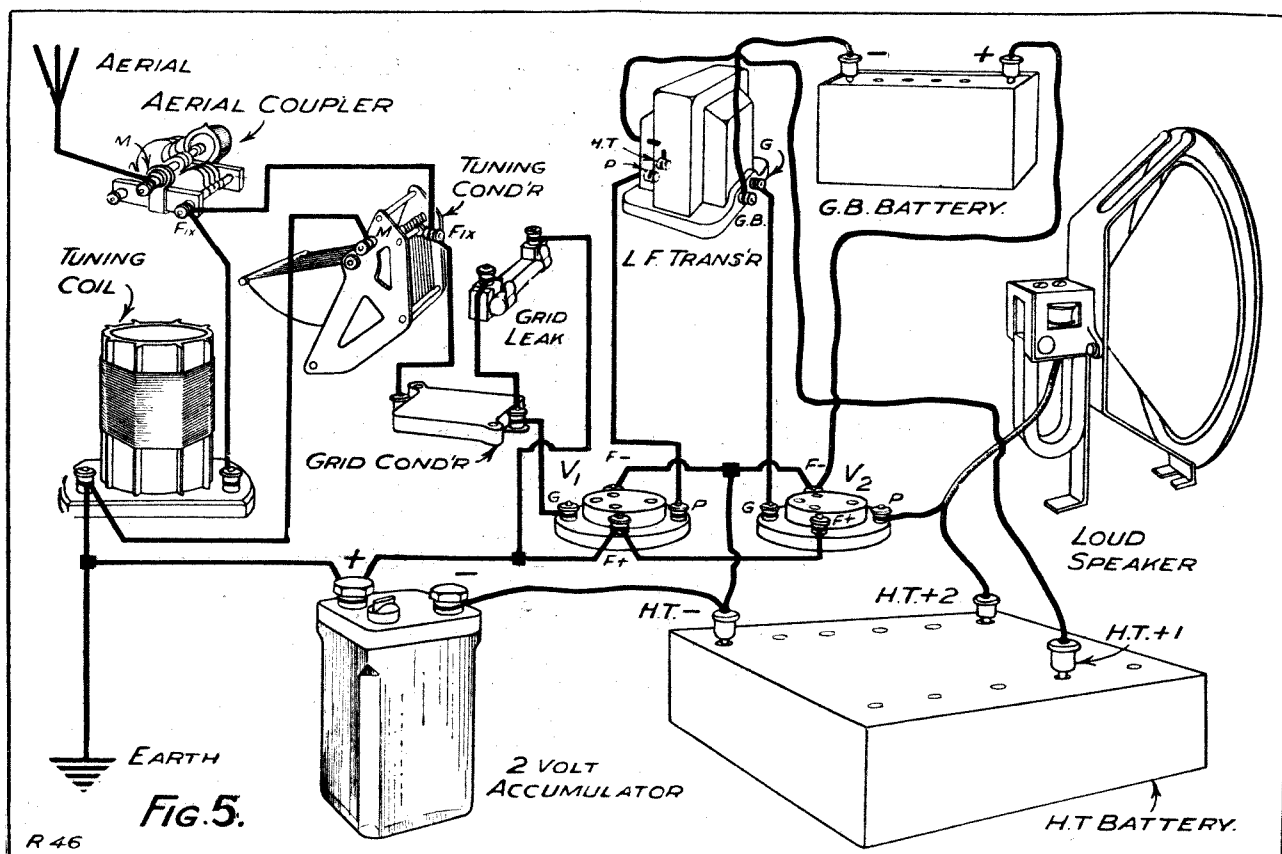
It is, of course, possible that the general increase of power of broadcasting stations may alter one's views of H.F. amplification. It may be that, with ultra-selective circuits, stable L.F. amplification of large magnitude and specially close reaction,

As we increase selectivity we lose signal strength. This appears to be an inexorable law. To make up for loss of signal strength we have either to add more "H.F."—which is complicated—or add more "L.F."—which is very simple. Hence the suggestion that more L.F. is needed if we want more selectivity.

Too Few Valves?

At first sight there seems no connection between the two, but the explanation above makes one wonder whether we are not starving our

NOW YOU CAN SEE WHAT THOSE SYMBOLS MEAN



The Fig. 3 circuit in pictorial form, so arranged that you can see at a glance what all the symbols in the theoretical diagram stand for. If you don't already know them, you should memorise them now while you have this drawing in front of you.

more especially those sets with one tuning circuit and which will give loud signals on local and some of the more powerful foreign stations, but which are inadequate when it comes to selective and distant reception.

Not, of course, that all users of such sets are dupes or their designers unscrupulous. Such a suggestion would be impertinent and untrue.

The det. and 2 L.F. is a very easily

H.F. amplification may cease to be necessary.

That day is not here and we still have to rely on one stage at least of H.F. amplification, a screened-grid valve being used for the purpose.

Quite Another Reason

But interest in L.F. amplification is being given a fillip for quite other than normal reasons. We want more and more selectivity.

sets of L.F. I refer particularly to the three-valve type of set using an S.G. valve, a detector and an output power valve. *Are we using too few valves?*

There is a great deal to be said for a five-valve set even in these days. One can do wonders with a 2 H.F., det., and 2 L.F. But, in any case, is it not worth while investigating and seriously considering whether or not

(Please turn to page 290.)

THE NEW

Varley

PROPRIETORS :- OLIVER PELL CONTROL LTD.

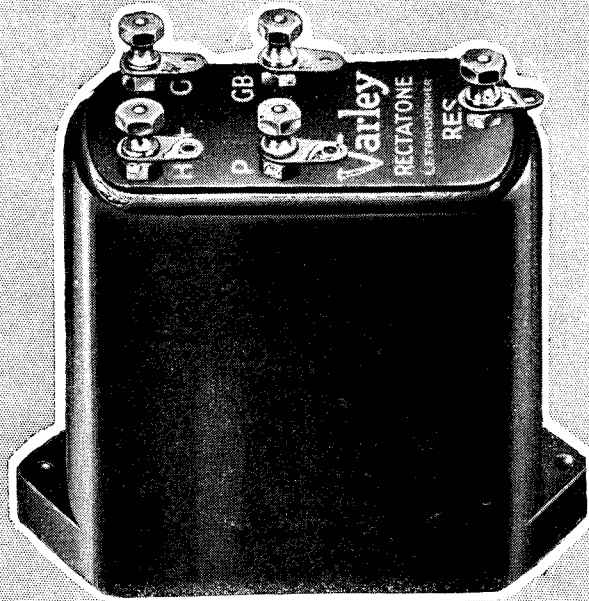
"RECTATONE"
L.F. TRANSFORMER

Radio reproduction with full and natural treble response. Gramophone reproduction with the bass in proper balance, without over-emphasis of treble. You can get them both **from the same receiver** with the Varley RECTATONE.

This new transformer compensates for high-note losses in the tuning circuits by frequency compensation in the L.F. amplifier. **The RECTATONE frequency response curve is straight up to 1000 cycles per second and then rises** reaching a maximum at approximately 4500 cycles—the ideal arrangement.

The degree of compensation is controlled by a variable resistance connected externally between two of the transformer terminals. If this resistance is omitted the RECTATONE functions as a normal transformer giving high and even amplification.

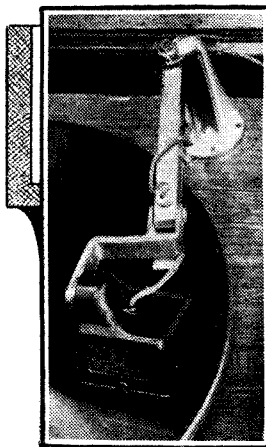
RECTATONE is thus the ideal L.F. coupling for sets using a pick-up or for radio-gramophones, since the tone control so valuable on radio, can be switched out on gramophone where it is unnecessary.



**STAND 160
NATIONAL RADIO
EXHIBITION
OLYMPIA**

True tone - balance
from Radio or Record
—with **one** transformer

Price **15/-**



PICK-UP HINTS AND TIPS

Some interesting notes on various practical aspects of radio-gram. reproduction.

By **A. BOSWELL**

About Record Speed—Ruining Realism—A White Paper Test—The Stroboscope—Counting the Spokes—A Daily Duty.

THIS month I want to discuss a more or less neglected point concerning radio-gram reproduction. I want to talk about record speed. This would appear to be a subject that is not worth any great consideration, but in fact it is one of the most important branches of record playing. Unless the speed is correct it is impossible to get reproduction that is truly life-like.

A Feminine Tenor!

It may be argued that a few revolutions per minute cannot make much difference; but they can, and do. Recently I was playing a record on which there should have been a tenor voice. To my surprise the vocalist was distinctly feminine, the voice having the pitch of a contralto, and sounding in other respects quite good.

The song did not appear to be taken too fast, and the accompaniment gave one the impression of being quite natural. Yet there was something wrong with the record, of that I felt sure, and for some time I mistrusted the amplifier and pick-up.

Other well-known records were tried with the same result, but so subtle was the transition from male to female vocalisation that I did not spot the trouble for some time.

The record was running at about 84 instead of 78, and the result was, as I have shown, disastrous to realism, although it was passable as entertainment.

It is always a mistake to rely absolutely upon the graded quadrant that denotes the speed setting of the gramophone motor, however good the motor may be.

Regular Checks

The speed of the turntable should be checked up now and again by some simple method. I keep a record specially for the purpose, for it is, of course, essential that the speed be

taken with a record in position and being played.

I prefer a groove running radially from centre to edge of the disc, and to count the clicks made by the pick-up as it passes its needle over the groove, the number of clicks per minute giving the speed.

Other people prefer to stick a piece of white paper on the edge of a record

WORTH HAVING

SELECTED RECORDS.		
Aldershot Tattoo	.. . .	H.M.V.
What Would You Do?	.. . .	H.M.V.
Maurice Chevalier	.. . .	H.M.V.
When Yuba Plays the Rumba.	.. . .	H.M.V.
Ambrose and His Band	.. . .	H.M.V.
It Ain't No Fault of Mine.	.. . .	Zonophone
Grant Trio (Vocal)	.. . .	Zonophone
Good Night, Vienna.	.. . .	Zonophone
Five Minutes to Twelve.	.. . .	Zonophone
Blue Lyres Band	.. . .	Zonophone
Paradise.	.. . .	Columbia
Savoy Hotel Orpheans	.. . .	Columbia
Good Evening.	.. . .	Columbia
Henry Hall	.. . .	Columbia
Marche Slav.	.. . .	Columbia
H.M. Grenadier Guards Band	.. . .	Columbia
Hiking Medley.	.. . .	Columbia
Debroy Somers	.. . .	Columbia
The Sport of Kings.	.. . .	Columbia
Flanagan and Allen	.. . .	Columbia
A Trip to Brighton.	.. . .	H.M.V.
Mabel Constanduros & Co.	.. . .	H.M.V.
Can't We Talk It Over?	.. . .	H.M.V.
Gracie Fields	.. . .	H.M.V.

and to count the number of times this passes a given point in a minute or part of a minute.

With A.C. Mains

If you have A.C. mains you can construct or purchase a stroboscope which will automatically tell you if the speed is correct. It consists of a disc which is placed over the turntable, in the centre, and which is marked with equal black and white lines running radially from the centre.

These lines are of equal thickness and are equally spaced, and their number depends upon the speed of the record that it is desired to register and the frequency of the electric light supply.

What happens is this. With disc on and the turntable running, the electric light in the room is switched on and a light placed somewhere near the turntable to illuminate the stroboscope. The electric light flashes at twice the frequency of the supply, and so it will alternately illumine and cease to illumine the stroboscope.

Learn the Formula

Thus you will see the lines of the disc 100 times per second (if the frequency of the electric light is 50 cycles). Now, obviously, the disc will be seen to be revolving in either one or the other direction, according as the flashes of light show up the positions of adjacent black lines. More likely than not the lines will appear to be just unsteadily wavering, like the spokes of the wheels on a car shown on the cinematograph screen.

At one speed, and at one speed only, as applied to the gramophone, the disc will appear to be stationary. This is when (with the correct number of lines marked) the record is revolving at the right speed.

Obviously, the number of lines depends upon the speed desired and the frequency of the electric light, but the number can be very easily calculated from the following formula.

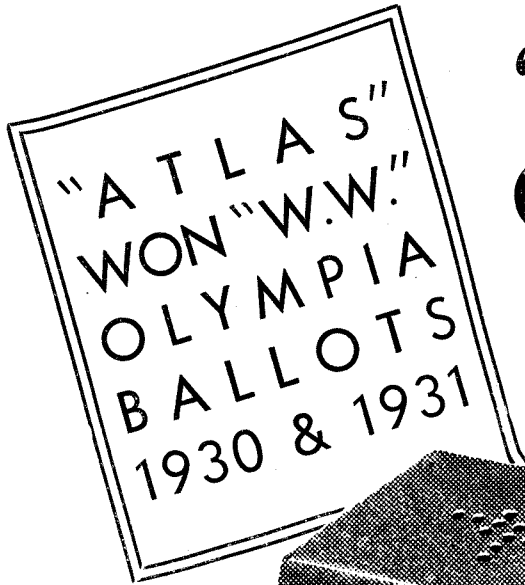
$$\text{Number of black spots on the disc} = \frac{120 \times F}{R}$$

where F= the frequency of the electric light and R is the speed at which the turntable should revolve. Then with the spokes correct we shall find that at the right speed we have moved one spoke forward for every flash of light, and the appearance of being stationary will be obtained.

Easy and Accurate

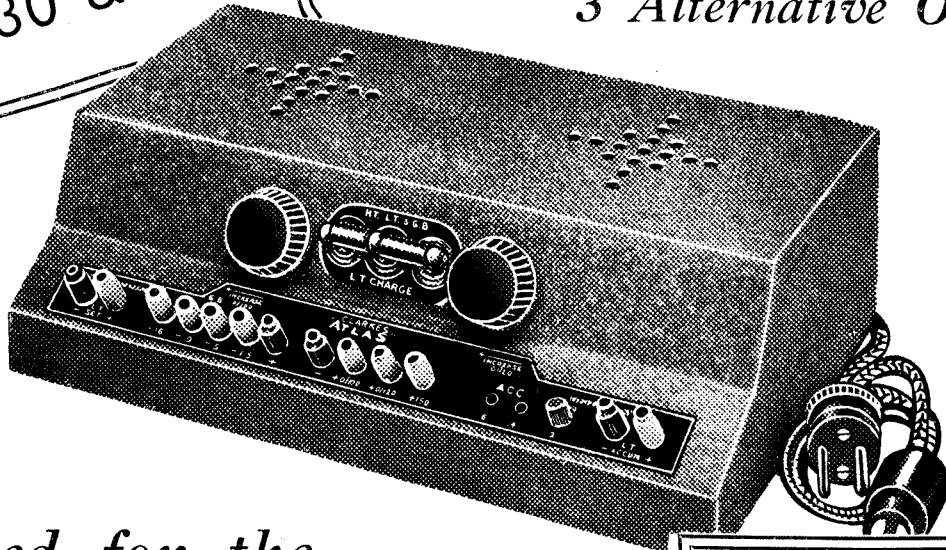
With a frequency of 50 the above formula works out at 77 for the nearest whole number, and so we must have 77 spokes on the wheel if we want to check up a speed of 78 revolutions per minute. For 80 revs. at 50 cycles we need 75 spokes.

It is quite simple, but it is accurate within the necessary limits, and it takes but a moment to check up the speed. As a matter of fact, the stroboscope can remain handy for a daily check if desired, for if made of stiff cardboard or celluloid it will last many years.



"ATLAS" AGAIN GO ONE BETTER!

*Wonderful New Model
3 Alternative Outputs*



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STAND
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Specified for the "S.T.300" RADIO-GRAM

Only "ATLAS" can improve on "ATLAS." The outstanding features of last year's Olympia Ballot winner, hitherto acknowledged as the world's finest value, are now enhanced by the addition of alternative output tappings. This refinement ensures a constant and correct output voltage for all current consumptions up to 25 milliamps.

The new "ATLAS" A.C.300 is emphatically the last word in design and is ideal for the "S.T.300" Radio-gram described in this number.

Ask your dealer to arrange for a demonstration and send coupon for full details of the "ATLAS" range of Mains Units and Components.

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H. CLARKE & CO. (M/cr.) LTD.
George Street, Patricroft, Manchester.
SOUTHERN OFFICES: Bush House, W.C.2.

MODEL A.C.300

For A.C. Mains 100/125 and 200/250v., 40/120 cycles. One Variable Tapping, 0/100v.; One Variable Tapping, 0/120v.; One Fixed Tapping, 150v. Three Alternative Outputs, 12, 18 and 25 m/A. at 150v. L.T. Trickle Charger, 2, 4 and 6v. Charging rate, 0.5 A. 4 G.B. Tappings, 1½, 3, 9, 16v. Safety Switching. Tapped Input. Double Adaptor. Size, 10½ × 6 × 3½. Westinghouse Rectifiers.

12 months' Guarantee.
CASH PRICE

£6 : 10 : 0

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Please send me the "ATLAS" Folder giving full details of "ATLAS" Mains Units and Components.

Name.....

Address.....

W.C.9.....

L.F. AMPLIFICATION*—continued from page 286*

we are skimping our sets on the L.F. side?

And now to leave controversial topics and come down to the solid fare of instruction which my articles are meant to impart.

The general idea of L.F. amplification has been explained in this series. In Fig. 1 I give a simple single stage of L.F. following a crystal detector.

An iron-core transformer is the connecting link between the two. This transformer consists of two coils of insulated wire wound over an iron core.

Stepped-up Voltages

One winding is called the "primary" and the other the "secondary." The latter has usually three or four times the number of turns of the primary.

The transformer is called a "stepped-up" L.F. transformer, because the voltages produced across its secondary (by currents flowing in the primary) are three or four times those across the primary.

The L.F. transformer in Fig. 1 feeds stepped-up voltages to the grid

of the amplifier valve. Magnified currents now work the loudspeaker.

Fig. 2 is a very similar arrangement using the identical transformer; this time, however, a valve acts as the detector and the transformer primary is included in the anode circuit of the detector valve.

Common Batteries

We can actually use the same L.T. and H.T. batteries and the circuit now becomes Fig. 3. Fig. 5 is

The primary of the transformer is fed with L.F. currents through the 1-mfd. condenser. In this circuit no steady direct anode current flows through the primary of the transformer and so partial "saturation" (i.e. magnetisation) of the core does not take place.

This results in a higher inductance for the winding and a more effective use of the transformer.

The principle of the circuit is, roughly, that some of the L.F. cur-

Mr. Scott-Taggart's Flying Tour

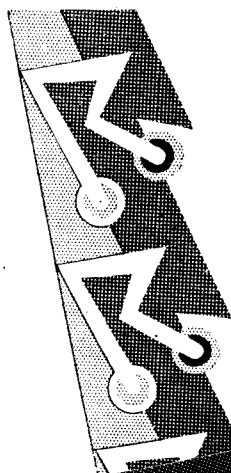
Readers desiring to identify Mr. Scott-Taggart's plane from the ground can recognise it from the fact that it is a monoplane and has the letters G-AAHW on the underneath of the wings. The last two letters H.W. will be enough to look for.

a pictorial form of the simple receiver of Fig. 3. The reader should familiarise himself with the symbols which represent the different components.

Before leaving this brief description of L.F. amplification, "parallel feeding" of L.F. transformers may be mentioned. Fig. 4 shows a simple detector valve with a resistance of 70,000 ohms (a spaghetti will do) in its anode circuit.

rent goes through the resistance and some through the transformer primary. No D.C. at all flows through the primary.

Some of the apparent merits of this parallel feeding system disappear on closer investigation, but as I am verging on controversial topics again I had better wait until I have more space in which to deal with the matter.



You must go to the Radio Show

You'll be going to the Radio Show, of course! This is an event that claims the attention of all modern-minded people. See all these sensational new sets for yourselves and hear, examine and discuss them with the experts on the spot. Last year's Radiolympia broke all records. The 1932 Radio Show must be seen to be believed. It's bigger — more spectacular — an absolute wonderland.

COME TO RADIOLYMPIA
WHERE BRITISH IS BEST!

AUGUST 19-27

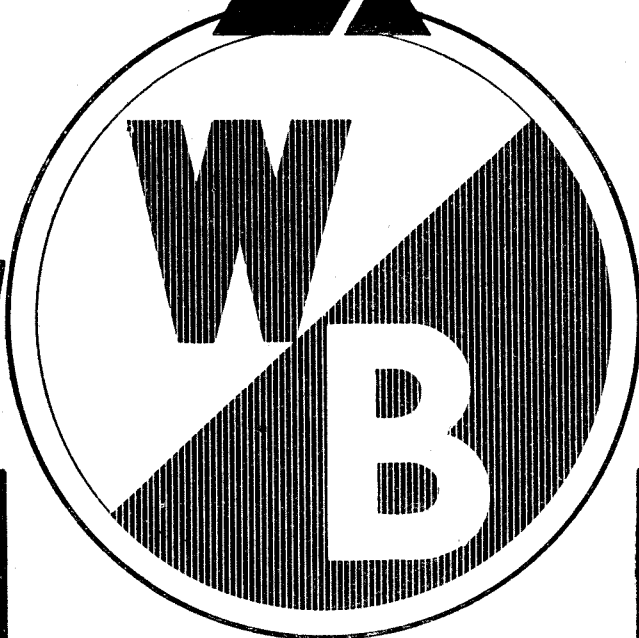
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ENERGISED

MOVING-COIL SPEAKERS

**NEW VALVEHOLDERS
AND NEW SWITCHES**

This season a complete range of ENERGISED moving-coil speakers has been added to the famous  series. They have all the qualities of extreme sensitivity and supreme British workmanship that have built up so tremendous a sale for the  PERMANENT MAGNET moving-coil speakers. Have you heard yet the new "Mansfield" Permanent Magnet Moving-Coil Speaker? Hear it at your dealers. You will marvel that so fine an instrument can be possible at so low a price.

**STAND No. 108
O L Y M P I A**

PIONEERS AND LEADERS ALWAYS
Write for the New Catalogue (FREE).

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Irish Free State Distributors: Kelly & Shiel, Ltd., 47, Fleet Street, Dublin



OUR NEWS BULLETIN

we have been told that "television has arrived," and "television is ready," and this, that and the other about television.

The wireless gossip writer in the "Daily Herald" recently had a paragraph headed "Television Ready," while the "Daily Mirror" early this month opened a short article with the amazing statement that "television—has arrived," and went on to say—"This is no wild statement, for yesterday I saw a practical and convincing demonstration of moving images on a screen that can be seen from any angle by any number of people"—and so on, ad lib.

The Television Position

A contemporary, itself bearing the important title "Television," recently devoted a considerable amount of space accusing our contemporary

In Good Time

It is reported that the B.B.C. have appointed a television studio manager, and it is further alleged that the gentleman in question has never seen a television demonstration. If so, during the next few years he has got plenty to learn, and it is quite likely that by the time somebody invents a television system capable of giving public service entertainment he will be expert at his job.

Those Gossips

As usual, there has been another periodical burst of television chatter in the newspapers. For years past now

"Popular Wireless" of attacking television. One day, perhaps, these enthusiastic but rather credulous admirers of television will realise that "Popular Wireless" does not indulge in the gentle pastime of tilting at windmills.

What is a "Service"?

When this independent journal is accused of attacking television, the accusers seem to forget that it is attacking those who exaggerate about television, and in particular those who would, probably quite innocently, lead the public to believe that television has reached such a degree of perfection that it is ready to take its place side by side with sound broadcasting as an entertainment factor in the lives of listeners.

Well, the facts speak for themselves.

Television in one form or another has been before the general public for some years now. There have been television experiments from mid-ocean, televisions of the Derby, and all sorts of attractive television experiments.

As experiments they have been deeply interesting, and have, from time to time, given glimpses of what a terrifically important and

(Continued on page 294.)

A PERFECTLY MATCHED CIRCUIT

with the new **FORMO**

GANGED CONDENSERS

No more inaccurately matched circuits—the concentric trimmer on all new Formo dual and triple-gang condensers, enables you to match your circuit in spite of inequalities in wiring. Smooth and silent in action, the accurate assembly and sturdy construction eliminate all mechanical distortion and make for maximum efficiency.

The new Formo catalogue reveals many unique improvements in modern and moderately-priced components. Get your copy to-day.

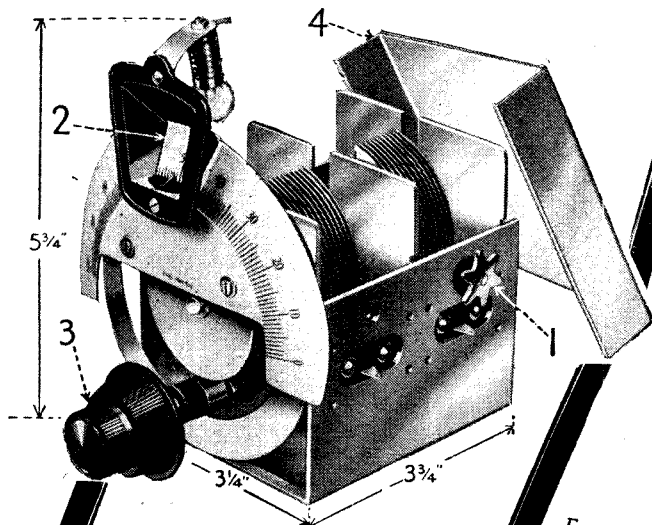
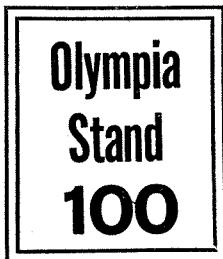
If unable to obtain locally, write to:

FORMO CO.

Crown Works, Regents Park, SOUTHAMPTON.

London Offices: 23, Golden Square, Piccadilly Circus, W.1.

Telephone: GERRARD 2088.



DUAL GANG

Complete with dial **16/6**
 Triple gang with dial **21/6**
 „ „ without dial **18/6**

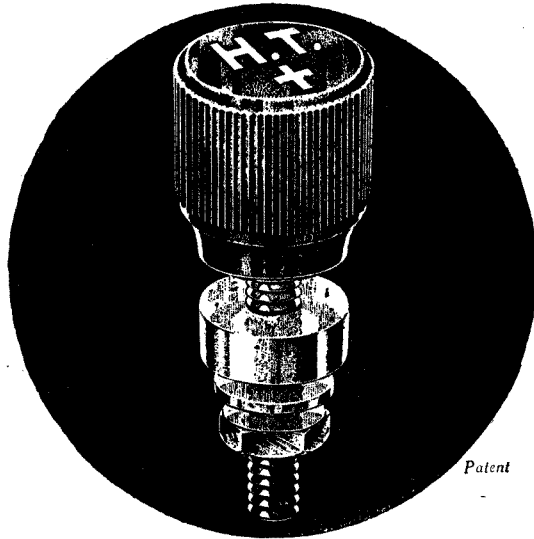
NOTE THESE OUTSTANDING FEATURES

1. New adjustment of trimmers with no back-lash.
2. Illuminated sloping escutcheon permits easy reading.
3. Air dielectric trimmer operated by small knob.
4. Supplied complete with cover.

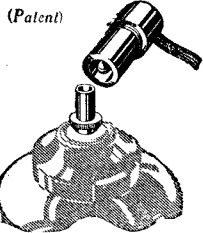
Formo dual and triple-gang condensers can be supplied mounted on a base plate with either two or three dual-range coils. All switches are ganged and assemblies matched.

NEW LINES and PRICE REDUCTIONS

"R" Type Terminal reduced



PRICE NOW 2¹/₂ D.

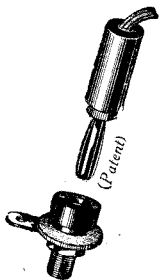


S.G. ANODE CONNECTOR.
For S.G. or Pentode Valves. **NOW 4d.**



NEW BOWSPRING WANDER PLUG.

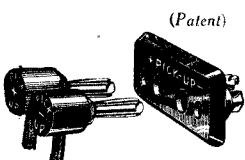
All standard letterings **1¹/₂ d.**



NEW BANANA PLUG AND SOCKET.

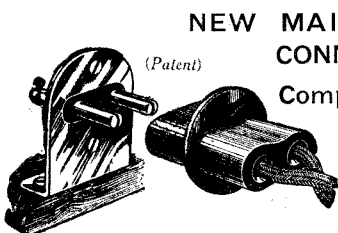
Red or Black.

Plug **2d.** Insulated socket **2d.**



NEW PLUG AND SOCKET STRIP.

Usual standard letterings **9d.**

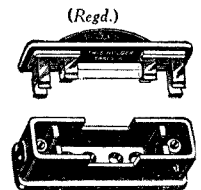


NEW MAINS INPUT CONNECTOR

Complete safety in use.

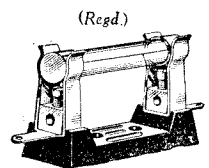
1/3

SINGLE SAFETY BASE BOARD FUSEHOLDER.
Fuse carried in lid making shocks impossible. Complete with 1 amp. fuse **1/6**



SINGLE OPEN FUSEHOLDER.

With 1 amp. fuse **9d.**



PANEL FUSEHOLDER.

For panel mounting. With 1 amp. fuse **1/6**

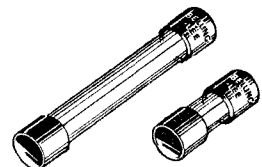


SPARE FUSES ARE SHOWN ACTUAL SIZE

LONG FUSE. All ratings, 60, 150, 250, 500, 750 m/a., 1 amp., 2 amp., 3 amp.

SHORT FUSE. For WANDER-FUSE only, 60 and 150 m/a.

Dealers will fit other ratings in any of these holders at the time of purchase.



BELLING-LEE

FOR EVERY RADIO CONNECTION

OUR NEWS BULLETIN

—continued from page 292

interesting thing television may be in the future when some really satisfactory and practicable system has been evolved.

But to suggest that these experiments constitute a real entertainment service is completely to misunderstand what the general public of to-day considers to be real entertainment service.

Eulogy Misplaced

We do not attack, and never have attacked, those who are doing their best to bring television up to properly developed standards; but we do definitely attack, and shall continue to attack, those eulogistic and somewhat hysterical admirers of television who persistently make exaggerated claims for television and, in particular, for the Baird Television System.

For Mr. Baird himself we have the utmost admiration. He is a pioneer, and one who has devoted time and money to a very worthy cause, but the fact remains that although television experiments have been numerous in the past and, we hope, will be

numerous in the future, and although progress has been made, it cannot be claimed that the problem of television as an entertainment factor has been solved.

The B.B.C.'s Attitude

It is to the credit of the B.B.C. that they are viewing the matter of television seriously, and that they have enlarged the facility for television broadcast experiments; but let us hope when enthusiastic journalists in the newspapers write that television cannot be far off, or the day when we shall be looking-in as well as listening-in cannot be far off, that this very shortly will be proved to be true.

New Televisors

We hear that the new Baird Televisors differ considerably from the old or present models. A mirror drum replaces the large scanning disc, and a special form of Kerr Cell is used, giving a brilliant black and white image.

We learn that the apparatus itself is very compact, measuring 1 ft. 6 in. × 8 in. × 13 in. No batteries are required, for the set is plugged into the mains and operated like any ordinary wireless set and loud-speaker.

On the Market Soon

In a few months' time, we understand, these sets will be on the market at a price of about 25 guineas. We have not yet had an opportunity of testing one of these new televisors, but directly they are available we shall purchase one and issue, in due course, a full and impartial report.

Let us hope that these new televisors will give indication of living up to the terrific boost given to television by the non-technical but nevertheless enthusiastic gossip writers in the newspapers.

League-of-Nations Broadcasts

It is likely that a weekly series of International broadcasts from the League of Nations Wireless Station will begin shortly. They will take place on Sunday evenings, and, it is said, on a wavelength permitting reception in the most distant countries in the world.

We hope they will also be transmitted on a wavelength permitting their reception in Europe, for if the value of broadcasting as a means of creating better understanding between nations is to be proved, it is no good having a powerful station which can be quite easily received in say Siam,

(Continued on page 296.)

INTERESTED IN RECTIFIERS?

THEN

**RADIO EXHIBITION
OLYMPIA,
AUGUST 19th—27th.**

WESTINGHOUSE

METAL RECTIFIERS
—the rectifiers of proved reliability.

INTRODUCING

THE NEW "GOLTONE"

SCREENED DUAL-RANGE COILS



ILLUSTRATION
TYPE R10/GCR
with cover removed.

Matched to a high degree of accuracy and fixed inductance standards.

For mounting on metal chassis or wood baseboard.

Terminal connections to inside of screen or underside of base.

Medium wave range 190-572 Metres.

Long wave range 890-2000 Metres.

TYPES available:

- "GGR" Tuned Grid with Reaction
- "GGC" Aerial Coil *without* Reaction
- "GGO" Tuned Grid with Reaction and 2 Aerial Tappings
- "GBA" Band-Pass Aerial Coil
- "GBS" Band-Pass Secondary Coil or Tuned Grid

All Types Price 5/9 each.

Pamphlet with full particulars on request.

GOLTONE COMPONENTS

FOR THE
"WIRELESS CONSTRUCTOR"

"S.T. 300" RADIO-GRAM

- GOLTONE S.T. 300 COILS Price 10/- per pair
- GOLTONE SUPER H.F. CHOKE R 3/46 Price 4/6
- GOLTONE R 3/36 BINOCULAR H.F. CHOKE Price 2/6
- GOLTONE L.F. TRANSFORMER GRAND (3 to 1) R 17/98 Price 8/6
- WANDER PLUGS (ENGRAVED) R 31/97 Price 1½d. each
- GOLTONE "LACOLINE" CONNECTING WIRE (Coloured) per 10ft. assorted colours R 42/240 Price 4d. per packet

For details of Panels, Terminal Strips, etc., see Catalogue FREE on request.



OUR NEWS BULLETIN

—continued from page 294

but is inaudible in London, Paris, Berlin, or Brussels.

A Romance of Radio

Mr. A. W. Macnamara, founder and managing director of the famous Telsen Electric Co., Ltd., of Birmingham, recently handed a cheque for £25,000 to the Lord Mayor of Birmingham for the Birmingham General Hospital.

This magnificent gift had a romantic origin, for, as a boy, Mr. Macnamara sold newspapers in the streets of Birmingham and, at one time, had to go under a serious operation in the Birmingham General Hospital. He was so grateful for the care and attention shown him that he vowed that one day he would repay the great debt he owed the hospital authorities.

His Great Ambition

Eight years ago he began, with a capital of £50, to manufacture wireless parts in a shop costing him 7s. 6d. a week rent. To-day, so greatly has his business grown, he employs more than 4,000 people.

Talking about his early days, Mr. Macnamara said recently to an

interviewer: "I was rushed to the General Hospital to undergo a serious operation, which undoubtedly saved my life. Because I was very poor, they did not charge me anything, but it has always been my great ambition to be able to repay that service."

Well, Mr. Macnamara has kept his promise, and his magnificent gift to the hospital is undoubtedly one of the great romances of the romantic radio industry.

A HANDY CLAMP
 * For those readers who make *
 * their own cabinets. *

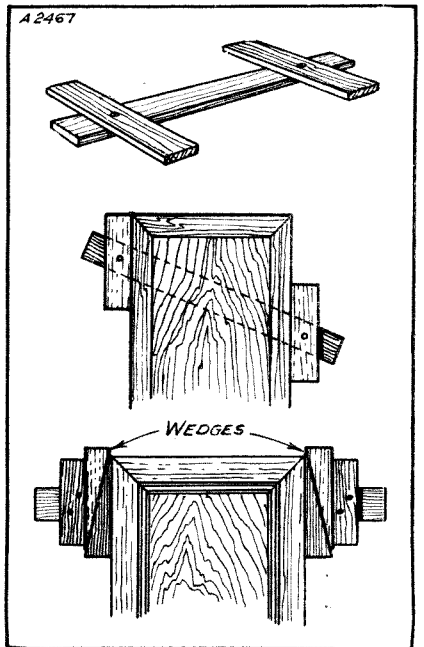
A USEFUL innovation for clamping such things as cabinet doors can be made in a few minutes, and with almost any odd pieces of wood. Only three pieces are necessary (refer to sketch). The two smaller pieces being fixed to the larger by screws—one in each, acting as a swivel pin; the distance between these being about an inch or so greater than the article to be clamped.

It is possible the object may be forced a shade out of square. This, of course, can be allowed for. An

alternative is to make a second one, using this at an opposite angle.

For large, heavy work it is recommended to secure the small pieces with an extra screw; using wedges as in the bottom sketch. W. W.

HOW IT IS DONE



With the help of these sketches and the accompanying article the constructor will have no difficulty in making this ingenious clamp.

MAKE USE
of our complete
Service and
EXPERT
ADVICE

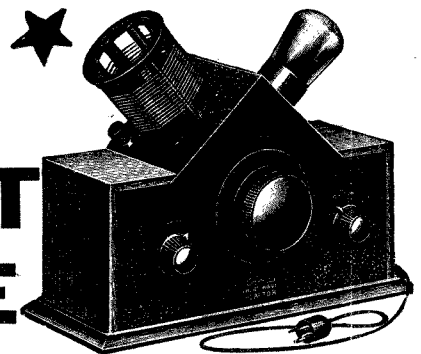
Call at our extensive Show-rooms and let us demonstrate all the most modern and up-to-date Radio equipment. We hold the largest stock of wireless apparatus in London and can meet all your requirements. Our experts will advise and help you in your selection.

WILL DAY LTD.

19, LISLE STREET, LONDON, W.C.2

Telephone: Gerrard 4476.

Enjoy
SHORT
WAVE
RECEPTION

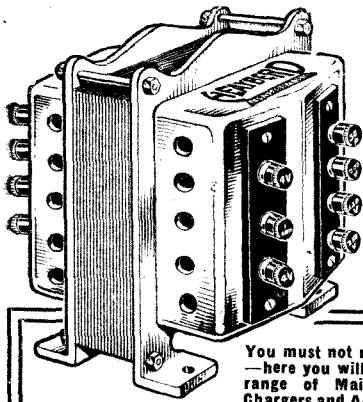


★ The latest Magnum Short Wave Adaptor is suitable for both A.C. Mains and Battery Sets. Price including coil 40/80 metres, Cord and Plug **39/6d.** Extra Coil if required 18/40 metres **3/-**
Model T. For sets using British Valves.
Model T.A. For sets using American Valves.
 To meet the demand from owners of American Sets, we have designed a Short Wave Adaptor suitable for all types of sets using American Valves. This is known as Model T.A. and is similar in design to Model T. The price also being the same.
 Note. It is not suitable for sets where a S.G. Valve is used as a detector.
 Send at once for full particulars with a list of Short Wave Stations and free trial offer.

MAGNUM
RADIOGRAM
SCREEN
 Specified for the S.T.300 Radiogram. Price **1/9 D.**

"STENODE"
 The set that is years ahead. A Brochure fully describing the latest Burne-Jones "Stenode" is now available. Free on request.

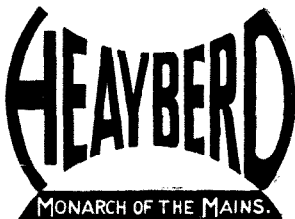
BURNE-JONES & CO. LTD.
 "Magnum" House, 296, Borough High Street, London, S.E.1. - - - Telephone: Hop 6257 & 6258.
 Scottish Agent:—Mr. Ross Wallace, 54, Gordon Street, Glasgow, C.1.



**A modern
Evolution
in Mains
Working!**

You must not miss Stand 13 at Olympia this year — here you will find a really complete and modern range of Mains Units, Transformers, Chokes, Chargers and Accessories—to suit the requirements of every Radio Constructor. Mains Units are of a distinctive and sturdy design—cased in aluminium finished Metal covers, with a recessed panel housing the terminals and control knobs. The Mains Transformers used are of the usual strong and powerful make. Heayberd Chokes—double core constant inductance air-gap type. A combination of British materials with British skill, plus severe testing.

Send 3d. stamps for details of Heayberd Mains Products, including diagrams and Technical information.



If you have any Technical Mains problems, our Technical dept. will be only too pleased to help you.

STAND

13



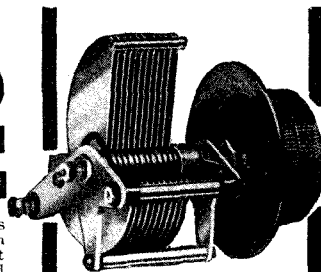
WE ARE EXHIBITING AT

10, Finsbury Street, London, E.C.2

(1 minute from Moorgate)

FOR THE
**S.T.300
EXHIBITION
RADIOGRAM**

Wavemaster Condensers are as necessary for the S.T.300 Radiogram as they are for any other efficient set where delicate tuning control and reliability are vital. The model illustrated is the All-brass slow and fast motion type. **5/3**
Cat. No. 27. Capacity .0005.



Write for Illustrated Catalogue

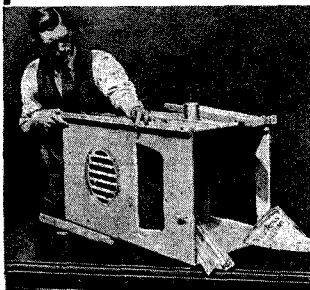
WAVEMASTER

WEBB CONDENSER Co. Ltd., 42, Hatton Garden, London, E.C.1

**S.T.300
EXHIBITION RADIOGRAM**

Complete Kit of finest quality parts for easy construction of cabinet—£2 only.

WRITE FOR FULL DETAILS OF THIS AMAZING OFFER.



FILL IN AND POST NOW!
To VIBRANTI PRODUCTS CO.,
308, Euston Road, N.W.1.

Name

Address

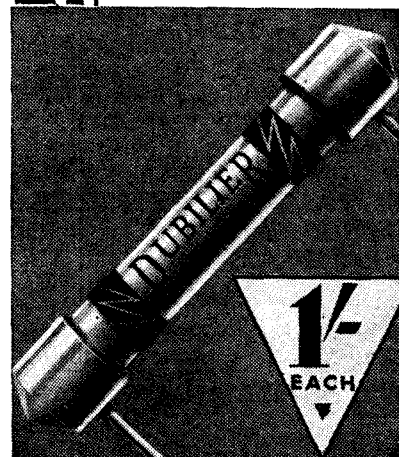
A DUBILIER

**GRID
LEAK
WHICH COSTS
ONLY 1/-!**



There's no excuse now to have unreliable Grid Leaks in your Set. For here is a Grid Leak bearing the name Dubilier . . . and all it costs is 1/-! Only 1/- . . . and you have a Grid Leak which is the last word in efficiency . . . constant, permanent, strong mechanically . . . and tested in laboratory and factory to be quite certain that it will never fail you.

The new Dubilier Grid Leak is available in all popular values. For whatever resistance value you need, from today see that your Grid Leaks are all made by Dubilier. That name is another word for "Dependability."



**DUBILIER
CONDENSER
CO. (1925) LTD.**
Ducon Works,
Victoria Road,
North Acton,
London, W.3

THE "WIRELESS CONSTRUCTOR" OFFICIAL LIST OF EXHIBITORS

Where to see Our Sets and get the components

Here is the full list of "Wireless Constructor" official exhibitors. Visit your local Radio retailer and ask for a demonstration.

- LONDON.**
Alexander & Sons, Ltd.,
130, Clapham Road, S.W.9.
H. Amos, 244, Earlsfield Road, WANDSWORTH,
S.W.18.
W. A. Andrews,
13, Burnt Ash Hill, LEE, S.E.12.
Andy's Radio, 285, Edgware Road, W.
Angel Radio Supplies,
428, St. John's Street, ISLINGTON, N.
C. H. Appleton, 74, Upper Clapton Road,
CLAPTON.
T. M. Barbour, 24, Knights Hill, S.E.27.
Bearman Bros., DALSTON JUNCTION, N.
Berensford Bros., 6, Berensford Square,
WOOLWICH.
J. H. Boddy, 819, Fulham Road, S.W.6.
John Brahm, 194-200, Bishopsgate, E.C.
J. H. Brookman, 8, Farley Road, SOUTH
NORWOOD, S.E.25.
Bush Radio Stores, 184, Railway Approach, W.2,
and 7, Fulham Palace Road, W.
Cadisch & Son, 56-8, Eagle Street, W.C.
A. Clarke, 22-4, Market Hall, FULHAM.
J. Collier & Sons, Ltd.,
53-57, High Street, PECKHAM, S.E.15.
S. T. Corry & Co., 52a, Southampton Row, W.C.1.
S. & J. Crompton, Ltd., 129, High Road,
CHISWICK, W.4.
Direct Supply Stores, 62, Lower Marsh,
WATERLOO, S.E.
District Gramophone Co., 315, Old Kent Road,
S.E.
District Supplies, 11, Brushfield Street, E.

- Elephant Electrical Co., Radio & Electrical
Engineers, 29, New Kent Road, ELEPHANT &
CASTLE, S.E.1.
"Electrico," 97, George Street, CROYDON.
Elkay Wireless, 225, Bishopsgate, E.C.
E. O. Ellis,
15, The Village, OLD CHARLTON, S.E.7.
Empress Radio,
680, High Road, TOTTENHAM, N.
H. C. Fieldhouse,
95, Valentine Road, Wood Street, E.17.
A. Fudge & Sons, Bendall Street, LISSON
GROVE, N.W.1.
F. Galt,
56, Norbury Road, THORNTON HEATH, S.W.
L. A. Gardner & Co., 58, Church Lane, S.E.7.
Gas Light & Radio Co., 464, Holloway Road, N. 5.
G. Goodwin,
6A, The Broadway, WOOD GREEN, N.
J. Glickman, 479, Cambridge Road, BETHNAL
GREEN, E.2.
S. Grey & Co., 745, Barking Road, E.
Griffin, 187, Broadway, Uxbridge Road,
SOUTHALL.
H. A. Wirelless,
13, Hackney Road, SHOREDITCH, E.2,
and 139, Bethnal Green Road, E.2.
Hackney Wireless Supplies,
614, High Road, TOTTENHAM, N.
Harmo Products, 46, Hoe St., WALTHAMSTOW,
E.
Harper's Radio, 430, High Street, LEWISHAM,
S.E.13.
Hewitt & Co., 21, South Street, GREENWICH.
Hogben, 272, High Road, TOTTENHAM.
Hurley & Baker, 172a, Roman Road, BOW.
James & Williams,
31, Queen's Road, BATTERSEA, S.W.5.

- M. Kams & Co., 9, High Street, PUTNEY, S.W.15.
Keen Wireless, 1, Dane Road, EALING.
W. Kerr & Co., 107, West Green Road,
TOTTENHAM.
M. Landau, 66, High Street, CAMDEN TOWN.
The Lea Music & Lighting Salon, 632, Lea Bridge
Road, LEYTON, E.10.
The Ludgate Circus Radio, 4, Ludgate House,
Ludgate Circus, E.C.4.
F. Mace & Sons,
15A, Delacourt Road, BLACKHEATH, S.E.3.
Maxims Stores, Ltd., 7A, Tothill Street, S.W.1.
Morgan & Gaunt, 25A, Montpelier Vale, S.E.3.
H. Moyer,
111, High Street, STOKES NEWINGTON, N.16.
Northcote Motor Co., 145, Northcote Road,
CLAPHAM JUNCTION, S.W.11.
A. Orstin, 154, Green Street, BETHNAL GREEN,
E.2.
G. H. Pearce, 129, Sydenham Road, S.E.26.
Pearl & Moore, 168, Strand, W.C.
Pearl & Pearl, 190, Bishopsgate, E.C.
Peckham Radio, 132a, Rye Lane, PECKHAM.
The Peto-Scott Company, Ltd., 77, City Road,
E.C.1.
The Peto-Scott Company, Ltd., 62, High Holborn,
W.C.1.
Plaisfow Radio Service, 178, Plaisfow Road, E.15.
Polchar's Wireless, Ltd., 5, Manifold's Market,
Rushy Green, CATFORD, S.E.
Polchar's Wireless, Ltd., 175, High Road,
BALHAM, S.W.
Polchar's (1919), 96-98, High Street, DEPTFORD
S.E.
A. Potter, 234, Green Street, BETHNAL
GREEN, E.2.
Radio Supply Stores, 574, Old Kent Road, S.E.1.
Rayette, 128, King Street, HAMMERSMITH.
Real Radio Service, 61, Cannon Street, E.C.4.
Reliance Radio Service, 29, South Street,
ISLEWORTH.
D. Sacks, 130, Kentish Town Road, N.W.
Saville Radio Company, 19, Saville Place,
S.E.11.
Service Electrical & Radio Co., 28, Windmill Hill,
ENFIELD.
Service Radio, 210, High Street, SHOREDITCH, E.
R. Silverstone, Ltd.,
186, High Street, CAMDEN TOWN, N.W.
Sovereign Products, Ltd., 52-54, Rosebery Avenue,
E.C.1.
E. Spelle, 14, Lancaster Street, HYDE PARK, W.2.
G. Stern, 115, Fleet Street, E.C.4.
M. Stone, 66, High Road, BALHAM.
(Continued on page 300.)

LANCHESTER RADIO

Our 1932/3 Programme includes
MOVING COIL PERMANENT
MAGNET SPEAKERS

full range, from our "B.O.B." at 20/-
(25/6 incl. Transformer) to our public address
ACOUSTIC TUBE TYPE at £65

Full range of
A.C. MAINS UNITS.
eliminators and battery chargers

LANCHESTER RECEIVING SETS
AND GRAMOPHONE AMPLIFIERS
and our latest
CONSTANT INDUCTANCE
OUTPUT TRANSFORMERS

WRITE TO US DIRECT.

CATALOGUES FREE.

Acocks' Green 1404

G.W.R. Spring Road

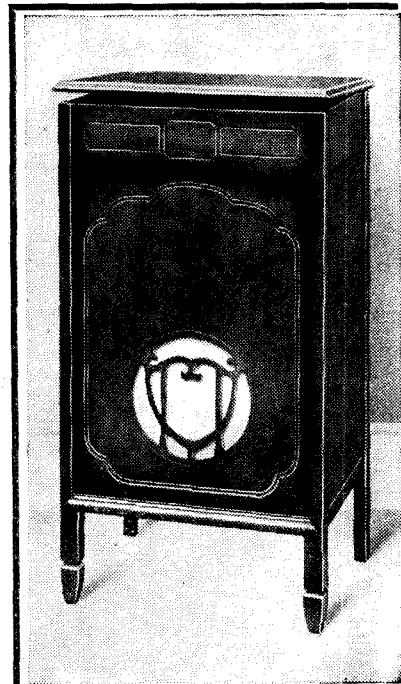
LANCHESTER'S LABORATORIES
TYSELEY LIMITED BIRMINGHAM

YOUR COPY OF "CAMCO'S" NEW CATALOGUE

is ready—send the
coupon now and secure
a copy. It contains the
complete range of
"Camco" cabinets with
full particulars and
specifications. The
Camco "Popular"
Radio-Gram Cabinet
(rgd. design) illustrated
is the finest value
offered with motor
board shelf, baffleboard
and automatic stay,
shaded walnut finish,
75/- complete.

OLYMPIA STAND 123
CARRINGTON
MFG. CO., LTD.

Showrooms: 24, Hatton
Garden, London, E.C.1.
Phone: HOLBORN 8202.
Works: South Croydon.



COUPON

Name.....

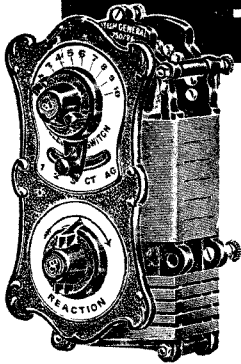
Address.....



..... r.W.C. CABINETS

The famous

BRITISH GENERAL TUNING UNIT



now reduced to 10'6

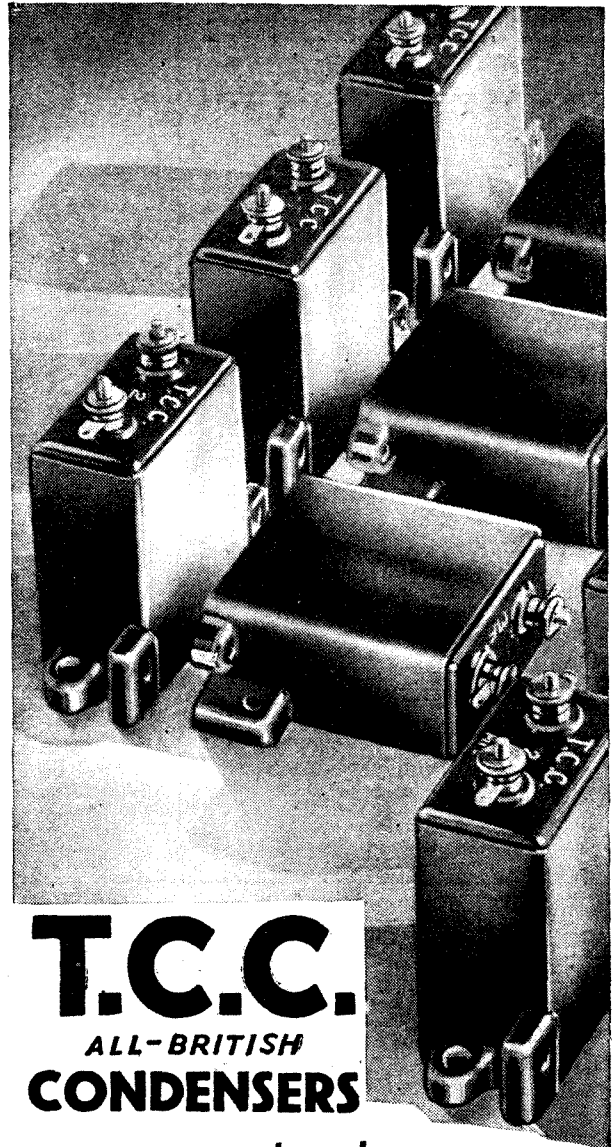
See our display at the Radio Exhibition AUGUST 19-27

STAND 29

By reason of increased demand and enlarged production we are able this season to offer our well-known Tuning Unit at 10.6 instead of 14.6 as before. This Unit effectively replaces plug-in coils and covers the entire wave-band, from 200-2,000 metres. Easy fixing; simple tuning. Full instructions supplied with every model.

From all dealers or direct from the manufacturers—

BRITISH GENERAL MANUFACTURING CO., Ltd.
Brockley Works, London, S.E.4



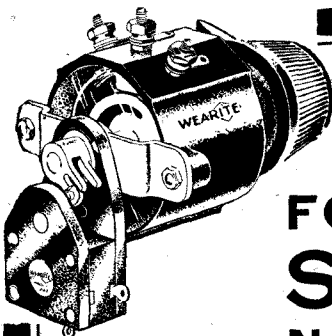
T.C.C. ALL-BRITISH CONDENSERS

—initials that are your safeguard

YEARS of unfailing service have won for T.C.C. Condensers a reputation second to none. In every specification — in every set, where unquestioned reliability is demanded, there will you find T.C.C. Condensers. When you want a condenser—for any purpose — “by-passing,” smoothing, decoupling etc., insist on “the condenser in the green case”—in the knowledge that T.C.C. stand ‘four-square’ behind their every product.

A group of 2 mfd. Non-inductive type 50 condensers are shown above. These condensers are particularly suitable for sub-chassis or base-board wiring by reason of their double-mounting brackets. Price 3/10 each—other capacities in this type from .005 to 2 mfd. Working Voltage - - 200 D.C.

The Telegraph Condenser Co., Ltd., Wales Farm Road, N. Acton



FOR EVERY SPECIAL NEED

Whenever a problem is presented for the simplification of construction or wiring, if that problem involves a component it is certain that the answer is in the “Wearite” laboratories. For over twelve years Wearite have laboured to produce components—not just those of everyday use, but components with a special function—a typical example of which is shown here. Whatever the component you need—follow the lead of the set designers—consult the “Wearite” Range first.

Here is a standard Q.V.C. Volume Control and a standard G.40 Mains On-Off Switch mounted together - Price 6/6

These Volume Controls are available in all values from 600 to 200,000 ohms.

HERE ARE THE WEARITE PARTS FOR THE “S.T.300 EXHIBITION RADIOGRAM.”

- Mahogany-finished panel, 18" x 8", Price 9/-
- 2 4-pin Valve-holders, Price 1.3 each.
- 1 Switch (125) (exclusively specified) 4/-
- 1 50000-ohms Volume Control (Q.V.C.) (specified) Price 4.6
- 1 "S.T.300" Radiogram Screen, 10" x 6", 2/-
- 1 Reaction type H.F. Choke (H.F.P.) 3/6
- 2 "S.T.300" Coils Price 12/- per pair.

Write for special leaflets—and, if you have a technical problem, if it's components, write our "Technical Dept."

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WRIGHT & WEARE LTD. - 740, HIGH ROAD, TOTTENHAM, N.17 - - Tel.: Tottenham 3847/8,9.

**THE "WIRELESS CONSTRUCTOR"
OFFICIAL LIST OF EXHIBITORS**

—continued from page 298

Super Radio Service, 31, Surrey Street, CROYDON.
C. & W. Thew, 44, Blackheath Hill, S.E.10.
Tower Radio, 5, High Street, SHOREDITCH.
J. J. Verne.
25A, Brighton Road, SOUTH CROYDON.
W. A. Waldron, 60, High Street, HOUNSLOW.
Waf's Radio Stores.
55, Cadogan Terrace, VICTORIA PARK, E.9.
Western Lighting Co., 77, Mitcham Road, TOOTING.
Wholesale Components, 8-Sa, Cross Street, ISLINGTON.
Willesden Radio, 267, High Road, WILLESDEN GREEN, N.W.
Williams Lighting, 2, High Street, TOOTING.
The Woolwich Radio Supplies, 22, New Road, WOOLWICH, S.E.
V. Zeitlin & Sons, Ltd., 144, Theobalds Road, W.C.

ABERDARE.
J. D. Williams, 65, Cardiff Street.

ABERDEEN.
The Aberdeen Radio Co., Ltd., 9, Hadden Street.
J. P. Christie, 29, Victoria Road.
Miller Bros., 249-251, George Street.
Smith, 39, Bridge Street.

ACCRINGTON.
Frank Edmonds, 17, Abbey Street.
H. A. Sharples, 261, Blackburn Road.
G. V. Stephenson & Sons, 31, Blackburn Road.

ARBROATH.
W. McKay, 243, High Street.

ACTON BRIDGE, Nr. Northwich.
R. Manning.

ASHFORD.
A. Edenden, 150, Bridge Street, WYE.
F. G. Ware, Sellindge.

ASHTON-IN-MAKERFIELD.
G. F. Smith, 57, Gerard Street.

AYLESBURY.
E. D. Hasberry, Radio Shop, Temple Street.
C. R. Steggall, 52, Cambridge Street.

BACUP.
J. Crawshaw, 149, Market Street.
J. J. Holden, 25, St. James's Street.

BANBRIDGE, CO. DOWN.
Messrs. T. & A. Wallace, 52, Bridge Street.

BARTON-ON-HUMBER.
Park Bros., 11, King Street.

BATH.
C. W. Maxim, 33, Broad Street.

BATLEY.
W. E. Wood, Sandyfields Wireless Stores, Bradford Road.

BEDFORD.
Norman Mickle, 37, Bromham Road.

BEESTON, NOTTS.
C. Hall & Sons 68, High Road.

BELFAST.
Belfast Radio & Electric Co., Ltd., 17-19, Queen Street.
The Wireless & Electric Co., 32, Dublin Street.
W. Houston (Everay Service Co.), 10, New-towards Road.

BERWICK-ON-TWEED.
Knox Bros., 25, Bridge Street.

BEXLEY HEATH.
Bexley Heath Electric Co., 191, Broadway.

BICKLEY.
Richardson & Whitaker, Bickley Station.

BIDEFORD, N. DEVON.
Messrs. F. H. Darch & Son, 13, Chingswell Street.

BIRKENHEAD.
A. Allehin, 370, Borough Road.
Radion Co., 237, Old Chester Road.

BIRMINGHAM.
Bayrick's Radio Stores, 2, Hamstead Road, HANDSWORTH.
F. W. Beeby, 25, Winson Green Road.
G. F. Collins, 511, Slade Road, ERDINGTON.
The Electroec Radio Co., Solihull.
J. Elvins, 112, Stoncy Lane SPARKBROOK.
Hopkins Bros., 216, Hawthorne Road, KINGSTADING.
Lees Radio Stores, 209, Lichfield Road, ASTON.
Malcom & Stewart, 491, Alum Rock Road, ALUM ROCK.
E. Matty, 69, Lichfield Road, ASTON.
"Scarrs," 9, Watford Road, COTTERIDGE, KINGE NORTON.
Wallace & Co., 856, Bristol Rd., Selly Oak.
Messrs. Wallace & Co., 1839, Pershore Road, COTTERIDGE.

BISHOP AUCKLAND.
A. M. Hunter, Evenwood House, Evenwood.

BLACKBURN.
H. Flintoff, 47, Copy Nook.
Snaps, Ltd., 55, Penny Street.

BLACKPOOL.
Tom Jones, 1A, Leopold Grove.
A. Morfitt, 306, Lytham Road.
The Radio Stores, 10, Cedar Street.
J. Taylor (R. H. O. Hills, Ltd.).

BOLTON.
J. S. McLeod & Co., 34, Gt. Moor Street.
Olympia Radio, Ltd., 74, Bradshawgate.

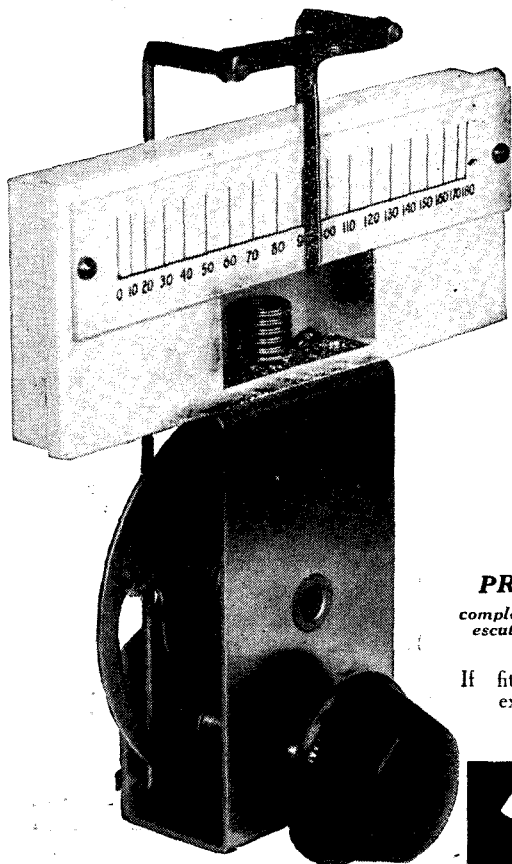
BOOTLE.
L. A. Wireless, 304, Stanley Road.

BOURNE.
E. Pearce, 32, North Street.

BOURNEMOUTH.
Gardiner's Radio, West Southbourne

BRADFORD.
H. Atkinson, Barkerend Music Stores, 211a, Barkerend Road.
V. Wilson, 33, Bowling Old Lane.
A. Adams, 105, High Street, WIBSEY.
A. Adams, 50, Oak Lane, MANNINGHAM.
A. Ridgway & Co., 23, Hall Buildings.
J. Scurrell & Sons, 6-12, Rooley Lane BANKFOOT.

(Continued on page 302.)



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LINE *reading!*

Obviously the most sensible method of tuning a set was to have a complete tuning scale before your eyes all the time, and now Utility have produced a Straight-Line Dial which renders obsolete and old-fashioned every other method.

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If fitted with front lamp extraction, 6d. extra.

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**MEET US AT
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MODERN
WIRELESS

BRITAIN'S LEADING
RADIO MAGAZINE

LEADS

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OF

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WORLD'S PROGRAMMES

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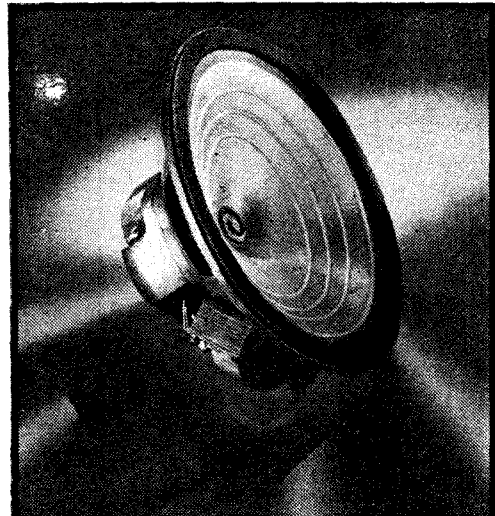
A WONDERFUL VARIETY

OF ARTICLES ON ALL
ASPECTS OF RADIO

GET A COPY NOW

Price 1'-. Every Month

SPEND
£1,000
on your S.T.300
EXHIBITION RADIO-GRAM



Choose the Celestion
P.P.M. STANDARD
..... as specified

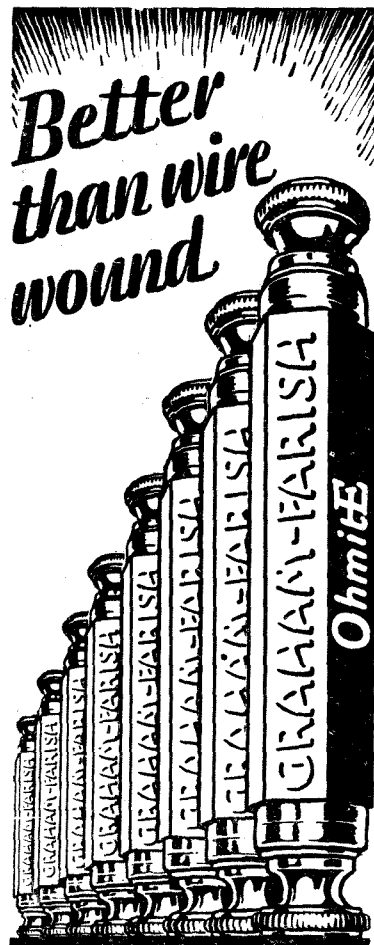
and you will have the benefit of having spent £1,000 on your S.T.300 Radio-Gram, because Celestion have already spent thousands of pounds for your benefit in their Laboratories, to bring their speakers to the present state of unrivalled efficiency that they enjoy.

The P.P.M. Standard, specified for the S.T.300 Exhibition Radio-Gram, incorporates an impregnated diaphragm and a patent twin suspension permitting large cone movements without distress. The new patented cobalt content steel magnet produces a very high flux density. Supplied fitted to baffle ready for mounting into cabinet. Price 47/6 including transformer; please state whether standard or pentode required. Easy payment terms 10/- down and 6 monthly payments of 8/-.

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Kingston - on -
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London Showrooms:
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The Very Soul of Music



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KNEW**

That is why he has specified OHMITE RESISTANCES in every set he has designed for "The Wireless Constructor," including the famous S. T. 300 Radiogram.

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ANODE RESISTANCES**

All values—100 ohms to 5 megohms.

**1/6
EACH**

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**GRAHAM FARISH
LIMITED. . . . BROMLEY, KENT**

**THE "WIRELESS CONSTRUCTOR"
OFFICIAL LIST OF EXHIBITORS**

—continued from page 300

- BRIDGWATER.**
Whitby's Music & Radio Stores, 1, Cornhill.
- BRISTOL.**
H. F. Hamblin, 39-40, Bridge Street.
H. E. Hamilton, 39-40, Bridge Street and 45-51, Church Road, Redfield.
Polchar's Wireless, Ltd., 20, Bridge Street.
- BROMLEY.**
Chapman & Son, 418, Downham Way.
- BROMSGROVE.**
C. Wynne, 19, Worcester Street.
- BROWNHILLS.**
Everson's Radio Depot, 93-95, High Street.
- BURNLEY.**
T. Duerdon, Westgate.
G. Pye & Son, 134, Padiham Road.
Northern Radio Exchange Co., 150, Trafalgar Street.
- BURY.**
Bennett & Co., 36, Union Street.
- CAMBRIDGE.**
Baily, Grundy & Barrett, Ltd., 2, St. Mary's Passage
W. K. Islip, 42, Chesterton Road.
A. Matthews, 41, Mill Road.
W. F. Webb, 188, Mill Road.
- CAMPBELTOWN.**
A. P. Macgrory, 16-18, Main Street
- CANTERBURY.**
W. A. Goodhew, 22, Sun Street.
- CARDIFF.**
J. F. Paull, 43, Caroline Street.
Splott Radio & Gramophone Co., 9, Splott Road.
- CASTLE HEDINGHAM.**
G. H. Sylvester, Wireless Dealer.
- CHATHAM.**
Chatham Radio, 220, High Street.
- CHELMSFORD.**
Flexman Bros., 4, New Street.
- COLCHESTER.**
F. W. Straw, 9, St. John's Street.
- COLWYN BAY.**
J. Hacking "Wireless," 7, Erw-wen Road.
- CONNAH'S QUAY.**
George Coppack, 80, High Street.
- COVENTRY.**
H. J. Cleaver, 112, Spon Street.
- COWDENBEATH.**
H. S. Stott, 144, High Street.
- COWES.**
J. A. Attrill, Birmingham Road.
F. E. Dominey, 20, Shooters Hill.
H. W. Millard, The Corner Radio and Gram. Stores, 25, Clarence Road, EAST COWES.
- CRAWLEY.**
W. H. Hogger, 4, Post Office Road.
- CRIEFF.**
Frank Thomson, 7, 9, 11, East High Street.
- CROMER.**
J. B. Postle, 9, Mount Street.
- CUPAR.**
W. T. Ross, 16, Millgate.
- CWM.**
Douglas C. Osborne, Modern Music Depot.
- DAGENHAM.**
Acme Wireless, 9, Goresbrook Road.
- DARTFORD.**
J. C. Freeman & Co., 1, Spital Street.
S. N. Hammond & Son, 62, Lowfield Street.
- DARWEN.**
J. E. Loynds & Co., 204, Duckworth Street.

- DEAL.**
E. D. Newing, 138, High Street.
- DERBY.**
Hulme & Son, 8-9, Sadler Gate.
J. & C. Wireless, 54, Green Lane.
- DEREHAM.**
Utting & Buckingham, Ltd.
- DEVIZES.**
James Bros. (Wiltshire), Ltd.
- DEWSBURY.**
C. Phillips, 33, Wellington Road.
- DONCASTER.**
Brook Hardecastle, Ltd., 21, Cleveland Street.
- DOVER.**
Albert V. Nutley, 30, London Road.
- DOWNHAM.**
R. S. Ewell, Nordelph.
- DUNBLANE, PERTHSHIRE.**
A. Gonnella, 33, High Street.
- DUNDEE.**
Clydesdale Supply Co., 13, Crichton Street.
Swainstons Radio Stores, 66, King Street.
- DUNFERMLINE.**
Clydesdale Supply Co., Ltd., 137, High Street.
- DURHAM.**
C. N. Grundy, 27, Station Road, STANLEY.
- DURSLEY, GLOS.**
G. E. Smith, "Elmsleigh," Uley.
- EASTLEIGH.**
Nalder C. Cox, 16, High Street.
- EDINBURGH.**
Wm. Borthwick & Co., Ltd., 26 to 44, Cockburn Street.
Clydesdale Supply Co., Ltd., 5, Lindsay Place, and 66, South Bridge.
- ELLESMERE PORT.**
G. Salter, 56, Station Road.
- ELY, Cambs.**
E. Baines Cope, 36, Back Hill.
- ENNISKILLEN, ULSTER.**
W. H. Creighton, 14, Church Street.
- EXETER.**
G. L. Fildew, Radio House, 177, Sidwell Street.
- EXFORD, Taunton.**
P. E. Heywood-Bawden, Motor Works.
- FARSLEY.**
G. Lumley, 75, Town Street.
- FROME.**
Alec. G. Applegate, 47, Trinity Street.
- GAINSBOROUGH.**
H. E. Cobb, 10-14, Hickman Street.
Shiple & Co., Ltd., Market Place.
- GILLINGHAM.**
Maningtons, Ltd., 426, Canterbury Street.
- GLASGOW.**
Wm. Blackadder, 236, Argyle Street, C.2.
City Wireless & Cycle Stores, 668, Govan Road.
Clydesdale Supply Co., 2, Bridge Street, 63, Renfield Street, and 160, Sauchiehall Street.
S. W. Cohen, 7-15, King Street.
Gordon & Smith, 669, Calheart Road, S.2.
Gramophone Radio Service, 218, Main Street, CAMBUSLANG.
Youngs (Glasgow), Ltd., 49, Stockwell Street.
- GLOSSOP.**
L. P. Penny, 65, High Street West.
- GLOUCESTER.**
Cycle & Wireless Services, 120, Barton Street.
- GODALMING.**
Jordan's Garage, Ltd., 11-13, Ockford Road.
- GORLESTON-ON-SEA.**
Gorleston Cycle Depot.
C. W. Williams, 174, High Street.
- GOSPORT.**
Hardway Radio, 26, Grove Road South.

(Continued on page 304.)



There can be no certainty of success for the sales of a product unless backed by sound, consistent advertising. Don't gamble with sales. Advertising facilitates distribution and ensures sustained demand.

H.S.

IT PAYS TO ADVERTISE

Issued by the Institute of Incorporated Practitioners in Advertising in conjunction with the Federations of Master Process Engravers and Master Printers, etc.

-WARNING-
DO NOT FAIL
 to use the
BECOL EBONITE FORMER
 as specified
 for the **"S.T.300" COIL**
 FORMER No. II.
TESTED and RELIABLE

Price 2/6 per pair Slotted and Drilled, or
 Post Free 2/10 per pair.
 Plain, Not Drilled or Slotted, 1/8 per
 pair, or Post Free 2/- per pair.
 Look for Trade Mark and **DO NOT USE**
 AN IMITATION.

Apply to your Dealer or direct.
 SOLE MAKERS:
THE BRITISH EBONITE CO. LTD.,
 HANWELL, LONDON, W.7.

We undertake to solve all Radio Problems,
 including S/W Transmission and Reception.
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 Charges: 3/- per query, four or more
 2/6 each, including diagrams.

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(either sex) to sell Private Christmas Cards. Sample
 Book Free. Exquisite Cards at Popular Prices. Highest
 Commission and Valuable Prizes. Apply:
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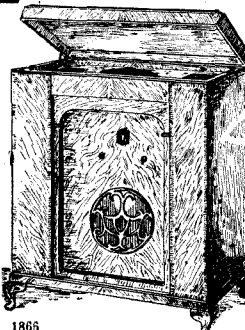
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 Send 2d. stamp for Illustrated Catalogue.

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The DAILY SKETCH
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 High Grade
RADIO GRAMOPHONE CABINET



of exclusive modern design, with record wells, hand-made and polished, on Queen Anne legs.
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 (Carriage Paid.)
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GILBERT
 Cabinet Maker,
SWINDON
 Estimators Free. Estd. 1865.

THE "WIRELESS CONSTRUCTOR"
OFFICIAL LIST OF EXHIBITORS

—continued from page 302

- GRAYS.**
 T. H. Grylls, Electra House, Clarence Road.
 The Harbon Radio Stores, Southend Road.
- GRIMSBY.**
 Abbey Motors, Radio House, Freeman Street.
 C. H. Turner & Co., 3, Corporation Road.
 The Electrical Service Co., 323, Cleethorpes Road.
 W. Westoby, Hutton Road, Fish Docks.
- HALIFAX.**
 C. Ambler, 3, Woolshops, Old Market.
 C. Kinder, 49, Saddleworth Road, WEST VALE.
- HANLEY.**
 M. Pearson, 76, Lower Mayer Street.
- HAYES, MIDDLESEX.**
 Spratley Bros., Station Road.
- HEMEL HEMPSTEAD.**
 F. Wilkins & Sons, 54-56, High Street
- HEREFORD.**
 S. C. Jones, Clehonger Garage.
- HILLINGDON.**
 A. H. Lawton, Field Heath Road.
- HITCHIN.**
 H. Shadbolt, 6, Tilehouse Street.
- HOLT.**
 Sheldrake & Son, Lion Corner.
 A. V. Ship, HOLT
- HUDDERSFIELD.**
 L. Biltcliffe, 8, Church Street, HONLEY.
 P. Dyson & Co., 18, Cross Church Street.
 Radio Equipment Co., Market Avenue.
 Taylors (Hudd.), Ltd., 6, Shambles Lane.
- INVERURIE, ABERDEENSHIRE.**
 The Square Engineering Works, 39a-40, Market St.
- IPSWICH.**
 Boddey Page & Co., 16, St. Margaret's Green.
- JARROW.**
 G. R. Thomas, 6A, Grant Street.
- KEIGHLEY.**
 W. S. Nicholls & Son, 187, South Street.
- KIDDERMINSTER.**
 T. F. Hancock, 117, Mill Street.
- KIMBERLEY, NOTTS.**
 J. Goulder, 10, Norman Street.
- KIRKHAM.**
 P. Croisdale, 19, Poulton Street
- KIVETON PARK**
 H. P. Snowdon, Snowdon's Wireless Stores,
 Station Road.
- LEEDS.**
 City Wireless Supplies, 49, New Briggate.
 M. Feldman, 58, Meanwood Road.
 A. G. Radio Stores, 39, Meadow Road.
- LEIGHTON BUZZARD.**
 Frank Griffin, 40, Hockliffe Street.
 Griffin Bros., 11, High Street, and 63, North Street.
- LETCHEWORTH.**
 P. C. Millard, 195, Glebe Road.
- LEWES.**
 E. Goldsmith, 10, The Cliffe.
 Leory & Richardson, Ltd., 170, High Street.
- LIVERPOOL.**
 City Wireless, 80, Whitechapel.
 The Beaver Radio Co., 60-62, Whitechapel.
 The J.D. Wireless Co., 195, Breck Road.
 L. A. Wireless, 304, Stanley Road, **BOOTLE.**
 Stanley's Radio, Ltd., 178-180, London Road.
 G. Street & Son, 16, Wavertree Road.
 H. J. Coxon, 240, County Road.
 "Hobbies," 35, Manchester Street.
 Morris & Co., 230, Smithdown Road.
 Tom Simm, 275, West Derby Road.
- LLANGFNFI.**
 T. Hughes Davies, High Street.
- LONDONDERRY.**
 Carlisle Radio Store, 48, Carlisle Road

- LONGSIGHT.**
 S. Abbott, 510, Stockport Road.
- LOWESTOFT.**
 Gladwells Radio, Sussex Street.
 F. J. Hughes, Junction Passage.
- LUDLOW.**
 Messrs. A. W. Paeker & Son, 147, Corve Street.
- LYTHAM.**
 F. Calvert, County Garage.
- MAIDSTONE.**
 Cycco-Rado, Ltd., 3, Mill Street.
 J. W. See & Son, 12, Earl Street.
- MANCHESTER.**
 E. Butler, 178, Princess Road, Moss Side.
 Newton Radio Co., 398, Oldham Road, Newton
 Heath.
 Park Wireless Depot, 37, Raby Street, Moss Side.
 R. H. Bradley, 53, Cobden Street, Moston
 Lane, **BLACKLEY.**
- MANSFIELD.**
 J. Jennings & Sons, High Street.
- MARGATE.**
 Walker & Son, 1/2, Marine Terrace.
- MELTON MOWBRAY**
 Sharman & Ladbury, Ltd., Sherrard Street.
- METHIL.**
 Methil Radio Stores, 21, East High Street.
- MONTROSE.**
 Valentine & Son, Radio Corner, Murray Street.
 M. Wilson, 138, High Street.
- MORTIMER, BERKS.**
 F. J. Hillary, Electrical and Radio Engineer.
- MOTHERWELL.**
 Glasgow Cycle & Wireless Depot, 113-115, Brandon
 Street.
- NELSON.**
 F. Deluce & Co., 3-5, Prospect Buildings
- NEWCASTLE-ON-TYNE.**
 W. Emerson, 255, Westgate Road.
 John Mills & Sons, 63, Grainger Street.
 Accumulator Construction Co., Powdene House,
 Pudding Chare.
- NEWPORT, MON.**
 Newport Electrical Co., 3, Dock Street.
- NORTHAMPTON.**
 V. O. Curtis, 86, Wellingborough Road.
- NOTTINGHAM.**
 World Radio Supply Stores, 78, Radford Boulevard.
 Mr. Pickbourne, 93, Sneinton Boulevard.
 Reliance Engineering Co., 101, Alfreton Road.
 Reliance Engineering Co., 144, Derby Road.
- NUNEATON.**
 Collins Radio Depot, 9-11, Riversley Road.
- OLDHAM.**
 F. Fryer, 141, King Street.
 H. Gilbert, 139, Yorkshire Street.
 Premier Wireless Stores, 26, Manchester Street.
- OLNEY, BUCKS.**
 Minney Bros., 98, High Street.
- OSSETT.**
 A. Wainwright, Wakefield Road, **FLUSHDYKE.**
- OXFORD.**
 The Oxford Radio Supplies, 29, Queen Street.
 G. R. Cooper, 40-44, St. Ebbe's
- PAISLEY.**
 Clydesdale Supply Co., 9, Moss Street.
- PELTON, Co. DURHAM.**
 H. Sayer, Front Street.
- PENRITH.**
 W. Pears, Great Dockray.
 A. B. Bowe, late Frank Smith, Corney Square.
- PERTH.**
 A. Harrower, 150, South Street.
- PETERBOROUGH;**
 R. J. Croft, Main Street, **FARCET.**
- PEWSEY.**
 T. E. Bailey, The Bazaar.
- PONTYPRIDD.**
 D. G. Ball, 72, Taff Street.
 (Continued on page 305.)

**THE "WIRELESS CONSTRUCTOR"
OFFICIAL LIST OF EXHIBITORS**

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- PORTSMOUTH.**
Southern Wireless Service, 151, London Road.
W. Keost, 290-302, Commercial Road.
L. F. Wells, 4, Fourth Street, St. Mary's Road.
Wild Bros., 125, Arundel Street.
Wild Bros., 60, Fratton Road.
- PULBOROUGH.**
L. R. Willmer, Lower Street.
- RADCLIFFE.**
The Talkie Shop, Picturedrome Buildings.
- RADCLIFFE-ON-TRENT.**
H. S. Smith, The Wireless Stores.
- RAMELTON, Co. Donegal.**
S. B. Corry, Market Square.
- RAMSGATE.**
J. Corman, 65, King Street.
- RATHERLAND.**
S. G. Kentley, Castle Hill.
- RAWTENSTALL.**
O. Borsay, 101, Bank Street.
- READING.**
F. Gale & Son, Ltd., 133, Friar Street.
G. Wilson, 45, Castle Street.
- REDHILL.**
J. Brems, 35a, Clarendon Road.
- REDRUTH.**
E. Russell, Higher Fore Street.
- REIGATE.**
B. Finch & Sons, 35, Bell Street.
- RICHMOND.**
Morley & Thuey, 14, The Quadrant.
- ROCHDALE.**
A. K. Cotton & Co., 2, Water Street.
- ROCHESTER.**
Clarke & Simmons, 212, High Street
- ROMFORD.**
Filmays Radio, Filmays Corner, South Street.
- ROTHWELL, Nr. LEEDS.**
W. Gibson, Radio Co., 34a, Commercial St.
O. Fox, 84, Commercial Street.
- ROYSTON, YORKS.**
J. Gordon Cheetham, 127, Midland Road.
- RUSHDEN.**
Lektro Radio Stores, 5, Newton Road.
- ST. ANNES-ON-SEA.**
E. Summer, Ltd., 11, St. Andrew's Road South.
- ST. HELENS.**
W. Cawley, Junr., 66, Liverpool Road.
F. Cholerton, 52, Bridge Street.
- ST. NEOTS.**
Moore & Co., High Street.
- SAXMUNDHAM.**
O. W. Lane, Radio Dealer.
- SEAFORTH.**
J. Murphy, 13-15, Seaforth Road.
- SEVENOAKS.**
F. J. Lawrence, Westinghouse, Quakers Hall Lane.
- SHEFFIELD.**
W. H. Sherwood, 56, West Street.
- SIDCUP.**
Sidecup Electrical Co., 72, High Street.
- SITTINGBOURNE.**
E. & C. Landen, 55, High Street.
- SMETHWICK.**
Lambert Bros., 326, High Street.
- SOUTHEND-ON-SEA.**
L. V. Bridge, Warrior Square.
London Radio Supplies, 29, Victoria Arcade.

- SOUTHPORT.**
Wireless Supplies & Repairs, 14, Princes Street.
- SPALDING.**
R. S. Barlow, Francis Street (Hole-in-the-Wall).
- SPELDHURST, TUNBRIDGE WELLS.**
R. C. Woodcraft, Barden Road.
- SPENNYMOOR.**
E. F. Cator, 24, High Street.
- STAFFORD.**
E. B. Clendinning, 37, Cramer Street.
- STAVELEY.**
H. E. Drabble, High Street.
- STIRLING.**
Lockhart & MacNab, 34-38, Craigs.
- STOKE-ON-TRENT.**
"Bevs," Bevs Corner, BURSLEM.
Baneroff Bros., 207, Newcastle Street, BURSLEM.
- STOWMARKET.**
Stannard & Co., Tavern Street.
- STROOD.**
Clarke & Simmons, 26, High Street.
- SWANSEA.**
Dadem, Ltd., 206, High Street.
G. P. Evans, The Square, Brynhyfyrd.
Waldron Electrical Manfg. Co., 6, Portland Street.
Peacocks (Swansea), Ltd., 32-36, Woodfield Street,
Morriston.
O. K. Radio & Gramophone Stores, Church Street.
J. Mitchell, 46, Clydack Road, Morriston.
Tom Roberts' Radio Service, 8a, Humphrey Street.
Snell & Sons, 20-26, High Street, Arcade.
- TORQUAY.**
S. J. Searle, 33, St. Marychurch Road.
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A. R. Farr, 7, Islington.
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Cheshire Wireless Co., 98-100, Brighton Street.
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Jessops 2A, Midland Road.
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At last!
**PERMANENT
EFFICIENT
EVER-DAMP
EARTHING**

**A Sensational
Radio Invention!**

Get the utmost out of your set by fitting **FILT**—the newest and most efficient earth ever invented—based on a completely new principle. Its operation is unique. You simply bury the copper receptacle containing the wonderful **FILT** chemical, which at once begins to spread through the earth, attracting moisture and making a **PERMANENT** highly conductive area to the depth of several feet.



Never dries up.

In all weathers, in every soil, **FILT** keeps moist and highly conductive. It spreads like a tentacle, earthing your set perfectly and giving you every ounce of power, range and purity no matter what set you use.

GET A FILT TO-DAY

It is inexpensive, permanent and the most efficient obtainable.

GRAHAM FARISH

**FILT
PERCOLATIVE EARTH**

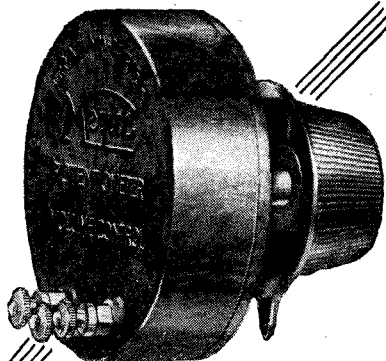
Ask your dealer to obtain, or write direct to:

**GRAHAM FARISH LTD.
BROMLEY - KENT.**

PRICE
2/6
COMPLETE

A NEW PRECISION VOLUME CONTROL

(POTENTIOMETER TYPE)



**CANNOT BREAK CONTACT
ABSOLUTELY SILENT ACTION**

For every wireless circuit requiring a potentiometer or volume control you will secure the maximum efficiency by using this new Graham Farish Megite Volume Control.

The element is of fine nickel-chrome wire embedded in a bakelite moulding. The action is through a slipper plate giving a smooth, positive contact, absolutely silent operation and making broken contacts impossible.

The instrument is of the 3-terminal type, enclosed in a bakelite case. Single-hole fixing. Supplied complete with indicating knob and full instructions.

**GRAHAM FARISH
MEGITE
POTENTIOMETER
VOLUME CONTROL**

Resistance up to 25,000 ohms.
Price

3/6

Resistance over 25,000 ohms.
Price

4/6

Ask your dealer to obtain or write direct to

**GRAHAM FARISH
LIMITED. . . . BROMLEY, KENT**

THIS YEAR'S RADIO DEVELOPMENTS ON SHOW AT OLYMPIA

—continued from page 235

In this case, one or two extra battery connections are necessary in order to put the unit in use, but that doesn't seriously complicate matters by any means. On the contrary, it is quite a simple job to connect it up.

So much for the question of adaptors. They are not the only ones on show by any means, but the above references will give you an idea of where to look for them.

Next we come to the question of components, and as there are now so many available it will perhaps be best for us to deal with them in some sort of logical order in order to cover as much ground as possible.

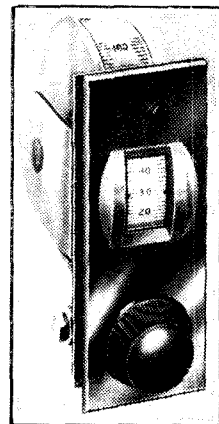
First, then, coils. What is the most outstanding development? As a matter of fact, there are several new developments, all of which might warrant first mention. But possibly the most unique development is the new Antinodal coil introduced by Messrs. Radio Instruments.

All of us who have done any short-wave work will know of the difficulties that can be caused by aerial nodal points; in other words, that state of affairs which occurs when the aerial comes into tune. The new R.I. coil is designed to overcome

that are well worthy of your attention are to be seen almost all over the Show. You will find excellent examples of the high standards of the new season's coils on the stands of Messrs. Bulgin, Colvern, Lissen, Peto-Scott, Ready Radio, Tunewell, Telsen, and Wright & Weaire, just to mention a few of them. They are all good coils, and whatever you choose you can be certain of getting a really high-quality article.

Then for those of you who may be interested in coils of the plug-in type, you would have to go a long way to beat the models exhibited by Messrs. Clarke (of Manchester) and Messrs. Igranie.

Commendable improvements have also been made in the short-wave H.F. chokes that are being exhibited this year. The H.F. choke



This neat knob control drum-drive is shown by Messrs. Jackson Bros.

plays a most important part, and evidence of the serious attention that has been given to them this year is to be found in the models shown by Messrs. Igranie, Bulgin, Peto-Scott, Slektun, Telsen, Wright & Weaire, again to mention only a few of them.

It seems rather unnecessary to stress the importance of a good tuning condenser in order to obtain noiseless operation on short waves. It is one of the most vital of all components, and in previous years, with one or two exceptions, we have had to do the best we could with the standard types of condensers.

This year it's a very different story. Almost every one of the well-known condenser manufacturers is producing a model specially intended for short waves, and they include such makes as Jackson, Ormond, Polar, Utility, Cydon, Formo, etc.

The model produced by Cydon is of particular interest. It is what is known as a series gap condenser, and it amounts to two condensers coupled together in one framework with a common rotor spindle.

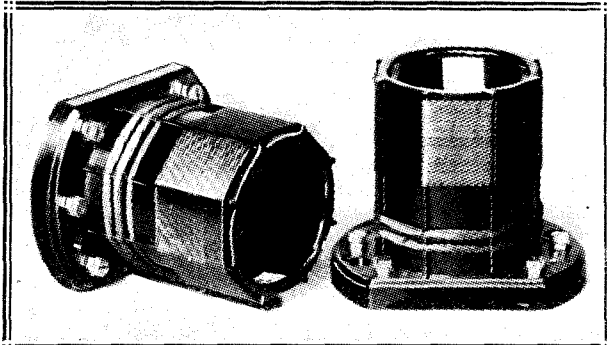
By this method, rubbing contacts and pigtaills—which, unless they are carried out very carefully, are the principal causes of short-wave tuning noises—are entirely eliminated. In our opinion, it is a very commendable scheme, although, since it is really two condensers, the cost is naturally higher than that of the ordinary types.

While on the subject of condensers it is appropriate to mention one or two of the small capacity types that are available for series aerial purposes. Excellent examples of the latest designs are included in the ranges of Igranie, Bulgin, Jackson, Ormond, etc.

There are several good dials available, and to give you two typical examples may we just mention the Utility "Micro" dial and the

(Continued on page 307.)

WEARITE COILS FOR THE "S.T.300"

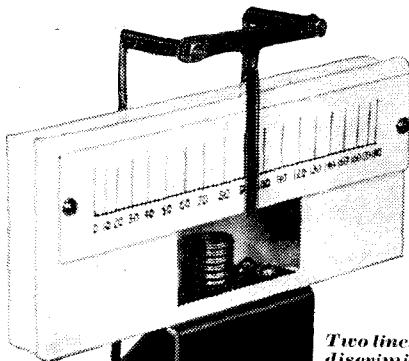


These coils are made by Wright & Weaire for that popular set designed by Mr. Scott-Taggart.

that difficulty, and from our tests there doesn't seem to be very much doubt about it.

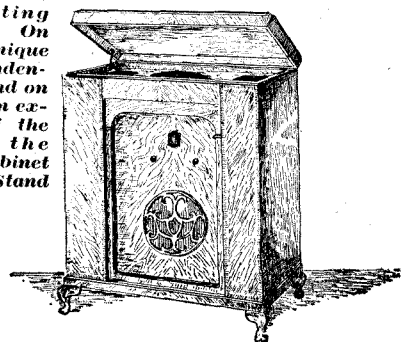
But that is only one of the new coils. Others

"UTILITY" FOR UTILITY



Two lines for the discriminating set builder. On the left a unique type of condenser drive and on the right an example of the work by the Gilbert cabinet makers. (Stand 232.)

FIT FOR ANY SET



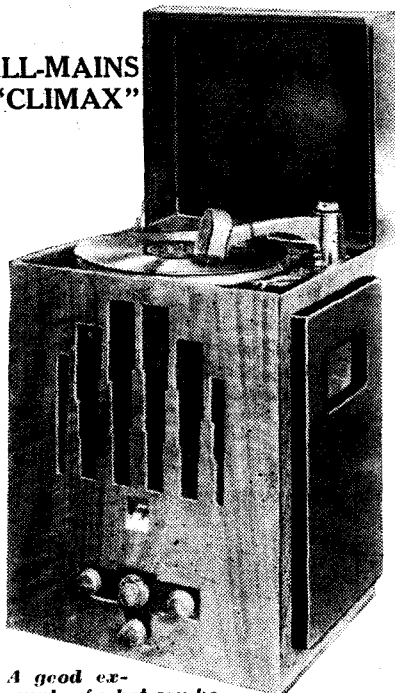
THIS YEAR'S RADIO DEVELOPMENTS ON SHOW AT OLYMPIA

—continued from page 306

Igranic "Indigraph." They are both ideal for short-wave work.

Alas, the time has now come when we must bring our review to a close. But in doing so there is just one other subject to which we should like to refer. Hand-capacity troubles do not occur in every short-wave receiver, but if ever you

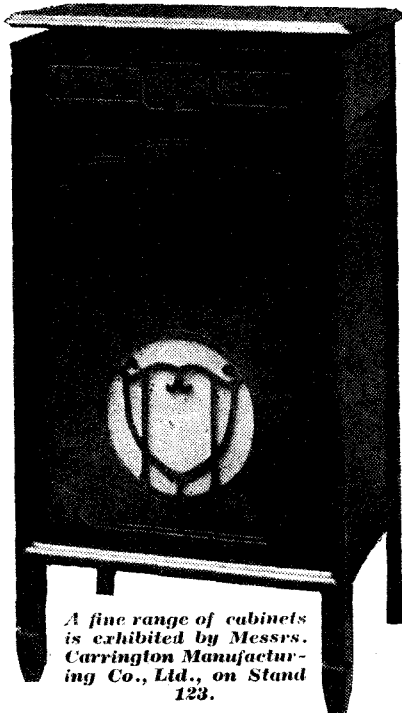
**ALL-MAINS
"CLIMAX"**



A good example of what can be done in the way of a neat all-mains radio-gram.

do encounter that radio sleight-of-hand trick, get one of the Bulgin extension handles. They will put things right, nine times out of ten!

A "CAMCO" CABINET



A fine range of cabinets is exhibited by Messrs. Carrington Manufacturing Co., Ltd., on Stand 123.

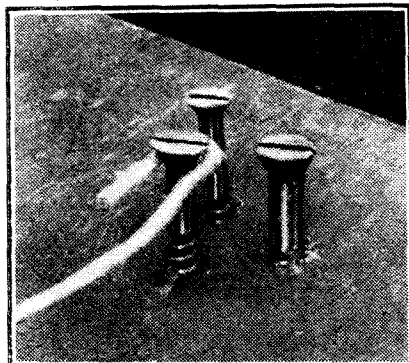
A HOME-MADE WIRE-BENDER
Simple — Efficient

MAKE the simple wire-bender depicted herewith! Its construction is but the work of two minutes, but, in both neatness and efficiency of working the total saving of time which it may bring to you may often amount to hours.

Three different-sized screws placed in the form of a triangle at some convenient corner of the wooden bench—that is all the wire-bender consists of. The screws should protrude above the bench for a distance of half an inch, and they should be placed just far enough apart to admit the free passage between them of the thickest wire you are ever likely to require to bend.

In bending or making loops in wire, merely insert the wire between the screws and bend or loop it sharply round one of them. If desired the heads of the screws may be sawn off for greater ease in working.

HOW IT IS DONE



The space allowed between the screws depends on the gauge of wire the gadget is needed for.

NEXT MONTH

"What I Thought of the Exhibition"

By **JOHN SCOTT-TAGGART.**

"The Wireless Constructor." October Number. Out September 15th.

**TUNEWELL
COILS & COMPONENTS
RECOMMENDED for the
S.T.300 RADIO-GRAM**

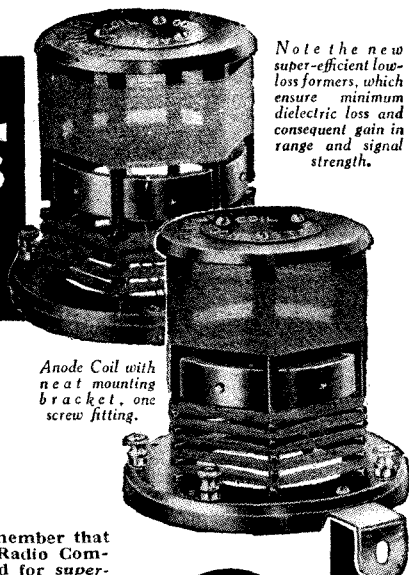
Mr. Scott-Taggart's wonderful S.T.300 Radiogram will be one of the big successes of the year!
The following Tunewell Components are recommended:

- 2 Special S.T.300 Coils Per pair **9/6**
- 1 H.F. Choke - - - **3/6**
- 1 3-point Switch - - - **1/-**

Build this fine Radiogram—and remember that the new range of Tunewell Super-Radio Components has been specially designed for super-reception, and at the same time to save you money.

Get the Tunewell "Guide to Super Radio," FREE, from Stand 96 or address below. It will show you how you can have better radio and how much you can save. It contains

8 FREE BLUE PRINTS
including Kil Eliminator and All 10000 Band Pass 3.



Note the new super-efficient low-loss formers, which ensure minimum dielectric loss and consequent gain in range and signal strength.

Anode Coil with neat mounting bracket, one screw fitting.

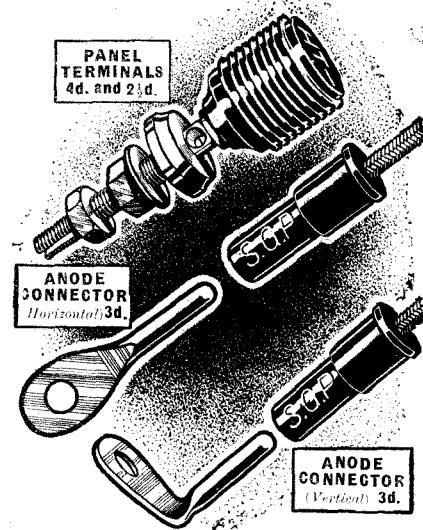
**STAND
96**

**TUNEWELL
Super-Radio Components**

TUNEWELL RADIO LTD., 54, STATION ROAD, LONDON, N.11.

CLIX

CHEAPEST PERFECT CONTACT



**VISIT STAND 225
RADIOLYMPIA**

and examine the full 'Clix' range of components for every form of contact. Expertly designed to give Perfect Contact—and better radio.

Write for Folder 'C'. Ask your dealer for 'Clix'.
Lectro Linx Ltd., 254, Vauxhall Bridge Road, S.W.1.

NOTICE

Send 6d. (post free) for UP-TO-DATE HANDBOOK of Tuning Coils for Circuits, Dual-Range, Band-Pass and Super-Het. Fully illustrated with data.
THE BRITISH EBONITE CO. LTD., HANWELL, LONDON, W.7.

Famous Makers Offer! **£5 Radio-Gram CABINET to: 65/-**
7 DAYS' FREE TRIAL (or 10/- monthly.)
Polished Oak and Piano built! the acoustic Tone brings a fine thrill. Makers to (Radio Press, B.B.C., 3,000 clientele).
Other Models 35/- to £15. Photographs and List FREE.

PICKETTS Piano-Tone Cabinets
(C W 1 Albion Rd., Bexleyheath.)

THE PICTURE PAPER WITH THE MOST NEWS
SUNDAY GRAPHIC
and Sunday News

ADVERTISEMENTS

As far as possible all advertisements appearing in "Wireless Constructor" are subject to careful scrutiny before publication, but should any reader experience delay or difficulty in getting orders fulfilled, or should the goods supplied not be as advertised, information should be sent to the Advertisement Manager, "Wireless Constructor," 4, Ludgate Circus, London, E.C.4.

THE "S.T.300" EXHIBITION RADIO-GRAM

—continued from page 254.

INSERT SET AND SECURE TO LEDGE

(seeing that panel fits snugly against its frame).

PUT MOTOR-BOARD BACK IN POSITION

and screw it down. Lift up lid of cabinet and re-insert fixing screws at lower end of lid support.

(u) Connect flexible lead (36) from radio-gram switch to middle terminal of volume control.

(v) Slip the dome-like metal bush-housing and the bush (both provided with motor) on to the winding handle. Fit handle through prepared hole in cabinet side and screw into motor. Secure bush-housing to side of cabinet with two round-headed screws.

(If you want the handle to stick out farther from the side of cabinet, remove handle and slip a piece of wood in the hole into which the handle screws.)

(w) Fit brake loosely with two screws. By putting on turntable, find the most suitable

angle for the brake and then tighten up screws.

(x) Fit speed indicator plate, and adjust regulator arm so that the motor runs at 78 revs. per minute when pointer is in middle position on speed indicator plate. (Speed can be adjusted approximately by hearing if records sound right, or by counting revs. of a record.)

(y) Fit turntable and lock it home with the spring washer provided.

Connect up speaker leads. (Try effect of reversing, as reverse connections are sometimes better.)

FIT VALVES.

Connect the flex from S.G. choke to anode of screen-grid valve.

Fit 9-volt grid-bias battery on extreme side of baseboard, and plug in three bias wander-plugs. Make absolutely certain you use proper bias.

PLACE H.T. AND L.T. BATTERIES in bottom of cabinet and connect them to the appropriate terminals of set.

(z) Drill holes or cut notches in loose back of cabinet for aerial and earth leads. Connect up aerial and earth.

YOUR "S.T.300" RADIO-GRAM IS NOW READY!

J.S.T.

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All communications concerning advertising in "Wireless Constructor" must be made to John H. Lile, Ltd., 4, Ludgate Circus, London, E.C.4. Telephone: City 7261.

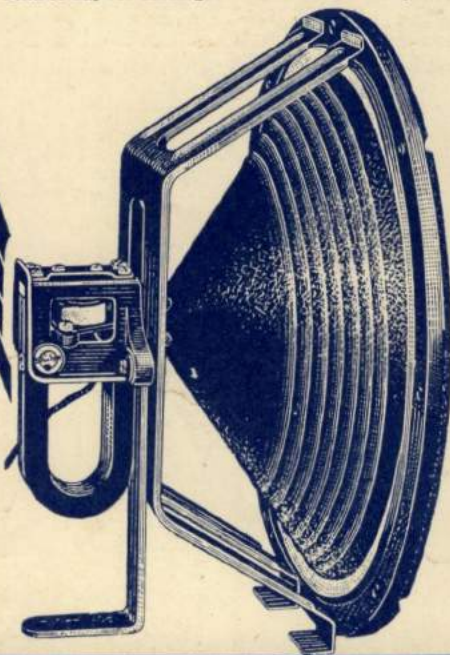
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Hear the Radio Show's BIGGEST SUCCESS Now!

BLUE SPOT 100U was the most talked of speaker in last year's show and this year it has a good start on all the others. How is it possible for Blue Spot 100U to be anything but a sensation? It is known everywhere as "The speaker that puts most moving coils to shame."

100U is an inductor type speaker. It costs only 39/6 complete and yet it can give lessons in reproduction to many a moving coil. It is equally good at bringing out the real values of deep bass notes and (this is where it scores over most moving coils) it does so without sacrificing the treble. It follows that every word and every note falls as clear and fresh as a dewdrop—nothing is lost, nothing added. There is no blaring or blurring. 100U can be used with normal or Pentode valves and no matching transformer is required. It is sensitive to very small inputs and is therefore ideal for battery-operated as well as mains sets. Ask your dealer to let you hear the Radio Show's biggest success to-day. 11 ins. high 5½ ins. overall depth, 11 ins. diameter.

Send to-day for catalogue W.C.20 U and full particulars.



BRITISH
MADE

BLUE SPOT
100U

RADIO EXHIBITION
Stand 35,
Demonstration Room D13

Price Complete

39/6



THE BRITISH BLUE SPOT COMPANY LTD.

BLUE SPOT HOUSE, 94/96 ROSOMAN ST., ROSEBERY AVENUE, LONDON, E.C.1
Telephone: Clerkenwell 3570. Telegrams: "Bluospot, Isling, London."

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IN YOUR
DEALER'S
WINDOW



There are three brand new and outstanding valves in the Mazda A.C. range.

THE AC/SI VM. A sensitive variable-mu screened grid valve, specially suitable for mains operated transportable sets.

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THE PP 3/250. A large output power valve requiring only a moderate anode voltage, which will deliver ample volume to large moving-coil speakers.

Full details of these and other useful Mazda A.C. types will be found in the Mazda catalogue, sent FREE on request.

Mazda Valves are fitted by all the leading receiver manufacturers. All good radio dealers stock them.

The amazing

MAZDA

THE
BRITISH
VALVES

STAND
Nos. 75 & 230
RADIOLYMPIA
(Aug. 19-27)

EDISWAN RADIO

100% BRITISH—Designed by British Engineers

The Edison Swan Electric Co. Ltd.



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