

# SCOTT-TAGGART'S LATEST *and* GREATEST BOOK

*A Master  
Book by  
a Master  
of Radio*



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**AMAZING OFFER  
TO READERS OF P.W.**

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Every Reader  
of P.W. can  
obtain this  
Wonderful

# PRESENTATION BOOK

THE BOOK  
OF  
PRACTICAL  
RADIO

SCOTT-TAGGART

THE BOOK  
OF  
PRACTICAL RADIO

Superbly Bound in Rich Shade of  
**GREEN CLOTH**  
with Silken Finish  
and Containing

**30 CHAPTERS**  
**320 PAGES**

over

**160 DIAGRAMS**  
and **CIRCUITS**  
**63 PAGES OF**  
**ART PLATES**

**THOUSANDS OF FACTS**  
**AND EXPLANATIONS**

JOHN SCOTT-TAGGART



# JOHN SCOTT-TAGGART'S NEW MASTERPIECE

## THE BOOK OF PRACTICAL RADIO

THE "BOOK OF PRACTICAL RADIO" represents the essence of the author's 22 years of practical radio experience as applied to radio receivers.

Famed as an inventor and a pioneer of radio valve work, Mr. Scott-Taggart possesses a vast experience of handling, designing, experimenting with and—when necessary—"putting right" every possible kind of receiver.

Hitherto the amateur has seen only the finished design, and only a few have, on his tours of the country, seen his practical handling of a set.

Nevertheless, all Mr. John Scott-Taggart's designs, books and articles draw upon a great fund of intimate practical knowledge and experience which has accumulated over 22 years.

To-day the public is offered in the "Book of Practical Radio," a complete compendium of all the really practical advice which Mr. Scott-Taggart has never previously made available.

Whether he is dealing with trimming a ganged condenser, advising on the tuning of a set or showing clearly how to trace an obscure fault, the reader at once realises that here is a master of detail who knows the practical side of his work from A to Z.

Implicit confidence is inspired in the reader from the opening paragraph. Every page, every sentence even, bears the imprint of a genuine understanding of the practical problems involved in radio. The author himself has so obviously done everything he writes about. There is no hearsay opinion, no slipshod advice, no evasion of a problem.

### EXPERT ADVICE.

If you obtain this book it will be like having John Scott-Taggart at your side showing you how to get the most out of your set, how to construct a design and how to put right a set which does not work correctly.

The author deals not only with general principles, but gives scores of examples of faults and how to trace and cure them speedily and effectively. **The fault-finding section of this work is a veritable "Wireless Doctor."**

In an incredibly short time you will be able to diagnose a fault, whether it is causing complete failure or weak signals, poor quality or indifferent selectivity.

Even if you do not think you need practical advice, the chances are that, once you have the book, you will get better results from your present set. And should a fault develop, John Scott-Taggart is there at your side, with his skill and long experience, ready to put things right.

Reserve your copy of the book immediately. Huge quantities are being printed, but the demand will be tremendous. Over 50,000 copies of the author's "Manual of Modern Radio" were completely sold out, and there are thousands who cannot now obtain the book through delaying to accept our offer of last year. Fill up the forms to-day!

Although the book is absolutely self-contained, no one who already has the "Manual of Modern Radio" will want to miss this new book, printed and bound in the same way, which gives between its two covers all the practical information and advice which every person interested in radio requires.

### THE S.T. CIRCUITS.

Incidentally, there are special sections dealing with all the S.T. sets, so that, if you possess one or intend to do so, this book will be invaluable.

Delve into it at any page, and you will find some gem of advice which will give you better and cheaper radio, or enable you to put right some fault in your own or anyone else's set.

**The professional service-man will also find the book of extreme help.**

There is really no substitute for such a book, unless it be to serve a very long apprenticeship at the art of radio. Here is someone—and none other than one of the greatest radio authorities in the world—who has been through it all and written it down in such clear, easy-to-understand terms that the veriest tyro cannot help but understand and benefit.

The practical detail is amazing. Do you realise, for example, that there are twenty possible causes of hum in a mains receiver? Yet each is tabulated and discussed in this book.

### HOW TO TEST YOUR SET.

Do you know how to test a set and find a fault without a single instrument? Do you know how to test the insulation and capacity of a condenser without a single meter? Such matters are dealt with so as to cater for all classes of reader.

An extremely valuable and original feature of the book is the set of numbered fault tests which infallibly point the way to any kind of fault, however subtle or complex. These "analysis tables" alone are worth many times the cost of the book, and can be obtained nowhere else.

**A great deal of the matter in this book has never even been discussed before by any other author, and every word is newly written by Mr. Scott-Taggart expressly for this volume.**

There is a wealth of "how-to-do" sketches and photographs, and the whole atmosphere of the book is intensely practical.

### NUMEROUS ILLUSTRATIONS.

There are 320 pages and 63 art plates; sketches and diagrams accompany the text; and there is a wide variety of useful reference data at the end of the book. Truly a magnificent bargain is here being offered!

Above all, of course, is the fact that the book is by John Scott-Taggart, F.Inst.P., A.M.I.E.E. His other books have sold to the extent of 800,000 copies—the greatest possible tribute to his ability to write the kind of book that people read and appreciate.

John Scott-Taggart not only "knows how," but is a brilliant "explainer." When only nineteen years of age he was Chief Instructor in Wireless to the 1st Army, B.E.F. To-day he unquestionably ranks as the leading technical author in the country.

From the first paragraph of this book you will be lured on from chapter to chapter by the fascination of his style and the very practical information conveyed. Almost a lifetime's experience can be read in a week. And there will be scores of occasions when you will reach this handsome volume down from your bookshelves in order to obtain the free advice of a consulting engineer who has advised the greatest radio concerns on both sides of the Atlantic.



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Look at these chapter headings and see whether they do not embrace the Practical Essentials of Radio

1. Operating wireless receivers.
2. Operating aerial coupler circuits.
3. How to work a reaction receiver.
4. Operating receivers using H.F. amplification.
5. Tuning multiple reaction circuits.
6. Operating ganged receivers.
7. Operating tone control devices.
8. Operating double reaction receivers which use a variable-mu valve.
9. Operating S.T. receivers.
10. Operating superheterodyne receivers.
11. Secrets of successful trimming.
12. How to identify foreign stations.
13. Installing a wireless receiver.
14. Aerial and earth faults.
15. How to test your components: (a) condensers, (b) inductance coils, (c) H.F. chokes, (d) L.F. chokes, (e) L.F. transformers, (f) mains transformers, (g) rheostats and potentiometers, (h) switches, (i) miscellaneous components.
16. Reaction faults remedied.
17. How to cure distortion and improve tone.
18. Noises and how to cure them.
19. Hum: its causes and cure.
20. How to read and use wireless circuits.
21. How to construct a wireless receiver.
22. Curing high-frequency instability.
23. Curing low-frequency instability.
24. How to turn weak signals into strong signals.
25. How to improve the selectivity of your receiver.
26. Systematic fault-finding.
27. Fault-finding without instruments.
28. Meters and testing equipment.
29. Rapid fault-finding guide and fault analysis tables.
30. Useful data for the practical man.

The chapter headings covering operating, installing, constructing and fault-finding indicate the practical scope of the book, but only give a hint of the mass of useful information which makes the "Book of Practical Radio" a treasure house of facts and advice.

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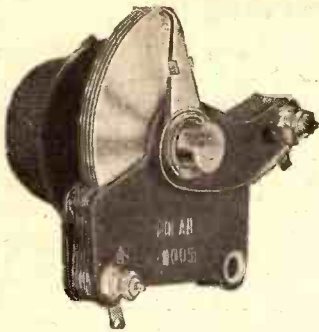
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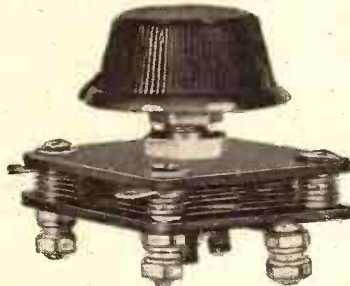




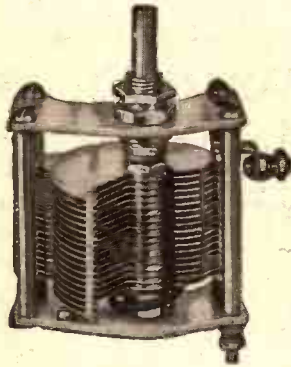
# S.T. 600



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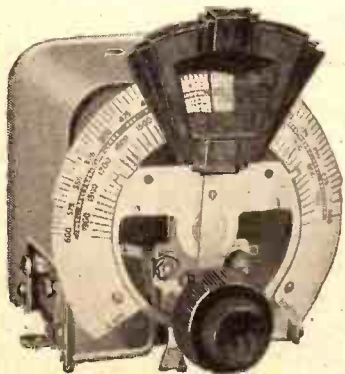
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The "Uniknob," as illustrated, 18s. 6d.  
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All values  
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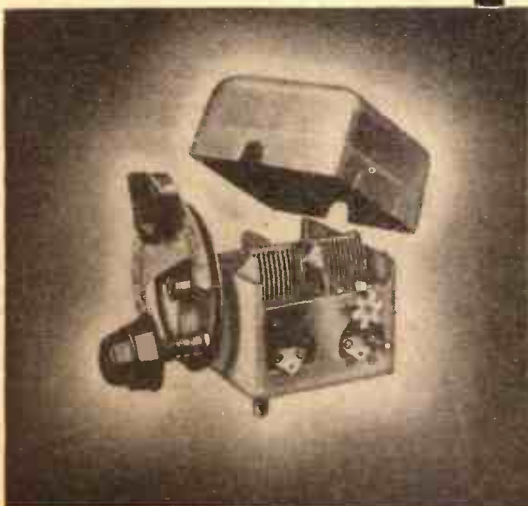
S.T.600

S.T.600

# NEW TYPE CONDENSER

## 600B

# DESIGNED TO J. SCOTT- TAGGART'S OWN SPECIFICATION



A new J.B. Condenser "600B" has been specially designed to Mr. J. Scott-Taggart's own Specification for the S.T.600 Battery model.

Insist on the J.B. "600B," and ensure the best results from your S.T.600. The "600B" satisfies the designer, so it's bound to satisfy you!

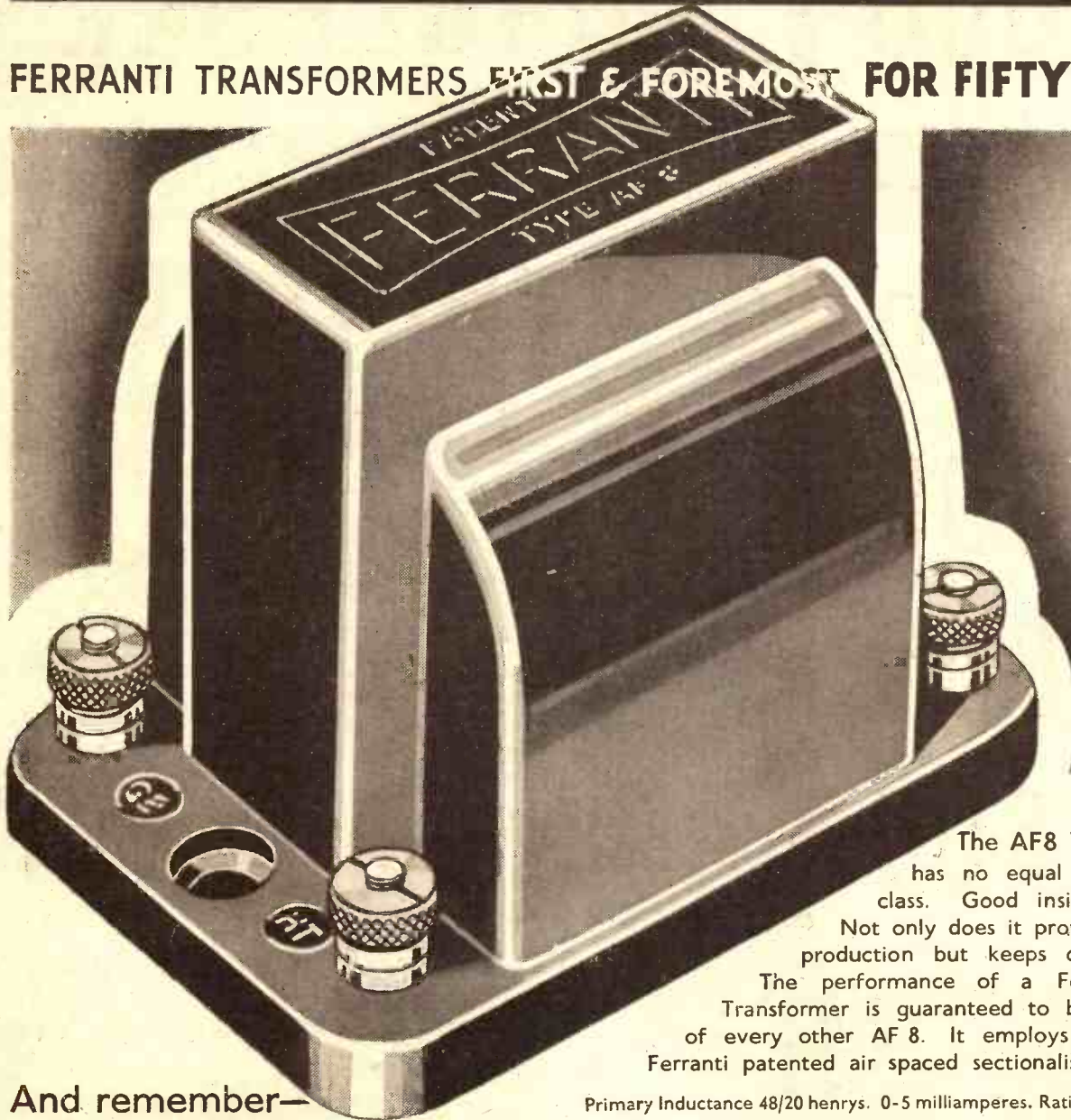
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The AF8 Transformer has no equal in its price class. Good inside and out. Not only does it provide fine reproduction but keeps on doing so. The performance of a Ferranti AF 8 Transformer is guaranteed to be within 5% of every other AF 8. It employs the famous Ferranti patented air spaced sectionalised windings.

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# ST 600



*As shown—Two dual-range coils with ganged positive switching, complete with knob. Guaranteed to "S.T." specification.*

PRICE **12/6**

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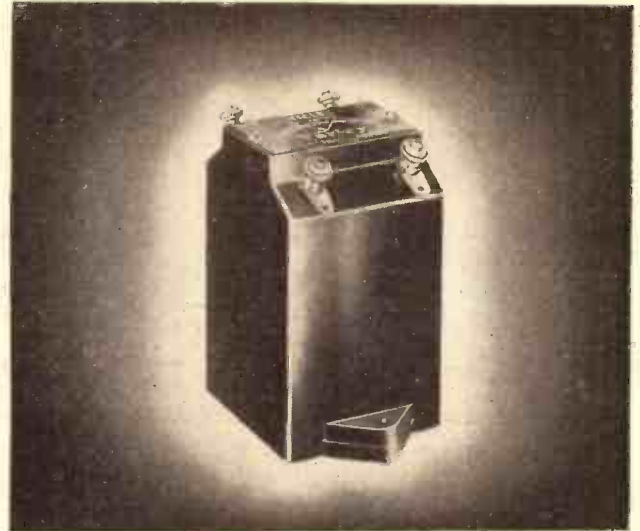
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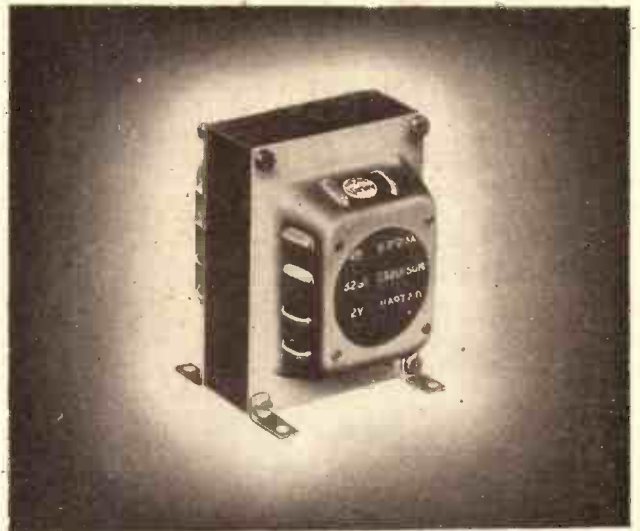


FOR THE 'BATTERY' S.T.600  
**NICLET L.F. TRANSFORMER**  
LIST NO. DP21 . . . . . 7'6



# FIRST CHOICE

FOR THE 'A.C.' S.T.600  
**MAINS TRANSFORMER**  
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For both the battery and the A.C. S.T.600 circuits, Varley is the designer's first choice for two important components. For the battery circuit, a Varley L.F. Transformer is specified; for the A.C. circuit, a Varley Mains Transformer. Get the best out of *your* S.T.600 set by using the designer's specified components. Write to-day for an illustrated catalogue of Varley components.

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# S.T. 600

## COMPLETE KITS OF DUBILIER CONDENSERS & RESISTANCES FOR THE S.T. 600 CIRCUITS

S.T. SPECIFIES DUBILIER Condensers and Resistances for the two S.T. 600 circuits.

To simplify the construction and assure complete satisfaction, Dubilier has ready two complete kits of Condensers and Resistances suitable in every way for the S.T. 600 circuits.

Be sure to ask for them when you build your S.T. 600, and you will be certain of immediate supplies and 100% dependability. In addition to the actual Dubilier specifications, each item has been thoroughly vetted by Dubilier technicians to ensure complete satisfaction.

**Dubilier Condensers and Resistances comprising Kit for the S.T. 600 Battery Receiver.**

RESISTANCES.		s.	d.
2 Half watt type 1MΩ	- - - -	1	0
★ 1 One watt 25,000 Ω	- - - -	1	0
★ 1 One watt 75,000 Ω	- - - -	1	0
★ 1 One watt 20,000 Ω	- - - -	1	0
1 One watt 300,000 Ω	- - - -	1	0
1 One watt 50,000 Ω	- - - -	1	0
CONDENSERS.			
1 Non-inductive type BB Condenser 1μF	- - - -	2	6
2 Non-inductive type BB Condensers 2μF	- - - -	7	0
★ 1 Type 9200 Non-Inductive Condenser 1μF	- - - -	2	6
★ 1 Type 9200 Non-Inductive Condenser .5μF	- - - -	2	0
1 Dubilier Type 670 Mica Condenser .00005μF	- - - -	1	0
1 Dubilier type 670 Mica Condenser .0003μF	- - - -	1	0
1 Dubilier Non-Inductive Paper Condenser type 4501 .006μF	- - - -	1	0
1 Dubilier Non-Inductive Paper Condenser type 4503 .1μF	- - - -	1	4
		<u>£1</u>	<u>4 4</u>

**Dubilier Condensers and Resistances comprising Kit for the S.T. 600 A.C. Mains Version.**

RESISTANCES.			
2 Half watt 10,000 Ω Resistances	- - - -	1	0
1 One watt 100 Ω Resistance	- - - -	1	0
2 One watt 20,000 Ω Resistances	- - - -	2	0
1 One watt 25,000 Ω Resistance	- - - -	1	0
1 One watt 200,000 Ω Resistance	- - - -	1	0
1 One watt 100,000 Ω Resistance	- - - -	1	0
1 One watt 500,000 Ω Resistance	- - - -	1	0
1 One watt 500 Ω Resistance	- - - -	1	0
1 One watt 150 Ω Resistance	- - - -	1	0
1 One watt 1MΩ Resistance	- - - -	1	0
CONDENSERS.			
2 Type LSB Paper Condensers 800 V. test 350 V. DC peak working 4μF	- - - -	15	0
2 Dry Electrolytic Condensers type 0281, 8μF, 500 V. DC peak working	- - - -	11	0
★ 1 Dry Electrolytic Condenser type 3001, 50μF, 12V.	- - - -	2	0
3 Non-Inductive Paper Condensers type 4503 .1μF	- - - -	4	0
1 Type 4501 Non-Inductive Paper Condenser .02μF	- - - -	1	0
★ 1 Non-Inductive Condenser type 9200 .5μF	- - - -	2	0
★ 1 Non-Inductive Condenser type 9200 1μF	- - - -	2	6
1 Non-Inductive Condenser type BB 1μF	- - - -	2	6
1 Non-Inductive Condenser type BB 2μF	- - - -	3	6
2 Moulded Mica Condensers type 670 .0003μF 250 volts D.C. working	- - - -	2	0
1 Moulded Mica Condenser type 670 .00005μF 250 volts D.C. working	- - - -	1	0
		<u>£2</u>	<u>18 6</u>

★ The Dubilier Condensers and Resistances marked thus (★) are Scott-Taggart's first choice for the S.T. 600 circuits.

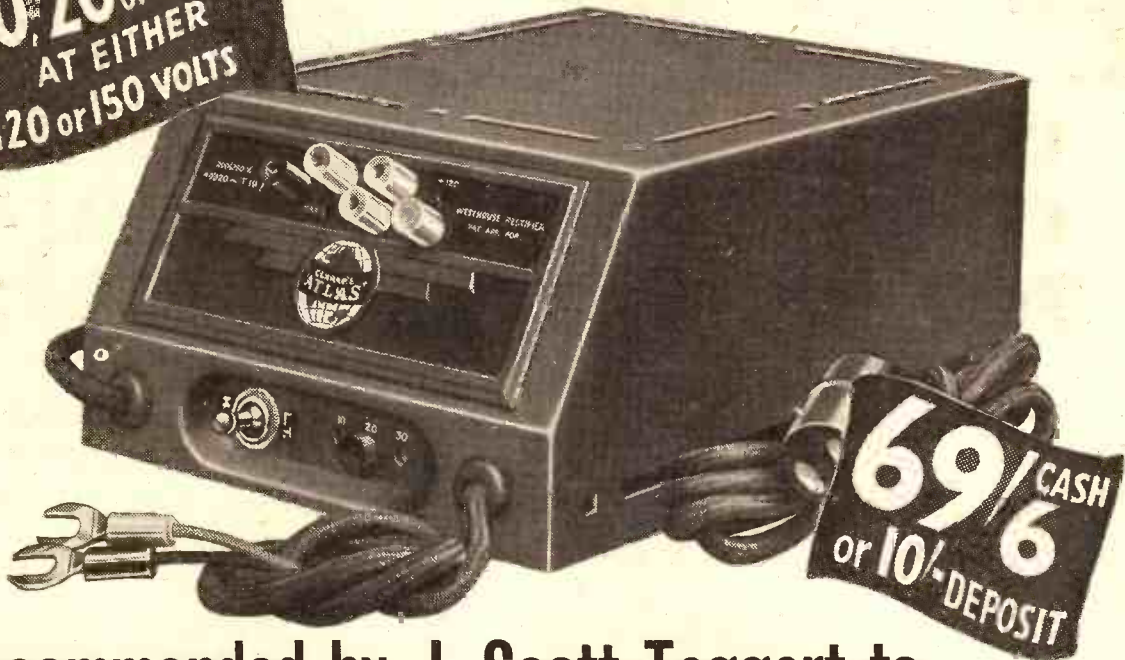
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## CONDENSERS & RESISTANCES



# IT STANDS ALONE

**10, 20 or 30 m/A... no other unit has these 6 OUTPUTS**  
AT EITHER  
120 or 150 VOLTS



## Recommended by J. Scott-Taggart to ensure Best Performance from S.T.600

### SPECIFICATION MODEL T.10/30

For A.C. mains. H.T.appings 60/80 v. (min. and max.), 50/90 v. (min., med. and max.), 120 v. and 150 v. Tapped outputs 10, 20 or 30 m/A at 120 or 150 v. Trickle charger 2 v. at 0.5 amps. Westinghouse Rectifiers. Guaranteed 12 months. H.P. Terms 10/- deposit and 8 monthly payments of 8/6 each.

### OTHER MODELS

for D.C. and A.C. from 39/6 Cash or 10/- deposit.

Prices do not apply in I.F.S.

This wonderful new "ATLAS T.10/30" Mains Unit is quite unique. It has no less than 6 TAPPED OUTPUTS. This means that, with electricity in your house, the S.T.600 or any other type of battery set, whether straight, superhet, "Class B" or "Q.P.P.," can be made All-Mains operated in a few moments. It means that, no matter what set you may buy or make in future years, you can be sure of ample power and correctly matched voltages. And, most important of all, it means that you can cut your radio running expenses to less than 1/- a year—one-fiftieth of the cost of batteries—and keep your accumulator always fully charged.

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# ATLAS

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Please send me Folder No. 95, telling me how to run my battery set from the mains.

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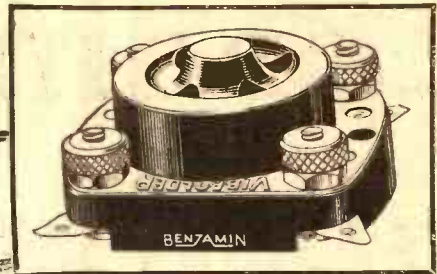


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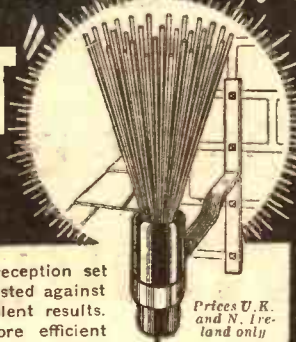
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120 Volt Orange Triangle **17/6**

For G.B. Drydex type H 1002  
16½ Volt **1/9**

*Obtainable from Exide Service Stations and all good dealers.*

**EXIDE BATTERIES, Exide Works, Clifton Junction, Nr. MANCHESTER.**

Branches: London, Manchester, Birmingham, Bristol, Glasgow, Dublin, Belfast.

# Wharfedale

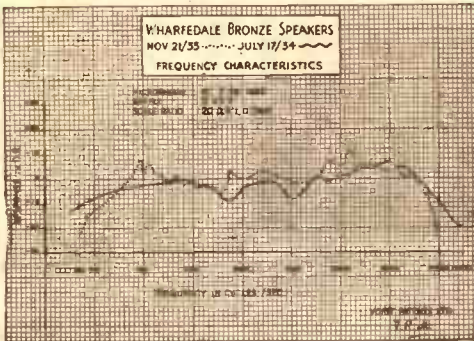
MOVING COIL  
SPEAKER

## THE CONSTRUCTOR'S SPEAKER

Suitable for any set!

SPECIFIED FOR THE S.T.600

Constructors! Study these test response curves, showing by comparison, how greatly improved is the performance of the Bronze Wharfedale in a single season.



A steadier curve, free from resonance peaks. A wider range with response well sustained at both ends. The new Bronze Wharfedale incorporates a magnet of the new ALNI steel giving sensitivity equal to an energised speaker. Used with a battery set, the increased sensitivity is like adding an extra valve.

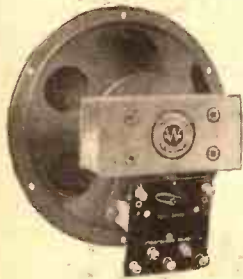
You will realise that now, real quality is attainable at a reasonable price. A Wharfedale speaker will do justice to any set you build, and, because of its Universal Transformer it will be equally suitable for any type of set.



WHARFEDALE  
**JUNIOR CHASSIS  
32/6**

The Wharfedale Universal Transformer is tapped on the secondary which ensures perfect matching to any output valve without loss of inductance in the primary.

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Name.....

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P.W.

# NEXT WEEK

Any "S.T." set causes a commotion amongst wireless enthusiasts; the S.T.600 more so. Read all about it in this week's issue. Right up-to-date and incorporating every modern feature available to home constructors, and some that have not before been released.



What is more important to mains users, however, is the fact that next week an A.C. version will be available. It's the mains set you've all been waiting for. And . . . quite naturally . . . it, of course, incorporates the only reliable rectifier there is . . . a Westinghouse Metal Rectifier, style H.T.8. You are thus assured of a constant unfailing high tension supply for your A.C. S.T.600 as long as the set itself is in use.

"The All-Metal Way, 1935," tells you all about Westinghouse Metal Rectifiers and contains circuits for their use. Send 3d. to Dept. P.W. for a copy and get on with your power pack right away.

The Westinghouse Brake & Saxby Signal Co., Ltd., 82, York Road, King's Cross, London, N.1.

# WAIT FOR IT!



# Now

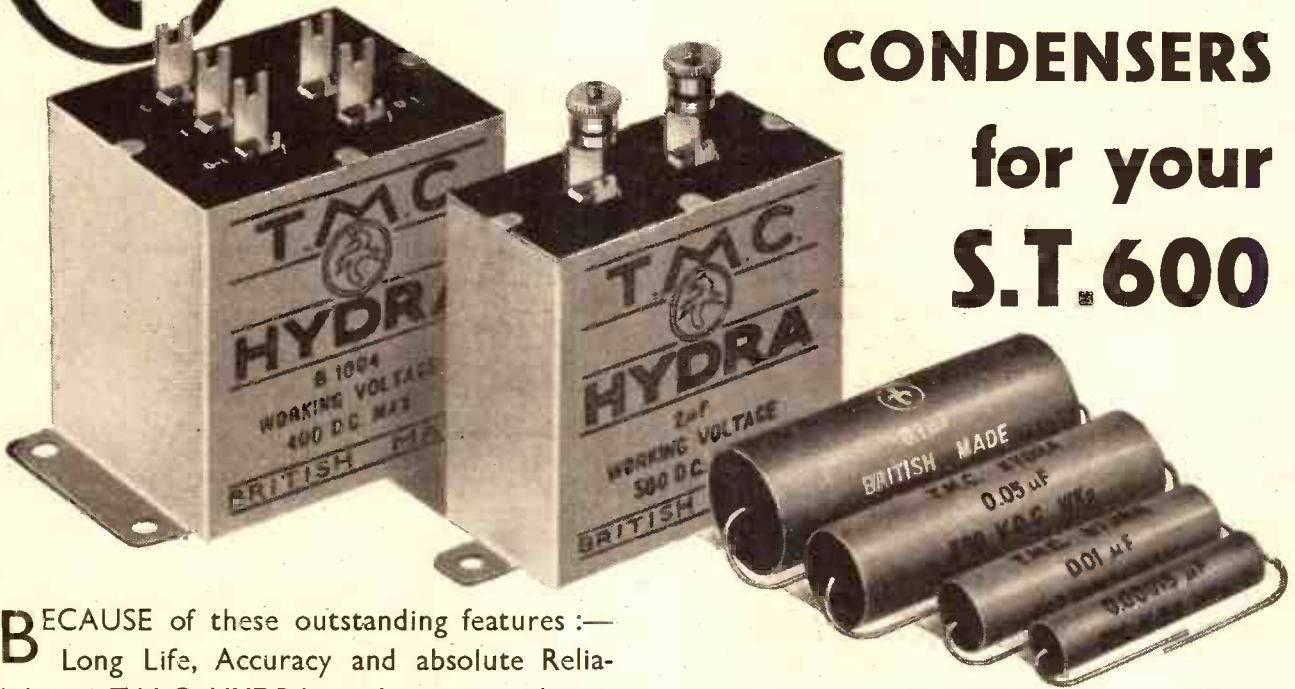
## follow Mr. Scott-Taggart's lead and use —



# T.M.C. BRITISH MADE HYDRA

## CONDENSERS

### for your S.T.600



T.M.C.-HYDRA condensers are made in England by Telephone Manufacturing Company Ltd.

**B**ECAUSE of these outstanding features:—  
Long Life, Accuracy and absolute Reliability — T.M.C.-HYDRA condensers are chosen by Mr. Scott-Taggart for his latest and most brilliant Set design, the S.T.600.

The following are the T.M.C.-HYDRA condensers specified by the designer:—

- Two 2 $\mu$ F.....Type 25. Price 3/-
- One 0.006 $\mu$ F...Type T 15/5. Price 9d.

They have a high insulation resistance, are of sturdy construction, and are manufactured from high-grade materials in the most modern plant. Scrupulous inspection and the utmost care are taken in every stage of production. They are guaranteed for 12 months. The special method of sealing employed in T.M.C.-HYDRA condensers absolutely prevents the penetration of moisture and so maintains their high electrical properties.

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SOLE DISTRIBUTORS:

# T.M.C.-HARWELL (SALES) LTD.

Britannia House, 233 Shaftesbury Avenue, London, W.C.2. (A few doors from New Oxford St.)

Telephone: Temple Bar 0055 (3 lines)

P.S. Write to-day for a copy of the new T.M.C.-HYDRA condenser illustrated price list containing much useful information and advice.



EFFICIENCY  
UNIFORMITY  
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**B**ECAUSE of their negligible inter-electrode capacity and high mutual conductance, Cossor Screened Valves permit exceptionally high stable amplification. This means better performance.

The Mica Bridge method of electrode assembly means that better performance and efficiency is maintained. Your dealer will advise you of the types for your Receiver.



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## SCREENED VALVES

### NEW WIRELESS BOOK

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A 40-page book packed with useful and interesting information—latest circuits—technical terms—how a 'super' works, etc. Send now . . . PLEASE USE COUPON.

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Please send me free of charge, a copy of the Cossor 40-page Wireless Book.

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**B.V.34.** P.W. 27/10/34

#### 2-VOLT SCREENED GRID VALVES

Type	Imped'	Mutual Conductance m.a./v.	Price
*215 S.G.	300,000	1-10	12/6
*220 S.G.	200,000	1-60	12/6
*220 V.S.G.	110,000	1-60	12/6
*220 V.S.	400,000	1-60	12/6

#### 2-VOLT H.F. PENTODE VALVES

*210 V.P.T.	—	1-1	13/6
*210 S.P.T.	—	1-3	13/6

#### INDIRECTLY-HEATED SCREENED GRID VALVES

4 volt 1 amp. Series

*+MSG-HA	500,000	2-0	17/6
*41 MSG	400,000	2-5	17/6
*+MSG-LA	200,000	3-75	17/6
*+MVSG	200,000	2-5	17/6

16 volt .25 amp. Series

*+DVSG	—	2-5	17/6
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#### INDIRECTLY-HEATED H.F. PENTODE VALVES

4 volt 1 amp. Series

*+MS/PEN	—	2-8	17/6
*+MVS/PEN	—	2-2	17/6

16 volt .25 amp. Series

*+DS/PEN	—	2-3	17/6
*+DVS/PEN	—	2-0	17/6

.2 amp. Series

13 V.P.A.	—	1-8	17/6
13 S.P.A.	—	2-5	17/6

\* These Valves available with or without Metallised Bulbs  
† Characteristics measured at —1.5 grid volts.

Prices do not apply in I.F.S.

CA 5799





MANAGING EDITOR: N.F. EDWARDS.

TECHNICAL EDITOR: G.V. DOWDING ASSOC., I.E.E.

S T 600

THE MASTER SET  
QUEER EXPERIMENTS

## RADIO NOTES & NEWS

PAGE IN CAGE  
MANY MIKES  
A WAR MEMORY

### The S.T.600.

ARE you one of those observant fellows who can always tell when a violent tornado centres round you or if an avalanche occurs in your vicinity? You are? Then you will have noticed that the S.T.600 has arrived. And *what a set!*

Perhaps your restive eye already roves from this page to glance again and again at details of this super-design. I do not blame you—but I warn you. That is *not* the way to approach a set of S.T.600's calibre.

Bear with me while I suggest, in brief outline, the correct procedure.

### How to Read About It.

FIRST select your Time and Place, with reverence, as becomes the connoisseur. (I favour the Old Kaspar method—*evening, when the work is done.*)

Next, enjoin a Silence upon the Multitude. Take your easiest chair. Spread out the blue print. Call for your pipe. Put your feet up on the dusted mantel.

Is dead silence ensured? Does Everyone know you cannot, must not, will not be disturbed?

Then wait. Wait until your mind is purged of all its worries and extraneous film-flam. Are you ready?

THEN place your hand upon the book; turn the page—and meet the master set, S.T.600!

### Did You Hear Them?

THOSE alert readers who heard the rather queer experiments on about 1,430 metres some weeks ago, from G 2 B S, will be wondering what it was all about.

A great many heard the announcement, "Marconi Experimental Station at Chelmsford," and something about single-sideband working—and some of them want me to explain what it means. Something big?

In reply, I suggest those interested should turn up their old

"P.W.'s"—page 433, July 7th, etc. They will then assuredly ask themselves: Is not "P.W." a wonderful journal? Has it not given birth to great ideas in the past? Is it not, still, incomparably ahead in long-range views and fundamentals?

Verily, verily, I'm telling you!

### Bradford Busy.

THE Bradford Experimental Radio Society is meeting the 1934-35 season with a cheer. It has headquarters at 66, Little Horton Lane and a syllabus full of meat.

"Cathode-ray Demonstrations," "Radio Applied to Police Work," "Loudspeaker Evening," "Visit to Bradford Fire Brigade Station"—these are but a few of the attractions.

But all good Yorkshiremen will first inquire: "How much?" I am happy to say five shillings is the annual subscription. (And, I would have you know, there are informal meetings right through the summer months!) Every Wednesday at 8 sharp.

### Page in Cage.

EVEN a sedate gathering like the Royal Institution has its moments—especially when Sir William Bragg is demonstrating.

He recently put a page-boy, wearing a head-dress of paper streamers, into a wire cage, to demonstrate the shielding there—one of Faraday's dicta.

On the cage were other paper streamers, and these were agitated when high voltage sparked to earth via the cage. But the boy's streamers did not stir.

Sir William said: "One of the things that strikes you in considering Faraday's work is the enormous number of ways in which it was possible for him to go wrong, and his acute sense in taking up the right one."

Just so. That is *Genius*, and not many other people have outlined it as clearly as this.

### The Queen Mary.

IF you did not see the announcement you will be interested to know that thirteen microphones were needed for the broadcasting of the launch of the Queen Mary. And, despite the unlucky number, there wasn't a hitch.

There were two microphones for the King and one for the Queen.

Three were needed for the commentator, two for the band and two for slipway effects.

Sir Percy Bates had one to himself, so had the Christening Bottle, and so had the water effects.

"In sooth, a goodly company."

### THE BEST RECEIVER DESIGN—IN 1914



This photograph shows John Scott-Taggart twenty years ago with the set he designed for the "Wireless World." At only seventeen his articles were being published.

### Twenty Years After.

JUST before the Great War started, twenty years ago, a lady in Derby received a post-card. She has kept it through all those years because of its intrinsic interest. But now she turns it out and sends it to me, in the goodness of her heart, because it bears an excellent photograph of the Jack Phillips Memorial at Godalming, to which I referred last week.

So many others, too, have helped me in this matter that I must say, once again, how greatly I value their interest and friendly co-operation.

ARIEL.





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



**TWENTY YEARS**

- 1914. (a) Designed the receiver, illustrated on page 201, for the "Wireless World," while still at school.
- (b) Enlisted at the age of 17 in Scaforth Highlanders.
- 1915. As Sergeant-instructor of Signalling, published "Field Telephones," his first book.
- 1918. Awarded commission on the field, in Royal Engineers.
- 1917. (a) Wireless officer in 1st Army Wireless Co. At battle of Vimy Ridge.
- (b) Appointed Chief Instructor of Wireless to 1st Army, B.E.F.
- (c) Published in "Wireless World" the first description of a heterodyne wavemeter, the beginning of a famous pioneer series of articles on the Valve.
- (d) Conducted the most exhaustive research on valve characteristic curves. Results published in "Wireless World" in an article "On Valve Characteristic Curves," which became a classic.
- 1918. (a) First of long list of patents.
- (b) Mentioned in Despatches (April).
- (c) Invented a valve circuit ordered by Col. Trew to be fitted to every trench set in France.
- (d) Awarded Military Cross for "conspicuous gallantry in maintaining wireless communications under fire."
- 1919. (a) First description in "Electrical Review" of the "tuned anode with reaction" circuit, which became the most popular circuit.
- (b) Chief of Government Valve Dept. at Ediswan works.
- (c) Took out the famous multiple grid patent acquired by the leading concerns in Europe. Was first British inventor to apply different frequencies to different grids for reception, a system used in practically every super-heterodyne to-day.
- (d) Founded the valve industry as understood to-day by designing the E.S.2 and E.S.4 valves expressly for the public. Made, catalogued and advertised by Edison Swan.
- 1920. (a) Chief of Patent Dept., Radio Communication Co., Ltd. Adviser on Patents to Mullard's and others.
- (b) Fellow of Physical Society.
- (c) Fellow of Institute of Physics (was youngest ever elected to this distinction).
- (d) Obtained a master patent for use of negatively biased diode or rectifier for delayed automatic volume control, a system used in practically every commercial set to-day.
- 1921. (a) Published "Thermionic Tubes in Radio Telegraphy and Telephony."
- (b) Managing Director, Radio Press, Ltd.
- (c) Lectured before British Association.
- 1922. (a) Published "Elementary Textbook on Wireless Vacuum Tubes," and other books.
- (b) Chief Technical Adviser to POPULAR WIRELESS.
- 1923. (a) Founded, owned and edited "Modern Wireless," and later "Wireless Constructor," and other periodicals subsequently sold to Amalgamated Press, Ltd.
- (b) Invented numerous reflex circuits, including S.T.100.
- (c) Invented the Neutrodyne. Prof. Hazeltine said: "Scott-Taggart invented the Neutrodyne in Britain." Practically all British and American sets were licensed under these patents.
- (d) Lectured before British Association.
- (e) Adviser to American Radio Manufacturers' Association.
- 1924. Elected A.M.I.E.E.
- 1925. (a) Sub-committee, Engineering Standards Association.
- (b) Consulting Engineer to H.M.V. and other concerns.
- 1926. Founded and was Technical Director of the famous Elstree Laboratories, which produced the Elstree Six and the Solodyne—Britain's first real one-knob set.
- 1928. Called to the Bar.
- 1932. (a) Designed S.T.300.
- (b) Conducted great flying tour of Britain with S.T.400.
- 1933. Designed S.T.500.
- 1934. (a) Designed the S.T. Supergram de-Luxe.
- (b) Designed the S.T.600 at Brookmans Park.

**S.T.600**

**S.T.600—A "JUBILEE" RECEIVER**

**MR. JOHN SCOTT-TAGGART COMPLETES 20 YEARS' SET-DESIGNING FOR THE PRESS**

**BEST SET "POPULAR WIRELESS" HAS EVER PUBLISHED**



At last, the S.T.600 is here!

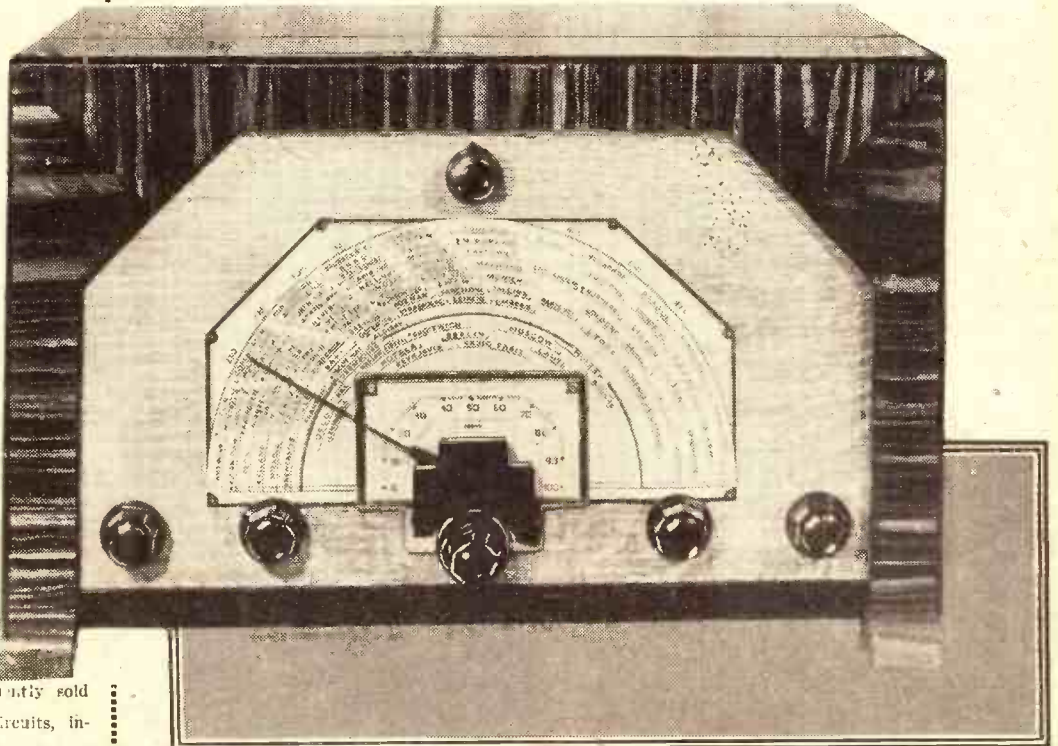
The whole constructing public of this country has for weeks been on the tip-toe of excitement. Letters from all Europe have testified to an international interest in this set, for foreign amateurs in increasing numbers look to Mr. John Scott-Taggart for their designs.

Here, his position is unique and unchallenged. An unbroken record of successes, brilliant inventive ability, and the deter-

tempted the improbable and achieved the "impossible."

He is not one who hands in his set and gives a dull technical description of it. He makes not a single claim that is not supported by the written statements of absolute strangers selected at random from huge piles of letters.

This is the truest modesty of all—the refusal to rest on his laurels. No one in Britain possesses so fully the confidence of the radio public. No one could so easily



mination to take an infinity of trouble in designing and then proving his National sets, are some of the reasons.

The S.T.600 is a "jubilee" receiver. It marks the completion of 20 years of published set designs—a remarkable record for one who to-day is only thirty-seven years of age.

At Balaclava, into the valley of death rode the six hundred. Against fearful odds, the objective was reached and the enemy's guns silenced.

A radio 600 has now faced tremendous odds and silenced the big guns of the B.B.C.

October 24th, 1934, will be a date in radio history. Mr. John Scott-Taggart, Britain's leading radio designer, has at-

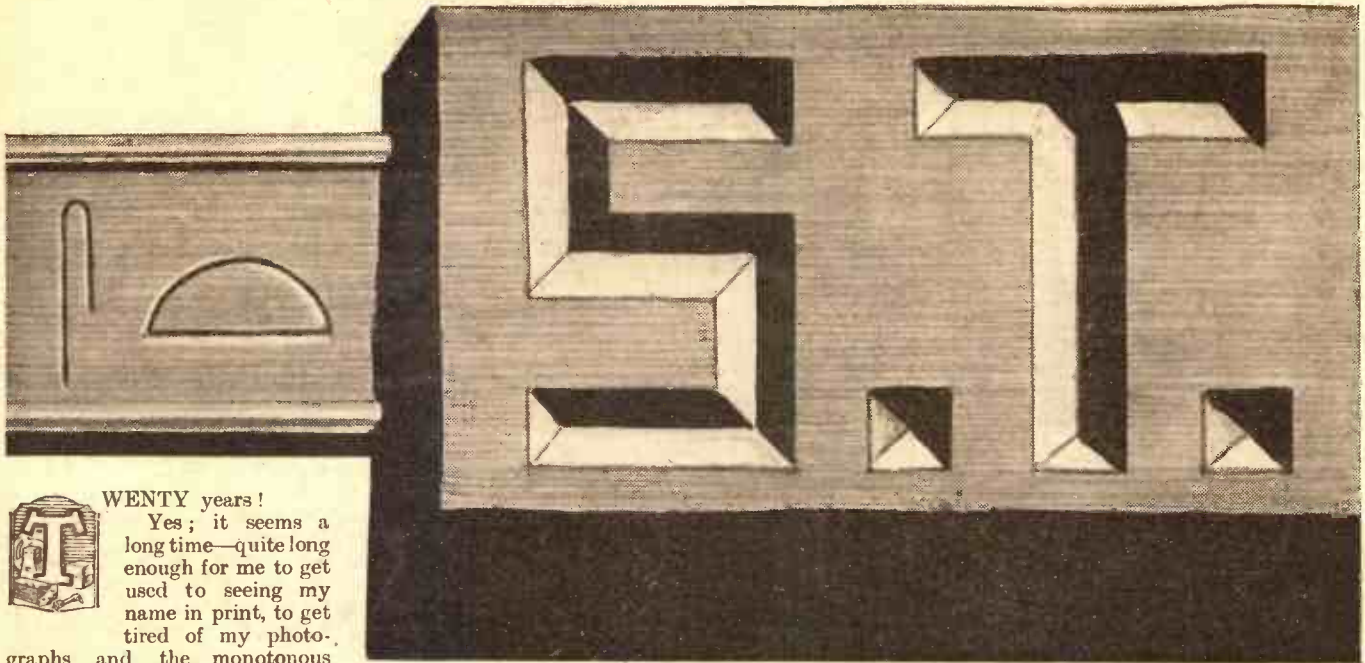
tempted to say: "This is my set; it does so-and-so," and simply state its performance.

If he did so, a public that has known his record for twenty years would enthusiastically build his set. But he wants others to say what the set will do. He told me he desired no adjective, no phrase, to be applied editorially to the set which did not come from the letters of those who have heard the set. All the enthusiasm, all the unprecedented amazement the set has created is not ours, but our readers.

We, on our side, say simply that we know of no set in the history of radio journalism which so deserves this praise. We are proud to have the privilege of publishing it.

**THE EDITOR**





**WENTY** years!



Yes; it seems a long time—quite long enough for me to get used to seeing my name in print, to get tired of my photo-

graphs and the monotonous recital of past activities.

But it is not too long to gain that specialised experience so necessary for the successful designing of sets for the home constructor.

Perhaps that is why the new designer— young, keen, perhaps able—seems unable to get a foothold on a ladder monopolised by the old gang. As the oldest gangster of them all—as regards experience, not age—I have, when I owned and edited radio papers, equipped laboratories, paid out thousands of pounds in salaries, given my personal encouragement, in order to give the public “new blood.”

#### Work of Ten Months.

But I still seem to have to bear the responsibility of new designs. Even after six years' complete silence from me, the S.T.300 spread like wildfire through the country. All my old friends rallied to my support, and new ones— tens of thousands of them— joined the band.

Fortunately, my heart is in the work. When you who are reading this are probably sound asleep, I am measuring this, calculating that. Modulated oscillators, slide rules, microammeters need no rest. And a new line of research persuades me that I need none either.

I can design a set—a very good set—in two weeks. Others could do it in two days. The S.T.600 has taken ten months.

Ten months is a long time to spend—not wholly, but nearly wholly—on one set. Any commercial designer who took ten months would receive one month's—notice.

Fortunately, I am given all the rope I want—and I have not yet hanged myself with it. I am subject to none of the exigencies of Press routine. I work as an independent designer—too independent, some people think.

Those who took POPULAR WIRELESS twelve years ago will find a page announcing my appointment as Chief Technical Adviser to this paper.

But since those days I have had little to do with POPULAR WIRELESS. I have not the slightest control over or influence with the journal. My most cherished opinions were

jealous, interests of the radio industry. That perhaps is one of the reasons for past successes—the service to one master: the man who is going to build my set, who is going to put down hard-earned money because I tell him this set is a good set—my best set for at least two years.

In serving the constructor alone, in producing a great nationally built set, POPULAR WIRELESS benefits and the radio industry benefits enormously. Half a million pounds is going to be spent on the S.T.600—most of which will go, incidentally, into the pay envelopes of employees. When you build the S.T.600 you will be turning lathes, stoking factory fires and starting transport. You will bring happiness to many a home.

#### Planned Economy.

All that, however, is incidental. My job is to give you the last ounce of performance for the first and every penny you spend. I have urged for years reduction of prices—and, believe me, it is not a popular policy amongst those manufacturers who think of percentage profit rather than turnover.

Look at the S.T.400. I used the same coils as the S.T.300 and suggested you wound one yourself. Look at the S.T.500. You could use the same coils as in the S.T.400. On all these sets you could use the same panel, the same baseboard and the same condensers and other components. This was no accident; it was planned economy.

It was no accident that the coil manufacturers reduced their prices to 8s. for two excellent tested coils. It was due to my urgent representations to them and their own sound business appreciation of the policy.

**S.T.600 A BRILLIANT SUCCESS HERE**



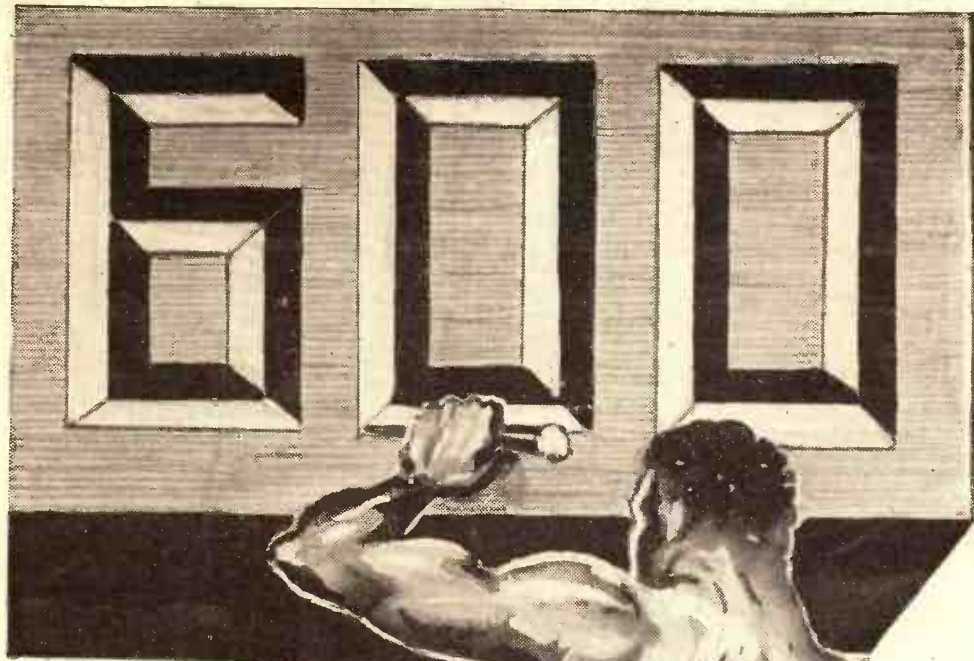
Almost under the aerials of the London transmitters the S.T.600 proved itself up to the hilt. Here is the designer on the station platform at Brookmans Park, while in the background is the Alaway and Partners' estate office, where scores of foreign stations were received.

contradicted last week and will be floated next week.

I am not worrying. All my successful work has been done as an independent engineer; and if I needed some little consolation I should recall that POPULAR WIRELESS are confidently expecting a greater success for this design than any since the journal was founded.

This matter of the S.T.600 is between you and me. My loyalty is to you. It is not to the publishers of “Popular Wireless.” It is emphatically not to the clashing, often





The main coil assembly on the S.T.600 will cost you 12s. 6d. The normal price for such a component would be 18s. 6d. Only a certain huge demand can justify the low price—some indication of what the industry thinks about the S.T.600. The Extractor circuit—one of the big features of my set—uses a

tuning condenser costing 3s. 0d., a "Ferrocart" coil costing 8s. 6d. More-

over, the gang condenser costs 11s. 0d. These prices are considerably below those ordinarily ruling.

Why do I emphasise these points? Simply to prove how carefully I have thought of your pockets. In a way, I feel guilty. Having saved the S.T.300 owner so much when I designed the S.T.400, I feel that he will at first regret the need to buy new parts.

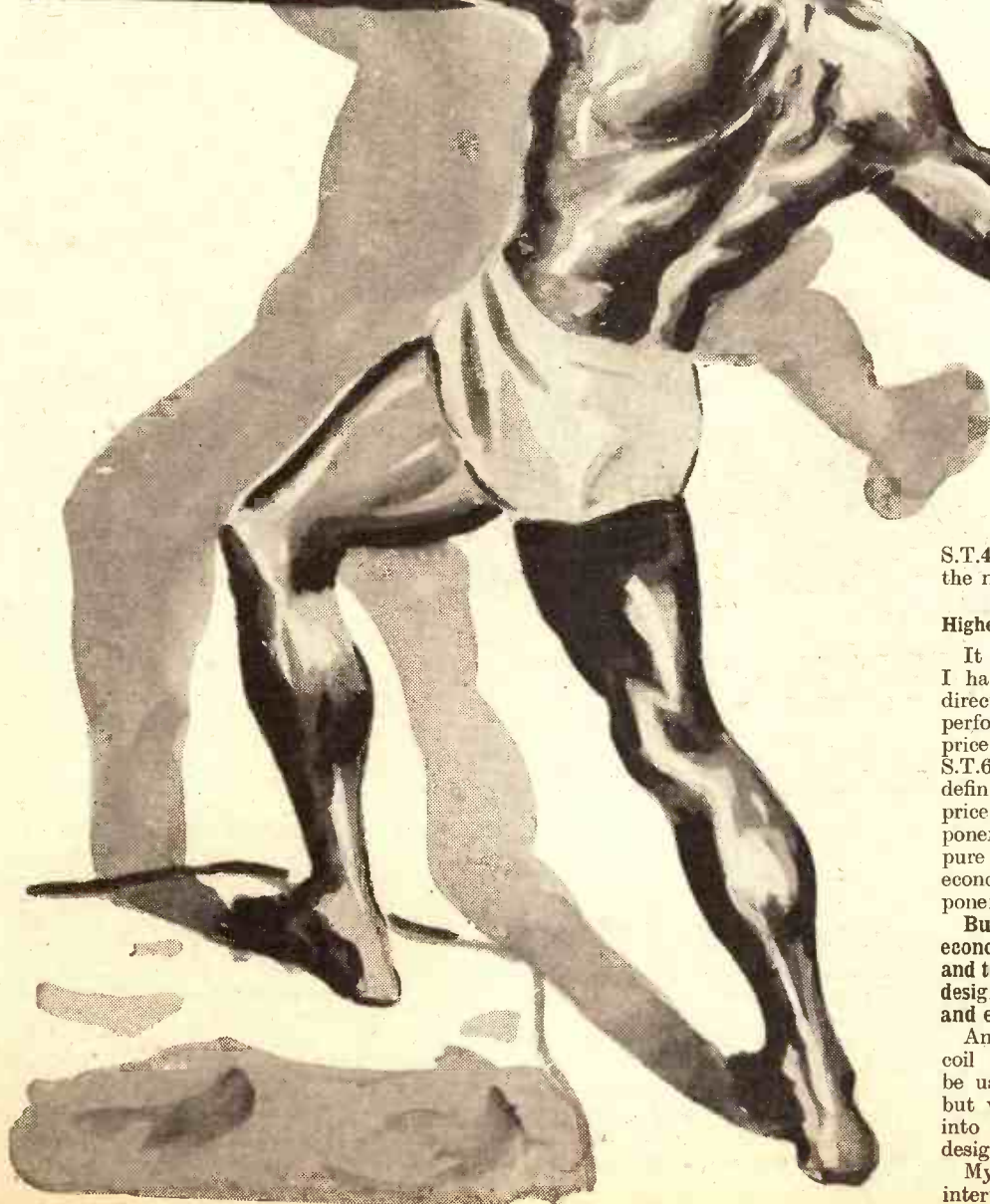
**Highest Possible Standards.**

It was inevitable. Time marches on. I have been struggling for years in the direction of simplicity combined with performance. I can design a set to a price as well as anyone else. But the S.T.600 has been designed to give certain definite results, absolutely irrespective of price. The fact that the whole list of components comes to only about £4 5s. 0d. is pure good fortune combined with ruthless economy on my part in choosing components.

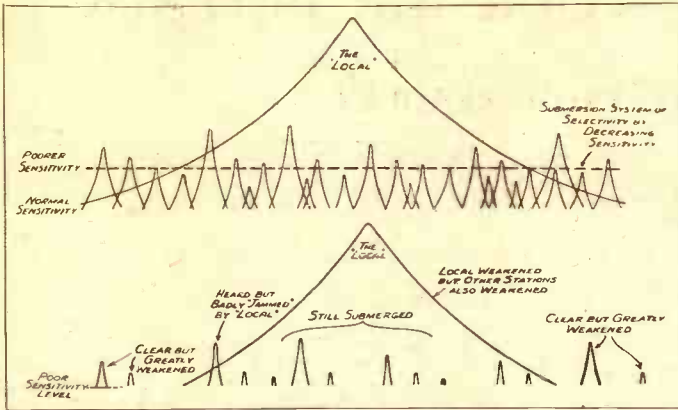
But as regards performance I refuse to economise. If you want poorer performance and to pay less for it, there are perfectly good designers churning out such sets every week and every month.

Any of the components—even the main coil assembly and Extractor coil—could be used in other ways and in other sets; but when you buy them and build them into the S.T.600 you have a set which is designed—like the Pyramids—to last.

My policy of a few National sets at rare intervals is your guarantee that no nev







These two sketches prove the fallacy of the little aerial and the cutting down of input. The whole sensitivity of the set is impoverished, and few stations survive the submersion.

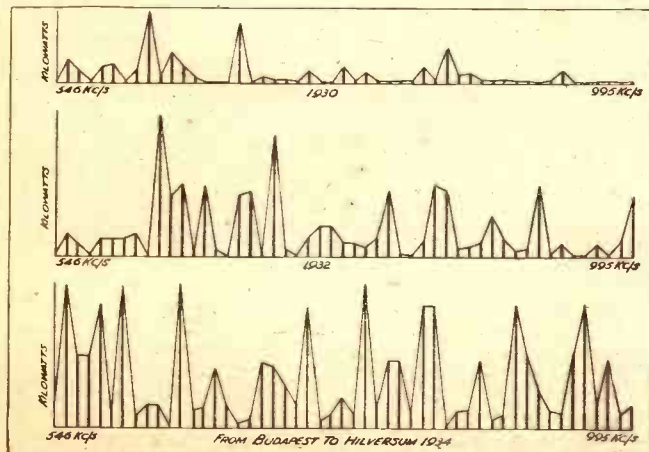
receiver of mine will render your S.T.600 obsolete for many years. You will have to wait a good two years for any set in the same class even to compete with it.

The S.T.600 easily outstrips the S.T.400—extraordinarily popular as that set is—but it took me two years to beat the 400.

But, apart from my own policy, the S.T.600 itself is technically capable of handling a tremendous increase in interference. If 41 stations can be received at one mile from Slaithwaite and as many at one mile from Brookmans Park—and these feats of the S.T.600 are recorded in this issue—you will see that I have piled up terrific reserves for the average listener.

**Start Right Away.**

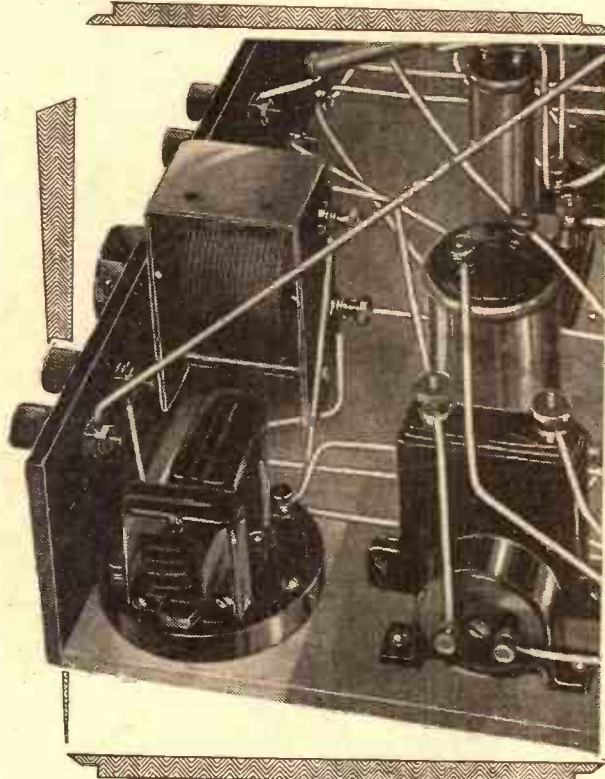
This number of "Popular Wireless" contains all you need to know about the set to start building it forthwith. There will be nothing to modify your views in subsequent issues. There is no reason whatever for "waiting and seeing." The sooner you start building the sooner you will reap the benefits of what those who have seen, heard and worked it regard as a set which is right outside the run of ordinary receivers, whether home constructed or commercial.



The increase in station power and differences in power are graphically illustrated above. The developments were prophesied by Mr. Scott-Taggart, who expects conditions to worsen.

In subsequent issues of POPULAR WIRELESS there will, however, be full explanations of all the features. It is hopeless in one issue to give full constructional details and also technical explanations. From next week, also, there will be a growing tide of letters which will carry along the most sceptical and cold-blooded on a flood of enthusiasm. As I write, a huge pile of such letters is on

my desk—all from constructors like yourselves who have actually heard the set in all parts of Britain.



The Extractor coil unit and its condenser are seen on the left of this photograph. The component in the right foreground is the aerial reaction choke.

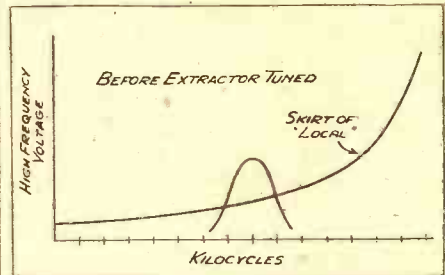
Within twenty-four hours of these words being read, a new pile of letters will rapidly build up—letters from delighted constructors of the S.T.600. These, too, you will read—and, I hope, add to their number.

This has happened in the case of every National set I have designed, and there are ten reasons to every one formerly why the

S.T.600 shall arouse enthusiasm. I know how I feel myself—and after twenty years.

Naturally, I should have a good deal to say about the S.T.600 in the next few weeks.

A friend of mine—at least, he calls himself a friend—saw me writing page 23 of my manuscript notes on the S.T.600.



Showing how the "skirt" of a powerful unwanted local station interferes with a weaker and desired transmission. Even reaction does nothing to cut out the "skirt."

"How many people," he asked, "do you think, are going to wade through all that?"

"About 300,000," I replied innocently.

"I think you're rather flattering yourself," was his rejoinder. "Thousands of your readers will build the set from your blue print and instructions without bothering to read through all your technical explanations and arguments."

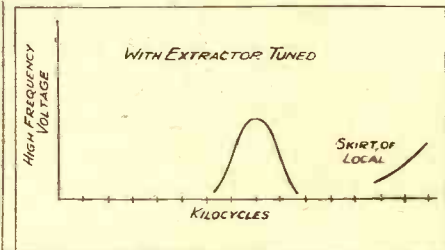
Of course, that rather took the sting out of his first remark.

**The Object of Explanations.**

I hope, however, that he is wide of the mark when he suggests that many readers will skip all the preliminary discussion.

Are you skipping this? No, I thought not. Well, I want you to go on reading, or rather listening, because I am going to talk and not just write.

I am afraid that I have an incurable habit of wanting to talk and to explain when I have something particularly good to talk about. I can't just produce a design and say: "There it is. If you like it get on with it." I like to review the situation in



The Extractor removes the skirt of the interfering station leaving the desired transmission. This method permits vastly improved sensitivity

which the set was designed, the obstacles the set was made to overcome, and the performance the set has been proved to give.

It is so easy to fling together a few components, to obtain a quite good performance, hand the set over to a draughtsman and photographer, and finally to write a (Continued on page 246.)



# S.T.600's TRIUMPHANT TOUR OF BRITAIN

## ENTHUSIASTIC LETTERS FROM READERS

### BROOKMANS PARK RESULTS.

I feel I must write to thank you for being one of your audience at the demonstration of your S.T.600.

It is the ideal set, considering the selectivity and sensitivity. The Extractor on the set was clearly demonstrated; the spread of the two London stations could be reduced to a mere space. Berlin and Hanburg came through quite loud and clear on the medium waves, despite the fact that Brookmans Park aeriels could be seen from the window where I was. Strasbourg was also heard, but with a faint background of London Regional.

Coming down lower to London National, which is another sticky part for interference, Madrid E A J 7 was got one side, and Trieste and Frankfurt on the other side. Even Copenhagen was got, which I think was very good, considering London National was punching away scarcely a mile away. Going over to the long waves, Droitwich came in loud, and by means of the Extractor could be cut out easily. Moscow came in very clear and loud. Also, Huizen, Luxembourg, and the others. It is really marvellous what four valves can do connected like they are in your set.

I must congratulate you on this ideal set. The other stations on the medium waves were all plainly heard and clear. But I was more interested in the Extractor part for cutting out the local stations.

E. J. FULLICK, 1, South Vale, Upper Norwood, S.E.19.

### 77 STATIONS AT LEEDS.

I am writing to thank you for the opportunity of hearing your new set, S.T.600, in my own home, working under the normal reception conditions of this district.

To say the performance of the set was astounding is only a mild way of conveying my impressions. When the Extractor was demonstrated it appeared as if the local station were being "faded out," and as soon as the tuning condenser was moved to the adjacent station on either side, the local station might just as well have been closed down, for there was no indication that it was still radiating.

The supreme ease of accomplishing this effect was very noticeable, being nothing more than a knob adjustment, the setting of which was not at all a skilled job. With this Extractor set to North National the whole of the lower end of the broadcast range right down to Bournemouth was at your service, as the selectivity and ease of tuning made it possible to choose any one of the stations in this part of the dial.

In the case of low-powered stations, aerial reaction very adequately brought the volume up to full strength, incidentally making the set more selective at the same time.

A remarkable feature of the set was the fact that none of the extra controls, i.e. aerial coupler, reaction or Extractor, affected the main tuning condenser setting, this making possible the use of a "Station Name" dial, giving exact positions for all stations.

The higher wavelength stations were covered in the same way, using the single Extractor this time on North Regional, the range extending to Budapest. The quality of reproduction was excellent, and volume of sound enough for all ordinary purposes.

Out of the 77 stations received during the

demonstrations I think special mention should be made of Sottens, and the excellent signal from Milan. Of course, when a set of this type will give good speaker reception of Fécamp *without any aerial at all*, there must be something extraordinarily good in the design. The comparative tests we made with my own S.T.300 served to convince me of the vast superiority of the new set.

Again thanking you for the pre-release demonstration and wishing all the success the design so richly deserves,

N. STANLEY BLACKBURN, 1, Parkville Road, Bell Lane, Bramley, Leeds.

### 72 STATIONS AT NEWCASTLE.

I am very pleased to give you my opinion of the S.T.600, which I was privileged to hear demonstrated. All through the demonstration I was very much impressed by the ease in handling, selectivity and sensitivity.

### S.T.600 IN SCOTLAND



Mr. Scott-Taggart has been demonstrating the S.T.600 in all parts of the country. Here he is on Oct. 5th in Princes St., Edinburgh.

The conditions of the test were searching, a small indoor aerial being used, and the "local" station, Newcastle, was only a mile away. But, in spite of these facts, the set handled extremely well.

The selectivity was excellent, and was maintained all round the dial, most of the stations logged being received with great clearness.

The number of stations received was surprising, considering the short time the test was in progress. Actually 72 stations were received at loudspeaker strength, and all of them were identified. They were all logged while the "local" was operating, and the number does not include several which were not identified owing to lack of time.

The quality of reproduction was very good, all music being reproduced faithfully, and speech was in no way blurred. The signal strength of such stations as Fécamp, Cork, Madrid and other notoriously weak stations in this area was surprising, and showed up the great sensitivity of the set.

The wavelength range extended from

Bournemouth to Budapest, and all the long-wave stations were received; thus it is evident that the choice of a programme is not limited to a few stations only.

The tuning of the set is very simple, mainly due to the fact that a two-ganged condenser with external trimmer is incorporated in the circuit. The other controls, the aerial coupler, aerial and anode reactions, being so designed that they do not interfere with the tuning of a station, but only serve to increase selectivity and volume, are a great feature.

Your new "Spot-On" dial, which is made so that the home-constructor may calibrate it for himself, I consider to be an excellent idea. Once calibrated the set can be used by a complete novice with confidence.

I was one of the privileged few to be allowed to handle the S.T.600 for a short while, and I was struck by the ease of operation, a great improvement on your previous sets.

Your device at the back of the set, which you explained was an "Extractor" to cut out the "local" station, proved most effective. Once set—and the setting only required a few seconds—it was never touched again, and it showed its worth when Fécamp was tuned in clear of Newcastle, a great test for a superhet receiver in this area.

The aerial reaction, a feature on the S.T.400, S.T.500 and S.T.300 Star, you have brought up to a much more improved form, and its use is immediately apparent, and you are to be commended on designing such an efficient, all-round set.

RAYMOND CLARE SEFTON, 7, St. Edmunds Road, Gateshead-on-Tyne.

### A GLASGOW TRIUMPH.

I had the great privilege to hear a demonstration of your new set, the S.T.600.

The selectivity of this set is so great that the local station only occupies two degrees on the dial.

Fifty stations were received, all at full speaker strength, and the quality of reproduction was perfect. This is really remarkable, because they were obtained on a small aerial, and such stations as Fécamp and Cork were as loud as the local.

The most remarkable feature was the fact that, when you alter any of the controls, either for selectivity or volume, it makes no difference to the tuning, and therefore you can go back to any station without having to readjust any of the controls.

The set uses a dial which has all the stations marked on it, and it is simplicity itself to tune in to any station, so that you need not be an expert to operate the set.

The Extractor system fitted is the greatest boon that has been presented to the home-constructor.

This is certainly the best set that you have designed, bearing in mind such great sets as the S.T.300, S.T.400 and S.T.500.

All over, this set is the easiest-operated and most selective battery set I have heard, and I will certainly build it myself, and then let all my friends and anybody else who cares to hear it.

GEO. B. HARVEY, 121, Corssock Street, Glasgow, E.1.

NOTE.—More letters on other pages. Many more will appear next week.



# AMAZING DEMONSTRATIONS OF S.T.600

## S.T.600 DESIGNED AT BROOKMANS PARK!

*Scores of Stations Received Under Worst Conditions in Britain*

### HOW MR. JOHN SCOTT-TAGGART FACED AND SOLVED THE SWAMP AREA PROBLEM



DESIGNED the S.T.600 at Brookmans Park itself. For eight weeks I hired the joinery workshop of Shadbolt and Nash, which is situated just under one mile from the London twin

Regional station.

I see from my technical notebooks that I tried 157 different circuits and carried out 287 separate electrical measurements. Behind these statements lies a dramatic story which I have no space here to tell. I was on the point of abandoning my temporary laboratory and



Mr. John Scott-Taggart indicates the Brookmans Park aeriels. They are only one mile from the laboratory in which the S.T.600 was developed, and can be seen from the windows.

If you want a good view of the creators of the London swamp zones, you cannot do better than visit the building shown in the photograph opposite.

Surrounded by the implements and materials of joinery, I worked like a galley slave. For weeks the problem of obtaining a long list of stations, snatched from the very jaws of the B.B.C., seemed insoluble.

I chained myself to the problem, determined to leave Brookmans Park only when I had gained the victory over those masts which I could see towering above me whenever I looked through the window.

retreating on London when the solution came.

Now I give demonstrations at Brookmans Park as a matter of course, and will continue to do so after this article appears. With this issue of POPULAR WIRELESS on their knees, "demonstrates" can check every word with the results they hear, or they can work the set themselves if they prefer.

How many test reports have you ever read for sets within one mile of the B.B.C.? Personally, I have never read one taken nearer than 15 miles.

Where do Press designers design their sets? I have taken the average distance of six leading designers from Brookmans Park and find it to be 23 miles. You may contrast this with the one mile I permitted myself.

#### Performance at Brookmans Park.

Here is the performance of the S.T.600 at Brookmans Park: Berlin Funkstunde on one side of London Regional and Hamburg on the other are obtained without interference and at full loudspeaker strength. Copenhagen and Madrid EAJ7 are similarly received on each side of London National.

#### 41 STATIONS AT SLAITHWAITE!

1 MILE FROM NORTH REG.

Readers in Lancashire and Yorkshire, especially, should read the report of Mr. W. H. G. HURLEY on a Demonstration of S.T.600 at Taylor's Garage, Slaithwaite. Unprecedented selectivity was proved.

These results mean that out of 105 station "channels" available on the medium waveband, two below London Regional and three above are lost, while around London National five are lost above and two below.

Amongst those whose performances you will not receive if you live at Brookmans Park will be Naples (1.5 kw.), Alexandria (0.25 kw.), Belfast (1 kw.), Graz (7 kw.), Limoges (0.5 kw.), Bergen (1 kw.), and one station on 1,113 kilocycles which is non-existent, anyway, but is included as a missed channel.

The rest of the dial is as easy as if the S.T.600 were 50 miles from Brookmans Park, since the Extractor in no way affects the sensitiveness of the set. This means that at one mile you get all the long-waves and exactly 90% of the medium-wave programmes, and of the remainder at least half comes from tin-pot stations.

Very similar results were obtained, at Slaithwaite (see Mr. Hurley's letter), and would be obtained at one mile from other Regional stations.

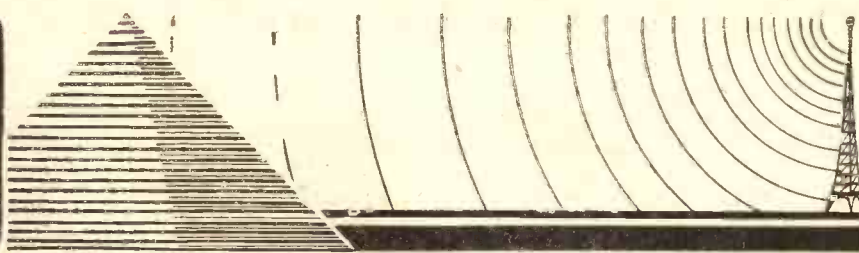
#### Long-Wave Reception.

On the long-waves the effect is even more striking. At Birmingham, now being strangled on the long-waves by Droitwich, the S.T.600 gets Berlin Deutschlandsender (also called the Königswusterhausen or Zeesen wavelength) clear of Droitwich. On commercial mains superheterodynes it was hailed as a great feat if in London the long-wave Berlin station could be received clear of Daventry, which was only one-fifth the power of Droitwich, and four times as far away compared with my demonstration.

I do not need to stress that if these performances—vouched for by numerous demonstrates' letters and repeatable at any time—can be obtained under the worst conditions in Britain for swamping, what child's play it is for the S.T.600 to overcome any trouble at further distances.



# THE 600 CIRCUIT




**S**I have always said: The circuit's the thing. Don't think that I minimise the importance of layout, of wiring, of screening, and all the other factors that go to the making of a successful set.

I don't.

You would be astonished if you knew the vast amount of detail experimentation that goes into the putting of a black-and-white circuit into the "flesh and blood" of one of my National sets.

But the circuit's the thing.

### Constructors in Unique Position.

I am not anxious to be known simply as a designer. There are hundreds of them in Britain. The term has come to mean one who puts together certain recognised circuits into the shape of a wireless receiver; and the circuits themselves are nowadays usually the product of the valve firms.

My own work in radio has been inventing and the technical, historical and legal study of inventions. All else is a by-product. My books, articles and set designs are not primary activities. It is therefore not surprising that my sets are quite different from anyone else's.

I have designed receivers, mains sets in each case, which could be sold to the general public. But the "big" sets, the National ones, have those refinements which place the constructor in a unique position of superiority over the completely non-technical maiden aunt.

With one knob you, who read this, could do little more than could a paralytic penguin. You are reduced to the lowest common multiple of intelligence.

The bottom falls out of home construction if you cannot get different and better results, although I seem to be the only designer fully to appreciate this point. Once upon a time, home-constructed sets appealed because they were cheaper; now price differences are narrowing. But even in S.T.100 and "Solodyne" days, the sets I offered gave a much higher performance than commercial ones in the same class.

The S.T.600 admittedly calls for little skill in tuning. The one tuning knob of the "600" will infallibly get your station. but

the four extra controls—aerial coupler, aerial reaction, volume control and anode reaction—enable the set to soar in performance. And none of these alters tuning readings—an extraordinary achievement towards simplicity of tuning. The Extractor is not an operating adjustment; it is simply set in five seconds to cut out the overpowering effect of a "local" or Droitwich, and is not, of course, altered for each station.

But five seconds of intelligence is far too much for the average owner of a manufactured set. But, designing for the

is the cry, and compromise the result.

I refuse to compromise. If you want only one knob, go ahead. No one possesses the secret of one-knob success. I have tried every circuit produced; there is no secrecy. I think I can produce as good a one-knob set as the next man; but it will not approach in performance the S.T.600, which, in any case, by leaving the extra controls at "normal," is convertible into such a set.

The S.T.300, S.T.400, S.T.500 and S.T.300 Star called for ten times the skill needed for the S.T.600; but the constructing public appreciated my arguments and proved them in sheer comparative performance.

### Regular Public Demonstrations.

Where to-day, in a factory set, can you get my Spot-On 100-station dial? Where can you get that miraculous—it is nothing less—building up of an inaudible signal to full loudspeaker strength by the aid of the screened aerial reaction, incorporated in no other set in Britain? What designer you know of would dare to give regular public demonstrations to critical crowds with two huge 50-kilowatt Regionals blazing away one mile off?

I implore you not to "improve" my circuit. For the first time I provide no alternative valves because I have carried out measurements and find those mentioned give best results. The pentodes must be metallised and with four-pin bases.

The set is amply decoupled as it is for

battery or mains unit. It works excellently as a mains unit set without trace of motor-boating, but you must use the Niclet transformer specified. With other makes of transformer I found that special decoupling was necessary, involving more expense than the purchase of a Niclet.

If the set is for working off a battery you can safely use any make of transformer, but for quality and sensitivity I advise you to keep to my list of alternatives.

Remember that my list of components is your sole authority. Any statement should be compared with my signed list and ignored if it differs from it. **J.S.T.**



### THE CIRCUIT WAS INVENTED AT BROOKMANS PARK!

Here is Mr. John Scott-Taggart carrying out measurements on the joiner's table at Messrs. Shadbolt and Nash. Actually 287 electrical measurements were made and 157 circuits both "straight" and superhet. were tested.

constructor, I am not prevented from providing the terrific reserve of selectivity ensured by the S.T.600 Extractor, permitting over 40 excellent programmes to be obtained at one mile from a 50-kilowatt Regional, that will never find its way into a manufactured set. Only the constructor, his family and his friends can benefit from such a feature. The same applies to the perfecting controls.

Every true, conscientious designer of a factory-built set writhes in the shackles imposed by shrewd business heads who know that the general public cannot be trusted to make the simplest adjustment. Simplicity





### THE MAN WILL ESTEEM:

#### SELECTIVITY

The most ardent fan should not require more, the Extractor being a material factor in securing the easy eradication of the "local."  
*C. A., Manchester.*

Hamburg and Berlin were received clear of London Regional, and Madrid E A J 7 and Copenhagen clear of the National (test at Brookmans Park).  
*W. Shipley, London.*

I was greatly impressed by the comparatively small spread of locals and general selectivity of the S.T.600.  
*W. L. Read, Glasgow.*

The selectivity of your S.T.600 is absolutely marvellous, the cut-out on the locals being knife-edge. As for the Extractor, it's almost as good as knocking an unwanted local station out of action.  
*J. Dawson, Glasgow.*

Selectivity was made to seem commonplace, the locals being "cut out" completely in one degree of the dial.  
*H. Duff, Glasgow.*

#### SENSITIVITY

It was wonderful the way your set would pick up stations when put on to the small room aerial. Some of the stations received on the "600" I had never heard of, far less heard, before.  
*B. Gordon, Edinburgh.*

The set is extremely sensitive, as is proved by the fact that you were able to receive Cork and Fécamp when Newcastle was on.  
*L. Freeman, Newcastle.*

It was obvious that 100 stations could have been obtained.  
*J. C. Seston, Gateshead.*

The aerial reaction is remarkably efficient in pulling in stations inaudible without it.  
*C. A., Manchester.*

#### VOLUME

Very loud signals were a noticeable feature.  
*J. C. Seston, Gateshead.*

The most outstanding points were . . . volume. Quality of reproduction on these (60) stations was perfect, all being received at good volume.  
*T. Dickson, Glasgow.*

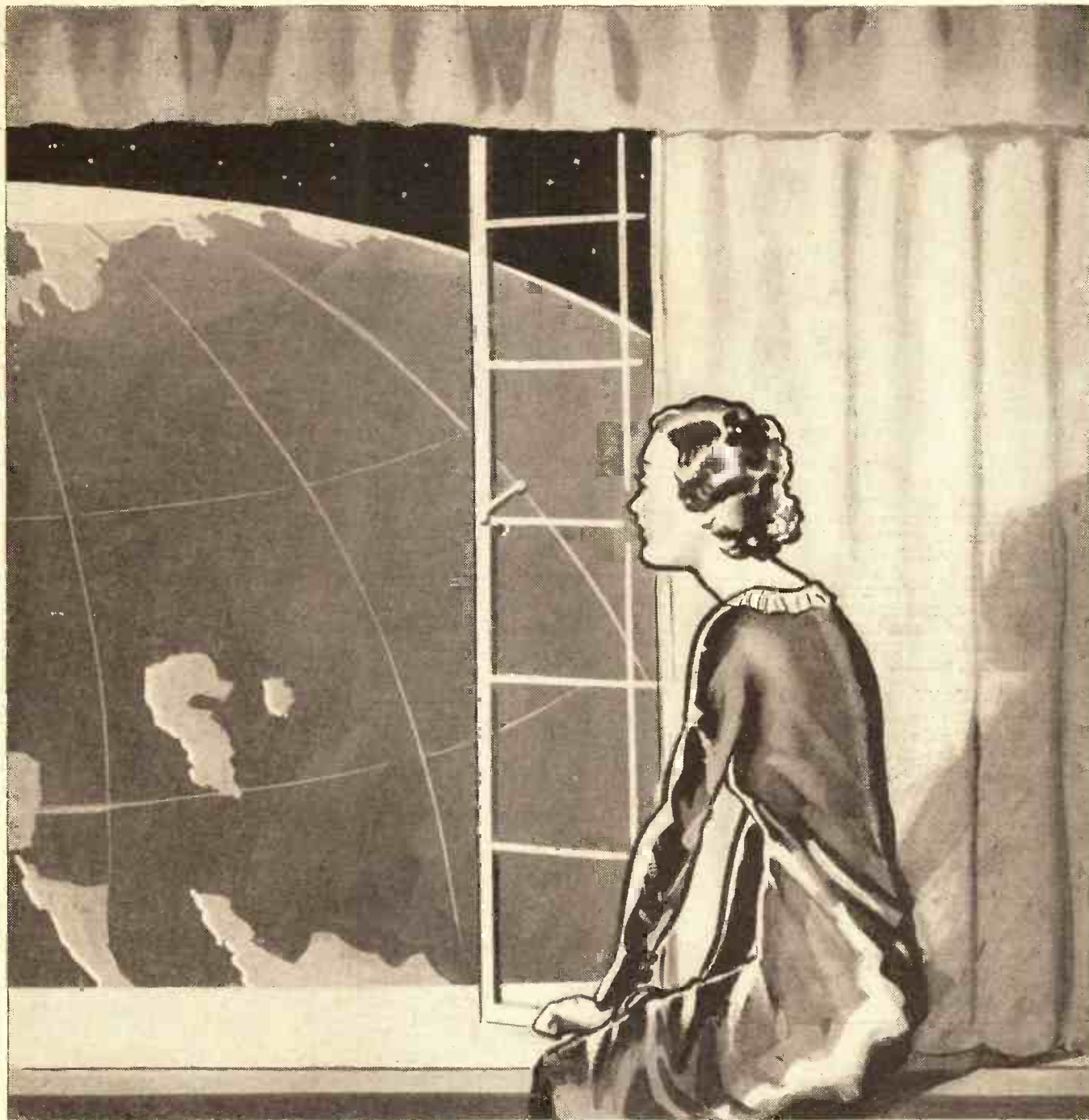
The volume was also astounding.  
*B. Gordon, Edinburgh.*

The set has a wonderful punch behind it.  
*W. J. Shipley, London.*

The addition of a volume control is a necessity on such a powerful set.  
*A. Hudson, Leeds.*

Fifty-two stations, all with perfect ease and plenty of volume. Volume is simply astonishing.  
*T. Stark, Edinburgh.*





THE WOMAN WILL APPRECIATE:

★.....STATION DIAL.....★

The new Spot-On dial with all the stations marked will be a boon to all.

*J. Davison, Glasgow.*

The Spot-On dial which gives the S.T.600 a real touch of "class."

*W. Hotchkiss, Glasgow.*

You are able to return in a second to any station that has once been spotted.

*L. Freeman, Newcastle.*

Your new Spot-On dial is most ingenious, and, together with one-knob tuning, the S.T.600 should prove to be popular as a family set, the operation of the set being simplicity itself.

*J. C. Sefton, Gateshead.*

Added to this wonderful achievement is the extreme ease of tuning given by the large dial.

*C. R. S. Elford, London.*

★.....BEAUTIFUL TONE.....★

The quality of reproduction was excellent.

*L. Freeman, Newcastle.*

The quality of reproduction on these was perfect.

*T. Dickson, Glasgow.*

The quality couldn't be better.

*W. Hotchkiss, Glasgow.*

The quality of reproduction was of a very high standard.

*W. L. Read, Glasgow.*

The addition of a tone control is another advantage.

*C. A., Manchester.*

The quality of reproduction was very pleasing to hear and will not fail to satisfy the most severe "tone critics."

*H. Duff, Glasgow.*

Of course, the quality is, as always with S.T. sets, beyond reproach.

*C. R. S. Elford, London.*

★.....EASE OF TUNING.....★

The set can be worked by anyone who can read English and turn a knob.

*L. Freeman, Newcastle.*

Easier than any of your previous designs.

*W. Hotchkiss, Glasgow.*

The Spot-On dial, which can be operated with ease and simplicity, is a wonderful improvement in radio design, and should be welcomed by many "P.W." readers ambitious to construct a receiver for family use in general.

*W. L. Read, Glasgow.*

The Spot-On dial is very ingenious, and once the spots are put on, even grandmothers could tune in the stations!

*Bruce Gordon, Edinburgh.*

It is indeed a well-thought-out and ingenious method of making it easy for the rest of the family to tune in to the Continent or the locals.

*H. Duff, Glasgow.*



# THE "EXTRACTOR"

## A BRILLIANT SOLUTION TO THE LISTENER'S GREATEST PROBLEM

### HOW THE SYSTEM WORKS

*Droitwich, Regionals and Relays are tamed for the first time, and foreigners hitherto drowned are restored to life and vigour by this feature of the S.T.600, which has enabled demonstrations to be given in Slaithwaite itself and in Brookmans Park itself.*



The designer explaining how the Extractor abolishes swamp areas.

**S**INCE S.T.300 days I have faced the problem of the swamp zones. The introduction of the Extractor circuit, however, became necessary as I increased my standard of selectivity as regards the B.B.C. The S.T.300 was designed at Bourne End, near Maidenhead, about thirty miles from Brookmans Park. The S.T.600 was designed actually at Brookmans Park, within one mile of the London Regional station!

#### Does Not Reduce the Volume.

On every battery receiver I know of efficiency is simply thrown away to make for selectivity up to at least 30 miles from a B.B.C. Regional station. I give you back all that lost sensitivity by using the Extractor circuit, which not only does not reduce the strength of desired signals, but gives a set back all that sensitivity which has been filched from it in an attempt to achieve selectivity.

The Extractor circuit, however, cannot be used independently of the rest of the circuit. Incidentally, the Extractor arrangement was tried on other circuits without a fraction of the final success, and I should like to pay a tribute to the efficiency of the Ferrocart

coils, which were prepared to my specification. The very high efficiency resulting from this iron-dust material contributed in great measure to the effectiveness of the Extractor circuit, which requires to be of very low-loss type.

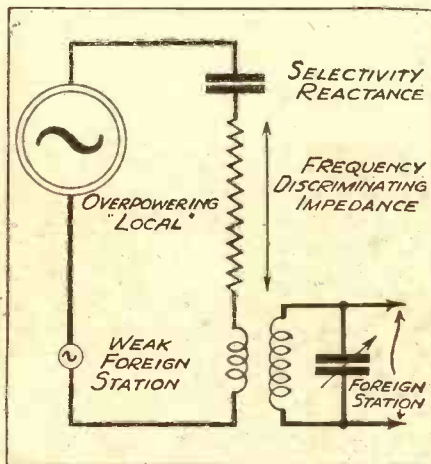


Fig. 2.—The theoretical equivalent of the Fig. 1 arrangement.

The basic principle underlying the success of the S.T.600 is that I have drawn a distinction between cutting out a very powerful local station and cutting out interference from other stations. A B.B.C. station may easily be a hundred times as powerful in your aerial as the station you desire to receive. It is true you may also be experiencing interference from, say, another foreign station which may be weaker than, or the same strength as, or several times as strong as the one you desire to receive. The B.B.C., however, comes into a different category altogether, unless you happen to be situated a great distance, say over 50 miles, from a Regional station. In Glasgow, for example, the power of Westerglen was over 1,000 times that of weak foreign stations which I could nevertheless receive on the loudspeaker with the S.T.600.

#### Cut Out in a Few Seconds.

My policy is to cut out the local station from the programme altogether, or—since this is a little drastic, as some people still want to hear the B.B.C. I—to reduce the signal from the "local" to the same proportions as an average foreign station.

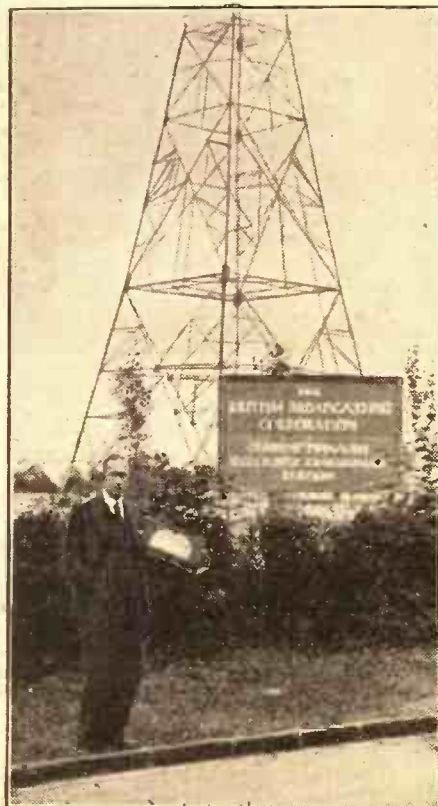
The time, measured with a stop watch, taken to carry out this operation as performed by five amateurs was as follows:

1st constructor:	5	seconds
2nd	3½	"
3rd	6	"
4th	2½	"
5th	7½	"

My own time was 9½ seconds, but that is not so much a question of lack of experience in tuning, but a more finicky desire for perfection.

It will be seen that the average time taken to cut out the local completely is 5 seconds. This adjustment is made when first installing the set and will last for years, if necessary. There is no need to alter it at all

### UNDER THE AERIAL



Mr. Scott-Taggart takes the S.T.600 right into the "lion's den."

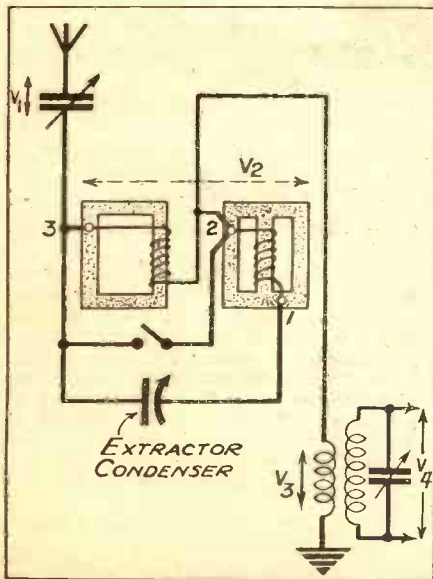


Fig. 1.—The Extractor circuit acts like a colossal resistance to the "local."



# ABOLISHES INTERFERENCE FROM "LOCALS"

unless you wish to do so. At one fell swoop—the swooping time being 5 seconds only—

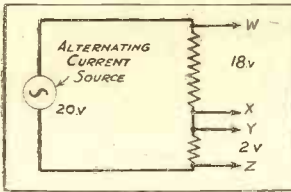


Fig. 3.—How a total of 20 volts would be distributed across two resistances WX and YZ, joined in series.

you have done what is equivalent to shifting your whole house and aerial hundreds of miles from a B.B.C. station which perhaps has been a thorn in the flesh for years.

Now for some technical explanations. The secret of the Extractor circuit is that it is a form of Frequency-Discriminating Impedance. By impedance I mean opposition to alternating currents.

If we apply an alternating current to two equal resistances in series, the voltages developed across the resistances will be equal.

If, however, we make the resistances of different values, the

the smaller resistance develops 2 volts across Y and Z. It will be seen that the 18 volts added to the 2 volts gives the 20 volts.

Let us now feed two lots of alternating current to the resistances. We will connect two alternators, as shown in Fig. 5. One of these gives low-frequency current and the other gives high-frequency current. Both these currents are fed through the resistances R1 and R2, which are equal. The high-frequency voltage, which is assumed to be 20, is split up into 10 volts of H.F. which appears across the terminals W and X and 10 volts across the terminals

Y and Z. The resistances act in the same

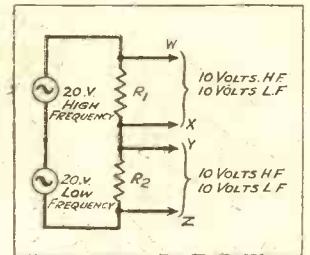


Fig. 5.—This circuit does not discriminate between frequencies.

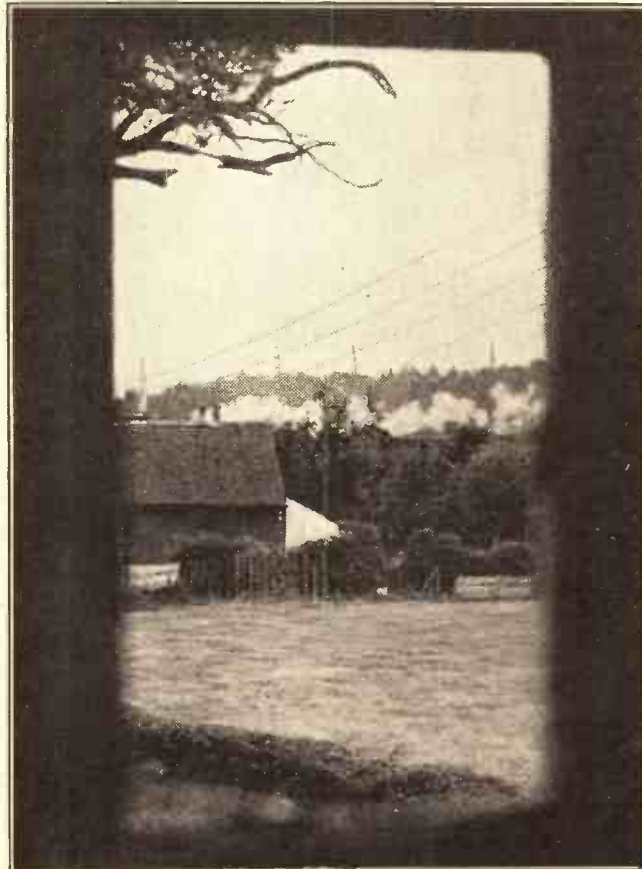
way towards the low-frequency currents, so that 10 volts of L.F. appear across W and X and 10 volts across Y and Z.

If we use an inductance coil in place of one of the resistances, as shown in Fig. 6, then we at once obtain frequency discrimination.

A system of frequency discrimination is used in a common way of reducing break-through on the long waves.

The break-through occurs when a local station on the medium waveband is working. Fig. 4 shows an aerial coupler condenser C1 included in series with the aerial for the purpose of giving greater selectivity, but the break-through is prevented by inserting a high-frequency choke Z in the

## VIEW FROM J.S.-T.'s LAB.!



From the window of the laboratory where the S.T.600 was born can be seen the aeriels and masts of the London Regional stations—a bare mile away.

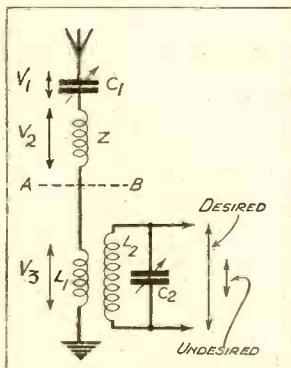


Fig. 4.—A simple frequency discriminator circuit.

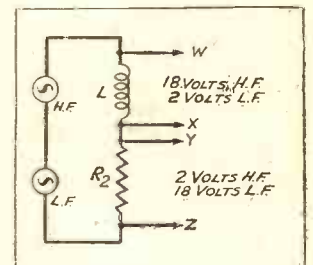


Fig. 6.—Frequency discrimination is obtained by replacing the resistance R1 in Fig. 5 by an inductance L.

total voltage across the two will remain the same, but it will be distributed unevenly. For example, in Fig. 3 one resistance is shown developing 18 volts across its terminals WX, while

position shown. The choke Z in series with the aerial coupling coil L1 produces a high-frequency potentiometer effect. Some of

(Continued on page 247.)

## WHAT READERS THINK ABOUT THE EXTRACTOR

"CUT OUT IN ONE DEGREE."

"... (1) Selectivity was made to seem commonplace, the 'locals' being 'cut out' completely in one degree of the dial on either side of the proper tuning point.

"... (9) Another luxury device incorporated in the '600' is the Extractor, which really effectively cuts out the 'local'; this device is operated when installing the '600.' The time taken to adjust the Extractor being roughly 6 seconds..."

HENRY DUFF.

90, Budhill Avenue, Shettleston, Glasgow, E.2.

"ONE MILE FROM MOORSIDE EDGE."

"... On October 7th, 1934, I accompanied Mr. Scott-Taggart in a test of the S.T.600 on an aerial at Slaithwaite.

"A slight movement of the Extractor cut down the spread of the local station to a quite negligible amount, and enabled many stations to be tuned in which were otherwise swamped.

"... The attached list of 41 stations, (see page 246) was received clear of interference.

Both local stations were working during this test..."

W. H. G. HURLEY. Rochdale.

"EIFFEL TOWER CLEAR OF DROITWICH."

"... The test was made as before on a 60 ft. indoor aerial, and Droitwich, being only about 18 miles away, the long waves were tried out first. Luxembourg, Warsaw, Kalundborg, Radio Paris, Huizen, Oslo, Leningrad and Moscow all were received clear of Droitwich. Then came the surprise of the evening—Deutschlandsender and Eiffel Tower clear of Droitwich with the single Extractor circuit in operation..."

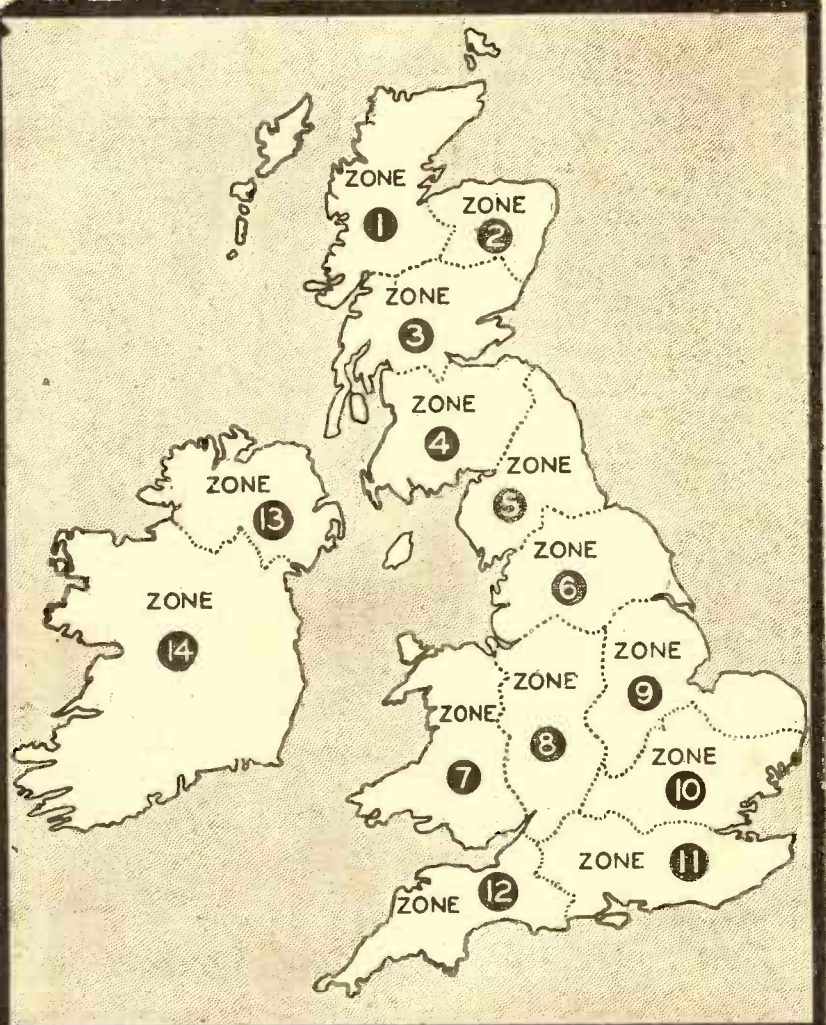
L. PERRINS.

101, Sycamore Road, Aston, Birmingham.



**FOR THE  
FIRST  
TIME**

# PERSONAL FOR THE



E. G. Coates



E. Millar



D. Horn



H. Sibbet



W. Howell



C. H. Hopwood

# THESE MEN ARE



E. W. Grundy



F. Williams



E. A. James



C. Lambert



T. J. Stainsby



T. Gee



# SERVICE CONSTRUCTOR!



A. L. Payne



E. S. Rogers



H. R. Brooks



F. N. Bedwell



C. E. G. Ricketts



O. Scrivener



HERE is great news for the constructor of the S.T.600. I have gathered together service men all over the country into an unprecedented scheme to ensure the 100% success of 100% of the sets built.

For many months I have been quietly preparing this great organisation. Everyone to whom I have mentioned the matter has condemned it as unnecessary. One man said: "After all, only one fellow in a thousand will fail with his set. Is it worth going to all that bother just to put one man right?"

### A Great Time-Saver

Another—this time a hard-bitten member of the staff of a wireless firm who thinks all constructors are trying to "find the catch" in everything—said cynically: "If you go on with this scheme you are sure to get some blokes who'll say the set is so complicated it needs a big service scheme to make it work."

This particular man took the same line over my Rapid Construction Guide introduced two years ago on the S.T.400. He said: "If you publish all that mass of detail it will scare people off. It's surely

## 200 S.T.600 SERVICE MEN

are your insurance. Only a portion of the list appears this week. More zones and names will be published next week.

much better to say: 'The wiring presents no difficulty.'

Well, the public took the opposite view. The Rapid Guide was enormously popular. It saved thousands of people hours of time and thought. It spoon-fed the novice, and saved the expert trouble.

So the constructing public are not such fools as my friend thinks. Duplicate S.T.600 sets have been built in record time by using my improved Rapid Guide. If anyone thinks it complicated—well, if I gave him a Rapid Guide of all his simple actions from waking in the morning to going to work, he would stay in bed all his life!

I have dreamed of this service scheme for years. In 1926 I established at my Elstree laboratories a constructors' set

(Continued on next page.)



W. Jackman



F. Jackson



F. G. Edmunds



H. Bridgett

# WAITING TO HELP YOU



H. Duff



L. King



E. A. Palmer



F. C. Allen



T. Aldridge



J. W. Paterson



# PERSONAL SERVICE FOR THE CONSTRUCTOR

(Continued from previous page.)

repair depot. On that occasion I set forth my ideals, but only the fringe of the problem was touched.

Now, I have a nation-wide scheme in action. The facts are these: There is only one "snag" about home construction. What can a man do who, having built a good design, fails to get good results? He can do very little. He may write to the periodical in which the design appeared, but rarely can a Query Department help, however willing.

If you wrote to a doctor and said "I feel ill," what could he do? The trouble might be anything from failure to win the Irish Sweepstake to housemaid's knee.

The only satisfactory procedure is for "someone who knows" to see the set. In nine cases out of ten he could spot the trouble in five minutes.

### How the Scheme Works.

Nothing like my scheme has ever been attempted before. I only hope other periodicals will copy it; it will establish home construction on a really sound basis. But, of course, such a scheme can only be launched on a set of outstanding performance and reliability. The very certainty of success with the S.T.600 makes the scheme workable. A second-rate set would cause it to collapse. No service man on earth could get first-class results on a second-rate design. The defects of the set would be "shown up" at once.

It is true that only one in a thousand might have trouble. But there is always a slight risk. By misfortune, or by making a slip, you might be that one in a thousand. It will not comfort you to think that 999 others are getting splendid results.

Hitherto—for a dozen years—constructors have cheerfully taken the very slight risk. But to-day, on the S.T.600, you need take none.

### Creating Confidence.

I have a list of over 200 service men, and their zones and names are being published in POPULAR WIRELESS. More names are being added daily, so if there is no man in your district now, there very soon will be. These men are not employed by "P.W." or myself. You go direct to them or ask them to call. They have all agreed to charge only small fees and strictly on a payment-by-results basis; no improvement, no pay. You make your own arrangements with them, so you know exactly how you stand and you choose your own man.

The scheme is really simply an insurance. Nearly everyone insures; most people fill in their newspaper forms. The chance may be only one in a million, but a feeling of safety is there.

These service men are like coastguards. They are standing by. It is extremely unlikely you will need their help. But it means you can go ahead at once with building the S.T.600 with absolute confidence—greater confidence than you have ever felt before. Each service man

will be a local expert on the S.T.600, ready with a helping hand.

I am convinced my scheme will revolutionise home construction. It will guarantee a 100% success on every S.T.600 built. It insures you, and ensures success.

J.S.-T.

## SERVICE ZONES—FIRST LIST

### ZONES 1 and 2.

*Aberdeen, Banff, Caithness, Inverness, Kincardine, Moray, Nairn, Ross and Cromarty, Sutherland.*  
TOWN. SERVICE AGENT.  
Cullen . . . . A. W. Wilson, 20, Seafield St.

### ZONE 3.

*Angus, Argyll, Clackmannan, Fife, Kinross, Perth, Stirling.*  
TOWN. SERVICE AGENT.  
Denny . . . . J. A. Clark, 13, Anderson Drive.  
Perth . . . . D. Horn, 12, North William St.

### ZONE 4.

*Aur, Berwick, Dumfries, Dumfries, Edinburgh, Haddington, Kirkcubright, Lanarkshire, Linlithgow, Peebles, Renfrew, Roxburgh, Selkirk, Wigton.*  
TOWN. SERVICE AGENT.  
Annan . . . . A. Anderson, c/o Mrs. McKinna, 21, High St.  
Dumfries . . . . W. R. Cumming, 4, Whitesands.  
Glasgow . . . . H. Duff, 90, Budhill Avenue, Shettleston; E. Millar, c/o Hutton, 123, Graham St.; C. Paul, 44, North Park St., N.W.; A. Stirling, 54, Carnwadrie Rd., Thornliebank.



F. SYMINGTON



T. ELLIS

### ZONE 5.

*Cumberland, Durham, Northumberland, Westmorland.*  
TOWN. SERVICE AGENT.  
Hartlepool (W.) . . . R. Jackson, 14, Holt St.  
Newcastle . . . . T. Emmerson, 87, Howes St.; H. E. Gill, 92, Stanton Gate; H. Middleton, 154, Newton Rd., High Heaton; H. B. Sibbet, 62, Ferguson's Lane, Old Benwell.

### ZONE 6.

*Lancashire, Yorkshire.*  
TOWN. SERVICE AGENT.  
Aston-in-Makerfield . . . G. W. Hill, 81, Bolton Rd.  
Aston-on-Ribble . . . W. B. Marsh, 1a, Cannon Hill.  
Bolton . . . . A. V. Chaisty, 11, Brindley St., Horwich; J. E. Crompton, Y.M.C.A., 125, Deansgate. R. Dailby, Olympia Radio Ltd., 74, Bradshawgate.  
Bradford . . . . C. E. Marshall, 18, Sun Wood Avenue, Shelf.  
Burnley . . . . W. Howell, 35, Berkeley St.  
Bury . . . . F. Jackson, 25, Oran St., Chesham.  
Chorley . . . . S. Snape, 51, Corporation St.  
Goldthorpe . . . . W. Rennard, 21, Nora St., Goldthorpe, nr. Rotherham.  
Goole . . . . D. Fairweather, 3, Sutton St.  
Guisborough . . . T. Hudson-Horley, 5, Market Pl.  
Lancaster . . . . E. W. Grundy, 58, King St.  
Liverpool . . . . C. H. Barden, 141, Oakfield Rd., Liverpool 4; S. Davies, 11, Wandsworth Rd., Liverpool 11; N. W. D. Paten, 24, E. Linnet Lane, Liverpool 17; Radio Repairs, 1, Back Vine St. West, Liverpool 7.  
Leeds . . . . A. Hudson, 11, Leopold Rd., Leeds; J. Mashinter, 5, Merrion Place, Vicar Lane; F. Symington, 14, Berkeley St., Harchills Lane.  
Manchester . . . H. M. Davies, 8, Orchid St., Harpurhey; S. Dawson, 37, Sandel St., Newton; J. O. Griffith, 17, Lansdale St., Peel Green; J. H. Kidd, 19, Brunswick St.; J. M. Patterson, 8, Hollyway, off Royle Green Rd., Northenden; T. J. Stainsby, 224, Second St., Trafford Park.

Mexboro . . . . L. Harget, 28, Highwood Rd., Roman Terrace, nr. Rotherham.  
Pontefract . . . L. King, 3, Tarm Rd., Purston, Featherstone.  
Ripon . . . . H. Pickersgill, 2, St. Wilfreds Rd.; A. Smith, 11, Victoria Rd., Royston, nr. Barnsley.  
Sheffield . . . . W. Jackman, 36, Rirelin Rd., Walkley.  
St. Helens . . . W. N. Glassey, Hawk and Buck Hotel, Peasley Cross Lane.  
Wakefield . . . H. Bridgett, 133, Rooks Nest Rd., Outwood, nr. Wakefield.

### ZONE 7.

*Anglesey, Brecknock, Cardigan, Carmarthen, Carnarvon, Denbigh, Flint, Glamorgan, Merioneth, Monmouth, Montgomery, Pembroke, Radnor.*  
TOWN. SERVICE AGENT.  
Aberdare . . . . A. C. Wooley, 13, Ynysllwyd Rd., Aberaman.  
Cardif . . . . Ward's Wireless Service, 9, Park Place; G. T. Weston & Sons, Redcliffe Garage, Cowbridge Rd.  
Monmouth . . . C. E. G. Ricketts, 102, Curre St., Cwm, E.V.  
Neyland . . . . T. W. Averill, 48, John St.  
Swansea . . . . W. G. Owen, 7, Lewis St., St. Thomas.  
Wrexham . . . O. Evans, 21, Salop Rd.

### ZONE 8.

*Cheshire, Derby, Gloucester, Hereford, Shropshire, Stafford, Warwick, Worcester.*  
TOWN. SERVICE AGENT.  
Birmingham . . . F. G. Edmunds, 172, Formans Rd., Sparkhill; J. H. Powkes, 63, Castleford Rd., Sparkhill; A. Nickless, 29, Hereford Sq., Saltley.  
Bristol . . . . E. G. Coates, 24, Old Charlotte St., Southville.  
Chester . . . . E. Dodd, The Bungalow, Stapleford, Farvin.  
Coventry . . . G. Kingston, 21, Orwell Rd.; G. Malin, Hazeldene, Hawks Mill Lane, Brownshill Green.  
Hazel Grove . . . J. Browne, Lyndhurst, Cavendish Rd.  
Hyde . . . . J. Forbes, 6, Cross Cliffe, Apethorne.  
Kington . . . . F. Williams, 35, Church St.  
Lichfield . . . W. E. Mohl, The Drive, Reke Hill, Burnwood.  
Matlock . . . G. Widdison, Messrs. G. Gregory & Sons, Winstler.  
Oldbury . . . . E. Fisher, 33, Freeth St.  
Sandbach . . . J. H. Whittaker, 9, Clifton Rd., Elvorth.  
Stockport . . . E. A. Palmer, 6, Buckley St., Redditch.  
Stoke-on-Trent . . J. W. Heath, 21, Bright St., Longton.  
Stratford-on-Avon . N. Bedwell, Rosemart, Even-shaw Rd.  
Wordsley . . . E. J. Debrey, 19, Alwen St., Wordsley, nr. Stourbridge.

### ZONE 9.

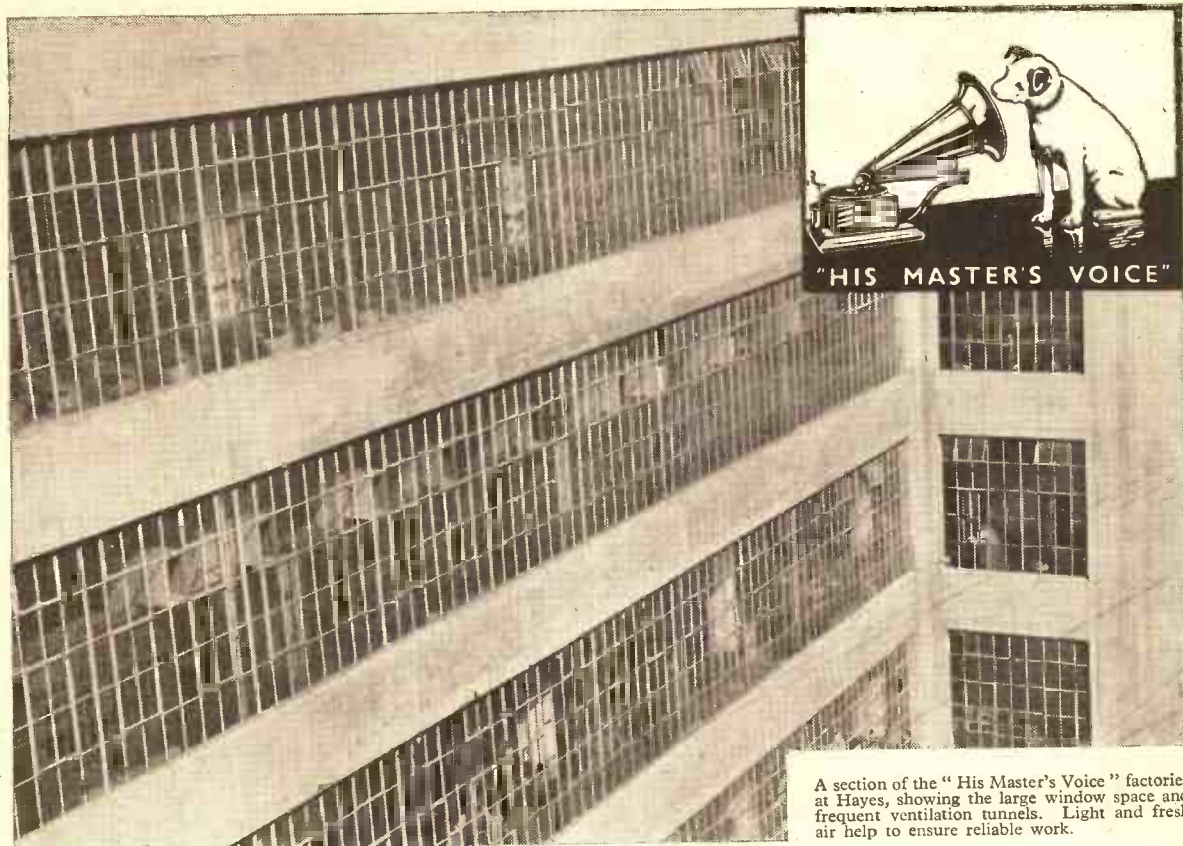
*Leicester, Lincoln, Norfolk, Northampton, Nottingham, Rutland.*  
TOWN. SERVICE AGENT.  
Grimsby . . . . F. T. Russell, 72, Clayton St.  
Leicester . . . . L. Bell, 14, Florence Rd.  
Nottingham . . . J. R. Thornton, 39, Markham Crescent, Sherwood.  
Slapton . . . . E. Roberts, nr. Towcester.

### ZONE 10.

*Bedford, Buckingham, Cambridge, Essex, Hertford, Huntingdon, London, Middlesex, Oxford.*  
TOWN. SERVICE AGENT.  
Barking (E. Ham, W. Ham, Ilford, Manor Park, Plaistow) . . . B. J. Roche, 67, Welbeck Rd., London, E.6.  
Bow . . . . K. B. Rodgers, 9, Vivian Rd., London, E.3.  
Brentwood . . . T. Ellis, 129, High St.  
Brompton, W. . . C. B. Miller, Premier Magneto Co., 64, Ifield Rd.  
Enfield . . . . F. Sherman, 94, Landseer Rd., Bush Hill Park.  
Finchley . . . . A. C. Millar, 52, West Avenue, London, N.3.  
Gidea Park . . . C. B. Lotcho, 25, Crossways.  
Hammersmith . . C. B. Miller, Premier Magneto Co., College House, Sussex Place, London, W.6.  
Hampstead . . . F. Jackson, 9, Cleve Court, Cleve Rd.  
Harlesden . . . V. Whitbread, 14, Shakespeare Avenue.  
Hayes . . . . A. L. Payne, "Tresco," Dorley Rd., Hayes, Middlesex.  
Hertford . . . . G. Ditton, 36, St. Andrews St.  
Heston . . . . E. de Laspee, 38, Devon Waye.  
Highbury . . . H. E. Quinn, 11, Highbury Quadrant, London, N.5.

(To be continued next week.)





A section of the "His Master's Voice" factories at Hayes, showing the large window space and frequent ventilation tunnels. Light and fresh air help to ensure reliable work.

## Men who are not machines!

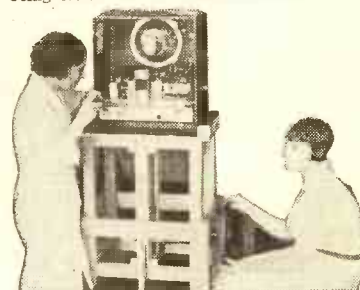
The men and women, over 10,000 of them, who work in the "His Master's Voice" factories at Hayes have unrivalled technical equipment to help them in their work, for "His Master's Voice" factories are the largest of their kind in the Empire. They have behind them the experience of research workers and engineers who have been engaged in the science of sound reproduction since the beginning.

But there is something else that contributes to the excellence of "His Master's Voice" instruments: the freedom from fatigue and the comfort in which these operatives work. Everything that can be done is done to lessen physical effort and relieve mental strain, so that the men and women who are responsible for the production and testing of "His Master's Voice" instruments work with vigour and fresh minds!

Which accounts for the superlative quality of "His Master's Voice" instruments and why they give such flawless service for the years they do.



The standard valves are mounted in pulleys to facilitate handling when the radio chassis are being tested for H.F. characteristics.



When the various sections of a radio receiver are connected together, lifts enable the operatives to bring the radio units to a comfortable height.

# "His Master's Voice"

THE GRAMOPHONE COMPANY LIMITED · 98-108 CLERKENWELL ROAD · LONDON E.C.1



# S.T. 600



See the Pilot on the Carton

**GUARANTEED TO FIT THE FREE "P.W." BLUEPRINT EXACTLY**

**AGAIN S. T. CHOOSES and SPECIFIES PETO-SCOTT CABINETS**

Unquestionably the finest Cabinets that Peto-Scott has produced and the best value for money.

Demonstrations daily at 77, City Road, London, E.C.1, and 62, High Holborn, London, W.C.1.



**YOURS FOR 2/6**



**YOURS FOR 5/-**

## S.T. 600 TABLE CABINET

EXCLUSIVELY SPECIFIED by Mr. John Scott-Taggart for the S.T. 600. Exclusively designed with finest macassar and walnut veneers. Constructed of carefully selected wood and hand french polished by London's leading craftsmen. Lift-up lid. Cash or C.O.D. 17/6. (Carriage and part packing 2/6 extra.)

Yours for **2/6**

and 4 monthly payments of 3/- (including Carriage & Packing).

## FINISHED INSTRUMENT

S.T. 600, built exactly to Mr. John Scott-Taggart's specification by Peto-Scott technical experts. Aerial tested on actual broadcasting. Complete with valves and Peto-Scott specified walnut table cabinet. Cash or C.O.D. Carriage Paid, £9/12/6.

Yours for **17/9**

and 11 monthly payments of 17/9.

## S.T. 600 CONSOLETTETTE CABINET

EXCLUSIVELY SPECIFIED by Mr. John Scott-Taggart for the S.T. 600. Another beautiful cabinet built by master craftsmen from the finest woods. Exquisite walnut veneers and modern black fret. Hand french polished by London's experts. With Baffle Board and Battery Shelf. Cash or C.O.D. 35/-. (Carriage and part packing, 2/6 extra.)

Yours for **5/-**

and 6 monthly payments of 6/- (including carriage and packing)

## FINISHED INSTRUMENT

S.T. 600, built exactly to Mr. John Scott-Taggart's specification by Peto-Scott technical experts. Aerial tested on actual broadcasting. Complete with valves, Peto-Scott S.I. P.M. moving-coil speaker and Peto-Scott specified consolette cabinet. Cash or C.O.D. Carriage Paid, £11/11/0.

Yours for **21/3**

and 11 monthly payments of 21/3.

## S.T. 600 STRUCTAKIT

### S.T. 600 PILOT Structakit

with FREE copy S.T. 600 issue Popular Wireless

FULL SIZE BLUEPRINT

CONTENTS

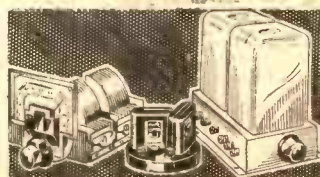


**6/6**

● Comprising Peto-Scott Ready-Drilled Walnut-faced Panel, 16 in. X 9 1/2 in.; Metaplex Baseboard, 16 in. X 10 in.; Ready-Drilled Terminal Strip, 16 in. X 3 in. and Platform, 4 in. X 4 in. Exactly as FIRST specified by Mr. John Scott-Taggart. Cash or C.O.D. 6/6. Postage 6d. Extra.

With FREE copy S.T. 600 issue "P.W." including S.T.'s 100-STATION "SPOT-ON" DIAL and other "P.W." FREE GIFT.

## S.T. 600 CONVERSION KIT



**32/-**

● Convert your present set to the new S.T. 600 with this Pilot S.T. 600 Conversion Kit. Comprising Formo Dual-gang Condenser, Wearite or Colvern S.T. 600 Coil Assembly, Colvern Extractor Coil. Cash or C.O.D. Carr. Paid 32/- or Deposit 4/-, and 8 monthly payments of 4/-.

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**Peto-Scott-FOR 15 YEARS UNIVERSALLY RECOGNISED AS**



# PILOT AUTHOR KITS

**EXACT TO SPECIFICATION**

*Guarantee exact duplication of S.T.'s wonderful results*



EST. 1919

**IMMEDIATE DELIVERY-CASH-C.O.D.-H.P.**

**ANY ITEM SUPPLIED SEPARATELY. ORDERS OVER 10/- SENT CARRIAGE and C.O.D. CHARGES PAID**

**WITH FREE FULL-SIZE BLUEPRINT AND COPY OF "POPULAR WIRELESS," OCTOBER 27th, 1934, INCLUDING S.T.'s 100 STATION "SPOT-ON" DIAL and other "P.W." FREE GIFT.**

These are the Parts **FIRST** Specified and **USED** by Mr. John Scott-Taggart.

	s.	d.
1 Peto-Scott baseboard, 16" X 10", with Metaplex section 16" X 7 1/2", with ready-drilled 4" X 3/4" platform	1	9
1 Peto-Scott ready-drilled terminal strip, 16" X 3 1/2" X 3/16"	1	9
1 Peto-Scott ready-drilled and polished walnut ply panel, 16" X 9"	3	0
1 Polar Compax .00075-mfd.	2	9
1 Telsen type W.358 .0005-mfd. react. condenser	2	6
1 Graham Farish "Littos" .0005-mfd. mid-log-line reaction condenser	2	0
1 Graham Farish "Littos" .0003-mfd. solid dielectric differential condenser	2	0
1 Graham Farish 1-mfd. fixed condenser	2	0
4 Benjamin valve holders, 4-pin Vibrolider type	3	4
2 T.M.C. Hydra 250-v. working 2-mfd. fixed condensers, type 25	6	0
1 T.M.C. Hydra .006-mfd. tubular condenser	1	4
1 T.C.C. 0.1-mfd. tubular condenser	1	4
1 B.T.S. disc reaction choke	2	6
1 Lissen disc reaction choke	2	0
2 Lissen fixed condensers, mica type, .00005-mfd. and .0003-mfd.	1	0
2 Ferranti 1-megohm resistances, type G.H.I., mounted in holders	3	0
3 Dubilier 1-watt metallised resistances: 25,000, 75,000 and 20,000 ohms	3	0
2 Dubilier type 9200 fixed condensers, 5 and 1-mfd.	4	6
2 Erie 1-watt resistances, 50,000 and 300,000	2	0
1 Wearite or Colvern S.T.600 main coil assembly	12	6
1 Colvern Ferrocat S.T.600 Extractor coil	8	6
1 Formo 2-gang condenser, with 51 pointer	11	0
1 Ormond S.T.600 Extractor condenser	3	0
1 Varley Niclet L.P. transformer 1-3.5	7	6
1 Bulgin type G.M.25 combined 25,000-ohm graded volume control with terminals and 3-pt. on-off switch, w/terminals	5	9
10 Belling-Lee type "R" terminals: A, E, HT+1, HT+2, HT+3, LT+, LT-, LS-, GB-1, Pick-up	2	6
8 Clix wander plugs: GB+1, GB-2, GB-3, GB-4, HT-, HT+1, HT+2, HT+3	1	0
Wire, screws, flex, etc.	2	0
Copy of "Popular Wireless," Oct. 27th, 1934, with full-size Blue Print and S.T.'s 100 STATION "SPOT-ON" DIAL and other "P.W." FREE GIFT	Gratis	

**KIT "A," CASH OR C.O.D., CARR. PAID £4 19 6**

**KIT "A" £4:19:6**  
CASH OR C.O.D. Carr. Paid

**OR YOURS FOR**



Deposit and 12 monthly payments of 8/6.

**KIT "A"** comprising complete kit of components, as first specified by Mr. John Scott-Taggart, including Peto-Scott Ready-drilled Walnut-faced Panel, Metaplex baseboard, Ready-drilled plywood platform and Terminal Strip, and copy of "Popular Wireless" with free full-size blue print and S.T.'s 100 STATION "SPOT-ON" DIAL and other "P.W." FREE GIFT, less valves, cabinet and speaker.

**KIT "B"**

As for Kit "A," but including set of 4 first specified valves, less cabinet and speaker. Cash or C.O.D. Carriage Paid, £7/4/0, or 12 monthly payments of 13/3.

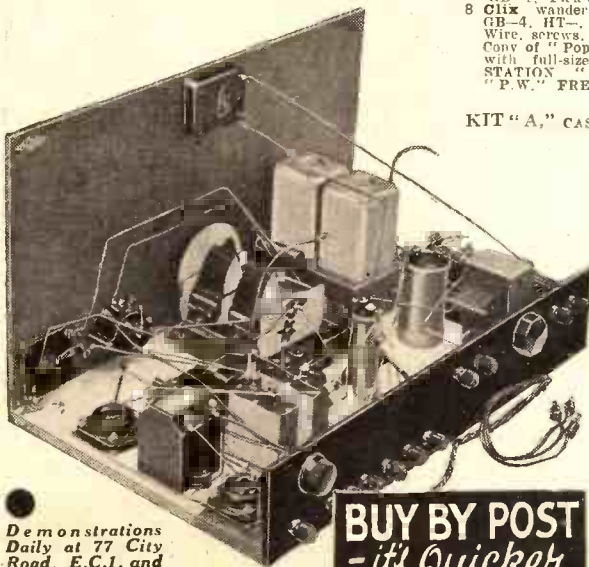
**KIT "CT"**

As for Kit "A," but including valves and Peto-Scott S.T.600 Table Cabinet, less speaker. Cash or C.O.D. Carriage Paid, £8/1/6, or 12 monthly payments of 14/9.

**KIT "CC"**

As for Kit "A," but including valves and Peto-Scott S.T.600 Console Cabinet, with speaker baffle and battery shelf, but less speaker. Cash or C.O.D. Carriage Paid, £8/19/0, or 12 monthly payments of 16/6.

**PETO-SCOTT 19/6 1935 Permanent-Magnet Moving-Coil Speaker recommended; if required, add 1/9 to deposit and each monthly payment.** £ s. d. VALVES: Set of 4 Specified Valves ... 2 4 6



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Telephone: Clerkenwell 9406/7.

West End Showrooms: 62 High Holborn, W.C.1. Tel.: Holborn 3248.

Dear Sirs.—Please send **S.T.600 KIT "A"** **S.T.600 KIT "CT"**  
me **CASH/C.O.D./H.P.** **S.T.600 KIT "B"** **S.T.600 KIT "CC"**  
**S.T.600 STRUC TAKIT** **S.T.600 CONVERSION KIT**

for which I enclose £.....d. CASH/H.P. Deposit.

NAME.....

ADDRESS.....

P.W., 27/10/34.

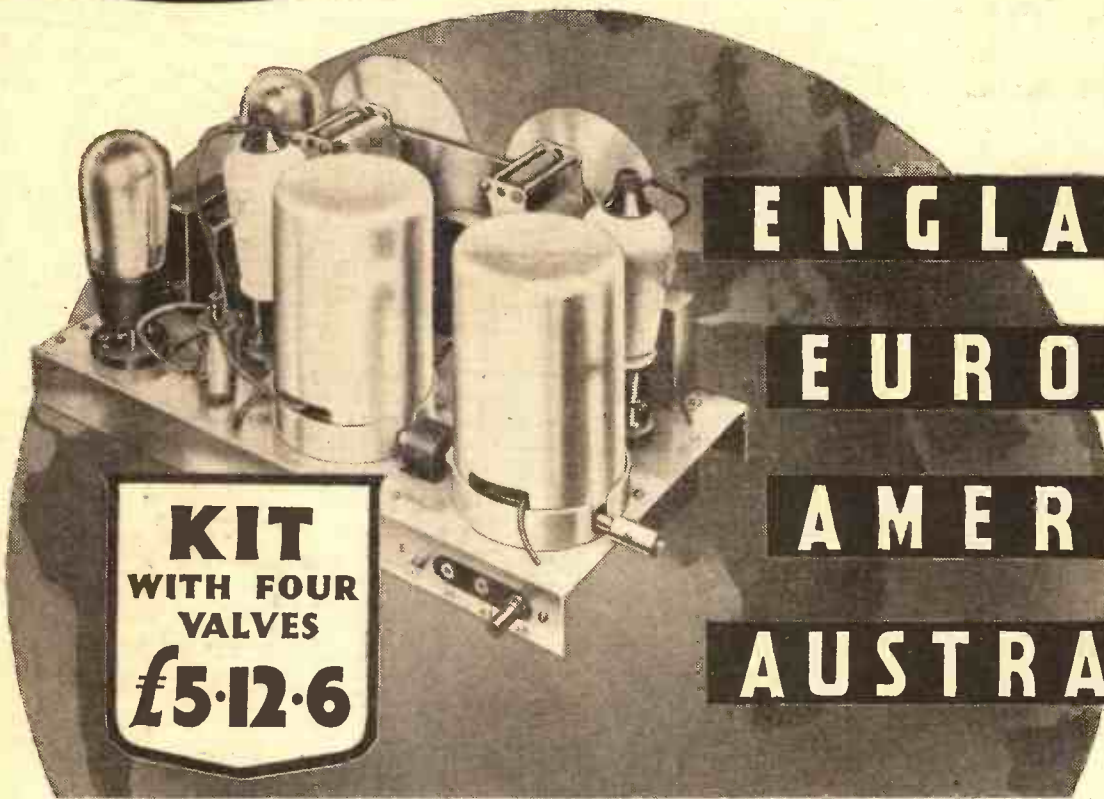
**THE WORLD'S LARGEST SUPPLIERS OF S.T. KITS**



# LISSEN

## ALL-WAVE ALL-WORLD "SKYSCRAPER"

# 4



**KIT  
WITH FOUR  
VALVES  
£5.12.6**

**ENGLAND  
EUROPE  
AMERICA  
AUSTRALIA**

# All on the loudspeaker

YOU BUILD IT YOURSELF WITH PLIERS AND A SCREWDRIVER ONLY—NO SOLDERING.

Lissen have made this All-Wave All-World radio available for Home Constructors, because it brings back the thrill of conquest to hear America and Australia direct on a set you have built with your own hands. The Lissen All-Wave All-World "Skyscraper" 4 tunes from 12 to 2,100 metres. It gives you all the British and Continental programmes you can desire, and in addition, stations all over the world which broadcast news, views and entertainment on the Short and Ultra-Short Wavelengths. These Short Wave stations are receivable on this Lissen All-Wave All-World "Skyscraper" at truly amazing ranges—Melbourne, Australia, at almost 12,000 miles, Johannesburg, at 6,000 miles, Sydney, Australia, at 12,000, Pittsburg, Pennsylvania, at 4,000 miles—these and many more of which the ordinary listener cannot even hear a whisper.

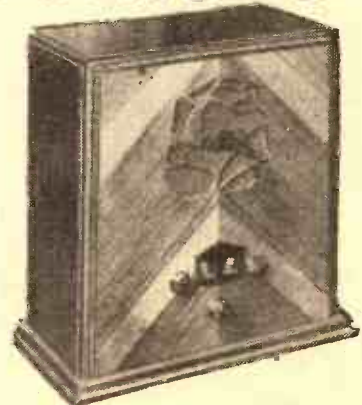
**DOUBLE BALANCED  
PENTODE OUTPUT**

You get all these stations through Lissen Double Balanced Pentode Output giving brilliant reproduction on a Lissen Permanent-Magnet Moving-Coil Loudspeaker—as much power as a Mains Set but from ordinary high-tension batteries. No other set can give you such remarkable long-distance performance with such outstanding quality of reproduction.



**TWO SCREENED-  
GRID VALVES**

A Variable-Mu Screened-Grid Valve acting as the H.F. Amplifier and working on all wavelengths, gives utmost sensitivity and stability. A Metallised Screened-Grid valve acting as the detector gives higher amplification, more sensitivity and increased ease of control.



WALNUT CABINET  
AND PERMANENT-  
MAGNET MOVING-  
COIL LOUD-  
SPEAKER. **£2.10**

### C O U P O N

Please send me FREE copy of All-Wave All-World "Skyscraper" 4 Chart.

Name.....

Address.....

P.W. 27/10/34.



POST THIS COUPON IN A 1/2d. UNSEALED ENVELOPE FOR  
**1/6 ILLUSTRATED CHART FREE**  
TO PUBLICITY DEPT., LISSEN LTD., ISLEWORTH, MDDX.



# A TONIC AND A GUILLOTINE

In my previous sets one reaction has affected the other's adjustment.

In the diagram which shows the two reaction circuits A and B of the S.T.600, complete separation is achieved. The anode circuit of the first valve is not connected in any way either with the grid circuit of that valve or the reaction circuit associated with that valve.

### The Stopper Grid.

I want to draw your attention particularly to the stopper grid which is placed between the screen electrode and the anode. This stopper grid is connected to the filament, and its purpose originally is to prevent secondary emission electrons travelling in a reverse direction and producing the well-known negative resistance kink in the characteristic curve.

In my present invention, however, I take advantage of the screening properties of this

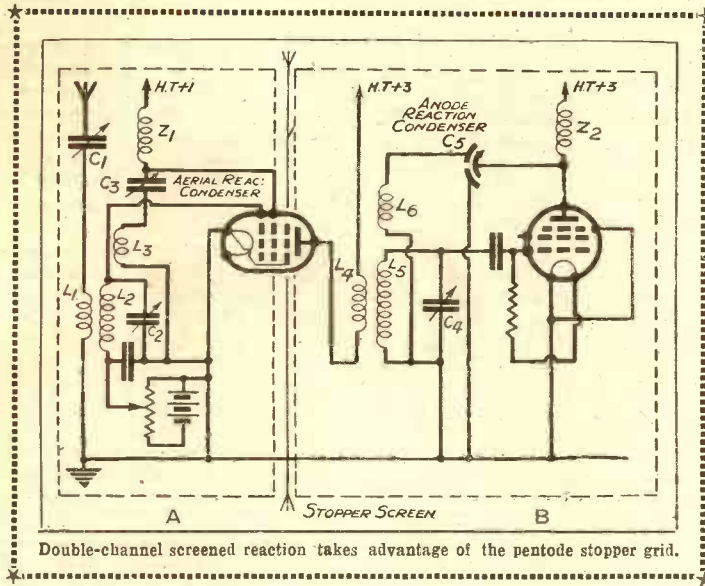
stopper grid to stop interaction between all that part of the circuit which comes after the anode and all the earlier part of the circuit which is associated with the grid of the first valve.

The diagram shows how two compartments are divided by the stopper grid, which thus carries out three functions, namely, (a) it prevents secondary electrons from flowing to the screen when the anode voltage drops below a certain value; (b) increases stability by increasing the screening effect between anode and control-grid; and (c) prevents interaction between the two reaction systems.

"Delighted."

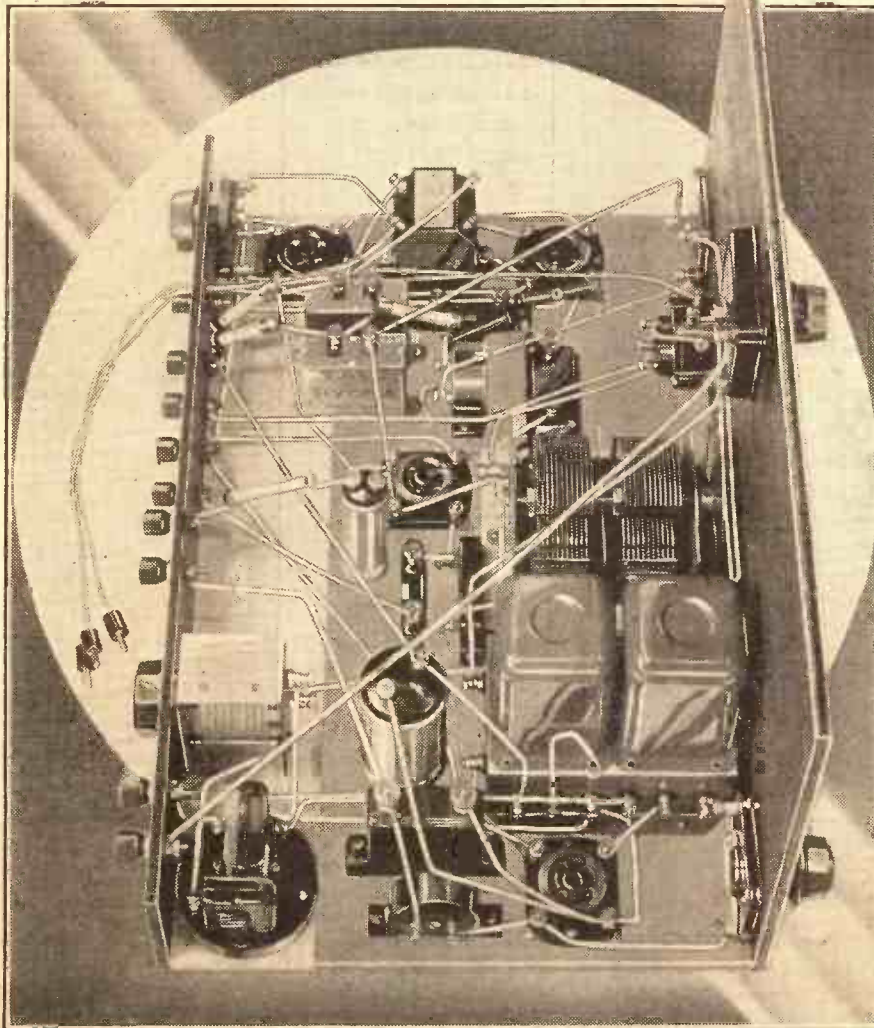
In the actual handling of the receiver the operation of aerial reaction is beautifully effective and simple; and when I have demonstrated the S.T.600 and have got the "demonstratees" to work the controls themselves, and they have been universally delighted with its ease of operation and extreme utility.

If you like, you can set the anode reaction



Double-channel screened reaction takes advantage of the pentode stopper grid.

to zero and the aerial reaction can be used solely to improve selectivity and signal strength.



Exit interference! S.T.600 complete and ready to comb the Continent. S.T.600 rigidly excludes gate-crashing programmes. You get what you want, when you want it. "Swamp areas" don't exist so far as the S.T.600 is concerned.

When it is desired to work the set with anode reaction, the aerial reaction knob (the one on the extreme left of the panel) may be left at zero (full left).

### The Most Sensitive "Four."

For maximum selectivity and sensitivity both reactions will be used, and, as the selectivity of both circuits is raised by reaction, astonishing feats may be performed. But even without increasing reaction to the most critical point, great selectivity and a high degree of signal strength are obtainable. A little reaction on two circuits is far more effective than a lot of reaction on one circuit.

It must not be thought, however, that the double-reaction method is solely one for obtaining extreme selectivity. The set as a whole is, I believe, the most sensitive combination of four valves at present

in use in this country. Three valves straight or superhet, are left miles behind and cannot approach it for sensitivity. The low-frequency magnification is truly colossal, while the background noise is less than on any battery set I have heard. Nevertheless, there are special cases where even greater "reaching-out" powers are required.

Everyone is aware of the advantages of reaction and of high-frequency amplification when it comes to reaching out for those weak foreign stations which, without these devices, could not be obtained purely by low-frequency amplification.

### Superb Quality.

Flat dwellers, those with small aeriels, or in screened areas, those who want to comb the ether for the weakest and most distant stations will revel in aerial reaction.

Read the letters and see how superb quality of reception is combined with extreme selectivity and sensitivity.

J. S.-T.



## BEFORE YOU BUILD THE S.T.600

A Warning by J. S.-T.

I WANT to warn you! I did so over the S.T.500, but a quarter of you wouldn't listen—and some of you are not listening now. I am just wondering how rude I dare be!

It's about components and valves; insist on getting those I used or recommend in my signed list.

You obviously cannot do better than build an exact duplicate of my own set. That is clearly the safest method. If your dealer will not supply the components, order direct from the manufacturers or reliable kit people.

On every big set I have designed, scores of unscrupulous dealers have fobbed off totally unsuitable components, valves or accessories on to their innocent or foolish dupes.

The usual reason given is that parts are "difficult to get," unobtainable, out of stock, etc. If you swallow this yarn I cannot be responsible for results. If you are tempted by price considerations, the fault is wholly yours.

### Check Your Choice.

I ask you to check your proposed choice against my own list of components in this article and to trust to my judgment. Remember that every S.T.600 kit does not necessarily include even the alternative components in my list; there is a real danger here, and the responsibility for substitution becomes the supplier's and not mine.

The first two valves (Cossor 210 V.P.T. metallised 4-pin type) are the only ones to use, and the last two (Mullard) are the ones I found the best for this particular set.

Speakers should be chosen by ear. All the makers produce good models, and I cannot single one out to recommend; the order in my list means nothing. Hear your speaker first.

Don't upset my design. You don't know why I have done this and not that. I do. Only Wearite and Colvern main-coil assemblies are approved, and only Colvern "Extractors" are suitable. Only a Niclet transformer should be used if the set is to be used on a mains unit (eliminator), but any make in my list is O.K. if the set is to work off battery H.T.

Don't ruin the set to save twopence. Keep to my list of components. If you don't, and your set's a failure, it's your own funeral. You've been warned. J. S.-T.

## THE BATTERY MODEL S.T.600—KEEP STRICTLY WITHIN THIS LIST

Component.	Make Used by J. Scott-Taggart.	Suitable Alternative Makes.
Tone Control : 00075-mfd. solid dielectric variable condenser	<b>POLAR (Compax)</b>	Telsen, W.357, Graham Farish, Ormond, J.B.
Aerial Coupler : 0005-mfd. solid dielectric var. condenser	<b>TELSEN (Reaction type W.358)</b>	Graham Farish, Polar, B.T.S., J.B.
Aerial reaction condenser : 0005-mfd. mid-log line	<b>GRAHAM FARISH (Litlos)</b>	Polar, Telsen, B.T.S., J.B., Ormond
Main coil assembly : S.T.600	<b>WEARITE</b>	Colvern S.T.600
Extractor coil : S.T.600 Ferrocort	<b>COLVERN</b>	
Two-gang condenser: with long-pointer, but without dust cover	<b>FORMO</b>	
Fixed condensers : 1-1-mfd.	<b>GRAHAM FARISH (Mansbridge type)</b>	J.B., Polar, Telsen, Ormond. (See article for comments.)
" " 1-1-mfd.	<b>DUBILIER (type 9200)</b>	A special S.T.600 condenser by J. B. is available for use with a panel dial card. The other alternative makes are the standard types.
" " 2-2-mfd.	<b>T.M.C.-Hydra, 250v. working</b>	T.C.C., Dubilier, T.M.C.-Hydra, Ferranti, Lissen, Telsen, Bulgin, Goltone
" " 1-00005-mfd.	<b>LISSEN (Mica)</b>	T.C.C., Graham Farish, T.M.C.-Hydra, Ferranti, Lissen, Telsen, Bulgin, Goltone
" " 1-0003-mfd.	<b>LISSEN (Mica)</b>	T.C.C., Graham Farish, Dubilier, Ferranti, Lissen, Telsen, Bulgin, Goltone
" " 1-006-mfd. (tubular)	<b>T.M.C.-Hydra</b>	T.C.C., Graham Farish, Dubilier, T.M.C.-Hydra, Ferranti, Telsen, Bulgin
" " 1-0-1-mfd. (tubular)	<b>T.C.C. (type T.250, 350 D.C. working)</b>	T.C.C., Graham Farish, Dubilier, Ferranti, Telsen, Lissen, Bulgin, Polar-N.S.F.
" " 1-0-5-mfd.	<b>DUBILIER 9200</b>	Graham Farish, Dubilier, T.M.C.-Hydra, Ferranti, Lissen, Telsen, Bulgin, Goltone
Anode reaction condenser : 0003-mfd. solid dielectric	<b>GRAHAM FARISH (Litlos)</b>	Polar, Ormond, Telsen, B.T.S., J.B.
Resistances : 2-1 megohm, mounted in holders	<b>FERRANTI (new type G.H.1)</b>	Graham Farish (with holders). The following may be used with Telsen 2-terminal blocks W.204 : Erie, Dubilier, Polar-N.S.F., Bulgin, Telsen
" 1-25,000 1 watt	<b>DUBILIER (metallised)</b>	Graham Farish, Polar-N.S.F., Erie, Ferranti, Bulgin, Telsen
" 1-75,000 "	<b>DUBILIER</b>	Graham Farish, Polar-N.S.F., Erie, Ferranti, Bulgin, Telsen
" 1-20,000 "	<b>DUBILIER</b>	Graham Farish, Polar-N.S.F., Erie, Ferranti, Bulgin, Telsen
" 1-300,000 1 watt	<b>ERIE</b>	Graham Farish, Polar-N.S.F., Dubilier, Ferranti, Bulgin, Telsen
" 1-50,000 1 watt	<b>ERIE</b>	Graham Farish, Polar-N.S.F., Dubilier, Ferranti, Bulgin, Telsen
Reaction chokes : 1 (used for anode reaction)	<b>B.T.S.</b>	Lissen, Graham Farish Snap or H.M.S., Telsen, Wearite, Bulgin, R.I., Lewcos
" " 1 (used for aerial reaction)	<b>LISSEN</b>	B.T.S., Graham Farish Snap, or Telsen standard H.F. choke (old type)
10 terminals : A, E., H.T. + 1, H.T. + 2, H.T. + 3, L.T. +, L.T. -, L.S. -, G.B. - 1. Pick-up	<b>BELLING-LEE (type R)</b>	Clix, Bulgin, Eelex, and Goltone
Wander plugs : G.B. - 2, G.B. - 3, G.B. - 4 (G.B. + is an external connection)	<b>CLIX</b>	Belling-Lee, Eelex, Goltone
H.T. plugs : H.T. -, H.T. + 1, H.T. + 2, H.T. + 3	<b>CLIX</b>	Belling-Lee, Eelex, Goltone
Volume Control : Combined 25,000-ohm graded volume control for variable-mu with terminals, and 3 pt. on-off switch with terminals	<b>BULGIN (type G.M.25)</b>	Colvern S.T. 5 C/S, with battery on-off switch
Extractor tuning condenser : ordinary 0005-mfd. air-dielectric tuning condenser, complete with terminals and knob	<b>ORMOND (mention S.T.600 type complete with knob)</b>	Telsen W. 132, Polar No. 4 direct drive, J.B. Popular Log, Formo direct drive. (These all require purchase of a knob.)
L.F. transformer	<b>VARLEY Niclet (Standard 1:35)</b>	Ferranti, R.I. Hypermite, Lissen Hypernik, Bulgin, Telsen type G.S.4, Multitone 1 to 4, Lewcos L.F.T.6A, Slektun 1 to 4. (Any transformer mentioned may be used on a battery set, but if a mains unit is employed the Varley Niclet should be used, as otherwise receiver would require designing to suit each individual transformer.)
Terminal strip : 16" x 3" x 1/8"	<b>PETO-SCOTT</b>	Goltone
Baseboard : With part Metaplex, 16" x 10" x 1/8" (Metaplex Covers 16" x 7 1/2")	<b>PETO-SCOTT</b>	
Panel : Walnut or oak ply, 16" x 9 1/2" x 1/8"	<b>PETO-SCOTT</b>	Goltone. Or locally purchased.
Valve holders : 4-4-pin anti-microphonic	<b>BENJAMIN Vibrolider</b>	Or locally made.
Platform for gang condenser : 4" x 4" x 1/8" plain ply (not Metaplex)	<b>PETO-SCOTT</b>	
Wire	<b>B.R.G. "Quikon"</b>	Bulgin "Quickwire," Brit. Radiophone "Pull-Back," Lewcos "Glazite."
Cabinet	<b>PETO-SCOTT</b>	
Optional Aerial and Earth Equipment : Aerialite "Levenstrand," Electron "Superial," Bulgin Lightning Switch, Graham Farish "Fit" Earthing device.	<b>VALVES</b>	
	<b>2 Cossor 210 V.P.T. (4-pin metallised type)</b>	
	<b>1 Mullard P.M.2D.X.</b>	
	<b>1 Mullard P.M.202</b>	

NOTE :—This is my official and only list of components. The makes in black capitals are those actually used in my original set and illustrated and referred to throughout the description and diagrams. Any statements regarding apparatus for the S.T.600 should be carefully checked against the official list on this page. (Sd.) JOHN SCOTT-TAGGART.



# RECEIVE 100 STATIONS BY NAME!

## INGENIOUS AUTOMATIC DIAL CUTS OUT SEARCHING

*Instantaneous and Dead Accurate Tuning Even on Sets That Vary*

### HOW TO USE THE 100-STATION DIAL



PART from the circuit, the S.T.600 dial is obviously the most arresting feature of the set. If the circuit were hackneyed, the design conventional and the description prosaic, I am confident that the unique automatic dial would be sufficient of itself to ensure a great success for the S.T.600.

In 1926 my laboratories produced the first true one-knob set in Britain—the Solodyne.

Since then the need for selectivity has,

until this S.T.600, forced me into more complicated tuning. In the S.T.600, however, I have been able to use a gang condenser while retaining all the merits of flexibility with other controls which do not in any way affect tuning.

This has enabled me to obtain a very high performance combined with one-knob tuning. But if anyone imagines that one-knob tuning means simply tuning to any desired station, he is making a huge mistake.

For several years now I have regularly gone to the annual Radio Exhibition and thought how utterly futile the average tuning dial can be.

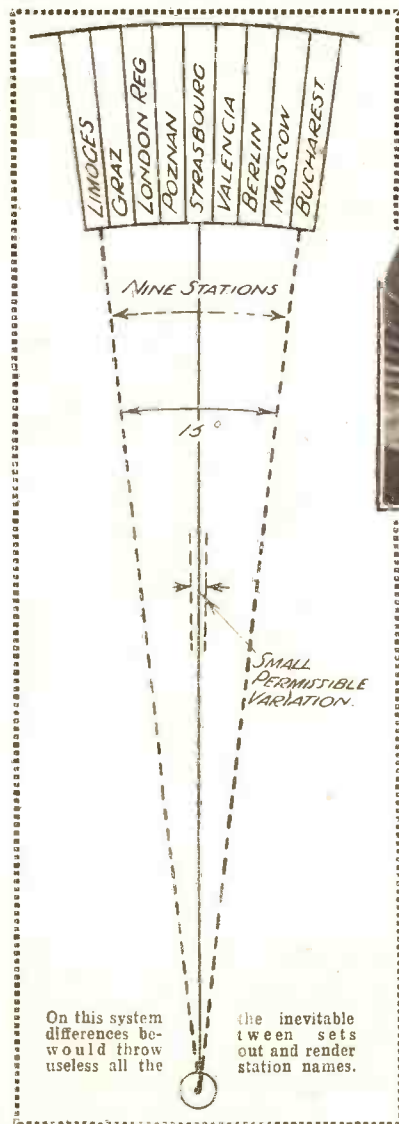
It is true that many of the poky little dials are disappearing; but even to-day a

asked to give the reading of a station at 57.5 degrees, not one would get it right, and if they cannot get it right they can never go back to that particular station. They may get near it, but if they are half the distance between two marks out they will not merely be a little off-tune, but will be tuned in to an entirely different station. In all probability, therefore, the non-technical operator of a set cannot be trusted to go back to any particular station unless it is an extremely powerful one which covers several degrees, in which case the set is unselective, anyway.

Even if the set is operated by a mathematician, the chances are that he will have lost the set of dial readings! Pieces of paper on which notes are written have an extraordinary knack of disappearing, which means that somebody has to recalibrate the whole set.

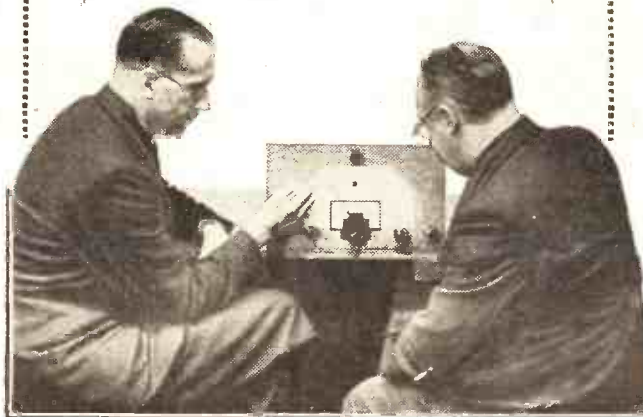
What usually happens, of course, is that

*(Continued on page 248.)*



On this system differences between sets would throw useless all the

the inevitable between sets out and render station names.



### EXPLAINING HOW THE DIAL WORKS

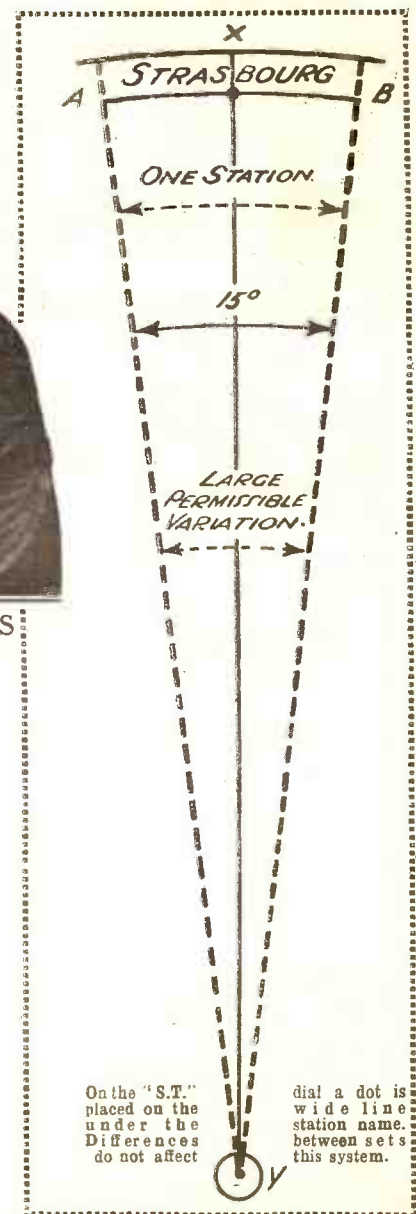
scale of four inches is regarded as tremendously generous.

I have felt the tears almost welling to my eyes as I have looked at those 100 degrees and pictured some housewife trying to find Breslau, Florence or Frankfurt.

#### Those Wavelength Indications!

In my own experience I have rarely known these wavelength indications to be accurate. The slightest change in trimmer capacity, works adjustments, etc., will push out the true reading by sufficient to put the reader on to another station. There may be exceptions, of course, but, generally speaking, the wavelength scale is, to use a vulgarism, "eye-wash."

The only hope, therefore, is for the good housewife to note down somewhere the degree reading. Very often it is very difficult to read the number of degrees or markings on a scale. Sometimes these markings indicate two degrees, which adds to further confusion. I should like to guarantee that if a dozen women were



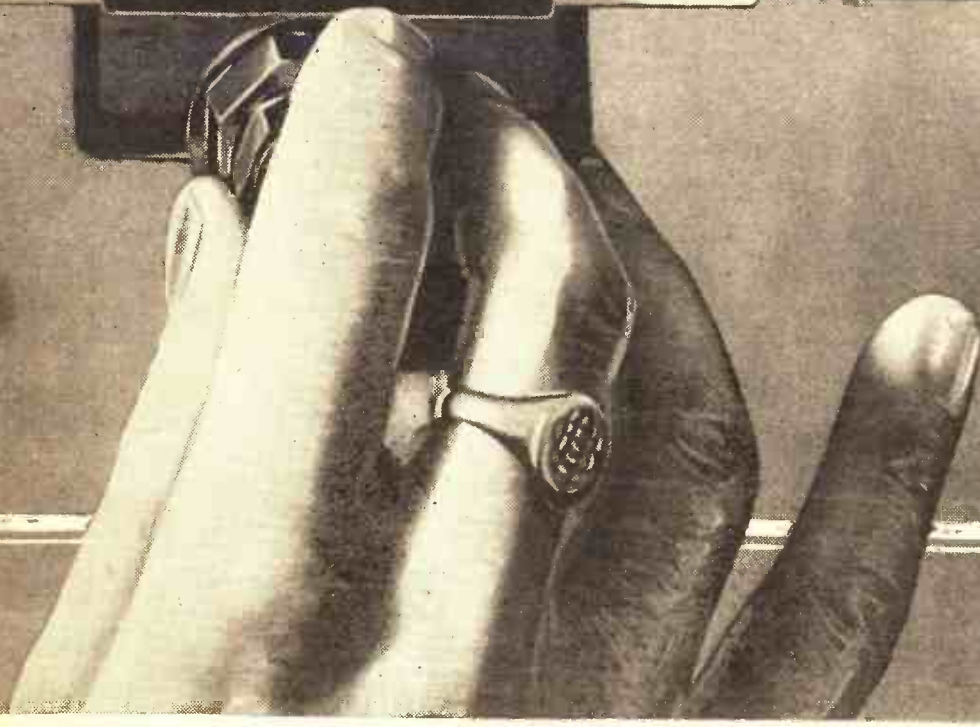
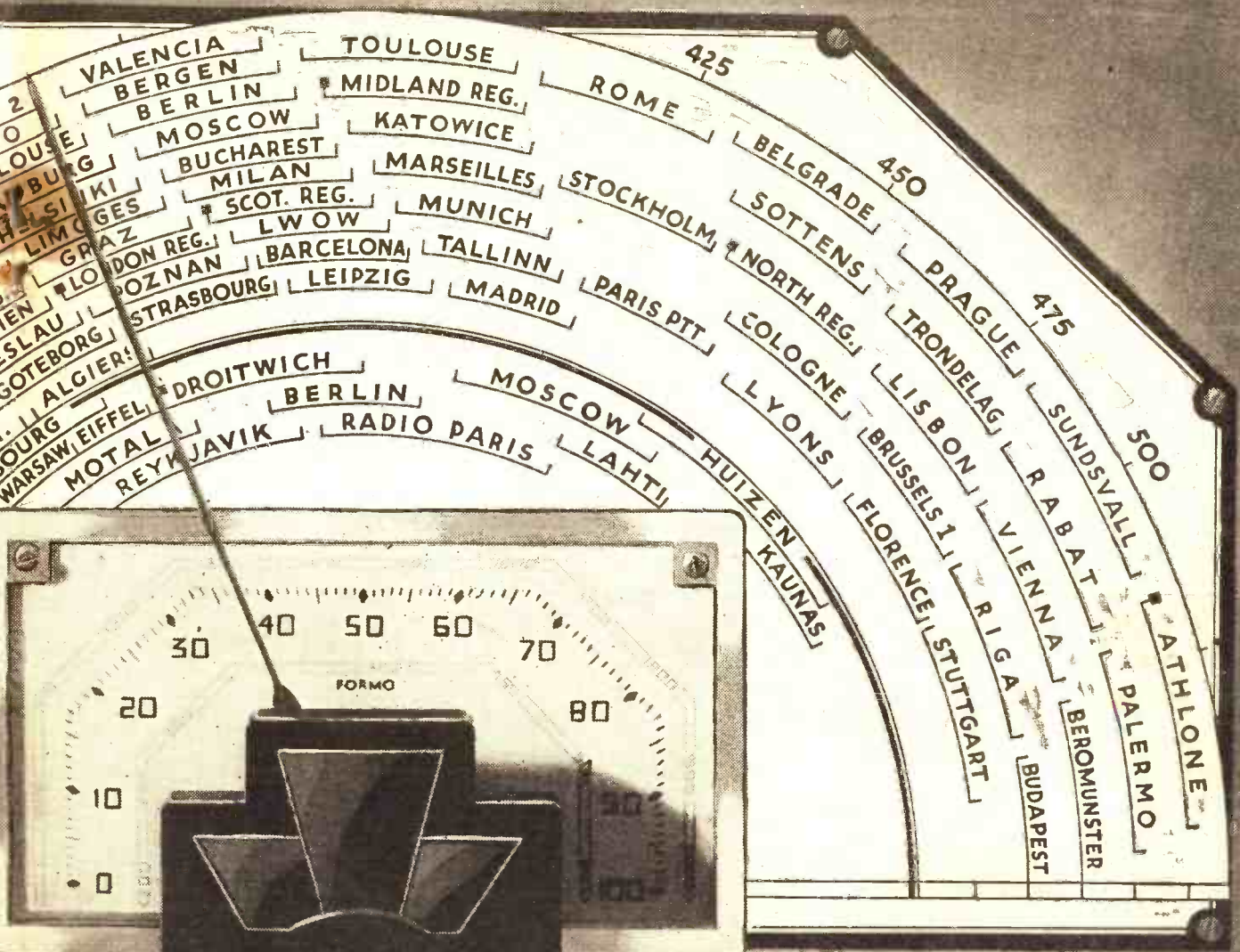
On the "S.T." placed on the under the Differences do not affect

dial a dot is wide line station name. between sets this system.











# DOUBLE-CHANNEL SCREENED REACTION

*Entirely New System Brings Signals, Normally Inaudible, up to Full Loudspeaker Strength*

## EXTRAORDINARY SELECTIVITY OBTAINED



THE merits of double reaction have been so great, both in theory and in my own laboratory and in the homes of well over a hundred thousand home constructors who have built the S.T.400, S.T.500 and S.T.300 Star, that I have not hesitated to incorporate this system in the S.T.600.

Double reaction means applying reaction both to the first and second tuned circuits, instead of to the second circuit only as in the case of other sets. Everyone knows how beneficial ordinary reaction is. All these benefits can be obtained twice over.

What I do is to obtain my reaction current from the screen electrode in the pentode, an electrode which, in the ordinary way, provides no useful output. The high-frequency currents flow normally in the screen circuit in any case, since the screen is acting as an anode, a positive potential of perhaps 75 volts being applied to it. These high-frequency currents, however, are normally shunted to earth; but in the S.T.600 I actually use them and make them feed back, helping currents into the grid circuit of the same valve.

By this means I am able to increase the signal strength of oscillations applied to the

first valve in the set by several thousands per cent. The effect is little short of miraculous, and stations which I have never heard before in a very long experience of radio reception on every known type of receiver in the world have come in with ease on the S.T.600, and the credit must largely go to the extremely efficient reaction applied twice over in a set already very sensitive.

Nothing Tricky about the Set.

The most gratifying part of all this, however, is that the double reaction is applied under conditions of extreme stability. There is nothing "chancey" about the circuit. There is nothing tricky, either in its operation or building. You can apply the aerial reaction in just the same way as you apply reaction to any other set, and it will make no difference to any reaction which you may be applying in the ordinary way to the anode circuit of the receiver. Aerial reaction, by this means, is a very valuable weapon even in the hands of the clumsiest radio operator.

**"GOSH! WHAT A DIFFERENCE THAT MAKES!"**



Aerial Reaction at Work! These people know how the Brookmans Park transmitter can swamp in when the aerial masts are actually in sight! Yet Mr. Scott-Taggart shows them, to their wonder and delight, that the S.T.600 can cut right through. Double-channel reaction enables weak continentals, near in wavelength, to be brought, at the touch of a control, from almost inaudibility to a glorious outpouring of music.



# If you would get the best from your S.T.600

You must incorporate a W.B. Stentorian.

Its *exclusive* new magnetic alloy provides a sensitivity which, in conjunction with the S.T.600's excellent response to weak signals, brings an amazing improvement in "distant" reception.

The new "Whiteley" speech coil, providing crisper attack and more brilliant top notes, takes full advantage of the S.T.600's high quality output.



### Model PMS1

Stentorian Senior (PMS1) .. 42/-

(100% dust protection. Oversize cone).

Stentorian Standard (PMS2) .. 32/6

Stentorian Baby (PMS6) .. 22/6

Whatever your set, a Stentorian *must* improve it. Read these opinions!

### POPULAR WIRELESS:—

"Certainly most interesting and valuable contributions to better broadcasting."  
25/8/34. *Test Report.*

### USERS WRITE:

"Not only eclipses the standards of last year, but is definitely one of the sensations of the present Radio Show."  
18/8/34.

"I was, and still am, amazed at the all-round supremacy of the Stentorian Senior. It definitely gives greater volume and better tone balance than any I have heard." (W. P., Birmingham.)

"The sensitivity is enormous, the quality beautiful, and bass response is perfect."  
(A. E. G., Edmonton.)

"Your advertisements in no way exaggerate the superiority of 'Stentorian' speakers."  
(C. A. N., New Milton.)

"I must say the performance is above expectation."  
(A. C., Luton.)

## HEAR THE DIFFERENCE A

# STENTORIAN MAKES

## PERMANENT MAGNET MOVING-COIL SPEAKER

Whiteley Electrical Radio Co., Ltd., Radio Works, Mansfield, Notts.

Sole Agents: In Scotland: Radiovision Ltd., 233, St. Vincent St., Glasgow, C.2. Sole Agents in I.F.S.: Kelly & Shiel, Ltd., 47, Fleet St., Dublin.

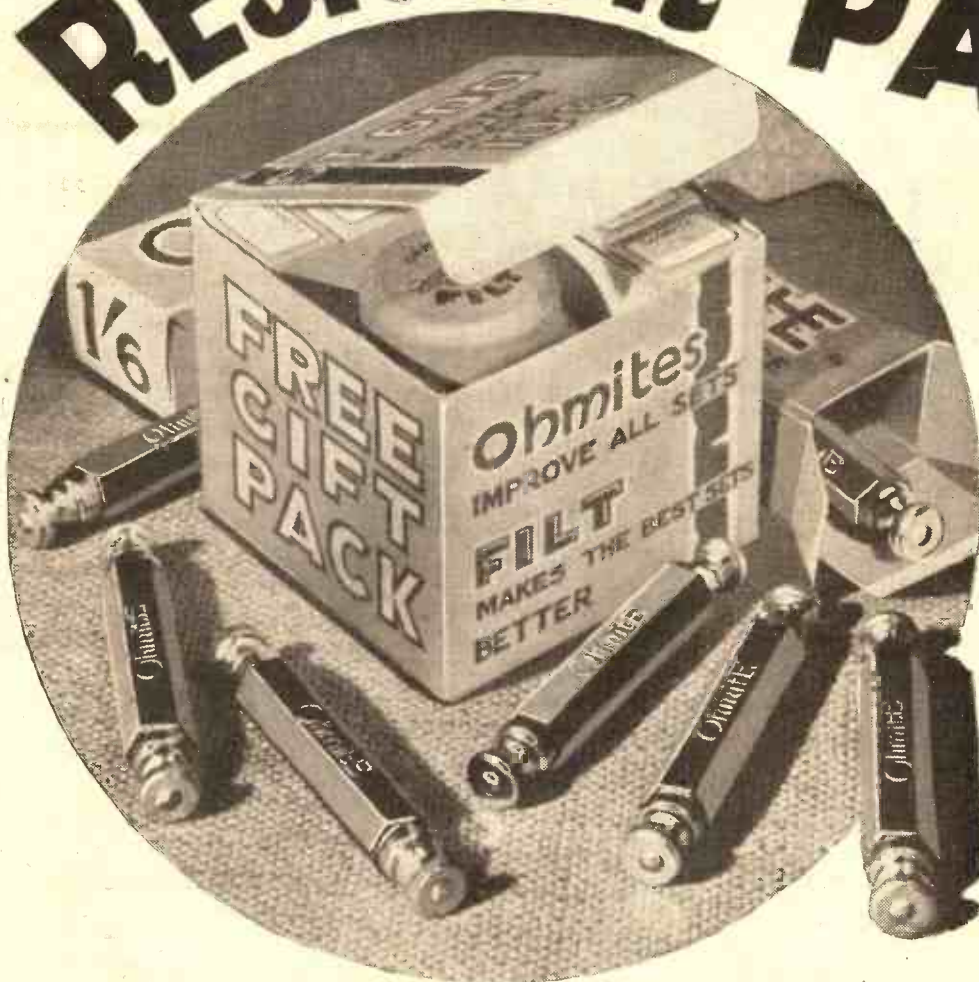


*A great idea—*

**S.T. 600**

**OHMITE**

**RESISTOR PACK**



**OHMITES** are specified by Scott-Taggart and used by him in the original S.T. 600. The OHMITE RESISTOR PACK contains Seven Ohmite Resistances (two 1 meg, one 25,000 ohm, one 75,000 ohm, one 20,000 ohm, one 300,000 ohm, one 50,000 ohm), a complete set of the correct values for S.T. 600. The pack is a great convenience—and it pays to follow Scott-Taggart by using Ohmites throughout, the World's finest Resistances.

**10 1/6**  
**COMPLETE**

(see the FREE OFFER)

**GRAHAM FARISH**



*and* a great  
**FREE OFFER!**



No Receiver can give its best with a faulty earth. Get the very best from S.T.600 or any other set by earthing with FILT, the ever damp Earth that guarantees maximum efficiency. 2/6 at all Dealers, but presented FREE with the S.T.600 Resistor Pack (see below).

When building S.T.600 beware of using inferior Resistances. They can vitally affect results. You want the results Scott-Taggart achieved; he recommends Ohmites and advises *you* to use them too. To encourage you to use *new* Ohmites throughout the S.T.600 your dealer will present FREE with every S.T.600 RESISTOR PACK a FILT Percolative Earth value 2/6. The Pack is full value at 10/6, but with the addition of a FREE Filt you get extraordinary value for money, the World's finest Resistances and an Earth that will bring out to the utmost the fine quality of S.T.600.

**PRODUCTS**

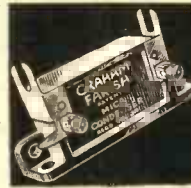
ALSO SPECIFIED FOR THE S.T.600



One '00075 Litios Reaction Condenser . . . 3/6 each  
One '0005 Litios Reaction Condenser . . . 2/- each  
One '0005 Log Mid Line Condenser . . . 2/- each



One 1 mfd. Mansbridge Type Condenser 2/- each  
Two 2 mfd. Mansbridge Type Condensers . . . 3/- each



One '00005 Fixed Mica Condenser . . . 6d. each  
One '0003 Fixed Mica Condenser . . . 1/- each



Two Disc H.F. Chokes, 2/- each.



One '006 Tubular Condenser 1/- each.  
One 1 mfd. Tubular Condenser 1/6 each



Four 4-pin Valve Holders, 6d. each.





# S.T.600

# GUARANTEED KITS

## Kit "A" £4:19:6 Specification

	£	s.	d.
1 Polar '00075 condenser		2	9
2 Graham Farish '0005 Litlos condensers		4	0
1 Wearite S.T.600 coil assembly	12	6	
1 Colvern S.T.600 Extractor coil	8	6	
1 Formo 2-Gang condenser	11	0	
2 Dubilier type 9200 1-mfd. condensers	4	0	
2 " " " 2-mfd. "	5	0	
1 " " " 665 "00005-mfd. "		6	
1 " " " "0003-mfd. "		6	
1 " " tubular "006-mfd. "	1	0	
1 " " "1-mfd. "	1	4	
1 " " type 9200 .5-mfd. "	2	0	
1 Graham Farish Litlos '0003 differential	2	0	
2 Dubilier 1-megohm resistances	1	0	
5 Erie resistances—25,000, 75,000, 20,000, 300,000, 50,000 ohms	5	0	
2 Wearite screened reaction H.F. chokes	4	0	
10 Belling-Lee type R terminals	2	6	
1 Colvern type S.T.5.C/S. volume control with 3-point switch	5	9	
1 Polar Extractor tuning condenser with knob and terminals	4	6	
1 R.I. NEW HYPERMU transformer	15	6	
4 W.B. valvholders	2	0	
Terminal strip, baseboard, panel and platform prepared and drilled	3	6	
Connecting wire, screws and sundries		8	

"ACE" S.T.600 KIT A . . . . . **£4 19 6**

Set of 4 specified valves	2	4	6
"ACE" S.T.600 consolette cabinet in walnut and maple	1	12	6
Set of Ever Ready H.T., L.T., and G.B. batteries	1	2	0
W.B. P.M.S.1 Moving-coil loudspeaker	2	2	0
"ACE" Super Power Universal matching Moving-coil loudspeaker	2	2	0
"ACE" Public address microphone with transformer	10	6	
Pick-up with volume control and gramophone motor	2	12	6
"ACE" Radiogram Cabinet, in walnut and maple	4	15	0
S.T.600 A.C. Model "ACE" Kit A	9	5	0
Set of 3 A.C. valves	2	13	6

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Electronic Reaction Leaflet.....

S.T.600 Kit..... "ACE" Kit.....

Goods as per list enclosed (Cross out item not required.)

for which I enclose £..... s..... d.....

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Please let us hear from you. PW.27/10/34

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(Circuit—Universal Pentode detector, Pentode Output and rectifier.)	
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**KIT A** consists of all necessary components, with Blueprints and assembly and working instructions; **KIT D** includes, in addition, Valves, Super Power Moving Coil Loudspeaker, and Cabinet, and in the case of Battery Sets—a full equipment of Ever Ready H.T., L.T., and G.B. batteries. **THE SET** is same as Kit D, constructed and tested by us and ready for immediate use. **THE NEW "ACE" DE LUXE KITS** consist of specially chosen brand-new manufacturers' type components, and must not be confused with kits of surplus, second-hand or obsolete stocks. They are designed round the very latest types of valves, and by cutting out superfluous trimmings which do not affect performance we offer you a high-grade article at a very modest price. We positively guarantee every component and kit.

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GUARANTEED KITS.





# RAPID CONSTRUCTION GUIDE

## FOR THE

# 5.T.600

**EVERY DETAIL IS GIVEN HERE**



**I**f different components than those used by myself are employed, slight obvious variations from this guide are called for, e.g. hole positions in panel.

(A) Collect and examine required components. Handle the gang condenser and Extractor coil gently. Check size of baseboard and panel. If you have the cabinet, see that they will fit it. See that back and front trimmers open and close correctly; if not, avoid repairing these yourself. See that no soldering tags will touch other terminals, or the metallised baseboard when in position.

(B) Tighten terminal fixing nuts (not terminal heads) on components. Avoid tightening those on Wearite coil assembly unless absolutely necessary, as excess pressure will split insulating washers on the inside.

(C) Lay baseboard on table with Metaplex surface uppermost and farthest from you. Lay blue-print on baseboard so that inner edge of terminal strip on blue-print lies along the edge of baseboard nearest to you.

Keep the blue print steady with a weight. Using bradawl prick through to baseboard the fixing holes of all baseboard components; if in doubt about any holes check by laying component over its picture.

Remove blue print, and with the components themselves check and prepare the fixing holes.

(D) Mark out and drill gang condenser platform (which is of plain plywood) unless bought drilled. Take gang condenser and swivel the two front fixing lugs outwards so that the holes in the lugs come over the appropriate holes in platform. Place a round-headed wood-screw (I used a 3/4-in. No. 6 brass round-headed wood-screw) through back fixing lug and appropriate hole in platform. Screw this screw into the appropriate and already prepared hole in baseboard, thus fixing down one end of condenser and its platform. Complete the fixing by two screws through the front lugs.

(E) Using blue print as check for their positions, screw down the following in order given: Main coil assembly, V1 valve holder, aerial reaction choke, 1-mfd. screen decoupling condenser (Graham Farish), 1-mfd. Dubilier 9200, .00005-mfd. Lissen grid condenser, Ferranti 1-megohm detector grid leak (which is next grid condenser), using bits of cork or metal washers at each end to raise this component about one-eighth inch above Metaplex, V2 valve holder, 1/2-mfd. Dubilier condenser, the two 2-mfd. condensers, V3 valve holder, 1-megohm Ferranti grid resistance (which is near V3 valve holder and requires no raising from baseboard), .0003-mfd. Lissen condenser lying flat on baseboard, B.T.S. anode reaction choke, Niclet (do not screw fixing screws tightly at this stage), V4 valve holder, Extractor coil (treat this coil gently and handle it by its base only).

(F) Mark-out and drill terminal strip (unless bought ready drilled).

(G) Fit terminals loosely to terminal strip, which is then fixed to edge of baseboard, using three countersunk-head brass screws (I used 3/8-in. countersunk-head brass screws). If the holes are not countersunk do not use

countersunk-head screws, as they would split strip.

(H) Mount .00075-mfd. tone control condenser and .0005-mfd. Ormond Extractor condenser on terminal strip.

(J) **WIRE BASEBOARD** (Wires (1) to (54)) with stiffish insulated wire. Some of the new pull-back (some call it "push-back") wires are very easy to work with, as this insulation is pulled back instead of being scraped off. To save the reader time and trouble I have numbered the wires in their most convenient order for connecting. Reasons are not given, but you will find them out if you depart from the order. As to their shape consult the photographs and perspective drawings. The numbers of wires are the same on all drawings. As regards connections (but not precise shape) the blue print is the final authority, in case of doubt. You can find the wires very easily by looking first at the "HI-SPEED" wiring series on pages 238 and 241. This series can be used alone without consulting the blue print, and surpasses the rather long-winded description of each wire given in previous guides. At the top left-hand corner of each

"HI-SPEED" drawing are given the numbers of the wires shown on that drawing; cross these out in turn as you complete the connections.

Do not tighten any terminal heads finally until you are sure there are no more wires going to that terminal.

The following series of hints on certain of the wires as numbered, enables the constructor to avoid even the smallest snags.

Wire (1). This is for earthing the Niclet core. Slack off both Niclet fixing screws. Bare and loop one end of wire (1) for later connection under the head of one fixing screw. Bare 1 1/2 in. of the other end, bend it to a V or hook shape, and slip it between the Niclet and the metallised surface of the baseboard. Remove one fixing screw and slip it through the prepared looped end of wire (1). Do not screw down tight until wire (47) is in position. If the transformer you use has no core which can be earthed, this wire (1) is omitted.

Wire (3) runs along the baseboard, rising only at each end.

Wire (4). Keep this wire short, and clear of baseboard and wire No. 2.

Wire (5) runs along baseboard.

Wire (6). Must not foul the Extractor Condenser moving vanes when they are fully out.

Wire (8). Must be clear of No. 3 and the baseboard metallising.

Wire (11) Is stiffish and is for later connection to the top (anode) terminal on the valve in V1 valve holder. When in position it should stand off a little from metallising on valve.

Wire (13). Must be clear of (11) and the baseboard metallising.

Wire (16). Must not foul the Extractor Condenser moving vanes.

Wire (19). Runs from the frame (chassis) terminal at the rear of the two-gang condenser to one of the two-gang condenser front fixing screws.

Wire (21). Must be short and clear of (19) and (20) (the 0.1 tubular condenser).

Wire (22). Must be short.

Wire (23). Must be short and clear of (19).

Wire (24). Must be clear of (23).

Wire (25). Must be short and clear of metallised baseboard.

Wire (26). Must be short and clear of metallised baseboard.

Wire (28). Must not foul the star wheel which adjusts the rear trimmer on the two-gang condenser.

Wire (40). Is stiffish and is for later connection to the top (anode) terminal of valve in V2 valve holder.

Wire (43). Is a .006-mfd. tubular condenser running from the anode

reaction H.F. choke to the 1-megohm grid resistance.

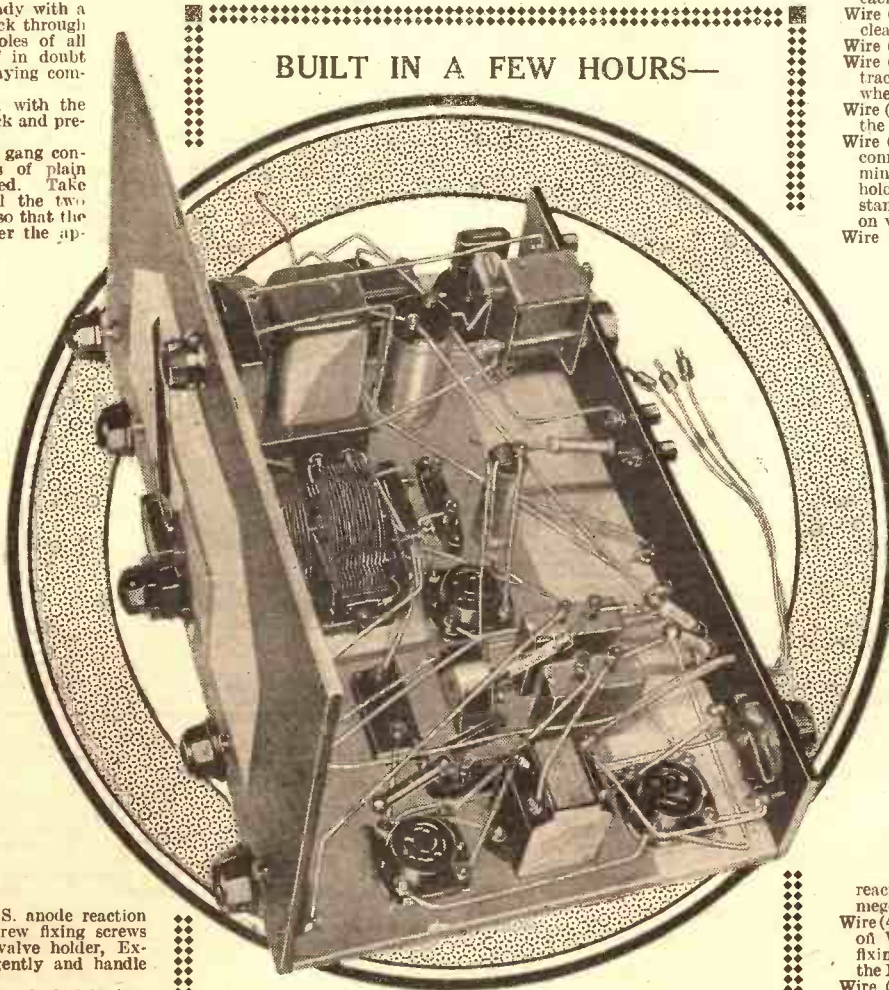
Wire (47). Runs from the F-terminal on V3 valve holder to the Niclet fixing screw. Both screws fixing the Niclet should now be tightened.

Wire (53). Runs from the anode terminal A on V4 valve holder to the L.S.—terminal on the terminal strip.

(K) **MARK OUT AND DRILL PANEL**, unless it has been bought

(Continued on next page.)

**BUILT IN A FEW HOURS—**



**—BY USING THIS GUIDE**



# INSTALLING AND OPERATING THE S.T.600

Some useful preliminary details that deal with outstanding features in the handling of this marvellous set:

THE S.T.600 is so simple to work that only the briefest instructions are necessary for those who will have the set working before next week. On previous experience, there will be a thousand or two in that happy position—those, in fact, who ACT in OCT.!

### Getting the Set Going.

Obviously, the first to order the parts or kits will be the first to get things going.

Here are the instructions:

Check all your wiring, connect batteries, speaker, aerial and earth as shown in the pictorial sketch. It is absolutely essential to connect the negative of the H.T. and the positive of the 16½-volt grid-bias battery to the actual earth terminal on the set. The reason is that if you connect them to the accumulator and you dabble inside the set with the H.T. battery "on" (which you may do) and short-circuit the H.T., you may ruin your valves.

The pick-up terminal on the terminal strip must NOT be connected to the H.T. by mistake. An unconnected terminal like this simply asks to be connected to something, so resist the temptation.

See that all connections to the terminal strip are as shown in the sketch. The various voltages are given.

Check voltages, if possible, with a voltmeter before inserting the valves, chiefly to check for wrong connections. Put valves in their right positions.

### Volume-Control Adjustments.

The volume control, second from right on panel looking at the front, turns on set when turned towards right. When fully left, the switch clicks and the set is switched off. Set volume control half-way. Set aerial

coupler half-way. Set wavechange switch (second from left) to vertical position (medium waves). Set aerial reaction (extreme left knob) to zero (full left position). Set anode reaction (knob on extreme right) to zero (full left). Tune in signals with main knob. Try out all controls. The star wheel rear trimmer should be set near, but not at minimum, and accurate "polishing-up" of any station is always possible with front concentric trimmer. Under no circumstances should the rear trimmer be forced. Treat it with respect, or else it may slip and it is then useless and you will have to return the condenser to the makers. Therefore do not screw it very tight, either at maximum or minimum. The leverage is very great—as great as the temptation to turn it too far in each direction.

### Double Reaction.

Reaction can be applied to each circuit as desired.

For cutting out a "local" interfering station simply turn Extractor condenser knob until "local" disappears. A silent or very weak point will be found on each side of which the local is strong. Tune slowly to the silent point.

It is extremely important to see that terminals L.T.+ and G.B.— are shorted by a wire as shown below.

J.S.T.

[FULLER INSTRUCTIONS  
WILL APPEAR NEXT  
WEEK.]

## RAPID CONSTRUCTION GUIDE FOR THE S.T.600

(Continued from previous p.)

ready drilled. The drilling diagram is symmetrical and so is the same for the front and back of panel with the exception of the countersinking of the panel fixing holes.

Mark the hole positions on the back of the panel. Do not draw pencil lines because they may become unwanted leaks. Hold the panel front against a wooden or cardboard surface and drill small pilot holes through from the back. If the front surface of the panel is not supported the pilot drill may split the veneer round the hole. Drill the holes to full size from the front. Countersink the three fixing holes unless you intended using round-headed screws.

(L) Slip the panel into position and fit the three fixing screws (countersunk only if holes are countersunk). The two spindles of the two-gang condenser and the wavechange switch spindle of the two-coil assembly should come through the appropriate holes.

(M) Fit the aerial reaction (-0005-mfd.) condenser (keep the moving vanes terminal and tag clear of baseboard to which they would otherwise short-circuit), Volume control, Anode Reaction Differential (-0003-mfd.) (keep the lower fixed vanes terminal clear of baseboard to avoid short-circuit), and Aerial Coupler (-0005-mfd.). Do not fit the control knobs at this stage.

(N) CONTINUE WIRING 55 to 69. The following notes will be of assistance.

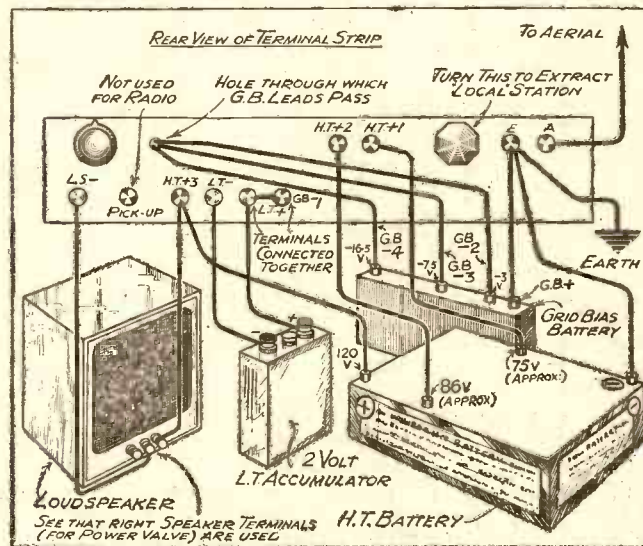
Wire (55). Is on Bulgin vol. control.

Wire (58). Goes straight from terminal (12) on the main coil assembly to back of the panel and runs along the panel just above the upper spindle of the two-gang condenser. Keep this wire clear of the two-gang condenser circular brass drive plate.

Wire (59). Goes straight from terminal (11) on the main coil assembly to back of panel and runs along the panel. Keep this wire clear of (58) and the two-gang condenser drive plate.

Wire (63). Must be clear of the metallised surface of the baseboard.

## ALL THE EXTERNAL CONNECTIONS



An exceptionally clear sketch showing how the batteries, speaker, and aerial and earth are connected to S.T.600. Note that the positive connection to the loudspeaker is taken to H.T.+3, while G.B.+ and H.T.— are connected to the E terminal.

Wire (68). Connects G.B.—1 and L.T.+ terminals on the terminal strip. Have some consideration for me and don't forget this connection. Hundreds will forget about it.

Wires (67), (68) and (69) pass through a hole in the terminal strip, and so each wander-plug should only be fitted when the rest of the wire is in position.

(O) TAKE THE "SPOT-ON" DIAL CARD, cut where indicated and cut out the dotted line slot in the middle of the bottom edge to fit the upper spindle of the two-gang condenser. Slip the card into position.

Hold the "Spot-On" card in position with the Formo dial (not frame).

The Formo dial should lie so that the upper spindle of the two-gang condenser comes mid-way between, and on the same level as the 0 and 100 marks on the Formo chart.

(P) Support the panel and prepare holes with a bradawl for fixing screws through the two upper holes in the Formo chart.

(Q) Fix the Formo Frame over the Formo and "Spot-On" dials first with the two countersunk head screws through the prepared holes.

is not lying at right-angles to the front edge of the baseboard. If the trouble is not very serious you can put it right by slacking off the three fixing screws of the gang condenser and skewing it before retightening.

(U) The Formo moulded bakelite boss-cover should now be fitted. This is done by slipping part of the back of the moulding behind a roughly-semi-circular tongue on the Formo frame.

(V) Fit knobs on to all the controls, including the extractor or condenser and tone-control.

(W) When the set is fitted into a cabinet you may find it advantageous to secure the panel to the cabinet front and so give the panel extra support.

Your set is now finished.

J.S.T.

## S.T.600 AS GRAMOPHONE

The S.T.600 with a sensitive pick-up makes an excellent gramophone. The connections to Pick-up terminal are shown on circuit. The Volume-Control is tuned to minimum "not off."

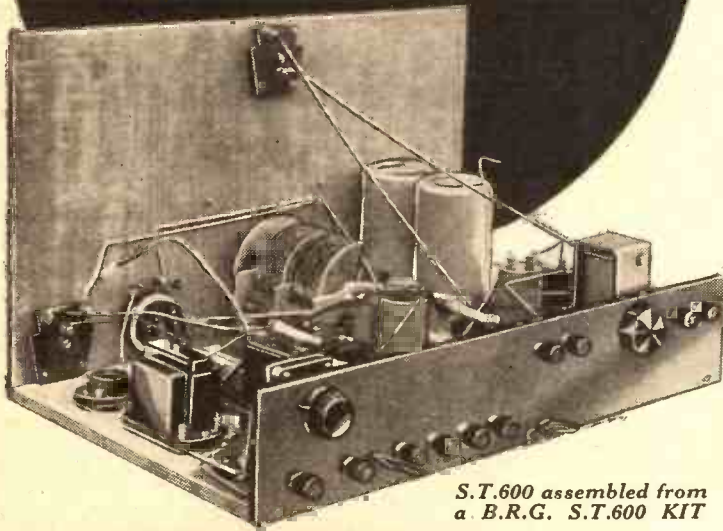


# B.R.G.

# S.T. 600

# £3:19:6

LESS VALVES *and* CABINET



*S.T. 600 assembled from a B.R.G. S.T. 600 KIT*

**WITH FREE AUTHENTIC FULL SIZE BLUEPRINT**

and copy of "Popular Wireless," October 27th, 1934, S.T.'S 100 STATION "SPOT-ON" DIAL and other "P.W." Gift.

B.R.G. Kit complete with 4 British Hivac valves **£5-10-0**

● **OBTAINABLE FROM ALL RADIO DEALERS**

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**EVERY PART GUARANTEED**  
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- WITH FIRST SPECIFIED FORMO 2-GANG CONDENSER ● COLVERN S.T.600 MAIN COIL ASSEMBLY ● COLVERN S.T.600 EXTRACTOR COIL ● METAPLEX BASEBOARD

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**KIT COMPRISES:** High Grade, Tested and Matched Parts, including the **SPECIFIED** Formo, Peto-Scott, Colvern, B.T.S. and Belling & Lee Components; all Terminals, Connecting Wire, Screws, Metaplex Baseboard, and Ready-drilled Platform, Ready-drilled Ebonite Terminal Strip and Wood Panel, with S.T. 600 issue of "Popular Wireless," Full-size Blue Print, S.T.'s 100 Station SPOT-ON DIAL and other "P.W." Gift.

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### DE LUXE BATTERY MODEL

Tone Control, .00075 (solid dielectric) (Polar). Aerial Coupler, .0005 (solid dielectric) (Polar). Aerial Reaction Condenser, .0005 mfd. log line (Polar). Main Coil Assembly, S.T.600 (Colvern). Extractor Coil, S.T.600 (Colvern). Two-gang Condenser, long pointer model (Formo). Fixed Condensers, 2 1 mfd. (T.C.C.), 2 2 mfd. (T.C.C.), 1 .00005 mfd. mica (T.C.C.), 1 .0003 mfd. mica (T.C.C.), 1 .006 tubular (T.C.C.), 1 0.1 (T.C.C.), 1 0.5 (T.C.C.). Differential Condenser, .0003 solid dielectric (Polar). Resistances, 2 1 meg. N.S.F., 1 25,000 1 watt N.S.F., 1 75,000 1 watt N.S.F., 1 20,000 1 watt N.S.F., 1 300,000 1 watt N.S.F., 1 50,000 1 watt N.S.F. Reaction Choke (1) used for anode reaction (Graham Farish); (1) used for aerial reaction (Graham Farish). Terminals, 10, marked A, E, H.T.+1, H.T.+2, H.T.+3, L.T.+, L.T.-, L.S.-, G.B.-1, pick-up (Clix). Wander Plugs, G.B.-2, G.B.-3, G.B.-4, G.B.+ external connections, (Clix). H.T. Plugs, H.T.-, H.T.+1, H.T.+2, H.T.+3 (Clix). Volume Control, combined 25,000 ohms, graded for variable-mu volume control with terminals, and 3-point on-and-off switch, with terminals (Colvern). Extractor Tuning Condenser, .0005 air dielectric tuning condenser (Polar). L.F. Transformer, R.I. Hypermite (R.I.). Terminal Strip, 16" x 3" x 3/16". Metallised Baseboard, 16" x 10" x 5/16" (metallised part, 16" x 7 1/2"). Panel, oak ply, 16" x 9 1/2" x 1/4", drilled to specification. Valve Holders, 4 4-pin. Platform for Gang Condenser, 4" x 4" x 5/16" plain ply, necessary wire for wiring up.

**£4 - 15 - 0**

### DE LUXE A.C. MAINS MODEL

A.C. MAINS KIT contains the following well-known makes of components (as specified):

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Valves for above kits supplied at extra cost. Any component supplied separately.

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Output valves, giving larger, undistorted output than any other valves of similar type at any price, and they all carry a six months' guarantee.

Pay what you will, you cannot buy a better valve than 362. Stop paying "luxury" prices... and insist on 362.

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**FOR THE S.T.600 USE 362 VALVES**  
Nos. B.P.2 . 9/- H.L.2 . 3/6 P.2 . 4/6

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H. HL & L, 3/6. Power, ACHL4, 7/6. ACPX4, 9/-  
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Please send valves .....

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**'METOCEL'**  
SCREENED DOWN-LEAD  
(Eng. Pat. No. 414,913)  
**SUPPRESSES ELECTRICAL INTERFERENCE!**

And Allows Enjoyable Reception

**FACTS!** Whether your modern receiver has a Superhet or "straight" circuit, it is certain to be sensitive to weak transmissions. Consequently, when installed in a congested area, such as a city, and close to a factory or even near overhead power lines, it will bring in many unpleasant crackles and sounds.

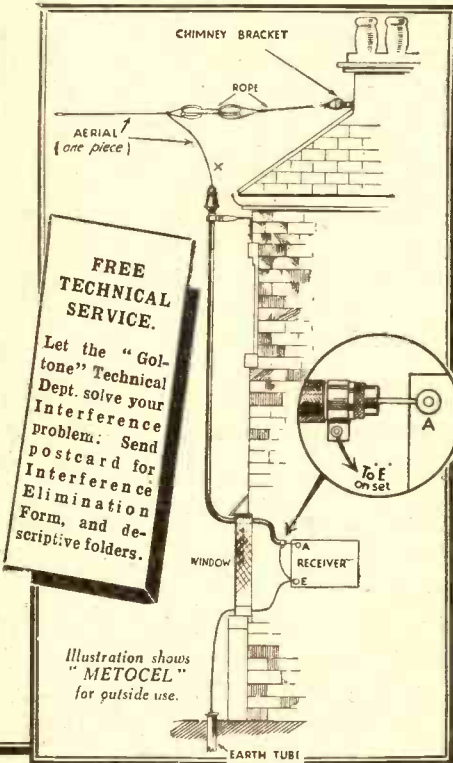
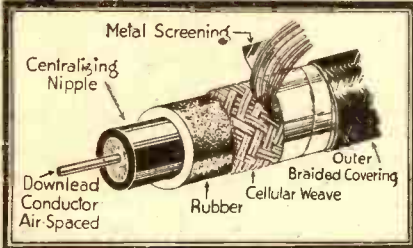
These are man-made statics, the result of electrical devices in the vicinity of the receiver.

You can eliminate these distracting noises by using a "Metocel" Screened Aerial Down-Lead. Obtainable from first-class Radio Stores. Refuse substitutes. If any difficulty, write direct.

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Illustration shows "METOCEL" for outside use.

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(SPECIFIED FOR THE S.T.600)

Will bring an unbelievable improvement to your set, because the exclusive new magnet gives nearly twice the volume of any previous commercial speaker, and a new method of speech coil assembly obtains astoundingly clear and faithful tone.



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W.B. "STENTORIAN" SENIOR model PMS 1 sent to approved customers for 7 days' trial for only 2/6 deposit. If satisfied, pay further 2/6 at once, then 8 monthly payments of 5/- (Cash, in 7 days, 42/-).

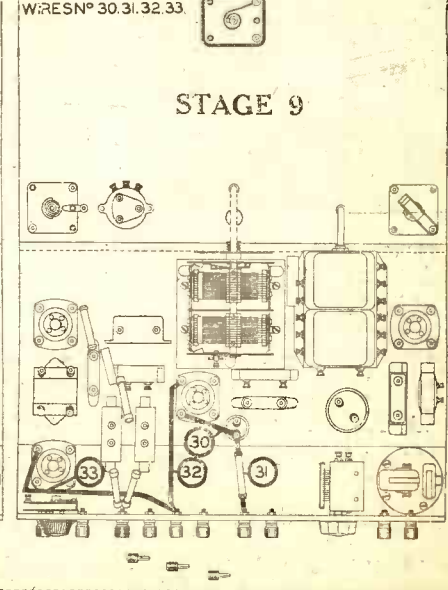
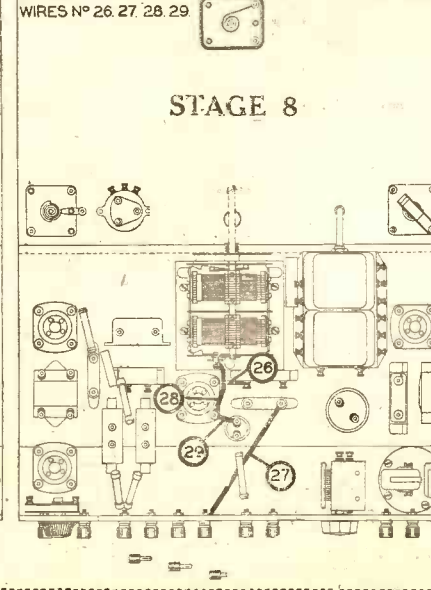
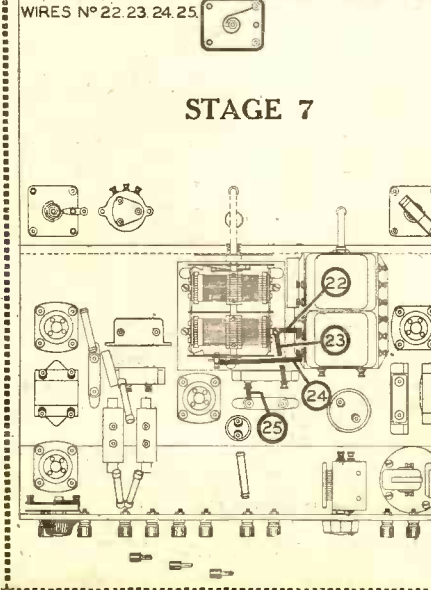
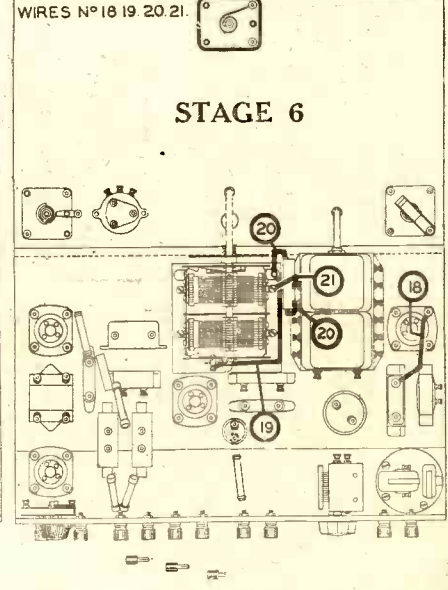
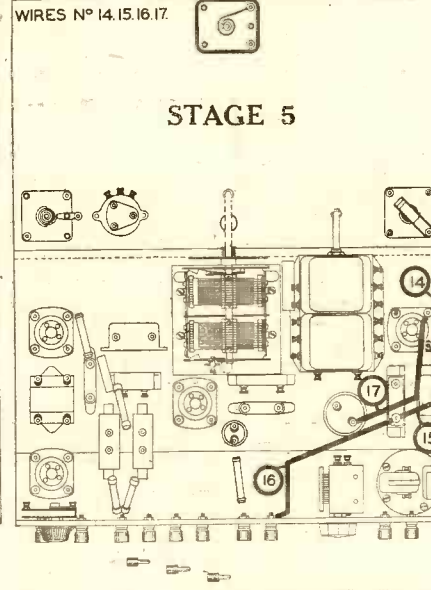
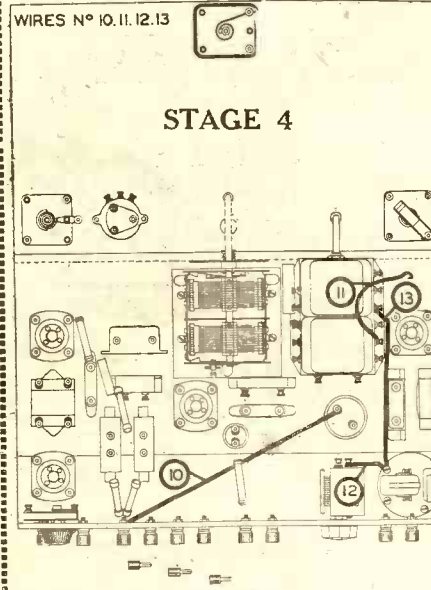
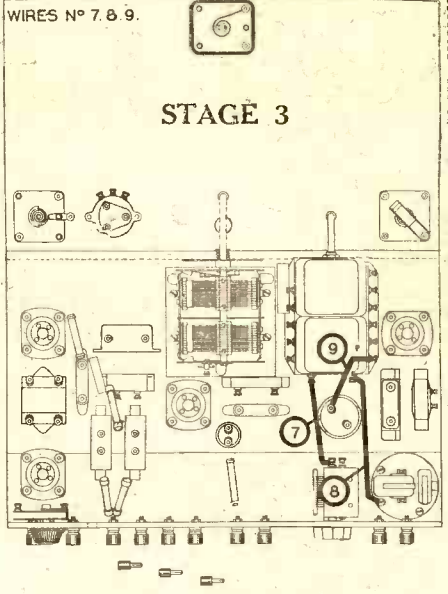
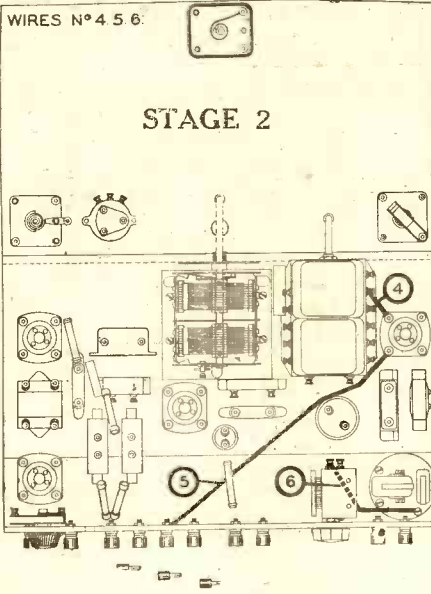
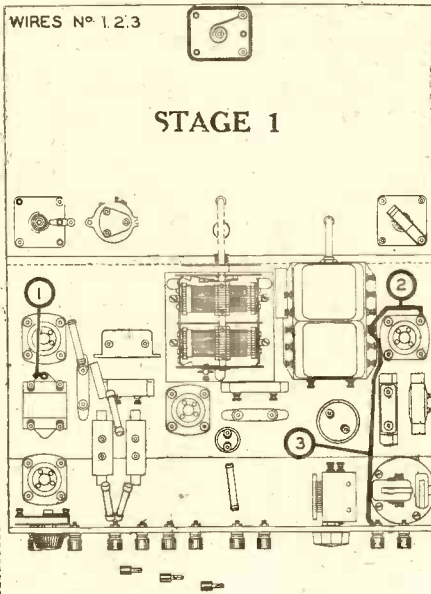
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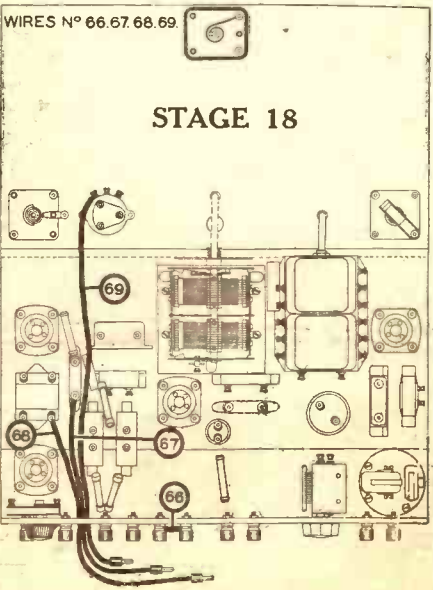
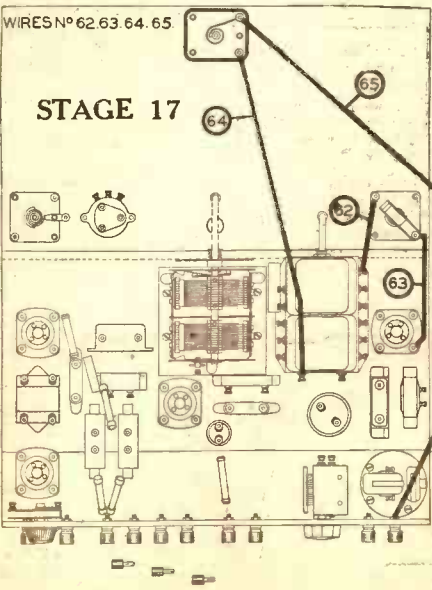
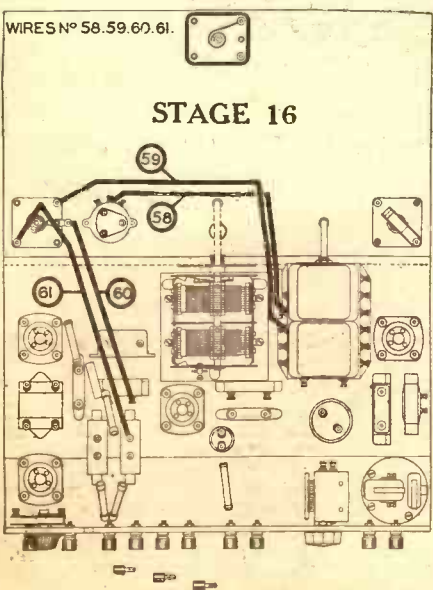
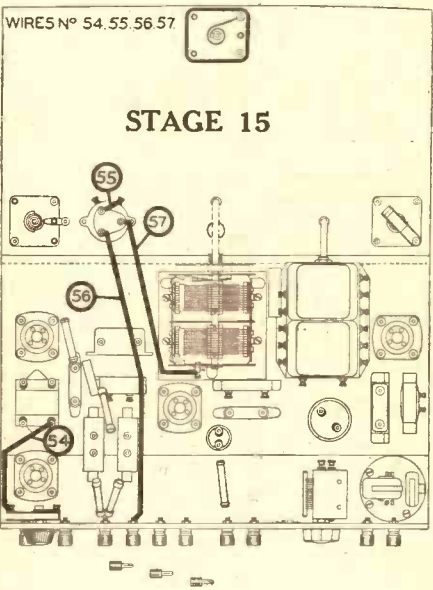
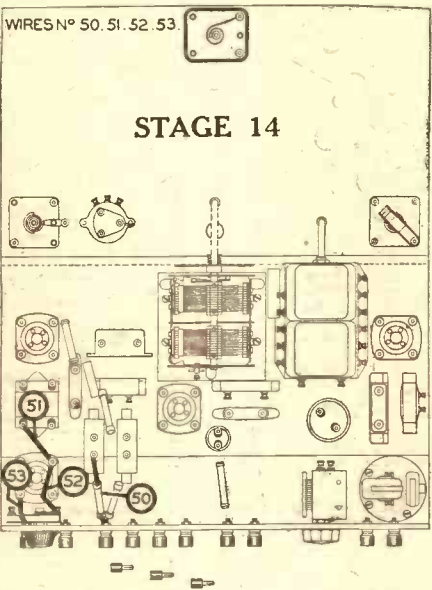
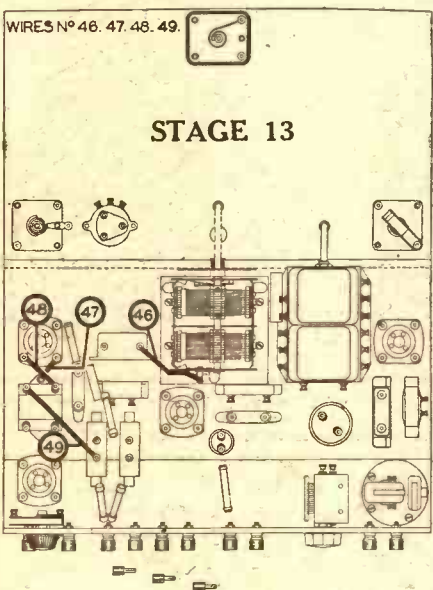
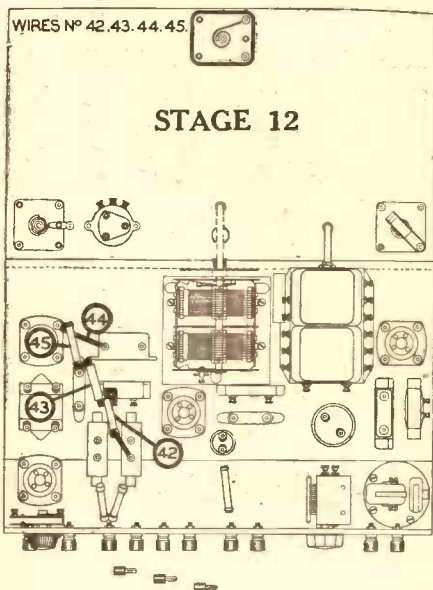
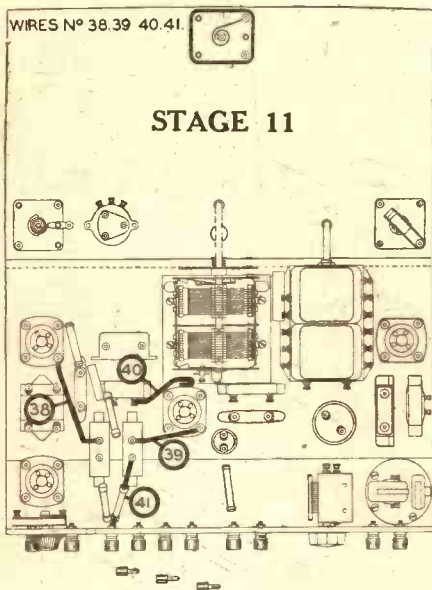
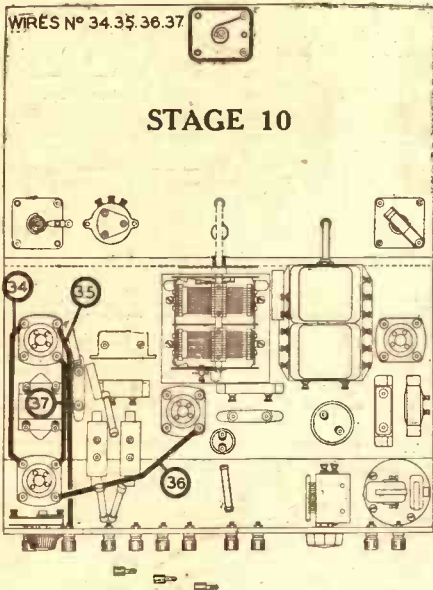
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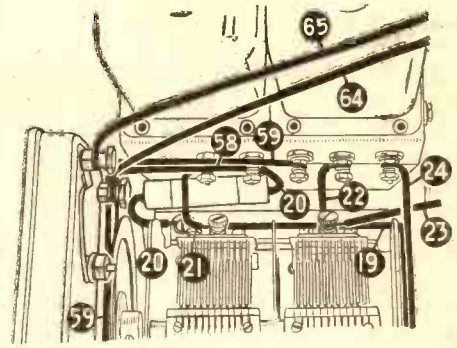




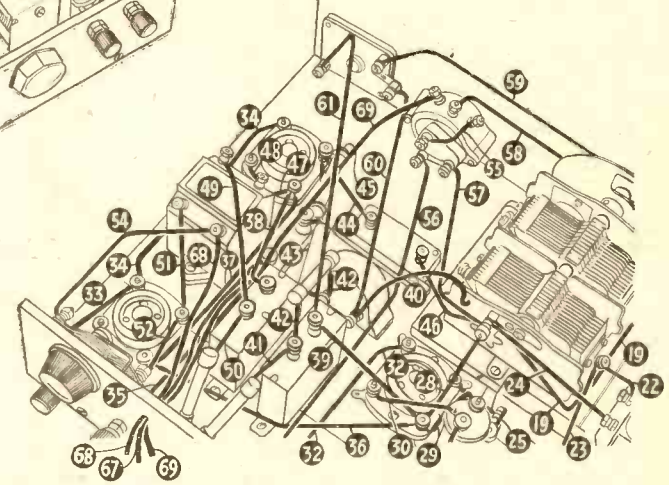
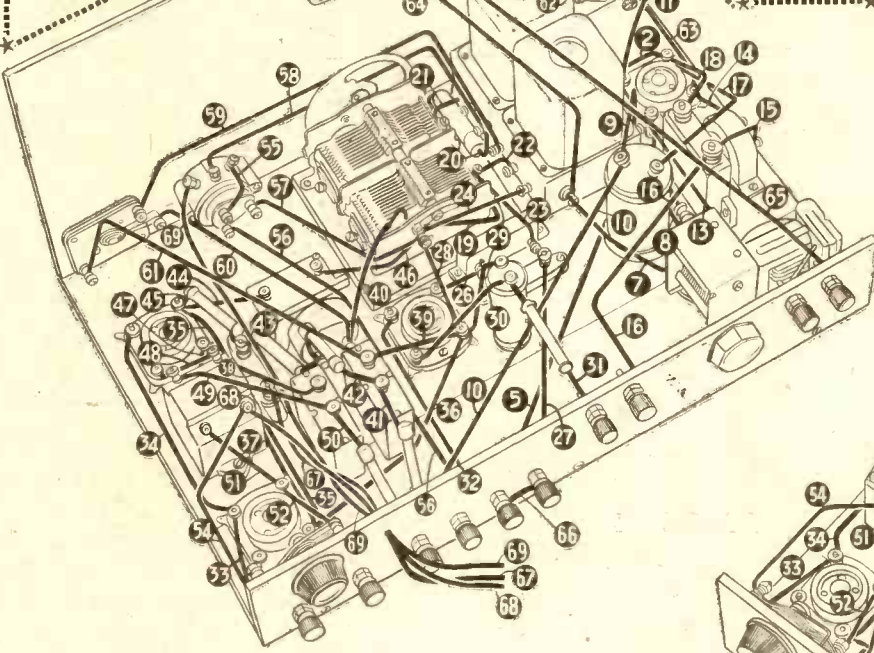


The sketch depicts a general view of the S.T. 600, from which most of the wires and component positions can be seen. A point to notice is the way wires Nos. 58 and 59 run along between the disc drive of the two-gang condenser and the wooden panel. The path of lead No. 65 should be compared with that of the same lead in the blue-print, where it has been bent out of its course to clear the components.

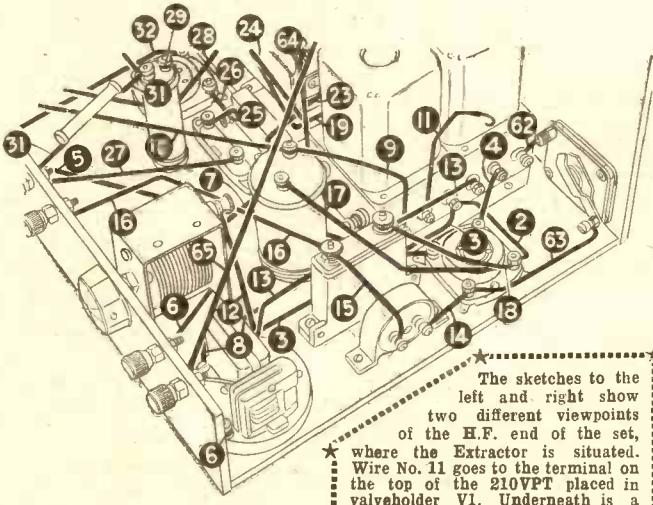
The wires marked 67, 68 and 69 have to be fitted with wanderer plugs. They are the leads for connection to G.B. - 2, G.B. - 3, and G.B. - 4 respectively. Note also that the L.T. + and G.B. - 1 terminals are joined together externally by lead No. 68.



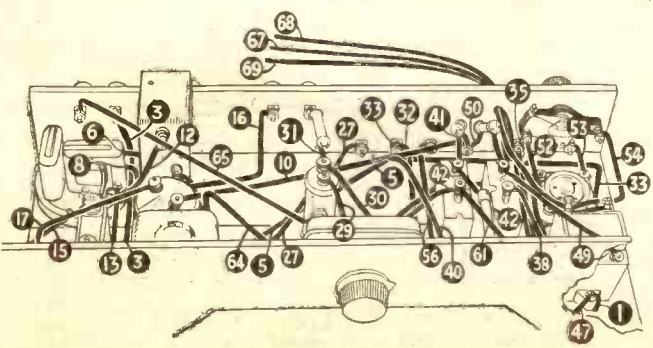
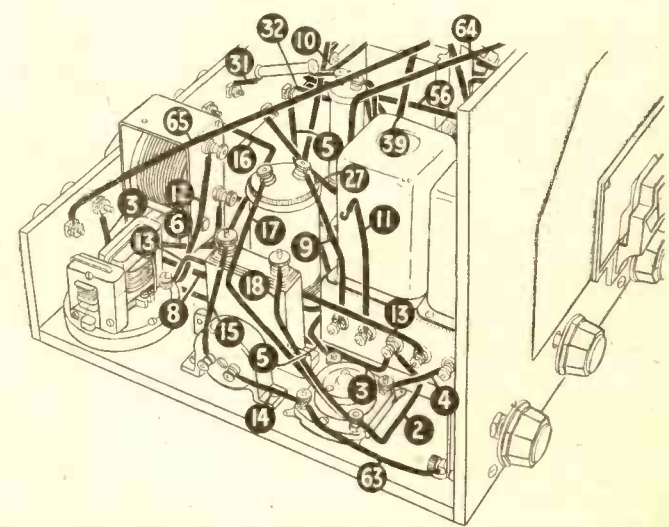
A point of interest in this sketch is the anchoring of wire No. 20 from the T.C.C. 0-1-mfd. condenser to the foot of the gang condenser. From this point also is taken wire No. 19 to the terminal on the condenser just above the rear trimmer.



Five wires have to be joined to the terminal at the rear of the two-gang condenser. These are Nos. 19, 24, 28, 46 and 57. Wire No. 40 goes from the reaction choke to the anode terminal on top of the detector pentode.



The sketches to the left and right show two different viewpoints of the H.F. end of the set, where the Extractor is situated. Wire No. 11 goes to the terminal on the top of the 210VPT placed in valvholder VI. Underneath is a rather unusual view taken from a point in front of the panel looking down over it towards the back of the baseboard.



**THESE DRAWINGS WILL HELP YOU TO BUILD THE S.T.600.**

Here are six detailed sketches of the S.T.600, with numbered leads to correspond with those on the blue-print and in the Rapid Construction Guide. These sketches show exactly how the various wires run, and are invaluable aids to the constructor. It is advised that the blue-print be used as the master standard for the actual point-to-point connections.



# Build it with a "GOLD-MINE" Guaranteed KIT

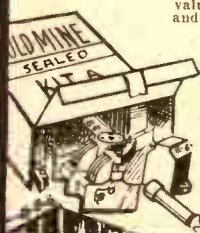
50% SAVING - 100% RESULTS

## S.T. 600 57/6

"GOLD MINE" RADIO  
 SYMBOL OF SECURITY, SERVICE & VALUE, INTRODUCED IN 1932 TO FULFIL A LONG FELT WANT & NOW STANDING THE TEST OF TIME!

### KIT A

Complete sealed Kit, comprising all components of exact specified values, baseboard, and all sundries.



57/6

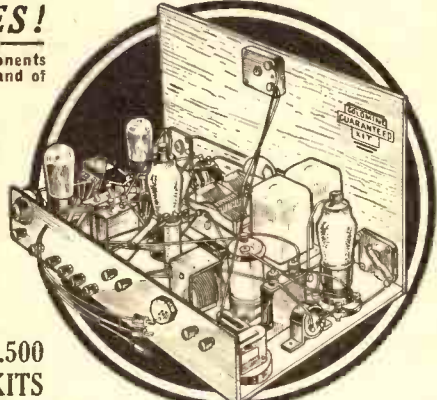
### EXACT TO SPECIFIED VALUES!

Every Gold-Mine S.T. 600 Kit, is made up of first quality components throughout. Every part being of the exact specified value, and of 100% suitability for the part of the circuit which it fits.

### OUR GUARANTEE—100% RESULTS!

OR YOUR FULL PURCHASE PRICE REFUNDED IN FULL.

It is with a confidence amounting to certainty, founded on the above facts, and on actual exhaustive tests in our laboratories that we guarantee not 97%, 98% or 99%, but 100% results with every one of the many thousands of Gold-Mine S.T. 600 Kits which will leave our premises for as many homes and firesides in all parts this winter. Every Kit a forerunner of lasting satisfaction, and backed up by the always continued service of our Technical Dept.



### 2 20'- SUPPLEMENTARY KITS FOR USE WITH THE S.T. 600

#### SUPERHET SHORT-WAVE ADAPTOR

complete sealed Kit, with full instructions, and valve included. Converts S.T. 600 into 5-valve short-wave superhet attached in 10 seconds. Price 20/-.

#### 25 M.A. S.T. 600 ELIMINATOR KITS

Specially designed. Complete sealed Kit, with full instructions. Westinghouse rectified. Price 20/- (Combined with trickle charger 4-amp. 10/- extra.) D.C. Model (25 m.a.) Price 10/-

### KIT B

Comprising contents of Kit A, together with set of matched all-British valves, fully guaranteed.



81/-

### S.T. 400 and S.T. 500 CONVERSION KITS

These conversion Kits will enable you to convert your present S.T. 400 or 500 to the new 600, without expending a penny further than the prices quoted. They contain every component and sundry necessary.

**KIT A. 56.** For Converting your S.T. 500 to the S.T. 600 Price 37/6

**KIT A. 46.** For Converting your S.T. 400 to the S.T. 600 Price 49/-

### CONTENTS LISTS:

**S.T. 600. Kit A.** 1 -00075-mfd. tone control, 1 -0005-mfd. aerial reaction, 1 -0005-mfd. aerial reaction. Main coil assembly. Extractor Coil, 2-gang condenser. Fixed condensers: 1 1-mfd., 1 1-mfd., 2 2-mfd., 1 -00005-mfd., 1 -0003-mfd., 1 -0006-mfd. (tubular), 1 0-1-mfd. (tubular), 1 0-5-mfd. Differential condenser, -0003-mfd. Resistances: 2 1-megohm, 1-watt, 1 25,000 ohms, 1 75,000 ohms, 1 20,000 ohms, 1 300,000 ohms, 1 50,000 ohms. Reaction chokes, 1 anode, 1 aerial, 1 -0005 extractor tuning condenser, 1 25,000 ohms volume control and 3-pt. switch, 1 L.F. transformer, 3-5:1, 4 4-pin valve holders, 1 panel, ply, 16" x 9 1/2" x 1/2", 1 terminal strip, 16" x 3" x 3/16", 1 baseboard to specification, 16" x 10" x 5/16" (Met. 16" x 7 1/2"). Fittings for gang condenser, 10 terminals, 8 wander plugs, 2 10' coils connecting wire. **Kit B** (additionally) 1 cabinet, 16" x 10" x 12" deep. Valves, types as specified, 2 var. mu. H.F. Peps, 1 steep slope detector, 1 super-power output. **Kit C** (additionally) 1 cabinet, 16" x 10" x 12" deep. **Kit D.** Batteries, 1 120-volt H.T. 1 45-amp. L.T. accumulator, 1 9-v. grid bias. **Kit A. 56.** 1 -00075-mfd. tone control, 1 main coil assembly, 1 extractor coil, 1 2-mfd., 1 -0003-mfd., 1 -006-mfd., 1 0-1-mfd., 1 0-5-mfd., 1 1-megohm, 1 25,000, 1 watt, 1 75,000, 1 20,000, 1 300,000, 1 50,000, 1 25,000, 1 control, 2 4-pin valve holders, baseboard, terminal strip, panel, and connecting wire as above.

### WONDER NEW BARGAIN CATALOGUE

2,000 Bargains. Fully Illustrated. 5 Colour Sections. Printed 3 Colours. Secure your copy of the wonder new "RADIO GOLD-MINE" NOW.

It will be universally proclaimed the greatest bargain medium in the Radio world. Literally packed from cover to cover with thousands of unprecedented bargains covering every radio requirement—components, accessories, mains gear, kits, receivers and sundries. All immediately at your finger-tips for reference through the five-colour sections. Act at once! It's the greatest investment you will ever make. Send, enclosing 3d. stamps, to-day—right now!

SEND 3d. STAMPS TO-DAY

### KIT C

As Kit B, with the addition of table model cabinet, 16" x 10" x 12" deep, beautifully finished. (Special S.T. 600 connection cabinets to hold set and speaker, 12.6, either vertical or latest horizontal type, extra 9/6. Ormond permanent magnet speaker, extra 15/6.)



92/6

**STOP PRESS:** See also our stop press bargain column. Back page of "P.W." every week.

**TERMS:** All goods on this page post and carriage paid. CASH OR C.O.D.

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(Dept. P.R. 100) 23, BARTHOLMEW CLOSE, LONDON, E.C.1.

Please forward me (a) goods as opposite. (b) your new 2,000 bargains "Radio Gold-Mine."

Mr. \_\_\_\_\_

GOODS REQUIRED.

I enclose \_\_\_\_\_ value £ s. d.

Or, if preferred, C.O.D. place X here.

### DEMONSTRATIONS OF THE S.T. 600

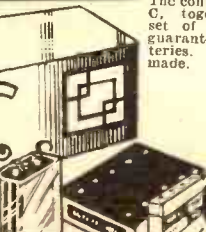
NOW IN PROGRESS DAILY, in our new City demonstration showrooms. Hundreds will be coming. Why not drop in, too? Always something on, on this super set. Book to "Post Office," Central London Railway.

"GOLD-MINE" RADIO LABORATORIES, 24, ALDERSGATE ST., LONDON, E.C.1.

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### KIT D

The contents of Kit C, together with set of high-grade guaranteed batteries. British made.



5'10'0

# The "GOLD-MINE" STORES

The Radio Market-Place of the World





When building the A.C. "S.T.600" you will require two 4-mfd. AMPLION CONDENSERS.

Remember that John Scott-Taggart would not risk his reputation by selecting any components unless he was assured of their reliability and ability to play their part in the set he designed.

Note the exceptionally High Test (700 volts D.C.) which these Amplion Condensers pass before they reach you.

Note the guaranteed ratings as stamped on every Amplion Condenser.

Note the position of the terminals which allow short leads.

ASK YOUR DEALER FOR THESE **Guaranteed Condensers** Type T.B. 4-mfd. - 5/6 ea.

**AMPLION "LION" SPEAKERS**  
These permanent-magnet moving-coil speakers can be matched perfectly to the output of the **THE "S.T.600" BATTERY MODEL** "Lion" (7" cone) 47/6. "Lion Super" (10" cone) 55/-

Send for Descriptive Literature of Amplion Loudspeakers, Receivers and Components.

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**Make Your Dreams Come True** Think what you could do with those extra £££'s coming in every week. And you'll enjoy earning them, for the work is safe, simple and fascinating. Even the children can help.

**COUPON**  
To The ENGLAND-RICHARDS Co., Ltd.,  
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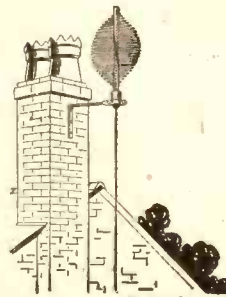
Sirs, Please send me particulars how to make money in my spare time. Also Large Broad-sheet of fully illustrated Original Testimony from those who have made EXTRA MONEY. I enclose 2d. stamp for postage.

Write your name and address in capital letters on a separate sheet of paper and pin this coupon to it.

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# AERIALITE'S LEVENSTRAND

the World's best aerial wire, containing eleven strands H.D. Copper Wire insulated with the famous Aerialite Bituminous covering. Enthusiastically endorsed by all the leading Radio experts. Prices 50 ft. 1/9, 75 ft. 2/6, 100 ft. 3/6. You can also obtain Aerialite 7-strand, boxed in 50 ft. 1/3, 75 ft. 1/10, 100 ft. 2/5.



**AERIALITE TRAPEZE AERIAL WHICH NEEDS NO MAST**

Has been so designed as to embody every conceivable advantage to give good reception, IMPROVED SELECTIVITY . . . MORE STATIONS . . . AND REDUCE INTERFERENCE. Complete with 40 ft. Aerialite Down Lead. Post Free or Direct From:—

Price 9/-  
Postage Extra.

**AERIALITE LTD.**

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A BRIEF INTRODUCTION TO THE MAINS VERSION OF JOHN SCOTT-TAGGART'S MASTERPIECE.

very sensitive. Apart from this the A.C. circuit is the same as the battery model, and all the merits of the latter are to be found.

The controls and Extractor-function in exactly the same way as before, and the same very high degree of selectivity—minus the whistles and mush so common on many mains superhets—is there.

Next week more details will be given. The component list is given this week. The type of drive and escutcheon is left to the individual. A cheap form is shown, but there are de-luxe drives, and the builder can consult the manufacturer's catalogue.

Those who desire to have the "Spot-On" dial will use special J.B. or Formo condensers and will require a slightly higher cabinet; this should be emphatically stated when ordering the cabinet. J. S.-T.

TOO often the mains version of a battery set is a skimped, improvised job which is little more than a sop to those who favour the use of mains valves.

The A.C. S.T.600, however, has had every possible attention given to its design. The main work as regards double-screened reaction, the Extractor circuit and so forth was done on the battery version, and it became simply a question how these systems would work on indirectly-heated valves.

They do so admirably, and three pentodes are used. The first is for H.F. amplification, the second as a detector, and the last as output valve. The A.C. supply is turned into D.C. with the aid of a Westinghouse H.T.8 metal rectifier.

The detector valve is coupled to the output by means of a resistance. There is no transformer. This is because the amount of L.F. amplification is very large with mains valves, and the A.C.2/Pen. is

ALL THE PARTS YOU NEED FOR THE S.T.600 "ALL-ELECTRIC"

Component.	Type Used by J. Scott-Taggart.	Make	Component.	Type Used by J. Scott-Taggart.	Make
Cabinet	For A.C. S.T.600	Peto-Scott	Condensers	1 1-mfd. 200 v. wkg. (type T. 50)	T.C.C.
Extractor Coil	S.T.600 "Ferrocart"	Colvern	"	1 2-mfd. (type T.50)	"
Condenser	2-gang, with front concentric trimmer	J.B. Unitune or Formo, Polar Uniknob, Telsen W. 227, Ormond Colvern or Wearite Varley	"	1 .02-mfd. tubular 400 v. working (type 300)	"
Coil assembly	S.T.600		"	1 50-mfd. dry electrolytic 12 v. working (type 3001)	Dubilier
Mains transformer	2-0-2 v. 4 A., 205/240 volts 180 mA. (type E.P.37)		Chokes	Reaction choke (used for aerial reaction)	Lissen
Smoothing choke	20 henries at 60 mA. (type D.Y. 51)	R.I.	"	Reaction choke (screened) (used for anode reaction) (type H.M.S.1)	Graham Farish
Metal rectifier	(Style H.T.8)	Westinghouse	Terminal blocks	2 double terminal (type W.204)	Telsen
Paper condensers	2 4-mfd. 700-volt test, 300 volt working	Amplion	Potentiometer	30-ohm ("Humdinger")	Claude Lyon
Electrolytic condensers	2 8-mfd. wet. 440-volt D.C. max. working voltage (type 802)	T.C.C.	Valveholders	3 7-pin (type V.H.15)	Bulgin
Loudspeaker	Energised, with 2,000-ohm field	Rola F.6-P.2,000 or W.B., Celestion R.&A. B.T.S.	Aluminium bracket for electrolytic condensers	To take two condensers:	Peto-Scott or home-made
Variable condenser	.0005-mfd. solid dielectric with insulated spindle and insulated bush. (For aerial reaction)		Resistors	1 100-ohm, 1 watt	Erie
Differential condenser	.00015-mfd. solid dielectric with insulated spindle and insulated bush. (For anode reaction)	B.T.S.	"	2 20,000-ohm, "	"
Volume control	5,000-ohm graded for variable-mu with terminals, fitted with mains type toggle on-off switch with terminals	Colvern	"	1 25,000-ohm, "	"
Potentiometer	50,000-ohm linear with terminals (type V.C.36)	Bulgin	"	1 200,000-ohm, "	"
Extractor tuning condenser	.0005-mfd. air-dielectric (Type F.15)	Polar No. 4 direct drive (with plain knob extra) Bulgin	"	1 100,000-ohm, "	"
Combined twin fuse-holder and mains connector			"	2 10,000-ohm, "	"
Condensers	.0005-mfd. solid dielectric W.358	Telsen Reaction	Bracket	1 500,000-ohm, 1 watt Ohmite	Graham Farish
"	3 1-mfd. tubular 350 v. working (type T.250)	T.C.C.	"	1 500-ohm, "	"
"	2 .0003-mfd (Mica)	Lissen	Grid-leak	1 150-ohm, 1 watt	Erie
"	1 .00005-mfd. (Mica)	Dubilier	Terminals	For holding 50-mfd. condenser	Peto-Scott or home-made
"	1 .5-mfd. (type 9,200)	"	Terminal-stri		Erie
"	1 1-mfd. (type 9,200)	"	Baseboard	1 megohm, 1 watt A., E., Pick-up (type R)	Belling & Lee
			Brackets	16" x 3" x 3/8"	Peto-Scott
			Wire	16" x 10" x 3/8" (Metaplex metal-lised portion 16" x 7 1/2")	
			Valves	3 for "panel" components B. R. G. "Quikon"	Lewcoz "Glazite" or British Radiophone "Pullback," Bulgin "Quikwya"
				H.F. V.M.P.4 Catkin Det., A.C./V.P.1 Output, A.C.2/Pen.	Osram Mazda



## S.T.600

(Continued from page 206)

few pages of either technical monotony or flamboyant irresponsibility.

It is so easy that it is not worth doing.

If a set has taken ten months to design, if it solves the problem which has worried one for years, if it provides instantaneous tuning to any desired station, if it has undergone a test tour all over Britain: in short, if it has involved a vast amount of work brought to a successful conclusion, it is impossible to avoid talking about it, and talking at considerable length.

### A Ridiculous Suggestion.

The friend I mentioned just now—and what friend worthy of the name would not pass on malicious gossip?—told me once that someone had said to him:

“Half Scott-Taggart's success is due to the fact that he can write.”

I readily admit that this is a most comforting solace for any designer who finds himself the architect of sets that nobody builds.

In point of fact, however, there is no designer in this country who has gone to greater trouble to demonstrate and prove his receivers than I have. A tour such as I have undertaken with the S.T.600, visiting readers in their own homes—and two years ago I did much the same thing with the S.T.400—shows how little reliance and faith I place in my ability to sit back and spin words to hypnotise the wireless public.

### 41 STATIONS AT SLAITHWAITE!

This list was supplied by Mr. W. H. G. Hurley, an amateur who was present at an amazing demonstration of the S.T.600 on October 7th, 1934, with both North Regional and North National blazing away less than a mile off:

<i>Fécamp</i>	<i>Leipzig</i>
<i>Newcastle</i>	<i>Midland Regional</i>
<i>Dublin</i>	<i>Katowice</i>
<i>Aberdeen</i>	<i>Munich</i>
<i>Nürnberg</i>	<i>Rome</i>
<i>Cork</i>	<i>Stockholm</i>
<i>Trieste</i>	<i>North Regional</i>
<i>Frankfurt</i>	<i>Prague</i>
<i>Copenhagen</i>	<i>Brussels No. 1</i>
<i>Monte Ceneri</i>	<i>Vienna</i>
<i>London National</i>	<i>Athlone</i>
<i>North National</i>	<i>Beromünster</i>
<i>West Regional</i>	<i>Budapest</i>
<i>Poste Parisien</i>	<i>Luxembourg</i>
<i>Brussels No. 2</i>	<i>(local background)</i>
<i>Hamburg</i>	<i>Droitwich</i>
<i>London Regional</i>	<i>Berlin</i>
<i>Poznan</i>	<i>(local background)</i>
<i>Strasbourg</i>	<i>Radio Paris</i>
<i>Berlin Fürkstunde</i>	<i>Moscow</i>
<i>Milan</i>	<i>(local background)</i>
<i>Scottish Regional</i>	<i>Huizen</i>

Those present were three complete strangers, who saw Mr. Scott-Taggart and the S.T.600 for the first time that day:

F. R. Taylor, Belmont Works, Slaithwaite.

W. H. G. Hurley, 122, Ramsay Street, Rochdale.

Alfred Bramall, 14, Varley Road, Slaithwaite.

To suggest that the reason that ten of my sets are built to one of any other designer is due to an ability to write is sheer rubbish, and is more flattering to the self-esteem than to the intelligence of my critics.

Do not let any newcomer who reads this issue of POPULAR WIRELESS imagine that my designs have gone uncriticised. Every other designer for the technical Press would dearly love to think that there is some other reason for that 10—1 ratio than the bald fact that the set is just better. Personally, I never criticise the work of another designer, although I may criticise prevalent opinions in general. I am much too concerned about proceeding with my own research work on my own lines to bother about criticising others.

### “Performance My Constant Aim.”

Criticisms of my previous sets have been confined to their alleged complexity and difficulty of tuning. I have, however, always admitted that working an S.T. receiver is not as easy as falling off a stool. That is simply because I have never yet discovered what particular merit lay in being able to fall off stools.

I am inclined to think that it is much better to sit securely and with certainty on a stool, even if the process is slightly more difficult. Performance has been my consistent aim; and while I have laughed at good-natured sarcasm I have never allowed it to knock me off my hobby-horse of performance. While achieving all the merits of simple tuning, I believe that in the S.T. 600 I have ridden my hobby-horse to a triumphant winning post. J. S.—T.

# NOW!

*A keener precision  
— a finer accuracy  
of tuning than  
ever before!*

# S.T. 600

No greater compliment could have been paid to the Formo two-gang condenser—no sounder tribute to its efficiency—than Mr. John Scott-Taggart's selection of the Formo for use in his remarkable S.T.600. The Formo two-gang condenser ensures perfect tuning, crisp reception and no interference.

Beautifully made and proportioned, the chromium escutcheon fits flush against the panel, requiring no laborious or intricate panel cutting.

Finished in dreadnought grey and supplied complete with Chrome and Bakelite drive, 11/- : Dust Cover 1/6 extra.



# THE "EXTRACTOR"

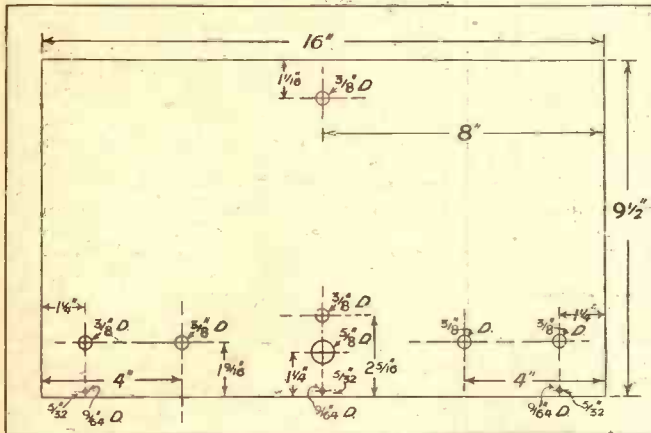
(Continued from page 215.)

the incoming voltage is distributed across C1, across Z and across L1. Most of the interfering signal is developed across Z.

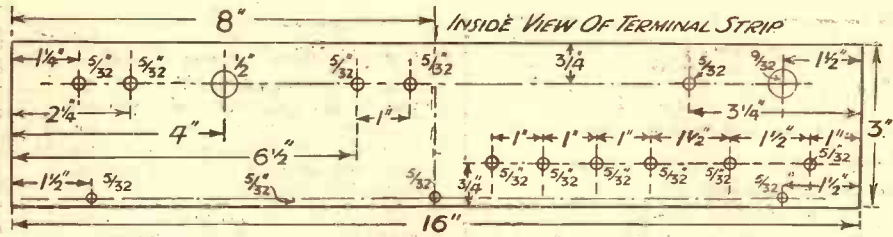
Since this coil is not coupled to the receiver in any way, and since the receiver can only deal with the voltages set up across the inductance coil L1, any voltages across the choke Z will simply be wasted.

This is only a rough-and-ready method of discriminating between signals of widely different frequency. The Extractor circuit, however, calls for discrimination between

## THE PANEL OF THE S.T.600



The exact panel drilling dimensions are given in this diagram.



The S.T.600 terminal strip and the positions of the holes required are indicated above

stations having frequencies very similar.

Fig. 1 shows in simplified form the Extractor circuit in conjunction with an aerial coupling coil. A variable air condenser is used to tune the Extractor coil, which has both a long-wave and a medium-wave winding, so that a B.B.C. Regional Station (or relay) or Droitwich may be cut out. The Extractor circuit acts as an impedance whose opposition effect is extremely high when the Extractor condenser is tuned exactly to the frequency of the station which is to be cut out. For all other frequencies the impedance is negligible.

Fig. 2 shows the theoretical equivalent to the Extractor circuit in operation against a local station of a power enormously greater than that of

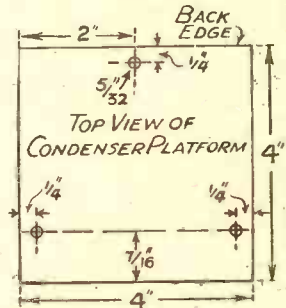
the desired foreign station. For all frequencies other than the interfering one the impedance shrinks to practically zero, and so the full strength of the foreign station is passed on to the receiver for routine improvement.

In practice, the system works better than any previous efforts to deal with the local problem.

The whole thing is so absurdly simple to work, is so lasting in its results and has so completely solved at last the problem of the local station that a revolution is going to be created in every home that installs the S.T.600.

These are brave words and bold promises. Let anyone challenge them who dares.

J. S.-T.

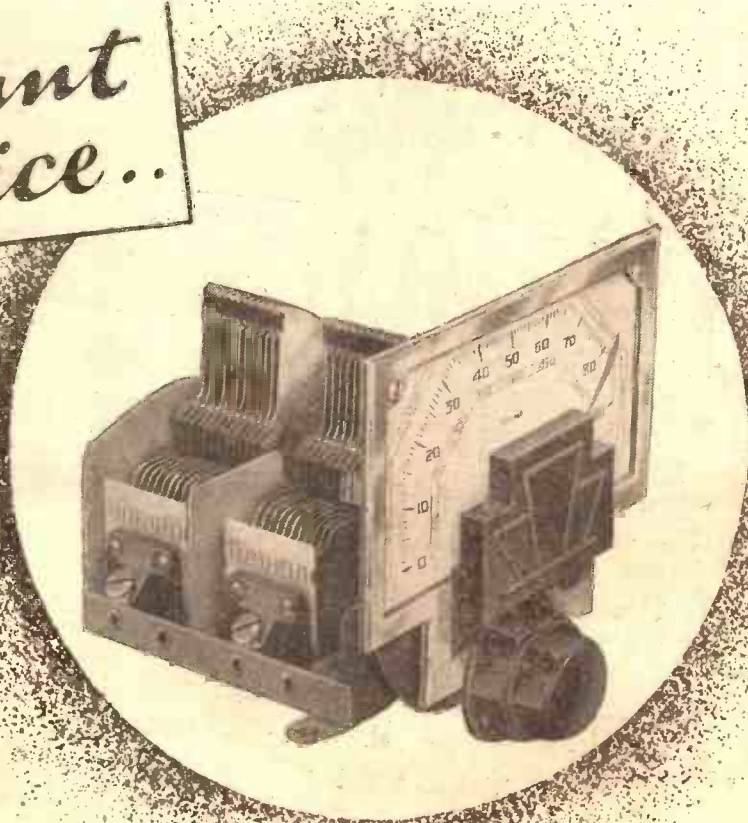


Cut and drill the gang condenser platform in accordance with these details.

*a Significant choice..*

Be sure to ask for the Formo Twin-Gang Condenser, type S.T./D.U.5, actually specified by Mr. John Scott-Taggart and used in his original receiver.

Write for new comprehensive folder describing all Formo Products to-day to:





## RECEIVE 100 STATIONS BY NAME!

(Continued from page 223.)

nobody calibrates the set at all, but that the dial readings of two or three of the most important stations are taken. These are frequently memorised by Father, to whom the rest of the family appeal for instructions as to where Radio Paris comes.

Even a sensitive set, therefore, is rarely used for touring the Continent.

Just be honest with yourself. Have you not always longed for a really self-contained set which requires no charts, degrees or other paraphernalia to enable you to go direct and actually in a fraction of a second to any station you desire?

### A Constant Reminder.

I have actually had it seriously suggested that no list of stations received should be published in connection with a proposed design. I myself regard such a policy as little short of dishonest. To refrain deliberately from publishing a list of stations lest the reader should become disgruntled is a cowardly evasion of responsibility.

I know quite well that the majority of listeners would be content if they received half the number of stations marked on the S.T.600 dial. Nevertheless, I want that list of stations fixed on the front of your set, not as a challenge, but as a constant reminder of the extraordinary selectivity and sensitivity of the S.T.600.

The S.T.600, with its special automatic dial, enables you to obtain a hundred stations by name. All you have to do is to identify a station, place a dot with a pencil or pen on the line underlining the name of the station, and, ever after, you, your wife, mother, or most dithery maiden aunt will be able to get that station by turning the pointer until it is over the dot.

## MORE READERS PRAISE THE EXTRACTOR

"MOST MARVELLOUS."

"... The Extractor is one of the most marvellous things I have ever heard of. . . ."

BRUCE GORDON.

4, Harlington Place, Edinburgh.

"THE EXTRACTOR IS  
REMARKABLE."

"... The Extractor on your set is remarkable, and I wish I could just do the same to my present set. . . ."

H. SIMON (Capt.).

94, Gilmore Place, Edinburgh.

My job was to accommodate the 100 or more stations which the S.T.600 has received, and to enable the listener to go direct to such stations.

My solution involved what can best be called Angular Tolerance. This means that the pointer can swing over a wide angle while still covering the desired station name, and while still enabling dead-

accurate calibration to be achieved.

On the S.T.600, by employing the particular coil and condenser used, you will obtain readings very close to those on my original set. But you will certainly not get to within 2° except by a sheer fluke, and unless you can get an accuracy greater than 2° an ordinary arrangement of station names would be useless and ineffective.

### Stations Found in Record Time.

By arranging the station names in the special staggered formation which has involved most careful calculation and experiment in spite of its apparent simplicity, the Angular Tolerance is increased from 2° to a minimum of 13° and a maximum of about 31°.

Admittedly, the existence of station names approximately placed on a dial is an attraction, but is it really much use?

To me, operating the average commercial factory-built set, even after all these years, is rather like going to a big railway station and finding that your train to Birmingham will depart from platform 7, 8, 9 or 10. When you discovered that you had travelled fifty miles in a train to Cardiff, you would realise that there was something to be said for accurate direction.

The general public, however, are believed not to care a straw what station they get.

With the S.T.600 automatic dial there is no aimless wandering about platforms or floundering into the wrong train. You get your destination station and you get there in record time.

Every member of your family circle will live to bless it.

J.S.-T.

# With full vision Mystic Drive

# FORMO Single Unit

## particularly recommended for existing 'Scott-Taggart' Sets

This condenser is particularly suitable for existing S.T. Sets. It can be fitted in place of your present condenser in a few seconds. No intricate panel cutting necessary. The condenser has all-steel frame of rigid design, and losses are extraordinarily low, giving a sharpness of tuning that improves the results from any set.

The full vision floodlit scale of the Mystic drive is engraved in dual colours for long and medium waves. Finished in dreadnought grey, this condenser, when fitted, is a distinct improvement to any receiver.



## DROITWICH CUT OUT

S.T.600 Results at Birmingham.

On October 9th I had the pleasure of a visit by Mr. John Scott-Taggart, who demonstrated his S.T.600.

The test was made on a 60-ft. indoor aerial, and Droitwich being only about 18 miles away, the long waves were tried out first. Luxembourg, Warsaw, Kalundborg, Radio Paris, Huizen, Oslo, Leningrad and Moscow, all were received clear of Droitwich. Then came

## SUITABLE LOUDSPEAKERS FOR S.T.600

W.B. Rola, Amplion, Celestion, Wharfedale, Gramplan, Blue Spot, R. & A., Magnavox, Ferranti. (No significance attaches to the order of makes.) J. S.-T.

the surprise of the evening, Deutschlandsender and Eiffel Tower clear of Droitwich with the single Extractor circuit in operation.

On the medium waves selectivity was just as effective. Leipzig and Marseilles being heard clear of the local. All told a total of 67 stations were heard with the locals working, 56 on the medium and 11 on the long waves. More stations would undoubtedly have been heard had they been working. The dual tragedy of the assassination of H.M. the King of Jugoslavia and M. Barthou earlier in the day was the cause of several stations being off.

The set was then put to a severe test of receiving on only 5 ft. of wire about 5 ft. from

the ground, and 15 stations were easily received, including Huizen, Lisbon, Frankfurt and Fécamp. These were also heard at loud speaker strength without an aerial at all. This, I think, proves the sensitivity of the S.T.600.

The volume of the set is colossal, and the quality, which was tested on my own speaker, was very good. The total H.T. voltage used throughout the demonstration was 110 volts, and this figure was tested by me personally.

With regard to the circuit the Extractor circuit is extremely efficient and the speed and ease with which it can be set is simply amazing.

The aerial reaction obtained in this remarkably novel way is superbly smooth, and quite the work of a genius, allowing signals to be built up which on the ordinary set would be unheard while maintaining such a fine degree of selectivity.

Incidentally, none of the selectivity controls affects the tuning, and so whichever may be brought into operation the tuning remains stable. This, as will be realised, is a great advantage over previous S.T. sets.

The one-knob tuning control makes it a proper family set as well as one for the expert. It has a range of from 200-560 metres on the medium waves, and more than covers the long.

Good as the S.T.400 was, and still is, the S.T.600 easily supersedes it on all points and I strongly advise all readers to change over to it as the improvement is so great as to justify to the full the extra expense involved.

In conclusion, I shall most certainly build this set and I will demonstrate it to anyone who cares to visit me. I shall be willing to help anyone with this set in any way I can.

LESLIE A. PERRINS,

101, Sycamore Road,  
Aston, Birmingham, 6.

## S.T.600 AT EDINBURGH

52 Stations at full strength.

I was delighted with your demonstration of the "S.T.600" last night. Your set has certainly got "it." Selectivity was exceptional and the cutting-out of the local was amazing.

Fifty-two stations were heard at full loud-speaker strength, despite the two locals working. Quality was very fine, and made listening a pleasure. Your new "Spot On" dial appealed to me, and makes tuning "child's play."

## THE POWER SUPPLY

BATTERIES—H.T.: Ever-Ready, Lissen, Siemens, Drydex, G.E.C. Vidor, or Block H.T. Accumulators.

G.B.: Ever-Ready, Lissen, Drydex, Siemens.

L.T.: Exide, Block, Lissen.

CHAINS UNITS—Atlas, Ekco, Heaybord, Regentone. (See article next week.)

J. S.-T.

The Extractor on your set is remarkable, and I wish I could just do the same to my present set.

I shall certainly recommend your set to my friends, and as soon as I get hold of the circuit will build one myself.

Thanking you again for allowing me to hear such a wonderful set.

CAPTAIN H. SIMON, 94, Gilmore Place,  
Edinburgh.

# Condenser S.U.5

Buy one—fit one to-day. All good radio dealers stock. 0005 mfd. with Mystic Drive, 6/6.

For those who intend building the S.T.600, please turn to Page 246.

Write for descriptive folder of all Formo high-efficiency components to:



FORMO PRODUCTS LTD.  
MASONS HILL, BROMLEY, KENT.





# QUICKLY THE TRUTH

A sudden noise - or an equally aggravating silence . . . inefficiency somewhere in your set! Take your AvoMinor and find out at once. The AvoMinor is an investment in permanent security, for it is a precision instrument, accurate to a critical degree, and made to stand up to hard usage and even abuse. It is, in fact, a younger brother of the famous Avometer, the instrument used by all the leading manufacturers and their service engineers. With the AvoMinor you can test circuits, valves, components, batteries and power units with the dependable accuracy of the technical expert.

There is no substitute for the AvoMinor. It is a moving-coil combination testing meter—ten accurate instruments in one. Supplied in convenient case with leads and interchangeable testing prods and crocodile clips, and complete instruction booklet adequately illustrated.

### TEN ACCURATE METERS IN ONE

#### CURRENT VOLTAGE

- 0-6 milliamps
- 0-30 ..
- 0-120 ..
- 0-6 volts
- 0-120 ..
- 0-300 ..

#### RESISTANCE

- 0-10,000 ohms
- 0-1,200,000 ..
- 0-60,000 ohms
- 0-3 megohms

**40/-**

Size 4" x 3" x 1 1/2".  
Total Resistance: 100,000 ohms.  
Full scale deflection on 3 milliamps.

Deferred Terms if desired.

THE D.C.

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REGD. TRADE MARK

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Everyone should have this invaluable new book. It explains every phase of fault-finding step by step in non-technical language. The comprehensive information and numerous diagrams make testing a matter of straightforward procedure.

2/6  
post free  
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## The IDEAL SPEAKER for use with the S.T. 600!

Here in this popular Gramplan B/P.C.I. Model is a general-purpose P.M. Speaker that has given splendid results on test with the new S.T.600. It incorporates an improved magnet and Baffle Box Assembly, and at its reduced price undoubtedly represents to-day's finest value in quality speakers.

2 models: — B/P.C.I. with multi-ratio transformer for Pentode and Triode Valves. B/P.C.I./B, fitted with special transformer for "Class B."

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**AS SPECIFIED**

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REGD. TRADE MARK

## "UNIDA" COIL ASSEMBLY

for the

# S.T. 600

### ACTUALLY USED AND SPECIFIED BY

*John Scott Taggart*



As shown — Two dual-range coils with ganged positive switching, complete with knob. Guaranteed to "S.T." specification. Price **12/6**

—and  
One H.F. Choke, Type H.F.P. Price 3/6  
One H.F. Choke, Type H.F.P.J. Price 2/-

—and for the  
**S.T. 600 A.C. MODEL**

- "Unida" Coil Assembly, 12/6
- One Mains Transformer, 25/-
- One Smoothing Choke, 9/-
- One Potentiometer Q.V.C., 4/6
- One H.F. Choke H.F.P., 3/6
- One H.F. Choke H.F.P.J., 2/-

Wright & Weaire Ltd., 740, High Road, Tottenham, London, N 17. Phone: Tottenham 3847



# INTERNATIONAL RADIO BUREAU

have pleasure in presenting their  
**"DIPLOMA" S.T.600 KIT**

which is guaranteed packed exactly to Scott-Taggart's **FIRST SPECIFICATIONS THROUGHOUT.**

The **"DIPLOMA-GUARANTEE"** packed in **EACH KIT** is an additional safeguard fully guaranteeing **EVERY COMPONENT** in the kit to stand up to its work or to be replaced without charge. Make sure of **DIPLOMA** protection.

**IMMEDIATE DELIVERY—ORDER TO-DAY!**

	s.	d.
1 Polar Compax .00075 tone control	2	9
1 Telsen W.358 .0005 aerial coupler	2	6
1 Graham Farish .0005 aerial reaction	2	0
1 Graham Farish .0003 Litlos	2	0
1 Wearite S.T. main-coil assembly	12	6
1 Colvern S.T.600 Ferrocart Extractor, TF6	8	6
1 Formo 2 x .0005 long-pointer assembly	11	0
1 Graham Farish 1-mfd. Mansbridge type	2	0
1 Dubilier 1-mfd. type 9200	2	6
2 T.M.C.-Hydra 2-mfd., type 65, at 3/	6	0
1 Lissen .00005-mfd. fixed mica	6	6
1 Lissen .0003-mfd. fixed mica	6	6
1 T.M.C.-Hydra .006-mfd. tubular T15/5	9	
1 T.C.C tubular 1-mfd. type, 250	1	4
1 Dubilier .5-mfd. type, 9200	2	0
1 Graham Farish .0003-mfd. differential	2	0
2 Ferranti 1 meg., new type G.H.1, complete in holders @ 1/6	3	0
3 Dubilier 1 watt (25,000-75,000-20,000)	3	0
2 Erie 1 watt (300,000-50,000)	2	0
1 B.T.S reaction choke	2	6
1 Lissen reaction choke	2	0
10 Belling-Lee type R terminals	2	6
8 Clix wanderplugs	1	0
4 Clix H.T. Plugs	6	
1 Bulgin 25,000 graded G.M.25	5	9
1 Ormond .0005 Extractor or tuning	3	0
1 Varley Nicolet 1-3-5 type O.P.21	7	6
4 Benjamin vibrators, 4-pin	3	4
1 Peto-Scott S.T.600 Struktakit (terminal strip, baseboard, panel and platform exactly as specified and used by Scott-Taggart	6	6
"Glazite" screws, etc.	2	0
1 copy "Popular Wireless," 27/10/34, and 1 Diploma		

(Orders for part kits accepted)

**"DIPLOMA" S.T.600 kit A.**  
 Cash with order or C.O.D., carriage paid in United Kingdom. **£5-0-0**

A matched set of valves, as specified:  
 2 Cosor, 210 V.P.T., 1 Mullard P.M.2D.X. and 1 Mullard P.M.202 **£2-4-6**

The recommended speaker ROLA, PR5-P.M.1 **£1-9-6**

—and here is a remarkable offer of an **INEXPENSIVE S.T.600** kit of matched components, as advertised elsewhere in this issue:

The **"B.R.G." S.T.600 Kit A** **£3-19-6**  
 and a matched set of valves to suit:

2 Tungram H.P.221, 1 Tungram L.D.210, 1 Tungram S.P.220. **£1-10-6**

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**INTERNATIONAL RADIO BUREAU** 199, DEANSGATE MANCHESTER.

# TELEVISION

A Special Practical Series for all Readers.

By L. H. THOMAS.

WHEN I wrote last week's notes, as readers will remember, I had only had one opportunity of testing my receiver on a B.B.C. transmission, and that was one of the morning half-hours. As I half-expected, on subsequent evening transmissions the receiver was not up to requirements as regards selectivity.

Considerable "back-chat" on London National's wavelength from both Kosice and Turin caused a little trouble, and the 9-ke. beats were stronger than they need have been with a selective receiver. The

## THE SCANNING DISC

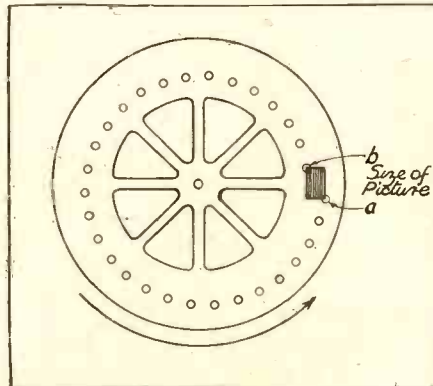


Fig. 1. The relative sizes of the scanning disc and the picture are indicated by this sketch.

installation of a straightforward screened-grid stage of H.F., with a commercial three-gang tuning unit, however, was but a morning's work, and the receiver is now well up to its job. This is a subject that we must return to later on.

We must now get down to the subject of synchronism. Some confusion about the true meaning of the word is apparent, in that it is often confused with "isochronism." If you have your motor running at exactly the required speed you will have a condition of isochronism, but not necessarily synchronism.

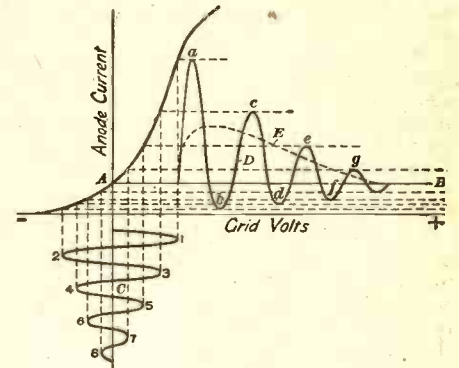
### Chances of Synchronism.

In fact, the chances of being in true synchronism when you switch on are exactly 29 to 1 against! Look at Fig. 1, which shows a scanning disc with the actual size of the picture sketched in on the right-hand side. Imagine that the transmitter is just beginning a picture, which means that the moving spot of light is just "exploring" the bottom right-hand corner of the subject—meaning the spot corresponding to "a" in the diagram.

Obviously, your scanning disc must be in the exact position shown, with "a" just starting the cycle of events. It is not enough for your disc to be running at precisely the same speed as the B.B.C.'s apparatus—which means a condition of isochronism—but it must be in the same position.

(Continued on next page.)

# Do You Know What This Graph Means?



The man who can analyse these curves and understand what they indicate knows his job. But if they do not convey to him perfectly definite information, it would appear that he needs more training than he has had. He is not competent to fill a responsible position in wireless.

Radio has developed so rapidly throughout the last ten years that it has now greatly outgrown the supply of technically qualified men required for the better posts. Moreover, it continues to develop with such speed that only by knowing the basic principles can pace be kept with it.

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Name ..... Age.....  
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## TELEVISION

(Continued from previous page.)

It is not difficult to see that if your disc is in some other position you will receive a steady picture; but it will be split vertically, like a photograph cut in half vertically, with the two halves stuck together on the wrong sides.

If you slow your motor down momentarily the pictures will begin to drift downwards, and with each consecutive picture the cut will appear to move one strip to the right, until you eventually have your picture in the correct position.

### Thirty Vertical Strips.

Fig. 2 shows how the picture is built up of vertical strips—there are thirty of them in all—and obviously you must have the correct strip on the extreme right before you receive an exact facsimile of the subject that is being transmitted.

It is difficult to explain on paper, but becomes perfectly clear as soon as you have your own first experience of handling vision apparatus.

### THE LIGHT FRAME

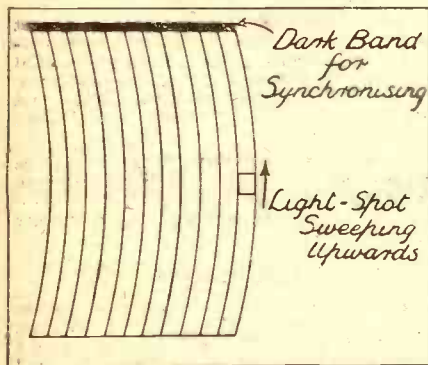


Fig. 2. How the upward sweep of the 30 holes forms a frame of lines of light.

Strangely enough, the so-called synchronising gear that one can fit on to one's own scanning disc does not help with synchronism at all; it is only an aid to achieving synchronism, which produces a steady picture as the result of a steady and correct motor speed.

The dark band shown at the top of Fig. 2 is a "synchronising signal" introduced artificially into the B.B.C. transmission. It occurs at a frequency of 375 per second—12½ pictures per second and 30 lines being, of course, the standard figures. It is made use of at the receiving end in this way.

### A Laminated Steel Wheel.

On the motor spindle (or, in the case of indirectly-driven models, the shaft on which the disc is mounted) is fixed a small wheel of laminated steel having thirty teeth. This is mounted between two pole pieces of the same material, each bearing a small coil—in short, a pair of small electromagnets.

The output of the receiver, as well as being fed to the neon tube, is passed through these two coils.

When our disc is revolving at the standard speed of 750 revolutions per minute (12½ per second) it follows that one of the teeth on the wheel is exactly opposite

(Continued on next page.)

# New Times Sales Co

Why wait weeks for that new Radio accessory? You'll get it quicker from N. T. S. Any items advertised in this journal on Easy Terms, Strict Privacy Guaranteed. Cash or C.O.D. if preferred. Orders over 10/- Carriage and C.O.D. Charges paid. SEND FOR QUOTATIONS FOR ANYTHING RADIO YOU ARE NEEDING.

## BLUE SPOT "STAR" JUNIOR P.M. MOVING-COIL SPEAKER

SENT ON 7 DAYS' TRIAL

With 12-point matching transformer suitable for all outputs. Send only 2/6 for 7 days' trial. If approved, balance in 9 monthly payments of 4/-. Cash or C.O.D. Carriage Paid, £1/15/0.



## W.B. STENTORIAN STANDARD

SENT ON 7 DAYS' TRIAL

For Power, Pentode and Class B. Send only 2/6 for 7 days' trial. If approved, balance in 11 monthly payments of 3/-. Cash or C.O.D. Carriage paid, £1/12/6.

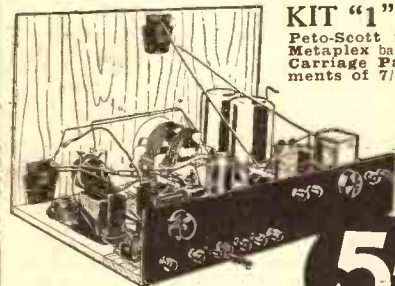


W.B. Stentorian Senior Model. Send only 2/6, balance in 11 monthly payments of 4/-. Cash or C.O.D. Carriage Paid, £2/2/0.

## B.R.G. S.T.600 KIT

EVERY PART GUARANTEED—MATCHED—PROVED—TESTED

Complete with FIRST Specified FORMO 2-GANG CONDENSER, COLVERN S.T.600 MAIN COIL ASSEMBLY AND COLVERN S.T.600 EXTRACTOR COIL, and with FREE FULL-SIZE BLUEPRINT and copy S.T.600 issue of "Popular Wireless" including S.T.'s 100 STATION SPOT-ON DIAL and other P.W. gift.



**KIT "1"** Comprising B.R.G. Kit of matched components. Including specified Formo 2 gang condenser, with Colvern coils, Peto-Scott ready-drilled walnut-faced panel and terminal strip, with Metaplex baseboard, less valves, cabinet and speaker. Cash or C.O.D. Carriage Paid, £3/19/6, or deposit 5/- and 12 monthly payments of 7/-.

**KIT "2."** As Kit "1," but including set of specified valves, less cabinet and speaker. Cash or C.O.D. Carriage Paid, £6/4/0, or deposit 7/6 and 12 monthly payments of 10/9.

**KIT "3."** As Kit "1," but including valves and Peto-Scott table cabinet, less speaker. Cash or C.O.D. Carriage Paid, £7/1/6, or deposit 10/- and 12 monthly payments of 12/3.

**KIT "4."** As Kit "1," but including valves and Peto-Scott console cabinet, less speaker. Cash or C.O.D. Carriage Paid, £7/19/0, or deposit 10/- and 12 monthly payments of 13/9.

If N.T.S. P.M. Moving-coil Speaker required, add 19/6 to Cash or C.O.D. prices, or add 2/6 to deposit and 1/7 to each monthly payment.

If HIYAC valves required in place of B.F.A. valves, deduct 13/3 from Cash Price, or send same deposit but deduct 1/3 from each of 12 monthly payments.



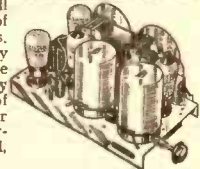
## LISSEN SKYSCRAPER THREE KIT

Chassis Model with (Lissen) S.G. Detector and Pentode Valves. Send only 7/-, balance in 11 monthly payments of 7/-, Cash or C.O.D. Carriage paid £3/17/6



## LISSEN SKYSCRAPER 4 KIT ALL WAVE KIT

Complete Kit comprises all components, including set of Lissen Valves. Send only 10/-, balance in 11 monthly payments of 10/3. Cash or C.O.D. Carriage Paid, £5/12/6.



## GRAHAM FARISH RAIDER 3 KIT

Complete Kit of parts for building, less valves and cabinet. Send only 5/-. Balance in 11 monthly payments of 6/3. Cash or C.O.D. Carriage Paid, £3/7/-. If valves and cabinet required, add £2/16/6 to Cash Price, or complete for 10/- deposit and 11 monthly payments of 11/6.



## GARRARD 202A GRAMOPHONE MOTOR

SENT ON 7 DAYS' TRIAL 12-in. Turntable. Electric Motor for A.C. Mains. Send only 5/- for 7 days' trial. If approved, balance in 10 monthly payments of 5/-. Cash or C.O.D. Carriage Paid, £2/10/0.



## ATLAS ELIMINATOR

SENT ON 7 DAYS' TRIAL. Model T10/30. For Class B and Q.P.P. A.C. 200/250 volts 40/120 cycles. Three tappings: 10, 20 or 30 m.a. at 120/150 volts. Triplet charger incorporated 2 volts .5 amp. Send only 5/- for 7 days' trial. If approved, balance in 12 monthly payments of 6/-. Cash or C.O.D. Carriage Paid, £3/9/6.



## New Times Sales Co.

56, LUDGATE HILL, LONDON, E.C.4.

Dear Sirs.

(a) Please send me.....

(b) I enclose Cash/Deposit.....

NAME.....

ADDRESS.....

P.W., 27/10/34.

FIRST WITH EASY TERMS IN 1924.....



TELEVISION

(Continued from previous page.)



"There you are, my dear..as good as new. You can't deceive a PIFCO ROTAMETER"

There's no doubt about a Pifco ROTAMETER. It traces faults in no time—any kind of radio fault. There are 9 distinct meters in one handy-sized polished bakelite case. The new De-Luxe model moving-coil ROTAMETER has a resistance of 200,000 ohms ensuring absolute accuracy, whilst the scale reading for voltage tests goes up to 400 volts. With these ranges available there is no test you cannot make with a Pifco ROTAMETER.



9 SEPARATE METERS IN ONE ROTAMETER-DE-LUXE

- 1. 0-5 volts.
- 2. 0-20 volts.
- 3. 0-100 volts.
- 4. 0-400 volts.
- 5. 0-10 milliamperes.
- 6. 0-50 milliamperes.
- 7. 0-250 milliamperes.
- 8. Resist./valve test.
- 9. Plug-in test for valves.

42/- ROTAMETER

- 1. 0-8 volts. For low-tension voltage test.
- 2. 0-30 volts. For grid-bias voltage test.
- 3. 0-250 volts. For high-tension voltage test.
- 4. BATTERY TEST.
- 5. 0-20 M.A. For individual valve test.
- 6. 0-100 M.A.
- 7. 0-250 M.A.
- 8. FILAMENT AND RESISTANCE TEST (4,000 ohms). For D.C. and rectified A.C.
- 9. Plug-in test for valves.

Ask your dealer to show you one now or write for the new Pifco Testmeter Folder, describing all instruments, to: PIFCO LTD., SHUDEHILL, MANCHESTER or 150, Charing Cross Road, W.C.2.

29/6



PIFCO ROTAMETERS

PIFCO ON THE SPOT WILL TRACE YOUR TROUBLES LIKE A SHOT

**RADIO GRAM CABINETS**  
As supplied to B.B.C.

65/- Polished Cabinet for 35/-  
No Middle Profits!

Famous maker offers finest Radio Furniture. As Supplied to B.B.C. A Quality and Value impossible to better. Beautifully hand polished! GUARANTEED Piano Tone Acoustically.

Trial Will Delight You! (Cash or 10/- Monthly.)

LIST FREE! From Makers—

**PICKETT'S**  
Piano Tone  
Cabinet (P.W.) Works, Albion Rd., Bexleyheath, Nr. London

HERE AT LAST! **GOLD-MINE VALVES**  
PRICED FOR EVERY POCKET

SAVE 50% on your S.T.600 VALVES!  
The introduction of 2 Var.-Mu H.F. Pentodes G.M.—V.P.T. at 8/- 16 0  
the amazing 1 Detector G.M.—2DX 2 9  
new range of 1 Super Power G.M.—202 4 3

Reliability Valves has been timed to coincide with the launching of the set of the year the S.T.600. Here you have a reliable valve, at a price to suit your pocket. We predict that a quarter of a million 'Gold-Mine' Reliability Valves will be in use by November, 1935. Send also for the 'Gold-Mine' Reliability Valve Guide Trade Enq. solicited.

THE SET 24 OF FOUR  
POST PAID

**GOLD-MINE RADIO LABORATORIES**  
PROPRIETORS: LONDON EAST CENTRAL TRADING CO.  
24, ALDERSGATE ST., LONDON, E.C.1  
TELEPHONE - NAT. 7473

the pole piece 375 times per second, there being thirty teeth.

Thus, if a strong pulse is passed through the coils 375 times per second, the disc and cogged wheel will automatically arrange themselves so that they are in the correct position. A few milliamps passed through the coils are sufficient to pull round the wheel and disc so that one of the teeth is opposite the pole piece, and therefore, if we already have our motor running as nearly as possible at the correct speed, the synchronising signal will "take charge" and hold the picture steady.

The Principles Involved.

I intend to go into this matter in detail in a later article. For the present it is sufficient to have an understanding of the principle involved and to realise that a synchronising device is of no avail when one has a motor that is running, in the first place, at a hopelessly incorrect speed.

Here are some facts and figures that one must get right into one's head. First, scanning (in this country) is achieved by a light spot sweeping upwards and starting in the bottom right-hand corner. This implies the use of a disc with holes cut as in Fig. 1 and revolving in an anti-clockwise direction. It also makes it essential to place the neon tube on the right-hand side of the disc.

The figures are as follows: Picture speed, 12½ per second; motor speed, therefore, the same. Number of lines (at present!), 30; frequency of synchronising signal, therefore, 375 per second.

For producing a stroboscopic effect when the disc is viewed in the glow of a lamp or neon tube on the 50-cycle mains it is necessary to have eight spokes. Four would do, of course, but would not give a sufficiently rigid disc.

It may seem superfluous to quote all these facts, which are well known to the television enthusiast, but I have done so for the benefit of the would-be enthusiast, who is often hopelessly fogged at first.

Square Holes Are Desirable.

The scanning discs that one buys in kits of parts are usually either 16 in. or 20 in. in diameter, and the picture size given by the usual 16-in. disc is of the order of 1½ in. by 1 in. A good disc has square holes punched in it, and with a fairly high degree of accuracy excellent pictures are obtainable. An indifferently designed disc will give vertical black or white lines owing to the light-strips traced out by adjacent holes "overlapping" or not quite touching.

When one considers that the holes in a 16-in. disc are only .028 in. across one appreciates the need for extreme accuracy.

IMPORTANT ANNOUNCEMENT

Owing to the exceptional and specially important nature of this issue of Popular Wireless it has been necessary to hold out several of our valuable regular features. These will be resumed in forthcoming issues, but readers will admit that with the wealth of vitally important material which we have packed into the present number it would be impossible to include all our usual very popular weekly articles.



## S.T.600 IN GLASGOW

A Reader's Enthusiasm — Fifty Stations—Local Spread Reduced To A Hairline

Dear Sir,—I have to thank you for the privilege of attending the "Glasgow test" of your latest production, the S.T.600.

I consider this a real test of a set, as you were a complete stranger to the locality, and also the reception conditions close to neon signs and trams were exacting. However, the set proved its worth at the first showing. Starting with a clean card, it was not very long before 50 stations were recorded thereon.

The selectivity was, in my opinion, excellent. This was particularly noticeable when you tuned in Milan absolutely clear of the Scottish Regional with only 10 k.c. or 4.5 metres difference. The spread of the locals was narrowed down to pinpoint tuning.

The reproduction was of a very high standard on all of the 50 stations received.

### "Very Sensitive"

The volume control had to be used to cut down the output of many. Evidently no anæmic reception of any of the stations was evident. The set was very sensitive as was shown by the receiving at the bottom end of scale of Fécamp to the top end with Budapest. This was further demonstrated by changing the outside aerial to a small length of wire slung up in the room and the various stations tuned on the exact readings on scale and the volume remained the same in each case. Truly this is good news for the flat dwellers.

Another vastly important and new idea is the designer's "Spot-On" dial. It really is ingenious, as once the spot is down, there it remains so long as the wavelength of the station remains. Real cute this is. The operation of the set is simplicity in the simplest form, and the one-knob tuning will be welcomed by all who construct the set. Now the real tit-bit was, I think, that control you called the "Extractor." When the local did spread a bit it was cut out dead with the least of ease and quite definitely by a slight adjustment of that control. The whole operation was also done inside of five seconds by an utter stranger to the set, too.

As for comparison with your S.T.400 or other sets, these will now require to take a back seat and look on and admire as the S.T.600 proves it can bring in the stations with all power, and some to spare as well.

### "A Real Stride Forward"

What appealed to me in the set was the reduction of controls, and the ease with which "spread" could be controlled to a hairline. The next improvement was the application of Aerial Reaction. This has been a real stride forward, not just a step.

I have every confidence that this new set, the S.T.600, can pull in at least 100 stations with ease and certainty under much improved conditions than which were prevailing during your test in Glasgow.

I consider that you have the real thing this time, or else you would have called off the demonstration when you found out the conditions under which you were to come up against. I am now waiting patiently on the release of your details, and these cannot come too soon, as I decided immediately to build S.T.600 when I heard what it could do under adverse conditions. Roll on October 24th!

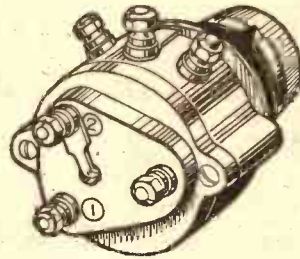
I have already been busy telling my friends and others to "wait for it." They will be saving pounds and worries if they do.

JOHN BLAIR, 407, St. Vincent Street, Glasgow.

# BULGIN COMPONENTS

Specified by John Scott-Taggart  
F.Inst.P., A.M.I.E.E.

## FOR THE ST600



Once again, as in all famous Receivers, Bulgin Products are given first choice by the designer. Ample stocks are available for delivery.

### FOR THE BATTERY MODEL.

1 Bulgin 25,000 ohms Graded Volume Control with three-point switch. List No. G.M.25, 5/9

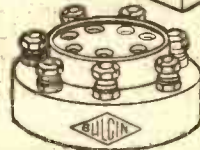
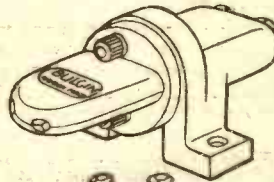
### FOR THE A.C. MODEL.

1 Bulgin Potentiometer Tone Control, 50,000 ohms. List No. V.C.36, 3/6

1 Bulgin Combined Twin Fuseholder and Mains Connector with Fuses. List No. F15, 3/-

3 Bulgin 7-pin Valveholders, baseboard. List No. V.H.15, 1/6 ea.

Full Technical details of these components will be found on pages 13, 26 and 38 of our New 1934-35 Catalogue.



### COUPON

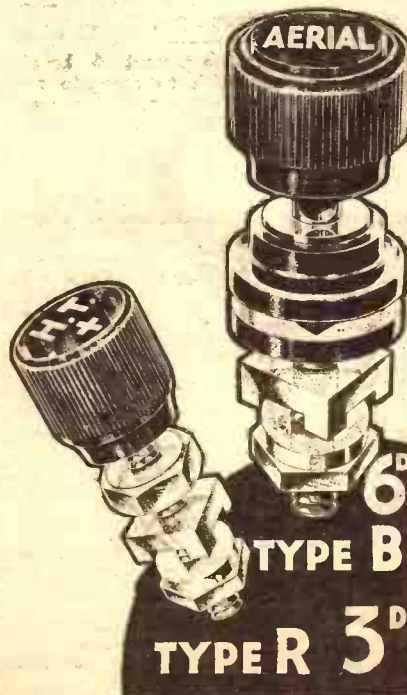
To A. F. BULGIN & CO. LTD.,  
ABBAY ROAD, BARKING, ESSEX.

Please send me, post free, a copy of the New 80-page Bulgin Catalogue No. 154 "P," for which I ENCLOSE THREE PENCE IN STAMPS.

NAME.....

ADDRESS.....  
BLOCK LETTERS, PLEASE.

Every receiver can be improved by the addition of Belling-Lee Wander Plugs, Wander Fuses, Terminals, etc. So write now for the Belling-Lee Component Catalogue.



# Once again Mr. J. Scott-Taggart specifies Belling-Lee

S.T.600 Battery Model calls for 10 R type terminals lettered A, E, H.T.+1, H.T.+2, H.T.+3, L.T.+ , L.T.-, L.S.-, PICK-UP, G.B.-1. The A.C. Mains version A, E, PICK-UP.

**BELLING & LEE LTD**  
CAMBRIDGE ARTERIAL ROAD, ENFIELD, MIDDXX



# S.T.600

## THE SWIFT SERVICE AND SUPPLY CO.

'SWIFT' KITS are GUARANTEED to give COMPLETE SATISFACTION. All Kits are sent in SEALED Cartons, with essential components specified by the Designer.

'SWIFT' KITS ARE GENUINE KITS AT A REASONABLE PRICE. SEND YOUR ORDER IMMEDIATELY, and take advantage of our 'SWIFT SERVICE.'

CASH or C.O.D.

**KIT 'A' . . . . . £3:15:0**  
(Comprising complete kit of parts, less valves, etc.)

**KIT 'B' . . . . . £5:1:0**  
(As Kit A, but including 4 valves)

**KIT 'C' . . . . . £6:1:0**  
(As Kit B, but including console cabinet)

**KIT 'D' . . . . . £7:15:0**  
(As Kit C, but including batteries and Nuvolion L/S.)

A COPY OF "P.W." DESCRIBING SET, WITH BLUE PRINT, SUPPLIED FREE WITH EVERY KIT.

ALL ABOVE KITS SENT CARRIAGE PAID. The following Components are essential for the S.T.600, and can be supplied separately:

	£	s.	d.
WEARITE S.T.500 Main Coil Assembly	12	6	
GOLVERN S.T.600 Main Coil Assembly	12	6	
" S.T.600 Extractor Coil	8	6	
" S.T.600 Combined 25,000 v./Control and Switch	5	3	
FORMO S.T.600 2-Gang 0005 v./Condenser with Long Pointer	11	0	
Dust Cover to match above	1	6	
EXTRACTOR 0005 Tuning Condenser	3	0	
VARLEY Nicet Transformer, 1-3-5	7	6	
ALSO GRAHAM FARISH, BULGIN, etc.			
362-V.P.2 Metallised Valves	9	0	
362-H.L.2	3	6	
362-P.2	4	6	
These types are equivalent to those specified, and Guaranteed.			
GROSVENOR 120 v. H.T. Batteries	11	0	
" 9 v. G.B. Batteries	1	0	
" 2 v. 45 amp. Accumulators	8	6	
NUVOLION P.M./M Loudspeakers	1	2	6
" P.M./J	1	7	6
" P.M./L	1	15	0
" P.M./O	2	2	6

Unequaled in Reproduction. All fitted with 3-ratio Transformer for Matching Power, Super Power or Pentode Valves.

THERE MAY BE CHEAPER KITS  
THERE MAY BE MORE EXPENSIVE KITS  
THERE ARE NONE BETTER THAN  
'SWIFT' KITS.

'SWIFT' KITS AND COMPONENTS ARE GUARANTEED. The Manager with over 12 YEARS' experience of the Constructor Set Business KNOWS YOUR REQUIREMENTS. WHY NOT take advantage of his experience and ensure yourself complete satisfaction? YOU CANNOT GET the results obtained by the Designer with Kits at CHEAP prices.

**DON'T DELAY**

Send at once to  
**THE SWIFT SERVICE AND SUPPLY CO.**  
(Dept. P.W.600).

**3, Featherstone Buildings, High Holborn,**  
(Telephone HOLborn 1836) **London, W.C.1.**

All Orders over 5/- Cash or C.O.D.  
All Orders under 5/- Cash only.  
Postage charged on Orders under 10/-.  
No Overseas Orders Supplied.

SEND 1½d. stamp for our special list.

## S.T.600 AT NEWCASTLE. 72 Stations Received

Having had the pleasure and privilege of hearing your new set, the S.T.600, demonstrated at my home, I would like to mention the following points which appealed strongly to me, and I think to all those present.

The sensitivity of the set was fully equal to a superhet, without the "mush" one generally hears with same.

The ease of operation is a great improvement on your previous sets, and the quality of reproduction left nothing to be desired.

The selectivity of the set speaks for itself when it is mentioned that 72 stations were received at loudspeaker strength, whilst the local station was working within a distance of

## NEXT WEEK

This issue gives all you need to start building the S.T.600 right away. But next week will appear full operating notes, use of mains units, more photographs, further letters and an absorbing article by John Scott-Taggart.

one mile from my aerial, which is an indoor one and only mediocre.

The various "improving" controls used in your latest S.T. are a decided advantage over your "400," owing to the fact that none of the "improving" controls in any way affect the tuning.

One great improvement is the Extractor you have incorporated. It was indeed marvelous how the "spread" of the local and Droitwich stations, respectively, was cut down to a minimum, and will prove a boon to those living in the immediate vicinity of high-powered stations.

After hearing your new set—worked under conditions anything but favourable—I cannot speak too highly of its excellent qualities, as the ease of manipulation, number of stations obtained, together with selectivity and quality of reproduction, was really amazing.

E. H. BRAMLEY, 9, Willow Avenue, Fenham, Newcastle-on-Tyne, 4.

Being one of those present at the above demonstration, I wish to associate myself with the foregoing remarks, and can safely recommend the S.T.600 to anyone desiring a set par excellence.

R. HAMPTON, 12, Greenway, Fenham, Newcastle-on-Tyne, 4.

## STOP PRESS

Just off to Wales to demonstrate S.T.600. Here are some hurried last-minute messages: Every S.T.400 owner will find a vast improvement in performance; H.T. current is 3 milliamps less. To S.T.300 users I say: A good "four" is always vastly better than a good "three," whatever the circuit. The number of amplifying valves efficiently used is what counts in straight and superhet circuits.

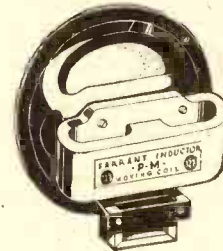
The S.T.600 is ideal on eliminator; details of connections to unit given next week. Wooden panel of S.T.600 is eminently satisfactory, I paid a shilling locally for mine. You can dispense with Spot-on card if you want (but who will?) to make panel fit 7-in. cabinet. Returning Oct. 24th to give more demonstrations.

J. S.-T.

## SPECIAL OCTOBER OFFER

We offer a limited number of the famous FARRANT PERMANENT MAGNET INDUCTOR MOVING COIL SPEAKERS at the specially reduced price of **16/6** post free.

Satisfaction guaranteed or money returned.



Outstanding features are 7 in. cone, Universal Transformer, Special Super Magnet creating greater flux density.

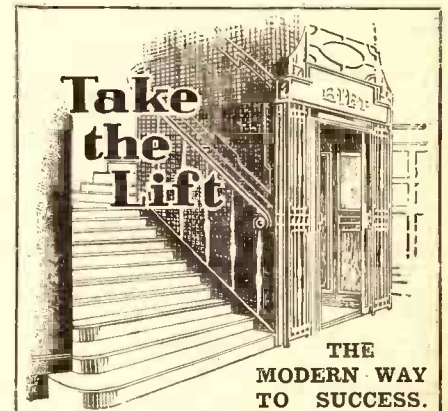
Send P.O. immediately to  
DEPT. "A.P."

## RADIO and ELECTRICAL WHOLESALE SUPPLY,

6, Conduit St., London, W.1  
MAYFAIR 3163 (3 lines).

## SAVE POUNDS ON H.T.

Bought Standard Battery nearly 4 years ago—only second time I have had to recharge. Am well satisfied with low cost and dead silent power.—C.L.W., Lewisham. All Standard Battery Spares, 120-v., 12,500 m.a., £2 complete, Carr. paid. Write: Wet H.T. Battery Co., 95, Dean St., W.1.



Instead of remaining in the crowd, struggling with others along the old zig-zag paths, decide now to take the more modern, more certain, and much quicker way to the top.

If you are ambitious for something more than a "bread and butter" job, send for a copy of our unique 256-page Guide, entitled "ENGINEERING OPPORTUNITIES." In this Handbook Professor A. M. Low (the eminent Engineer and Consultant) shows clearly and definitely the most certain way to a well-paid post.

The book gives particulars of all leading Examinations (including A.M.I.Mech.E., A.M.I.C.E., A.M.I.E.E., A.M.I.A.E., A.M.I.W.T., City and Guilds, G.P.O., etc.), and also outlines over a hundred Home-Study Courses in all branches of Civil, Mech., Elec., Motor, Radio and Aero. Engineering.

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BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY, 101, Shakespeare House, 29/31, Oxford Street, London.

Telephone: GERVARD 3486 & 4625.



**S.T.600 IN SCOTLAND**

Thank you very much for your courtesy in inviting me to your demonstration of the S.T.600. I must say that I was amazed at the performance of it—especially under the conditions prevailing on that night.

The selectivity was very effective and, coupled with the new type tuning dial which you have used, should be "Easy Selective Tuning." The range which the "600" covers was certainly much greater than some of the sets which I have used and heard—from Bournemouth to Budapest, and what was much to be admired was the fact that one could go back exactly to any desired station and tune it in.

Your device at the back of the set for cutting-out the locals was extremely effective, and did the job thoroughly. I will certainly recommend any of my friends to build the "600"—a set that can bring in over 60 stations and go back to them as desired.

*Wm. Whitten.*

1107, Maryhill Road,  
Glasgow, N.W.

**OUR SIX-IN-ONE TOOL**

A POPULAR WIRELESS Six-In-One Tool is contained in every copy of POPULAR WIRELESS this week.

This attractive gadget has hundreds of uses, as readers will quickly discover. The six features of it are as follows:

**A HANDY RULE.** Two sides are devoted to measurements in both English and Metric values.

**A SQUARE.** A sharp and accurate right angle is formed by the above two sides. You can use this for checking panel edges, striking marking verticals and so on.

**THE UNIQUE COMPASS.** There are a series of small holes, which, as you can see, are separated each from its neighbours by a quarter of an inch.

All you have to do is to stick a pin through the first hole and the very sharp point of a hard pencil through any other hole, according to the radius of the circle you wish to make.

The pin maintains the centre, and you merely swing the tool and the pencil round it to draw the circle. If you wish to mark some hard substance you can use a needle instead of a pencil.

**VALVE TEMPLATE.** Constructors particularly will find this invaluable in the fashioning of such things as adaptor plugs and for marking out chassis of one kind or another.

**WIRE STRIPPER.** There is a "V" pattern wire stripper. To use this, merely draw it up and down the wire, applying such pressure as is found necessary.

**DRILL GAUGE.** This has been designed to conform with the popular sizes of drills sold in sets on cards or in boxes. The holes represent the sizes of the drills, so that they have only to be compared with the terminal, spindle or other article that is being handled in order to ascertain exactly what drill will be needed.

**SPECIALLY TESTED**

FOR THE

**S.T.600**

**A SEALED CARTON CONTAINING FOUR HIVAC BATTERY VALVES FOR THE S.T.600 IS NOW AVAILABLE**

These valves in addition to having passed the exacting tests carried out on all Hivac products, will have been actually tested by us UNDER WORKING CONDITIONS IN THE S.T.600 CIRCUIT.

Purchasers of Sealed Cartons are thereby assured that these Valves will give entire satisfaction.

The KIT contains:—

1 HIVAC Valve Type VP 215	.. ..	<b>10/6</b>
1 HIVAC Valve Type VP 215	.. ..	<b>10/6</b>
1 HIVAC Valve Type D 220	.. ..	<b>3/9</b>
1 HIVAC Valve Type PP 220	.. ..	<b>6/6</b>

**TOTAL COST £1.11.3**

**BUY THIS HIVAC KIT AND SAVE MONEY**

Obtainable through all Curry's Stores and Dealers.

If by chance you cannot obtain your Kit locally a post-card to us will ensure its despatch C.O.D.

**HIGH VACUUM VALVE CO. LTD.**

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Telephones: Clerkenwell 7587 & 8064.

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THE SCIENTIFIC

VALVE

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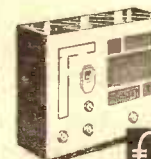
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A wonder set for those wishing to hear the main stations with clarity and pure undistorted reproduction. Handsome walnut cabinet. Output 2 watts.

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**EXCLUSIVELY SPECIFIED**  
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for the **S.T.600**

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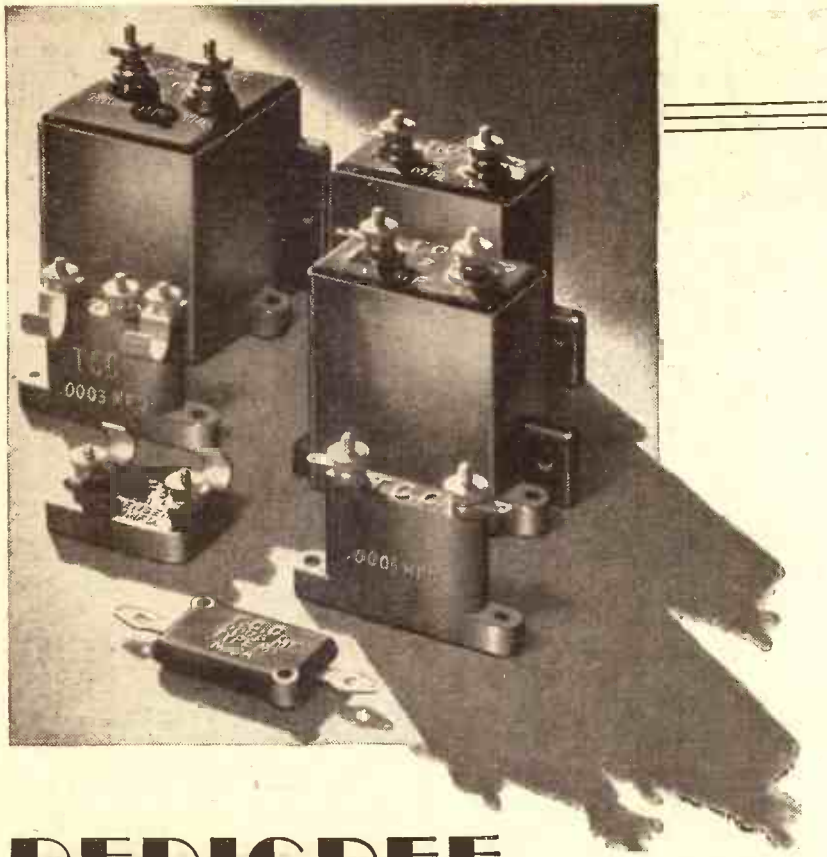
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for the S.T.600

### Battery Model

Two T.C.C. 1 mfd. Type 50	each	2s. 6d.
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Two T.C.C. 4 mfd. Type 80	each	7s. 0d.
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One T.C.C. .5 mfd. Type 50		2s. 4d.
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Thoroughbred—of sound stock—a line that goes back twenty-seven years . . . more than a quarter of a century's research—unmixed by other activities—always condensers. And so . . . development, year by year keeping just ahead of radio's needs.

That is what T.C.C. stands for—what backs each and every T.C.C. Condenser you buy. Any of the group of popular T.C.C. Condensers illustrated—or the latest electrolytic, or a block condenser, they are reliable—dependable.

Insist on T.C.C. and be sure.

# T.C.C.

ALL-BRITISH

# CONDENSERS

The Telegraph Condenser Co., Ltd.,  
Wales Farm Road, N. Acton, W.3

## THE B.B.C. MISSION TO AMERICA

The latest news about broadcasting.

I HAD already exclusively reported the visit to America of Mr. Noel Ashbridge, Chief Engineer of the B.B.C. The visit is even more important than I prophesied. With Mr. Ashbridge are several Post Office officials and engineers. The mission will examine technical improvements and conditions in the United States and will pay particular attention to television. There is, indeed, a suggestion that the report of Lord Selsdon's Committee on Television will be delayed until the return of the mission from the United States. This will be towards the end of November.

### B.B.C. More in the News.

I am told at Broadcasting House that the number of press-cuttings about broadcasting and kindred subjects has more than doubled during the past eighteen months. The increase has been steady, and continues. Apparently broadcasting is now very much better "copy" for newspapers than it was a few years ago.

Also the proportion of appreciation to criticism in newspaper comment has considerably altered, the "pros" now holding a commanding position. This is all very gratifying, but I hope our friends at the "Big House" will not get swollen heads about it. The danger of complacency is always present in monopoly.

### Colonel Dawnay in Scotland.

Colonel Dawnay, having completed a full year as programme chief of the B.B.C., is now acquainting himself with provincial centres. Last week he was in Scotland, where he examined carefully not only the organisation but also the public reaction, both in Glasgow and in Edinburgh. While he discovered that the state of broadcasting in Scotland is much healthier than it was, he was also provided with ample evidence that the listeners north of the Tweed would like their broadcasting to be a little more independent of London.

An example of this is the arrangement for broadcasting on Armistice Day. Scotland is anxious to have its own services from the famous War Memorial at Edinburgh; but as the timing clashes with London plans, Scotland has been prevented from hearing its own services. This is the cause of a good deal of heart-burning, and it would be well if the B.B.C. paid heed.

### The Royal Wedding Broadcast.

I hear the arrangements for broadcasting the Royal Wedding were nearly wrecked at the last minute. First of all there was the difficulty of doing the broadcast with the public address loudspeakers working simultaneously in the Abbey. When this was overcome, there was an objection to the commentary on the ceremony itself. I understand the Dean had deep misgivings. Apparently now, however, the objections have given way and the relay will take place as exclusively announced in "P.W." recently.

(Continued on next page.)



## THE B.B.C. MISSION TO AMERICA

(Continued from previous page.)

### That Silent Fellowship.

The abandonment of the "Silent Fellowship"—the Sunday night religious feature conducted by Mr. E. R. Appleton from Cardiff for some years, and monthly on 5 X X—has been followed by widespread protest from its huge following of listeners. But I do not anticipate any restoration, at least until Sir John Reith returns. The official reason for the change was that the re-timing consequent upon new programme development would have put the "Fellowship" feature too late to be of any value.

### Pacifism out of Favour.

Although the B.B.C. maintains friendly contact with the League of Nations secretariat at Geneva, and provides some opportunity for putting the "collectivist" plan for peace before listeners, there is a change of attitude towards "pacifism."

The League of Nations Union, for instance, used to exercise a considerable influence over the choice of talkers and subjects on international affairs. This has been completely cut off. I believe the B.B.C. has wisely followed public opinion.

O. H. M.

## GRANDFATHER'S WHISKERS

A REALLY rare event has recently taken place in the world of household amusements, an event that will set on fire the imagination of every member of every home, from the oldest to the youngest, for it affects them all. It is no less than the arrival of a totally new card puzzle-game, that is at once an hilarious party amusement in which any number of grown-up or tiny people can join, a set of six humorous and intriguing puzzles graded so that they suit any age, and a thousand funny pictures forming a riot of fun for all.

This new puzzle-game is known as Grandfather's Whiskers, and already it is sweeping the country and amusing hundreds of thousands of men, women and children. It is definitely the novelty sensation of this century. If you have not already experienced the hilarious fun that this marvellously ingenious puzzle-game provides you should do so without delay, for, in the words of the old song, "everybody's doing it," and it costs a mere shilling! Get a packet the next time you pass your bookstall or stationer. It represents the most extraordinary value for money ever seen, but it could not possibly be retailed at the price were it not for the fact that the manufacturers have the certain knowledge that millions will be sold.

**BUY YOUR**

# S.T.600

**THE NEW "EASYPAY" WAY**

**YOURS BY RETURN OF POST FOR**

THE WORLD'S ONLY NO GUARANTEE H.P. SYSTEM

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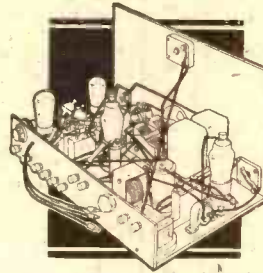
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Easypay Utilities, Ltd., introduce the S.T.600, the receiver design of the year, on their pioneer universal Hire Purchase system. Every Easypay S.T.600 Kit arrives in sealed carton, complete to the last detail, and contains Colvern coils and all component values exactly as specified. **WE GUARANTEE COMPLETE SATISFACTION** with every transaction, or deposit will be returned immediately.

Your signature alone at foot of coupon, and stated one-third NET deposit secures delivery by return. This deposit may be paid C.O.D. if more convenient.

### KIT A

Complete Kit of components, baseboard, and all sundries, in sealed carton. Cash price, £48/6. Yours by return for **29/6** (Post 1/-) and 12 monthly payments of 5/8.



### KIT B

Complete Kit as Kit A, with matched set of high-grade valves. Types as specified. Cash price, £51/6. Yours by return for **39/10** (Post 1/3) and 12 monthly payments of 7/8.

For use with S.T.600 ROTHERMEL Permanent Magnet Speaker. A high-class reproducer, ideal for use with the S.T.600. Cash price 22/6. Yours by return for **7/6** (Post 9d.) and 12 monthly payments of 1/5. **S.T.600 Eliminator.** A super-quality eliminator specially built for use with the S.T.600. For all voltages A.C. 25 m.a. Double smoothed. 5 output tappings. Cash price, 37/6. Yours by return for **12/6** (Post 9d.) and 12 monthly payments of 2/5.

### KIT C

Additionally to all components, sundries and valves. Kit C contains a beautiful table model cabinet, size 16½" x 10½" x 11". Cash price £26/17/6. Yours by return for **45/10** and 12 monthly payments of 8/10.

### KIT D

Kit D comprises the complete outfit. The full contents of Kit C, plus set of finest British-made batteries. Cash price, £27/17/6. Yours by return for **52/6** and 12 monthly payments of 10/-.

**CONVERSION KITS:**  
**KIT A.56.** Converts any S.T.500 receiver into the new S.T.600. All necessary components, baseboard, and sundries. Cash price, 57/-. Yours by return for **19/-** (Post 1/-) and 12 monthly payments of 3/8.  
**KIT A.46.** For converting any S.T.600 into the new S.T.600. Cash price, 69/-. Yours by return for **23/-** (Post 1/-) and 12 monthly payments of 4/3.

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I enclose deposit £..... d.  
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 Further, I agree to sign and dispatch the Easypay Agreement Form as soon as this arrives with the goods; except only that if the goods are not up to my expectation, I am at liberty, alternatively, to return these immediately. In this case, I understand my deposit will be refunded immediately, less 5% to cover expenses.

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 If not, why not fit the Unit Radio Short-Wave Unit and obtain World-wide Programmes.  
 For use with any type of receiver, mains or battery, straight or super-het. Built on metal chassis complete in cabinet. No extra batteries required. Sent for 5/- down. **Cash or C.O.D. 39/6**  
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## Build your S.T.600 to be truly UNIVERSAL

S.T.600 is a fine circuit. But why not build it to operate on ANY VOLTAGE, ANY MAINS CURRENT, A.C. or D.C., without Barretters, Cut-down Resistances or Mains Transformers. In short, build it with genuine **AUSTRIAN OSTAR-GANZ Universal High-Voltage Valves**. They take current direct from the mains and are far ahead of any other Universal Valve you can buy. Technical advice willingly given. Write for interesting Leaflet D, and details of our KITS for Amplifiers and Receivers.

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## This INVITES your CRITICISM . . .

Listen critically to the new "All-wave Hyvoltstar Super-het Five," and we have no fear of your verdict. Fidelity of tone, volume and keen selectivity . . . it satisfies in every particular. ANY MAINS and VOLTAGES, either A.C. or D.C. It covers Ultra-Short Wave bands as well as Medium and Long. No Mains Transformers, Barretters or Cut-down Resistances, hence the moderate price for a super-grade instrument with every refinement.

Table Model, 18 gns. Table Radiogram, 24 gns. Chassis with Valves, 14 gns.

Let us send you fuller particulars. Write for Leaflet D. **UNIVERSAL HIGH-VOLTAGE RADIO, LTD.,** 28/29, Southampton Street, Strand, W.C.2. Telephone: TEMple Bar 4985.

FOR ALL MAINS & ALL WAVES



## EASY TERMS

Everything Radio supplied on the lowest terms available. Easy payment transactions are strictly private and we give you really prompt delivery.

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Goods ordered C.O.D. dispatched by return of post and post free. Price list free.

### THE BEST BATTERY KIT

New Lissen Band-Pass 3. The Band-Pass 3. Iron cored coils. Single knob. Tuning. Straight vision scale, wavelength engraved. All metal chassis. Tone control. Dual action volume control. The ideal receiver for modern crowded ether conditions. Perfect reproduction with ideal separation of all programmes.

In our opinion the finest battery kit available. Very easy to build. Cash Price, including valves, £4 19 6, or 8/- with order and 12 monthly payments of 8/5.

As above, but including cabinet and moving-coil speaker. Cash Price £7 4 6, or 10/- with order and 12 monthly payments of 12/4

8/-

WITH ORDER

### S.T.600

Complete Kit of parts for this set supplied on the lowest terms. Please write for quotation.

### MOVING-COIL LOUDSPEAKER UNIT

New W.B. Stentorian Senior Unit. This is undoubtedly the best of the latest moving-coil units. More a volume for the same input and a further improvement in tone. Cash Price £2 2 0, or 2/6 with order and 11 monthly payments of 4/-.

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Every type of valve replacement supplied on convenient terms. 3 Valves, 1 S.G., 1 Det. and 1 Power (Mullard, Cossor or Marconi). Cash Price £1 5 0 or 5/- with order and 5 monthly payments of 4/7.

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### PIFCOMETER DE LUXE

Every possible fault in a receiver can be quickly traced with this instrument. Cash Price 42/-, or 5/- with order and 8 monthly payments of 5/-.

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### ALL CARRIAGE PAID.

Please state requirements and we will be pleased to quote you.

Full Specification and illustrated list of any of the above will be sent with pleasure.

To avoid delay, will customers kindly send first payment with order?

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## S.T.600

More Readers' Letters Prove Amazing Performance all over Britain.

### BEST SET FOR SCOTLAND.

I wish to offer my thanks for the privilege of being present at a demonstration of the S.T.600.

It is difficult indeed for me to calmly sit and write of this amazing set, when I am "bubbling over" with enthusiasm for the "600's" many outstanding advantages.

I will attempt to touch briefly on some of the astonishing feats performed by you with your remarkable new circuit.

(1) Selectivity was made to seem commonplace, the "locals" being "cut out" completely in one degree on the dial on either side of the proper tuning point. At no time during the demonstration did you fail to accomplish "bringing 'em in one at a time."

(2) Sixty stations were received in quite a short time. I can quite honestly say I could have brought in a hundred or more with the "600," the reason for this assertion being, I would not have stopped to identify my stations, as you did with every one.

(3) The quality of reproduction was very pleasing to hear, and will not fail to satisfy the most severe "tone critics."

(4) Sensitivity was astonishing, an instance of this being the reception of Cork and Pecamp at full loudspeaker strength, with only a short piece of wire thrown across the room, one end being attached to the "600."

### "This Splendid Receiver."

(5) Another point worthy of mention is range of wavelength, e.g. from Bournemouth at the bottom to Budapest at the top, every station clear and distinct, except, of course, where one or two stations were using "common wavelengths."

(6) Another point I noted was, no matter where the minor controls were left, any given station could immediately be tuned in again at the same point of the indicator on the main tuning control. This feat will be more fully appreciated if I mention the fact that the aerial coupler manipulation does not alter any station position on the tuning scale; this, I noted, applies to all other controls.

(7) I must pay tribute also to your new "Spot On" dial. It is indeed a well-thought-out and ingenious method of "making it easy for the rest of the family to tune in to the Continent or the locals"—essentially an "S.T." invention—could more be said?

(8) No one—not even the veriest tyro—need be hesitant in constructing this splendid receiver, ease of operation being evidenced in design all through.

(9) Another luxury device incorporated in the "600" is the Extractor, which really effectively cuts out the "local," this device is operated when installing the "600." The time taken to adjust the Extractor being roughly six seconds—once adjusted it can be forgotten about altogether.

(10) Now, Mr. Scott-Taggart, I have an apology to make. When writing to you re "S.T.600" I dogmatically asserted that you could not possibly improve on the "400." I admit I was mistaken—yes, very much mistaken. The "600" is very decidedly a very much better 4-valve than your "400."

I have the greatest of pleasure in advising all readers who can possibly do so, to build this splendid receiver. I can sincerely give this advice without any qualms of conscience.

(Continued on next page.)



## POWER for the S.T.600

Here is a suitable Transformer and Choke for the S.T.600. Heyberd are recognised as Britain's leading Mains Apparatus Manufacturers. Use products of MAINS SPECIALISTS and ensure perfect reception.

MODEL W.31 Transformer. Output: 175 v. or 200 v. at 200 ma. 2+2 v. 5 amps. 2+2 v. 1 amp for A.C. Valves. PRICE 29/-

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CUT OUT THIS ADVT. ENCLOSE 3d. IN STAMPS, and SEND NOW FOR NEW 1935 RADIO HANDBOOK ON MAINS WORKING. PACKED WITH TECHNICAL HINTS, AND CIRCUIT DIAGRAMS, ETC

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## BRING NEW LIFE TO YOUR OLD RECEIVER

An excellent and economical method of making practically a new set from your old one is to convert your present set by the use of the famous Austrian OSTAR GANZ UNIVERSAL HIGH VOLTAGE VALVES for use on any mains with the simplest of alterations.

There is an Ostar Ganz Universal High Voltage Valve equivalent for practically every type and make in use today.

Revitalize your receiver with these Valves or send your chassis to us for the conversion. It does not matter whether your present set is home-constructed or a commercial set of any make, battery or mains, we are prepared to convert it into a most up-to-date Universal AC-DC Receiver, and guarantee excellent results with a much reduced current consumption for the nominal cost of only 10/- per valve-holder plus the cost of the new valves.

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### Specification of our "Westminster."

3' 3" high, 2' 6" wide, 1' 8" deep. Made to take all makes of pick-ups, turntables, motor and speakers; also sets up to 18" x 8". Holes will be drilled, or veneered, free of charge. Side cupboards will take both 10" and 12" records. Complete with chromium handles and guaranteed clock. Supplied in walnut, oak and mahogany at one price. H.P. Terms: Deposit 15/-, 6 monthly payments of 10/6.

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(Dept. A.2.)



# » Which is the right BATTERY for the S.T. 600?

When you have constructed your S. T. 600, remember the satisfaction you get from it both as to quality of tone and economical consumption of current depends upon powering it with a battery of exactly the right power.

**The ideal battery for the S.T. 600 is the Ever Ready Double Capacity Popular Power 120-volt battery (17/6) Specified by the designer, Scott Taggart.**

To give you exact powering is the policy of Ever Ready. With an intimate knowledge of the requirements of practically every make and class of set in use, Ever Ready design their batteries accordingly. There is an Ever Ready battery suited to the precise requirements of every set. By using the right Ever Ready you avoid both over-powering and under-powering. You get clearer tone and your battery lasts longer.



REGD. TRADE MARK

## WIRELESS BATTERIES

The Ever-Ready Co. (Great Britain, Ltd.) Hercules Place, Holloway, London, N.7

### S.T.600 LETTERS

(Continued from previous page.)

I am very definitely going to part company with another splendid set—the "400"—in order to make room for a set not bigger, but very much better, namely the "S.T.600."

If I seem to have over-praised this latest "S.T." creation, please bear in mind that I am prepared to defend all I have stated, by inviting any sceptics to my home, through the medium of POPULAR WIRELESS, when I complete my "S.T.600." I cannot be fairer than that.

In conclusion just allow me to thank "S. T." for his invitation to witness a demonstration of the "seventh" wonder in the 4-valve class.

HENRY DUFF, 90, Budhill Avenue, Shettleston, Glasgow, E.2.

#### S.T. 600 IN MANCHESTER 58 Stations—Tremendous Power.

Having attended a demonstration of your latest S.T.600, I was very pleased with it. If station-getting is what is wanted, then here is the goods as they rolled in to the tune of about 58 stations, 47 medium and 11 long wave in a very short space of time. Power was tremendous. It looked to me like a cut right away from any other circuit, having some wonderful reserve power with it.

WALT WILSON (Bandmaster)  
18, Upper Plymouth Grove,  
Longsight,  
MANCHESTER.

#### THE MOORSIDE EDGE REPORT.

On October 7th, 1934, I accompanied Mr. John Scott-Taggart in a test of the "S.T.600" on an aerial at Slaithwaite, about one mile from the Moorside Edge transmitter.

It was at once apparent that the general level of selectivity was high, and in a few seconds a slight movement of the Extractor cut down the spread of the local station to a quite negligible amount and enabled many stations to be tuned in which were otherwise swamped.

Reproduction excellent and volume ample. The attached list of 41 stations received clear of interference (except for three with a local background) and at good volume speaks well for the sensitivity and selectivity of the "600" under such a searching test, and shows the extensive wave range of the set. Both local stations were working during this test.

Tuning was remarkably easy and was unaffected by different settings of the selectivity controls.

Aerial reaction, obtained in a novel manner, proved highly efficient, and its effect on a weak station was to raise it from almost inaudibility to good volume.

The "S.T.600" has a high degree of sensitivity, which was almost unimpaired during a second test on a small indoor aerial slung between the set and the door of the room in which the test was made.

The "600" is a distinct advance on the "400" and "500," and the combination of single-knob tuning with concentric trimmer, new type "easy-to-find" dial, highly efficient aerial reaction, and the Extractor should enable it to cope with any conditions and to give a good account of itself in any hands.

My impressions during the test were that the flexibility of the "S.T.600" is enormous and that the excellent results obtained were not due to freak operation, but could be achieved by anyone on a duplicate set.

I shall be very pleased when I am in possession of the circuit and the "600," easily the best battery set available to the constructor and a worthy successor to the "400" and "500."

W. H. HURLEY, 122, Ramsay Street, Rochdale, Lancs.



Thousands of the Technical Experts who are now in well-paid regular employment, started radio as a hobby. Their hobby has brought them success.

You, too, can study at home and qualify for interesting and well-paid radio work. Inventing, Designing, Research and Laboratory work, Technical writing, Installation, Maintenance, Testing, Servicing, Set-building, and many other specialised occupations are open to the man who knows radio thoroughly. Radio offers rich rewards to the trained man.

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Our Correspondence Courses are praised and recommended by leading Radio Manufacturers and the Technical Press. We specialise in radio and all our Courses are conducted by Radio Experts with practical knowledge of the qualifications that lead to success, employment and a good income.

Why jog along in the same old rut? Why fear the consequences of losing your job? Why waste your valuable spare time?

Wherever you live and whatever you do, radio offers you success, security, and a spare-time income.

Send at once for free copy of our latest prospectus and learn how we can put you on the road to success.

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London, W.C.1.

Please send me free copy of your latest Prospectus.

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Address.....

P.W.12.....



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Radio components and accessories advertised in these columns at below list price do not carry manufacturers' guarantee.

The Proprietors have the right to refuse or withdraw advertisements at their discretion.

All communications should be addressed to:—Advertisement Department, "Popular Wireless," John Carpenter House, John Carpenter Street, London, E.C.4.

**WOBURN RADIO** offer the following bankrupt stock:

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**WESTINGHOUSE** Rectifiers: H.T.8, 9/- Transformer, for use with H.T.8, 7/6. H.T.9, 9/- Transformer, 7/6. L.T.1, 5/-. Resistances, Truwind, wire-wound 1½-watt, accurate, 1/-, 100, 150, 500, 600, 1,000, 1,500, 10,000, 15,000, 20,000, 25,000, 30,000, 40,000, 50,000, 75,000, 100,000, 200,000, ½-meg., 1-meg., 4d. each, 3/6 doz. Chassis mounting valve holders, 4/5-pin, 1/3 half doz. Godwinex, anti-micro., 4/5-pin, 4½d. each. Western Electric mikes, 2/3. Transformers for same, 85/1, 2/3. Marconi mike transformers, 100/1, 4/-. Marconi Ideal L.F. transformers (3½/1), 4/-. 7-way battery cord, 6d. yd. Screened flex, 3d. yd. Write for new valve list.

**W.R.C.** Eliminators, guaranteed 12 months, 150-v., 30-m.a. 3 positive H.T. tappings; A.C. model, 21/-; A.C., with trickle charger, 32/6; D.C. model, 9/6. Trickle chargers, 2-v., 4-v. or 6-v., ½-amp., 12/6. (Carr. 1/- extra on each).  
New Trade List now ready; enclose trade card and stamp.

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**12/6 only!!** As above, but 10-in. cone; 12/6 each.

**15/6 only!!** Permanent magnet, with power or pentode transformer, 8-in. cone; 15/6 each.

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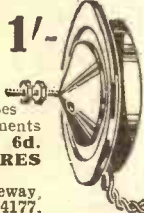
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Book of Practical Radio **1**

## S.T.600 IN LONDON

"Magnificent Results" in Central London.

May I thank you once again for having given me the opportunity of seeing your new set demonstrated before its publication. I certainly think this set is another winner, and it seems to me to be the last word in sets designed for cheap home construction.

My first view of the set gave me a thrill. I thought at once: here is something the home constructor is looking for, something distinctive and having the appearance of a first-class manufactured set.

With your Extractor circuits (only one was used in the demonstration) you have achieved what has been impossible this last few months—that is complete isolation of the station wanted from its near neighbours (of course, except those stations which have others working within two or three kilocycles of the one required).

I noticed on the long waves that Droitwich spread over most of the dial, but immediately the Extractor was brought into action this "spread" was reduced to about 2 degrees either side of the right point, enabling all the rest of the long-wave stations to be brought in without any background whatsoever.

## My New Book

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

Elsewhere you will find an announcement regarding my 'Book of Practical Radio.' Those who have my 'Manual of Modern Radio' will understand me when I say how well the publishers have produced this new and beautifully-bound volume.

The 'Book of Practical Radio' is handsome as well as extraordinarily comprehensive. There is no other way of getting it. Delay in reserving will mean you will be unable to get it, just as thousands cannot to-day obtain my former Manual. J. S.-T.

This seemed impossible a few seconds previously. On the medium waves the stations rolled in one after the other. The selectivity and sensitivity of the set are astounding. The most remarkable thing of all was "extracting" Strasbourg from London Regional, with no interference from London Regional at all, a truly remarkable performance.

I have on my chart 58 stations, which were secured with ease with all B.B.C. stations working.

The demonstration of the set without even an aerial left one gasping and wondering what the set would do after a little handling.

All controls were set to zero, the dial pointer set at the station required. Nothing was heard, but a slight movement of the knob controlling your improved aerial reaction circuit brought the station to life with a smoothness that was really wonderful. I was pleased to notice that at no time during the demonstration did the set show any sign of instability.

I am sure the constructing public will be grateful to you for producing such a fine set. I think it is a magnificent achievement.

W. IRONS, 173, Gosset Street, London, E.2.

[EDITORIAL NOTE: This demonstration took place just north of Hyde Park.]

## ELECTRADIX BARGAINS

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