

AN ARTICLE BY JACK HYLTON

Popular Wireless

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INCORPORATING "WIRELESS"

September 3rd, 1932.

A long Illustrated
CRITIQUE of the
RADIO SHOW

RECORD RESULTS on the OLYMPUS FOUR

THE MODERATOR
IN ACTION

Also This Week:
SIDE-SHOWS OF OLYMPIA
GLASGOW'S STUDIOS
S.G.'s FOR SHORT WAVES
ETC., ETC.

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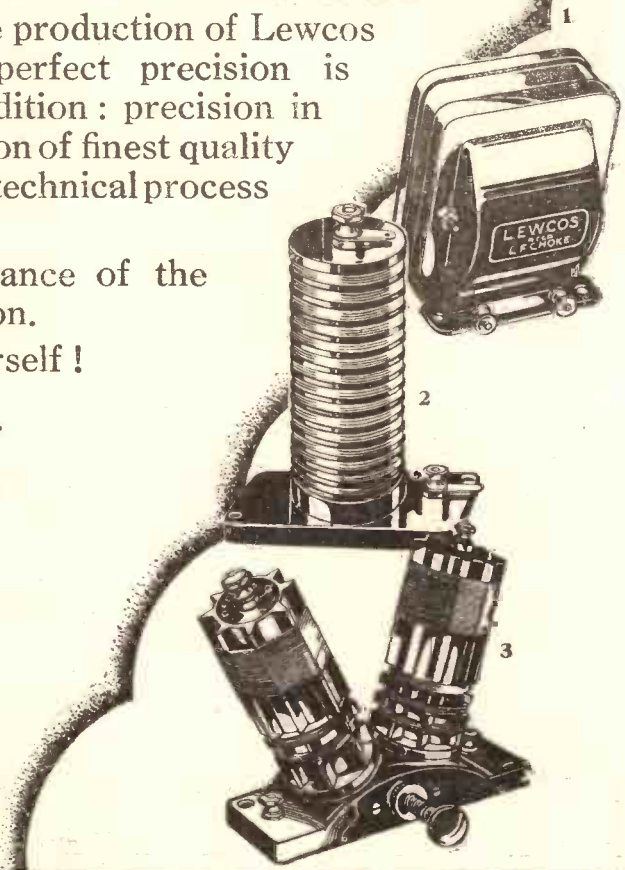
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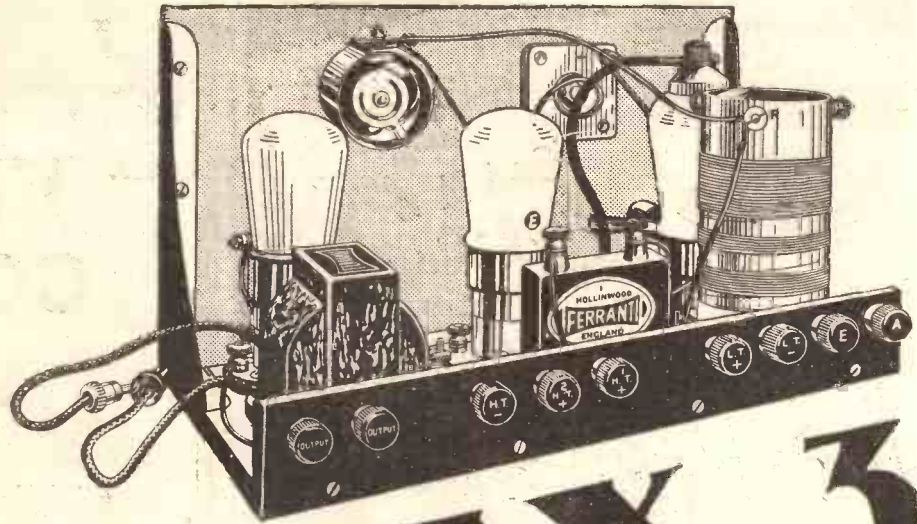
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THE LONDON ELECTRIC WIRE COMPANY AND SMITHS LIMITED. CHURCH ROAD, LEYTON, LONDON. E.10

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IN
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HIGH TENSION
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In the Milnes H.T. Supply Unit we have produced the perfect H.T. Supply. It costs you practically nothing to run, but that is not all; it gives better reception than any other method of High-Tension Supply. When you switch off your set, the unit is charged by your L.T. accumulator, and automatically cuts out when fully charged, so that no L.T. current is wasted. You will hardly be able to detect the very slight increase in your Low-Tension consumption. The Milnes Unit is built to give a life-time of trouble-free H.T. supply at low cost, and it does. Users who purchased units nearly five years ago are still getting every satisfaction from the original units.

Read the Technical Editor's Report in this issue of "Popular Wireless," on page 932.

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Microphony, the bugbear of modern reception, is conquered by the "muted filament"; economy in the batteries is assured by low anode consumption.

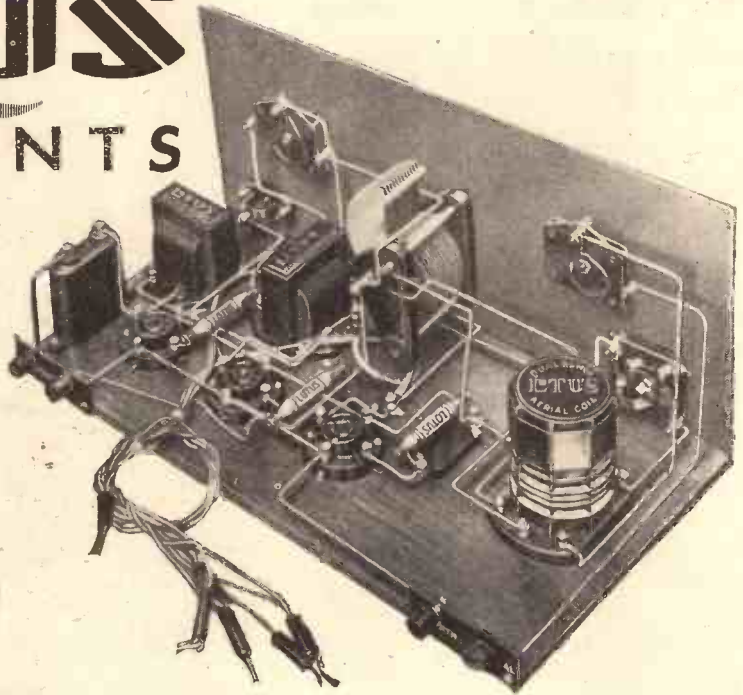
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LANDMARK 3 KIT SET 3 39'6

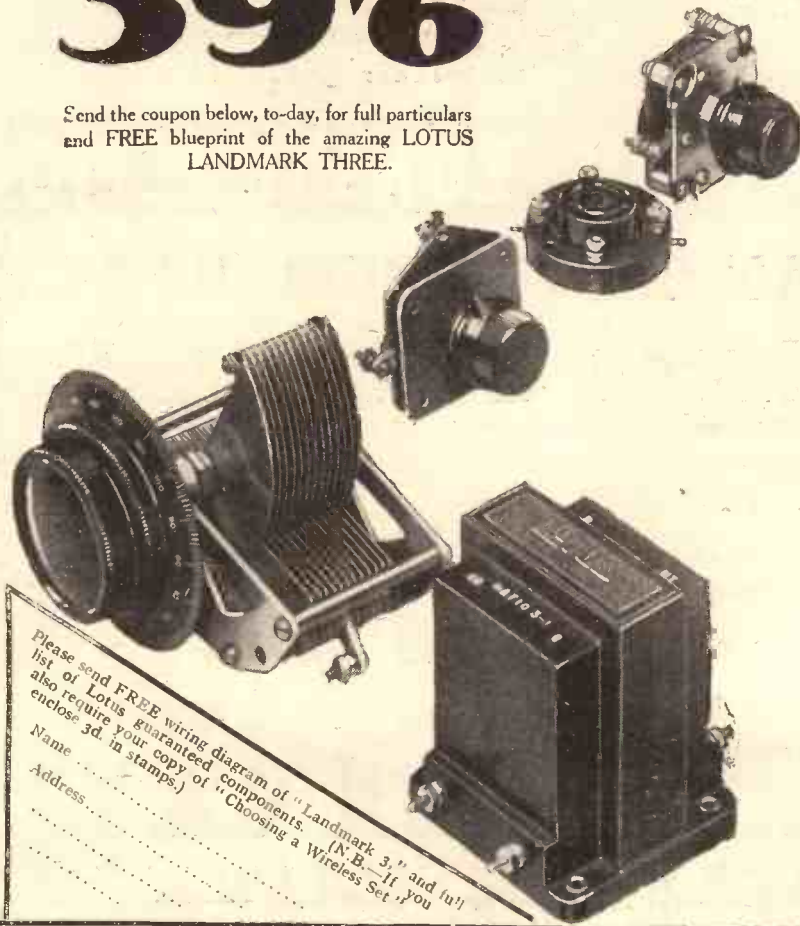
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" . . . Radio enthusiasts can purchase them with every confidence. Their outputs are above the average and they give a clean, steady output . . . "

says the Technical Editor of "Popular Wireless"

You can end all your H.T. battery troubles—you can take all the uncertainty out of battery buying, for Ediswan H.T. Batteries are now GUARANTEED against failure to give absolutely satisfactory service. No battery manufacturer could afford to give such a guarantee unless he had complete confidence in his product. Every single cell in every Ediswan battery must successfully pass four separate tests before it leaves the factory, and special precautions are taken to ensure perfect insulation between cells.



60 VOLTS	6'9	120 VOLTS	13'
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Standard Capacity. Where the anode current required does not exceed 10 M/a these batteries will give highly satisfactory service. If super-power valves are used, the super-capacity type should be used.

Super Capacity. These batteries have twice the capacity of the standard type, and, owing to their large reserve of power, last nearly three times as long when used as a replacement to a battery of standard capacity.

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Put an "All-in-One" Radiometer on the trail, and the hunt is quickly over. In an amazingly short time this instrument will track down the trouble.

There is no other instrument in the world like the "All-in-One" Radiometer. It works with an accuracy that must be seen to be fully appreciated. Every single component of any radio set can be tested swiftly and surely.

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If in any difficulty, write direct to:
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Standard Model "All-in-One" Radiometer for Battery Sets only, as shown here. Price **12/6**

De Luxe Model, for Battery Sets, Electric Receivers and Mains Units. Price **£2.2.0**



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A THIEF— a silent... sneaky thief



Valve deterioration is a slinking silent fellow creeping on you un-awares, robbing your wireless of its tone value, its clarity and even its selectivity. Valve deterioration robs you cunningly—just a little at a time, so little that you scarcely notice it until one day you realise that you are not hearing the wireless programmes as well, or as clearly, as you used to. The real enjoyment has—somehow—gone.

The fault is not in your set but in your valves. Twelve months work—or even less with some receivers—is as much as you should expect from your valves. After that efficiency is much lowered and running costs are much increased. A new set of ETA valves will restore the original purity and crispness of your reception. ETA valves will make your set as good as ever it was or even better. ETA valves give and maintain the highest possible standard of reproduction.

**YOU NEED NEW VALVES
 GOOD VALVES — ETA VALVES**



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A. Please let me know the correct type of ETA valves to replace my present valves which are as under

1..... 2..... 3..... 4..... 5.....
 (Insert type letters and number)

B. Please advise me which ETA valves to use for the following receiver or circuit.

Specify Type No. and Name

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Address.....

P.W. 3/9/32.....

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Every feature praised by Experts!

tone

Clear and full with good bass and upper register. Speech clear and natural. Quality really pleasing. Tone very pleasingly balanced. An adequate amount of bass and the upper frequencies also reproduce well.

Sensitivity

A good selection of Continental Stations clear of interference and at entertaining strength. What a lively set! Full loud-speaker strength of foreigners during broad daylight. Radio Paris at full loud-speaker strength with reaction at zero.

Selectivity

Toulouse clear of London Regional and Turin (274.2 m.) and Barcelona (251 m.), both clear of London National. On the long-wave range, Radio Paris well clear of 5XX. Wonderful selectivity. London stations limited to 15 metres each. The long wave selectivity was extremely good.

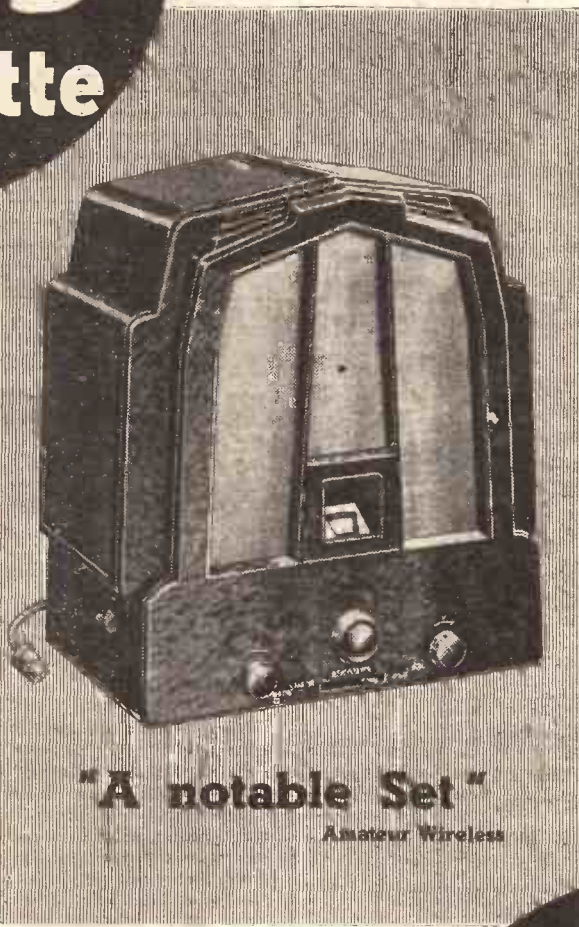
Operation

Calibration of the scales very accurate indeed. Easy to handle.

General

General construction very good indeed and all the components of high quality. Gives a performance that would have been incredible two or three years ago.

The above are brief extracts from Test Reports which have appeared in "The Wireless Trader," "The Broadcaster," "Amateur Wireless," etc.



"A notable Set"

Amateur Wireless

This wonderful E.K.C.O. M.23 Consolette has been tested by many technical experts—the keenest of critics—yet their enthusiasm knows no bounds. Sensitivity — selectivity — quality of reproduction—all have been praised wholeheartedly! Its all-round performance has been styled as 'incredible,' and construction 'of the highest quality.' Hear the M.23 demonstrated at your radio dealer's—or better still in your own home. Fill in the coupon below and we will send you full particulars!

THE NUMBER OF VALVES stated in descriptions of E.K.C.O. Receivers signifies the actual number of RADIO RECEIVER STAGES. Rectifying stages in A.C. models are NOT included.

With one exception, all E.K.C.O. receivers, etc., employ the Westinghouse patent metal Rectifier, which is of a definitely permanent character.

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Three-valve circuit (Screened Grid, Detector and Pentode, plus 1 Westinghouse Metal Rectifier in A.C. Model). Complete with built-in moving-coil speaker, in figured walnut bakelite cabinet. Illuminated dial. Connections for pick-up.

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Most mains radio problems are answered in this book, and "free" field excitation, "automatic" grid bias, hum, motor-boating, etc., are fully dealt with.

If you would like a copy, fill in the coupon and send it to us with 3d. in stamps. You will find the book invaluable.

Westinghouse Metal Rectifiers will be on view at the **BON MARCHE RADIO EXHIBITION**, Brixton, S.W.9, September 3rd—10th. If you were unable to visit Olympia, here is a chance to see these reliable rectifiers—the only rectifiers to combine robust construction, long life and high efficiency.

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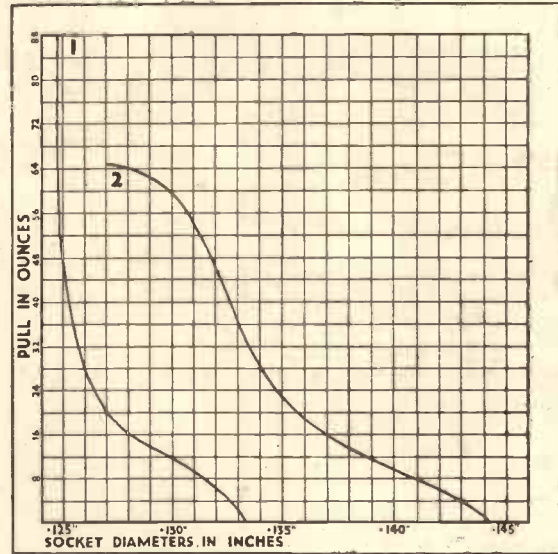
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LONDON, N.1.
Please send me a copy of your 44-page booklet, "The All-Metal Way, 1933," for which I enclose 3d. in stamps.

Name.....

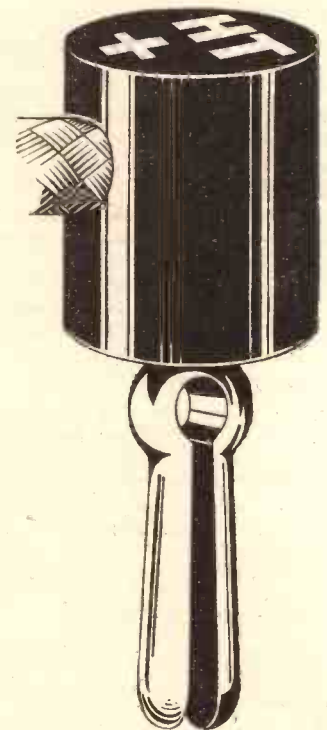
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P.W. 319/32.

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New "BOWSPRING" Wander plug



Some wander plugs grip a limited range of sockets strongly. Others adapt themselves to a wide range of sockets, but make such light contact that they easily come adrift.

The curves above record the performance of two wander plugs — (1) a typical "split pin" type and (2) the new Belling-Lee "Bowspring." Starting from a small socket, each plug has been pulled out and pushed into progressively larger sockets until no contact is made. The curves show the force in ounces needed to pull each plug from the various sockets.

A glance will show which is the better plug.

The "Bowspring" gives strong pressure over a far wider range of diameters than any plug we have so far tested.

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- "STATION MASTER 3"** (Model B.). With valves, speaker and cabinet. For battery use. Cash Price, £7/10/0. Balance in 11 monthly payments of 14/-.
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- READY RADIO 303.** 3-valve kit (Det., 2 L.F.) with valves, cabinet and permanent magnet moving-coil speaker. Built in 20 minutes! Cash Price, £6/17/6. Balance in 11 monthly payments of 12/7. Send **12/7** only
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- ULTRA 1933 TUBE RECEIVER.** A.C. or D.C. Mains. S.G., S.G. detector and Pentode. Moving-Coil Speaker. Complete with Mazda Valves ready for use. Cash Price £15-15-0. Balance in 17 monthly payments of 20/-. Send **20/-** only

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As Described in Popular Wireless 20/8/32.

EXACT TO SPECIFICATION

KIT "A" Author's Kit of specified components including *ready drilled panel* and *terminal strips* but less valves and cabinet.

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or 12 monthly payments of 8/6

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| Lissen Hypernik L.F. Transformer (medium ratio) | 4 6 |
| 2 Telsen Screened Coils | 12 6 |
| 2 Telsen .0005 mfd. Telextors | 17 0 |
| 1 Keystone .0003—.00035 mfd. max. differential reaction condenser | 1 5 0 |
| | 3 0 |

For full details, see our full-page announcement on page 817 last week's issue.

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3-valve (S.G., Det. and Power) Chassis Kit with single-dial tuning, screened coils and ready drilled panel. *Less valves and cabinet* CASH PRICE **88/6**

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- W.B. PERMANENT MAGNET MOVING-COIL SPEAKER. Type PM4.** Complete with transformer. Cash Price, £2/2/0. Balance in 7 monthly payments of 5/9. Send **5/9** only

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- BLUE SPOT SPEAKER UNIT AND CHASSIS.** Type 100U. Cash Price, £1/19/6. Balance in 7 monthly payments of 5/5. Send **5/5** only
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- REGENTONE D.C.1 H.T. ELIMINATOR** for D.C. Mains, tapped S.G. Detector and 120/150v, at 25 m/a. Cash Price £1/19/6. Balance in 5 monthly payments of 5/6. Send **5/6** only
- GARRARD INDUCTION GRAMOPHONE MOTOR.** For A.C. Mains. Model 202. Mounted on 12-inch Nickel Motor Plate with fully automatic electric starting and stopping switch. Cash Price, £2/18/6. Balance in 11 monthly payments of 5/4. Send **5/4** only
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Each component is made by a specialist and has been selected by the designers to render the Scout S.G.3 the most supremely efficient, powerful and selective set ever made available to the home constructor at such a modest outlay.

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The SLEKTUN SCOUT



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Please send me the FREE illustrated Book of the SCOUT S-G.3, together with the full size blueprint. I enclose 1½d. stamp to cover cost of postage.

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Send this FREE G.I.T. coupon by post or exchange it for the Book and Blueprint at your local radio dealer's.

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Read about them in this handsome book—you will enjoy it—it is a revelation of the perfection of really cleverly designed, modern Radio.

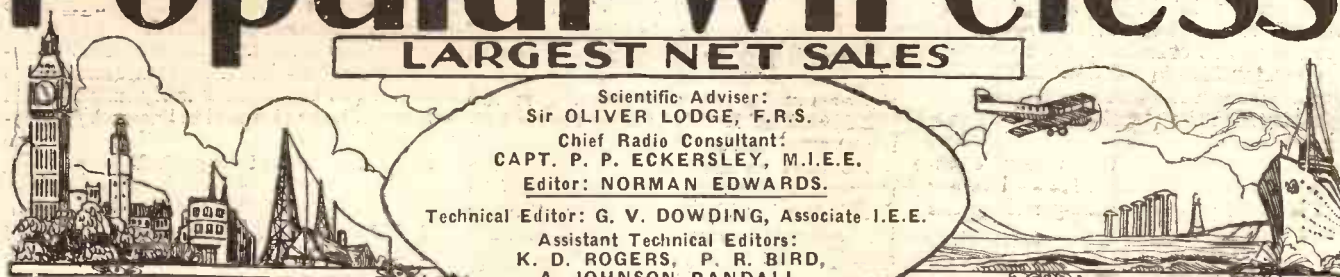
Just pin a 1½d. stamp to the coupon and post it to-day. You will receive, not only the Magazine, giving full constructional details, but also a full-size blueprint, also free. Send for your copy quickly!

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CONNOISSEURS.
 NEW GENERATION.
 WHERE IS G.B.?
 THE "FLYING S.T."

RADIO NOTES & NEWS

CRUELTY TO MILK,
 THIS WEEK'S MYSTERY.
 THE UNEMPLOYED.
 THOU SHALT NOT.

Our Connoisseurs.

THE other day my morning bus was invaded by a number of lady office-cleaners, and, to my huge delight, two who found seats immediately in front of me fell into gossip about radio.

At that moment I could have been diagrammatically represented by two large ears. Not done—that sort of thing—amongst boys who used to go to the "old school," but where is the radio journalist who could resist it?

Eventually Emmy said, "Oh, yerse! We've got a wireless and we all listens assept my old man. The only things as wakes him up is a nawgin ressydle or a cornick soler. But I always says, 'Give me a nice band.'"

New Musical Generation.

AFTER careful study of this season's Queen's Hall broadcasts I feel convinced that broadcasting has created a new generation of music-lovers, consisting of people who do not know much about music but who know when music pleases them.

They applaud, or begin to applaud, after the third movement of a symphony, not knowing that there is more to follow. Conceive the disgust of the old *habitués* and the *poseurs* who talk about "the hesitancy of the wood wind" or the "blatant self-sufficiency of the brass"; conceive the humiliation of the premature applauders!

Never mind! It's all to the good; the music-lovers of to-day are the musical jargoners of to-morrow. The main thing is to get people to begin to realise that a love of great music, like that of great literature, is something to be cultivated.

Where is Great Britain?

ASTOUNDING facts may, with due exercise of patience, be gleaned from those driest of all dry things—trade returns. The number of bone collar-studs exported from Czecho-Slovakia to Liberia, or how many tons of tea China sends to India, for examples!

Now! In 1931 Turkey imported £11,000 worth of radio stuff, of which Great Britain sent only £358 worth. What a rotten

The "Flying S.T."

EXCEPT for what the Americans will probably claim for Wilbur Wright or Hank P. Sloebottle, and the Chinese for Pi-hi-poo (786 B.C.), I claim Mr. J. Scott-Taggart's flight round, through and across (besides up and down) Great Britain as unique.

B'gosh! Olympic Games or not, we will have a record! He is the first non-professional-flyer to fly his own machine, as a radio expert. And he has been flying round Great Britain to test his latest model receiver in the homes of his readers.

For details of this exciting affair you simply have to plank down sixpence and say "Wireless Constructor for September."

"POPULAR WIRELESS" AT RADIOLYMPIA



Even in the early mornings there always seemed to be great interest shown in the "P.W." Stand at Olympia, and here are interested visitors discussing points about one of the sets displayed—with Sir Oliver Lodge and Capt. Eekersley in the background!

How It Happens.

PROBABLY the most useful section of the B.B.C.'s exhibit at Olympia was the exhibit of photographic and diagrammatic charts illustrating the various stages through which signals pass from the microphone to the listener's loudspeaker, a process which is still a mystery to many people.

The B.B.C. also showed a sectional scale model of Broadcasting House, and crowds flocked to their stand for a sight of the model of the D.G.'s bathroom at Portland Place!

showing! Turkey is going to be a good radio market for someone, and if we do not get a big wiggle on, the chaps who will collar the trade are the French and the Germans.

Just now the British are in favour in Turkey. That, I happen to know. Well—I dedicate this paragraph to all whom it may concern.

Marconi Plods On.

I LEARN that Marconi has succeeded in telegraphing and telephoning by wireless a distance of 168 miles, using waves 57 centimetres in length; say 22½ inches. That is short-wave work with a vengeance!

(Continued on next page.)

NEWS—VIEWS—AND INTERVIEWS (Continued)

The great point in this is that he has managed to get these short waves to curl over the earth's curvature. He appears to be repeating his old trick, when by communicating from England to Newfoundland he confounded the theorists who said that the waves wouldn't follow the earth's curve.

Having regard to the recent cross-Channel experiments, I am inclined to say that Marconi generally manages to go one better than his imitators.

Cruelty to Milk!

LOTS of varieties of bacteria are harmful to the human interior, and as such ought to be abolished; but I am amazed to learn that a conspiracy of officers belonging to the Texas Christian University—I repeat, *Christian*—is directed to the extermination of milk bacteria by the very Chinese method of whistling them to their doom.



These torturers produce a 9,000-cycle note by means of a 250-watt valve and subject the milk to the programme, thus reducing the bacteria by from 80 to 99 per cent. It is said that on hearing the name of De Forest or Fleming, milk microbes immediately turn into cheese and refuse to mike!

The Gramophone Scores.

A FRIEND of mine, lately returned from Africa on leave, tells me that his local barbarians were not at all impressed when he substituted a radio set for the gramophone with which he had frequently bewildered them. On seeking an explanation from the head nigger, who rejoices in the name of Candles, he learned that whereas the gramophone speaks the same word all-the time, the bottle-box (radio) changes its talk as often as the goats change their pasture. He (my friend) says that it is quite impossible to convince the natives that both the gram. and the radio are not persons, but are toys operated by men.

This Week's Mystery.

J. D. (Luton) offers a mystery which beats all the musical dogs, singing-pots, etc., to a bright green frazzle. He was using W. L. S.'s "Short-Wave One" and, wishing to change the valve, pulled it out without switching off. Whereupon the set stopped delivering 2 X AD and provided dance music.



This started J. D. off on a tour of experiment, during which he found that he could receive either Reg. or Nat. Sometimes he connected one telephone tag to the accumulator and held the other; sometimes he got the programme from a picture frame.

Radio Simplified.

J. D. says, moreover, that he lulls himself to sleep with dance music derived from a combination of his spring mattress and a pair of 'phones. "If two people each hold one 'phone tag (in my bedroom) quite audible strength is obtained."

We have no explanation ready at the moment, seeing that the nearest aerial to J. D.'s is said to be 90 feet away. Singing in the ears is a symptom which should not be neglected!

Sez They!

I NOTICED in an advertisement of Murphy Radio the following remarks: "When a design is done properly in the first instance, revolutionary developments simply do not occur. Progress in radio is not and has not been made by 'revolutionary developments.' In point of fact, 'there ain't no sich animile.'"

"SHORT WAVES"

"I don't like the tone of your wireless set."
"That's not wireless; it's our electric iron."—Answers.

Nervous Announcer: "I am very sorry to say that owing to the fog it is impossible for me to see what the weather is like to-day."

"Wireless talks for sea travellers," runs a headline. Enough to make you sick.

An American inventor claims to have completed a scheme whereby entire families can be kept warm by radio.
Hot air, we presume.

A theory has been put forward by a writer in a daily newspaper as to the reason for the enormous increase in the number of wireless licences recently issued.

He suggests that all the farmers, and other people, who believed that wireless waves were the cause of the last heavy rainfall, have bought wireless sets in the hope of working the oracle again.

She was only a broadcaster's daughter, but she was always ready to "mike."
"Pictorial Weekly."

Quite O.K. up to a point, but brother Murphy is, I think, a little too daring in suggesting a guarantee against man's inventiveness. It may or may not have been a "revolutionary development," but I remember that the introduction of the screened-grid valve quickly made a lot of "designs properly done" look a little old-fashioned.

And I wouldn't be so rash as to predict that no more innovations of a like calibre will ever be created. As a matter of fact, there is something brewing even now which many reputable authorities reckon may "revolutionise" set design within two or three years.

Interesting Encounter.

E. R. N. S. (Hull) had a stroke of luck last month. Having gone to Bridlington to fish, he saw in the harbour there some R.A.F. motor launches which are equipped with radio for the purpose of signalling to aircraft the results of bombing practice. In one of these a number of mechanics were installing a new motor, among them being the famous "Lawrence

of Arabia," or, as he playfully prefers to be called, "Aircraftman Shaw."

I'd give a lot to know why that diplomatist, organiser, fighting leader and superb writer has cast such a lowly mantle upon himself, just as I would to know why heavy-weight boxers so frequently weep like Little Nell when they get a licking.

Unemployed Phenomenon.

MY amusing correspondent, F. W., of Plymouth, who now turns out to be a Taffy, has given me a brief though bold sketch of his countrymen's demeanour—

"dark, sullen and suspicious"—which I beg leave to suspect erroneous, and a recommendation to consume some ghastly kind of bread made of seaweed, "good for flatulence and obesity." Not guilty, my Taffy. I am going to try to cajole our Editor to publish a spirit photograph of "Ariel," in order to scotch, once and for at least another ten years, this libel about obesity.

F. W. says he is unemployed; yet he fishes like a dook, runs a mo-bike and builds radio sets. Why should I work?



Electrical Inventors and Prohibition.

WHILST I do not pretend to make public my private opinion of the hysterical Eighteenth Amendment of the Constitution of the U.S.A., which deals with the sale of "strong drink," I think that it is significant that Charles Edison, son of the Edison, and Nikola Tesla, the A.C. wizard, ever-to-be-revered, are both deadly enemies of Prohibition. C. Edison wants Prohibition to be repealed because it is a breeder of crime and political corruption. Tesla wants Prohibition to be repealed because it permits the unlimited consumption of poisons, whilst restricting the use of the most needed and harmless of stimulants. Personally—mine's a bitter!

Thou Shalt Not Interfere.

THOUGH the French broadcasting system is not very systematic, France is a paradise for the harassed listener. Dare to interfere with the sacred liberty of

the *sansfiance* and you will find yourself within a measurable number of francs of the guillotine.

Witness that a Nice, but not very nice, hotel keeper, has been fined 10,000 francs for annoying a neighbour with his neon tube advertisement. Another neon lamp user in Brussels has been condemned for a similar offence: sentence not divulged.

Glad to know that we have some rights—somewhere!



WHAT I SAW AT OLYMPIA



Some vivid impressions of the magnificent show which marked the conclusion of the tenth year of British Broadcasting are here recorded.

By a "P.W." TECHNICIAN.

REMARKABLE proof of the hold radio has gained on the public imagination was forthcoming on the opening day of this year's show. As it so happened it was the hottest day in our time, for once the daily newspapers had a "record" which really was a record.

And on my way to the exhibition I noticed a succession of placards which gave a graphic summary of the rising temperature: "Hottest Day For Two Years," "Hottest Day For 21 Years," and "Hottest Ever."

Trying to Keep Cool.

Of course, this wave of increasing heat did not pass unnoticed! In the brilliant sunshine coatless and hatless men were perspiring in their comparatively thick clothing, while their womenfolk made the streets gay with ultra-summery dresses.

And yet one thousand people queued up at the Radio Show at Olympia before the doors opened! One thousand people were so anxious to see the latest things in radio that they stood and sizzled in the grilling sunlight instead of searching out some shady and cool woodland or riverside spot!

Travelling inside a bus down the Addison Road, feeling as though I were shut in a perambulating oven, I said to myself, "I am going to the show, will anyone else? Phew!" And, honestly, it did not seem possible that any but traders and a few rabid enthusiasts like myself would be able to face the inevitably tiring task of walking round the greatest radio exhibition ever on such a day as that.

A Hefty Crowd.

But although it was still early when I arrived, the interior of the Grand Hall was simply humming with life. It may not have been a record attendance, that would have been too much to expect, but the visitors made a very sizeable crowd even in that vast

hall. And instead of a few languid professional men, such as one might reasonably have anticipated, there was a vast assembly of keenly interested members of the public.

But they were very hot members of the public, and I metaphorically take off my hat to Messrs. Mullard for a brilliant brain-wave. They were giving away hundreds of paper fans, and practically everyone was waving the name of Mullard in order to create cooling movements of air.

I felt very sorry for some of the stand attendants, for integral parts of most of the stand decorations were huge electric show signs which generated almost frightening temperatures. I was shown a thermometer which indicated a temperature of 106 degrees at a point where an unfortunate individual had to stand and deal with endless inquiries regarding a set that was occasioning unusual interest! And after

lingering in the vicinity of this for a few minutes, I had no reason to disbelieve that reading!

However, in general, the interior of Olympia was as cool as (or no hotter than!) anywhere else that sweltering day. The exhibition authorities had tackled their job in a very thorough-going manner. The great expanses of glass roofing were covered with heat-insulating fabric and bags of ice and refrigerators coupled to electric fans were dotted all over the place.

Specially Interesting.

In parts the ground floor was refreshingly cool, but up in the gallery it was—Phew! I perspire at the mere recollection of it!

The decorations and displays were impressive. At the one end was a great blue and silver arch flanked by a vast and noble stairway leading to the upper sections. In the centre a beautiful fountain played. The stands, as usual, conformed to a standard colour scheme and the lighting throughout was under skilful control.

One of the greatest surprises was to find that the Post Office had weighed in with some extremely interesting and useful exhibits. They had a large display in the National Hall.

Skilled Men.

This display was mainly concerned with the problems of interference. It was claimed that the Post Office are now ahead of the problem of electrical interference, and that now one need not hesitate to purchase a receiver on the score of possible local disturbances.

There were skilled Post Office engineers in attendance to demonstrate the various forms of interference from domestic appliances, such as fans and refrigerators, etc., and to show how noises from these could be suppressed.

These engineers were most
(Continued on next page.)

THE HEART OF THE SHOW



Although the Radio Show opened on the hottest day for 21 years, a delightful sense of coolness was given to Olympia by the illuminated pylon and fountain which stood out from the bright array of stands.

WHAT I SAW AT OLYMPIA

(Continued from previous page.)

courteous and helpful, and I am sure this proof that there is humanity as well as red-tape in St. Martin's-le-Grand was very much appreciated.

The Post Office officials were also advancing the claims of long-distance radio-telephony and answering questions and giving, gratuitously, interesting information about the various services which are now available.

There was a model of the aerials of a short-wave transmitter and various examples of the actual apparatus used.

Touring the Stands.

Before commencing my stand-to-stand tour proper, I made my way over to the POPULAR WIRELESS stand (in order to park my hat and attaché case). Here I found a large number of visitors—some waiting to catch the eye of one of the technical experts who were in attendance to answer any and every radio question and deal with any and every radio query free of charge, and others examining the various pieces of apparatus which were on show.

I fancy the greatest attention was paid to the complete amateur transmitting station which we had installed. This was built by one of the members of the "P.W." staff for his personal use, and is as fine a piece of work of its kind as has been seen.

It is built in panel form on the lines of a broadcasting transmitter and it incorporates such up-to-date features as crystal-control. The filaments of the various valves were lighted, and a gramophone turntable was spinning away as though an actual transmission were taking place.

I firmly believe that a number of visitors thought that this outfit was supplying the

loudspeaker music which permeated the interior of Olympia!

The "Olympus" Four also occasioned considerable attention, and needless to say the exhibits of our associated journals, "Modern Wireless" and the "Wireless Constructor" also drew their respective crowds.

I stood among each of these for a little while, listening to the various comments which were being made. And I was surprised at the knowledge evinced by many of the people. There was much keen and well-informed criticism which was, I am glad to say, largely very favourable.

By the way, this is an aspect of the show to which we always look forward. It is the one golden chance of the year for us to see and talk to large numbers of our readers. It is true a large circulation is an indication that we are managing to please our readers, but we do like this chance of getting into personal contact with them.

Lessons Learned!

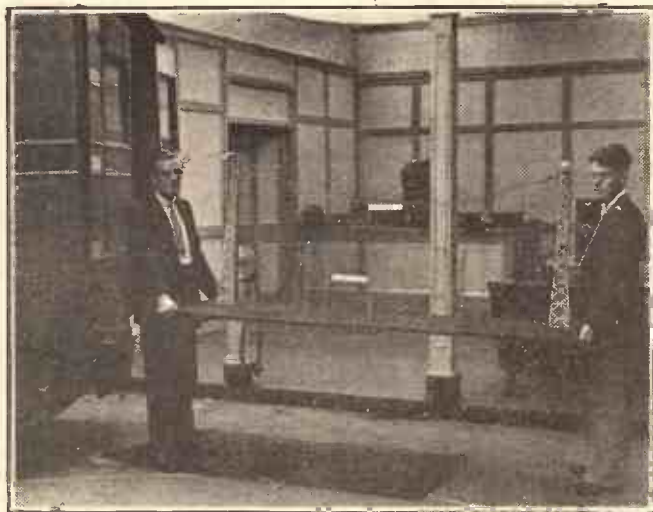
Invariably we learn a great deal at Olympia, and it is most instructive and interesting reading the detailed reports which we all prepare after due reflection and consideration.

At times, the diversity of likes and dislikes expressed are somewhat bewildering, but apparently we do seem to strike a happy mean—and that is what we are even now endeavouring to maintain.

I look back with the greatest possible pleasure to a discussion I entered into outside our stand with four visitors from the North. They were keen radio fans, indeed, and they had some sound views to express, particularly on the present condition of home-construction.

By then it was nearly one o'clock, so I repaired to one of the excellent restaurants for lunch. It should be noted by all who have not yet enrolled in the vast Olympic army, that Radiolympia always provides ample opportunities for first-class, inexpensive refreshments, ranging from ginger-beer and ice-cream to full-blown lunches and dinners. You can spend the whole day there without any inconvenience at all.

CARRYING A BEAM STATION



The G.P.O. stand included a model of the latest beam wireless station, and you can see it here being unloaded from what was, a short while ago, one of the "bogy" vans which waged war on radio "pirates."

My first port of call after lunch was the Telsen stand, where I had the great good fortune of having all the Telsen exhibits described to me by no less a personage than Mr. Macnamara himself. And I believe he was the keenest radio enthusiast at Radiolympia. You realise that there is no mystery in the ever-rising curve of Telsen prosperity once you have met and spoken to the man who has brought the name of Telsen from obscurity to pre-eminence in a matter of but a few brief years. He is dynamic.

He very clearly and with great enthusiasm expounded on the theme of "the home constructor is the best friend of the radio industry," and then showed me what he, in his turn, is doing for the home constructor this season.

In this connection, of greatest interest and importance, is probably the Telsen Drum Drive and Condenser Assembly. This unique component is supplied with two scales, one marked in wavelengths and the other in 0-100 gradations. The wavelength scale is based on the use of this condenser with the Telsen Screened coils.

Wavelength Calibration.

I believe this is the very first time wavelength calibration has been brought within the immediate and direct reach of the home constructor.

The second Telsen item brought to my attention is of almost equal attraction. It is the Telornor, a handsome, oxidised silver escutcheon plate complete with illuminated disc drive for the tuning condenser and accommodation for volume, wavechange and on-off controls. These are all neatly grouped and so the balance and dignity of a commercial set becomes possible, inexpensively and with no trouble, for the home constructor.

Of course, I inspected "Macnamara," the new set. I considered the most outstanding feature of this to be its clean and handsome internal appearance which was as much a pleasure to examine as its beautiful exterior lines.

The Telsen "Ajax" Home Constructor set is in its way every bit as great an achievement.

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SIMPLICITY ITSELF



This interested visitor sees the ease with which the expert wires up the "Olympus" Four, "P.W.'s" show set.

WHAT I SAW AT OLYMPIA

(Continued from previous page.)

But in a sense it is the complete antithesis of "Macnamara," for while that is the polished and refined "commercial" product, "Ajax" is radio design simplified, but none the less efficient, for home construction.

As the afternoon drew on it seemed to grow a little cooler, probably because the steps taken by the authorities were beginning to take effect. The extremes of temperature were very markedly represented at the Ediswan stand, for this seemed to be surrounded with cooling electric fans, while the illusion of a glowing fire was created electrically as a part of the decorative scheme!

Better Batteries.

The most prominent exhibits here were the new process H.T. batteries which Ediswan are now making. In connection with these, a helpful and interesting booklet was being distributed.

I came across two Ekco stands. There was first the main one on which were to be seen the full range of Ekco sets. I thought these were among the few really outstanding productions in point of general design. They seemed to carry an individuality which lifted them well above the average.

The station selecting dial, which constitutes the leading feature of the majority of Ekco sets, was illustrated by a large model. The Ekco super-het. receiver seemed to be the exhibit that created the greatest interest. (When a firm of the magnitude of Ekco embraces a particular circuit or

design, it is as though a seal of approval has been put upon it.) The bakelite cabinets housing the Ekco sets are striking evidence of the advance made in bakelite moulding and its potentialities.

The other Ekco stand was devoted to a visual testing device for radio receivers, which, it was claimed, is the only British-made article of the kind available.

And talking about testing reminds me that most intriguingly elaborate testing gear was to be seen in the H.M.V. display. With the assistance of a gramophone record, actual curves were being taken.

The H.M.V. stand won a prize, and in my opinion it thoroughly deserved to do so. It was a truly magnificent affair, glittering with chromium plating and ex-

And it is only the trained radio engineer who is able to appreciate the beauties of such a magnificent piece of work to the full, though I noticed that inexpert listeners were by no means unconscious of its more obvious wonders.

I passed from this H.M.V. masterpiece to a stand on which were arrayed a range of sets of the second-class order. I did not stay long, and I am not going to mention the name of the firm to whom they were due. If I could find any praise for them it would only be at best faint praise, and I expect these receivers are really quite adequate and not at all bad value for money.

But such a high standard has been set by so many firms that slight departures from the first-class are apt to assume

SOUND ADVICE FROM THE MAN WHO KNOWS!



"PUT THAT IN YOUR PIPE—!"



The stand attendant had no thought for the dignity of the Mullard robot—but the robot seems to be enjoying his "smoke"!

"No, sir, I am afraid you went wrong there. Now, this is how it should be done!" A scene that was enacted hundreds of times a day at the "P.W." stand.

pertly arranged display constructions. There were both artistry and science behind it, indeed, it revealed a complete understanding of the psychology of presentation and salesmanship.

I spent some time examining the H.M.V. instruments, particularly the six-valve super-het. and the wonderful radio-gram with automatic record-changing. I do not think the industry is capable of producing anything better; it is a "last-word" in modern radio. My mind jumped back seven or eight years; if anyone had prophesied such an advance as is represented by this H.M.V. instrument he would have been thought insane.

exaggerated proportions, which is unfortunate. I must say right away that even this does not apply to many. A few years ago, it may have been only one or two, it was necessary for us to issue something in the nature of a warning to the public on account of the rather alarming number of "sub-standard" instruments which were then current.

Very High Standard.

To-day, however, nothing of the kind is necessary. Commercial sets can be bought almost haphazardly just as can other objects of domestic utility—without the risk of disappointment. From "dudness" and adequacy we have progressed to goodness and excellence! That is, of course, generally speaking. There are still the very few exceptions, as there no doubt always will be.

I was attracted to the Epoch stand by
(Continued on next page.)

WHAT I SAW AT OLYMPIA

(Continued from previous page.)

the shrilling of a telephone bell. And I hoped that it presaged nice fat orders for the new Epoch set. It deserves it. It is a quality production and reveals craftsman-

kind was to be seen at Lissen's stand. Here there was a young lady assembling one of the Lissen kit sets. But she was not too deft, not too practised to spoil the effect. Indeed, I do not think she could have had any previous experience at the task at all, judging by the way she was carefully going to work.

A Fine Demonstration.

If she was acting she was doing it extremely well. But the assembly of this

There cannot be anything at all which they do not make and make very well, too. Is there any other radio concern which manufactures complete sets; kit sets, loudspeakers, batteries, valves, mains units, pick-ups, radio-grams, and every conceivable kind of component? I cannot call one to mind. There may be one or two in combination which run Lissen rather close in this respect, but I cannot remember any such which could match Lissen item for item, through a whole wonderful range of good gear at popular prices.

Nevertheless, there need be no cause for trade jealousy in this, for the prosperity of a whole industry depends upon the missionary work which is an incidental factor in the trading of such a concern. Lissens are doing great work in popularising home-radio.

I cannot particularise in regard to their Olympia exhibits, for, as I have shown, their range of products is embarrassingly large, and in any case their new lines have been detailed in our previous issues.

Clever showmanship was evinced by Osborn who had huge piles of unpolished parts of radio cabinets. Aproned workmen were engaged in the task of assembling these.

Anti-Interference Units.

Showmanship as effective, but of a totally different kind, was to be seen at Dubilier's. There were scores of small components such as the famous Dubilier grid leaks, condensers and various resistances vertically suspended in serried ranks.

The scheme was not over-done; I should imagine there were fifteen or twenty items in each of these rows.

Dubilier were showing a number of anti-interference units in addition to their various radio components. These anti-interference units are for the suppression of interference due to lifts, refrigerators, and so on. They are connected to the interfering apparatus, and when this is done I can say from experience that the noises disappear. With Post Office publicity and

(Continued on next page.)

PUTTING THE CONSTRUCTOR WISE



One of the technicians on "The Wireless Constructor" stand discusses an interesting point in set construction with a reader.

ship of the highest order. Epoch have the advantage that they have been manufacturing moving-coil speakers almost as long as such things have been known. Their set designers must have had a trying time designing a set which satisfied the Epoch executives that it could do full justice to an Epoch loudspeaker!

Good psychology was demonstrated at the Westinghouse stand where technicians in overalls lent an air of dignity to the display befitting the importance of the name of Westinghouse in modern mains radio. The idea would have been quite ruined had they been obviously hired attendants uncomfortably wearing the robes of laboratory science.

Very Ingenious

There was a largish cabinet affair here bearing the inscription: "Put your hand in and the photo-cell will give you a copy." I rather timidly placed my hand in a dimly-illuminated aperture at the same time looking for a delivery slot such as figures in a railway slot-machine. But, plop! A heavy little book fell on to the hand I had inserted and made me start. A clever and decidedly uncanny application of the photo-electric cell, that!

Apparently there was a ray of light continuously shining across the aperture and when this was interrupted, the photo-electric cell actuated a relay which set the delivery mechanism into operation.

Another clever idea of a quite different

particular set is so straightforward that there would be no point in having anyone skilled.

I was struck by the comprehensiveness of the range of Lissen Radio products.

MAKING NEW FRIENDS



Not the least important part of "P.W.'s" activities at the Show was the welcoming of individual readers, and the discussion of their requirements and ideas.

WHAT I SAW AT OLYMPIA

(Continued from previous page.)

research, and this Dubilier apparatus, less and less trouble ought to be experienced from "man-made" static.

In order to infuse a little variety into my itinerary I passed from the ground floor to the Mezzanine floor, leaving the remainder

ANCIENT AND MODERN



One of our exhibits which caused much interest at Olympia. A Fleming wavemeter, used in the earliest days of wireless, and the corresponding apparatus which is used to-day.

of the ground floor stands to be "done" later.

The Mezzanine floor is something new. It is reached by the wide and imposing staircase which also leads to the gallery. It lies beneath the gallery and is, in effect, a gallery itself. But it does not run right round the hall. From the central point at the top of the staircase it runs for a certain distance right and left, in the form of a horseshoe. I do not expect the firms occupying positions in it were particularly cheerful about that, although they looked pleased enough about the show in general.

The B.B.C. Exhibits.

The B.B.C. had their exhibits on the Mezzanine floor. First there came a pictorial representation of the complete broadcasting chain from the microphone to the listener's set.

Then there was a scale model of Broadcasting House. From the front you saw the complete, imposing building, but at the back it was sectionised and you were able to peep into all the studios.

Of course, the whole interior could not be viewed in this manner, but all the more important parts were visible.

Next door, in a glass-encased cabin, two engineers were tending the powerful amplifier which supplied the hundreds of loudspeakers with power. The amplifier was designed to give each loudspeaker about three-quarters of a watt. This does not represent very great volume for a loudspeaker not confined to a comparatively small living-room, and one or two exhibitors approached the engineers and asked for more power.

But, of course, this could not be done.

The B.B.C. was not so much interested in seeing that individual loudspeakers gave compellingly robust outputs as in achieving an adequate but restrained over-all effect.

Just as I arrived at the amplifier cabin the music quietened down until it became almost inaudible; then it increased in volume, but there was terrible distortion.

I at once thought of and sympathised with the hundreds of exhibitors whose very excellent sets and loudspeakers had suddenly begun to deliver a harsh, grating, croaking travesty of modern radio music!

Fortunately, this distortion did not last long, but the improved results had an even shorter life, for there soon was no music at all! An engineer popped out of the cabin, and I heard him say, "You can't hear it now." The other replied to the effect that this was no cause for wonderment, and I heard a muttered reference to "the valve."

Soon Rectified.

However, the trouble was soon cleared up. The breakdown was of comparatively short duration, and I do not suppose it figured high as a "break-down" percentage ruled up against the hours of "quality output" that huge amplifier, with its glowing transmitter type valves, gave during the run of the Show.

From this point I entirely departed from my carefully planned route. I had broken away from this by wandering up to the Mezzanine floor. However, I made certain

of seeing everything by marking my official guide.

At the R.I. stand I came across my first "officially approved" school set. Indeed, I fancy it was the only one exhibited, although there may have been others which escaped my attention by not being prominently featured.

This R.I. production is a standard three-valve R.I. Madrigal built into a special cabinet which can be locked right up so that inquisitive, youthful fingers cannot get at any of its controls. The cabinet is a stout and serviceable affair, as is fitting for its appointed purpose.

A Splendid "Super."

I liked the R.I. super-het. set. It is a sound proposition, and is built into a fine piece of cabinet craftsmanship. A particularly ingenious feature is that it has an automatic indicator. There is an aperture which shows nothing but the word "off" when the switch is operated appropriately. Turn the switch to "long waves," and the long-wave scale comes into evidence. Another touch of the switch and the medium-wave calibrations pop into view. A fourth switch operation and the word "gram," to denote that the set is over to gramophone record reproduction, replaces the wave-length scale.

The interior of the set is laid out in accordance with the latest all-metal chassis ideas. There are no straggling wires or oddly naked components to be seen.

The R.I. stand attendants were pleased with the success of their super. They had already booked a number of valuable orders.

The Mullard display was both dignified and interesting. The actual stand was decorated in a kind of marble and silver effect. There were large scale models of Mullard valves by which the internal constructions could be closely studied.

There appeared to be much attention paid by visitors in the variable-mu types of H.F. valve shown. I stood near a group

(Continued on next page.)

RADIO AND THE POSTMAN



The postman takes a good look at this radio "collection" before continuing with his "delivery."

WHAT I SAW AT OLYMPIA

(Continued from previous page.)

of enthusiasts who were discussing these. It was quickly apparent that a kind of magic is attributed the variable-mu by some! Actually, of course, it is a quite straightforward technical development, and there is no fundamental difference between a variable-mu and any other S.G. valve. Nevertheless, it is none the less an important development for that. Just how important it is can be gauged from the number of commercial sets in which it is now incorporated.

If there are any readers who chance to think of the variable-mu as a sort of stunt, I hope they will refer back to our detailed descriptions of the new season's sets and note the names of the firms who have been quick to appreciate the value of the variable-mu as an aid to better radio.

Very Easy to Build.

Among others, there is, for instance, the G.E.C. There is a variable-mu H.F. valve in the Gecophone "Viking" A.C. set. The G.E.C., I noted, are also making a feature of the S.G. detector. It figures in the "Nomad," a set for D.C. mains working. The "Nomad" has no less than three S.G. valves, for there are also two S.G. amplifiers.

At the G.E.C. stand there was a demonstration illustrating the ease with which the Osram Four and Osram Thirty-three "Music-Magnets" can be assembled.

The Osram Thirty-three makes up into a complete battery set with a self-contained loudspeaker and accommodation for the batteries in the handsome cabinet. This last is of bakelite.

As with the older "Music-Magnet" Four, the Thirty-three is very simple to put together, because its components are grouped cunningly into units. But, besides facilitating construction, this practice also makes for efficiency, a point which deserves not to be overlooked.

LOOKING AT IT FROM ALL ANGLES



The new H.M.V. portable receiver was one of the features of the Show. So that everyone might have a good look at it it could be turned round and round all day on its turntable.

There was also a demonstration of set assembly at the Peto-Scott stand, where a man was working within a screen comprising a huge wiring diagram. By the way, I must pay a special tribute to Peto-Scott for the recognition they have afforded the inventor of the short-wave adaptor idea.

They call their short-wave adaptor a Kelsey Adaptor, and thus give full credit to the man who originated the scheme of transforming an ordinary broadcast set into a short-waver merely by plugging in a simple unit.

"P.W.s" Idea.

It is far and away the most successful scheme which ever issued from the laboratories of POPULAR WIRELESS.

I noticed that the Peto-Scott constructor envelopes were being handed out at a most encouraging rate, and the same applies to an excellent book, "How to Build Four Short-Wave Receivers."

Close to Peto-Scott sat the glittering Robot about which so many marvellous stories have been circulated. From these one would tend to gather that Mr. Robot is nearly human. He is as big as a man, and he sits on a metal base menacingly glaring before him.

When he speaks his mouth opens and closes with the sounds which issue from it. At a word of command he will raise either arm or will even stand up. When I saw him he was sombrelly, and in a somewhat monotonous tone of voice, reciting truisms regarding Mullard valves.

I did not see him and hear him reading from a book or newspaper as it is said he can do, but I certainly heard him answer some simple questions correctly.

Let me record a little of the conversation among the spectators that I overheard.

LIVES UP TO ITS NAME



Here is a loudspeaker that really is a loudspeaker ! Fortunately for the young lady it isn't working at the moment, for it has an audible range of more than five miles.

"They say it works with a kind of talkie thing inside it. Sound on film."

"Special gramophone records, I expect."

"Well, how do they know what newspaper or book he is going to be asked to read?"

"I expect that is all arranged before, don't you?"

"I wonder what goes on behind that screen there? See if you can see anything."

"No; can't see. Still, he's two or three feet away from that."

"What about that big bunch of wires that runs along the floor to the screen? Bet there's a man controlling it from there."

"I don't think it is right to make such a monster, do you?"

"No, I don't. Supposing it started to walk and they couldn't stop it?"

An excellent side-show, that robot. It was a great pity that he was allowed to work for only infrequent and short periods of time. He was quite a star turn.

An Amusing Contrast.

All the same, I wouldn't like to spend too long with him! From grim mechanism to adequate humanity squashed into a sort of big pageboy's outfit! I all but laughed as I saw the smiling uniformed attendant at the Graham Farish stand. He looked so big, boyish and friendly! But I also heaved a sigh for the Graham Farish Robot. Perhaps this grown-up pageboy (I hope he'll forgive me for that description) might have been her human big brother. Do any of you remember that Graham Farish robot at Olympia of three or four years ago?

It was a dinky little lady robot with a piquant, pleasant, smiling little face.

However, Graham Farish had other things of more serious nature to exhibit both then and this year. There were many lines

(Continued on next page.)

WHAT I SAW AT OLYMPIA

(Continued from previous page.)



BEFORE AND AFTER

The picture on the left was taken on the eve of the Show with the stands nearing completion. Twenty-four hours later Olympia was transformed into a wonderland by exhibits such as you can see on the stand in our other picture.



of interest. Most closely coupled with the name of Graham Farish in my mind are their "Ohmite" resistances.

I always remember these with gratitude, for when they first came into prominence there were few reliable components of a similar nature in existence, but plenty which were very far from being trustworthy.

I thought the Ready Radio stand was among the most outstanding displays. It was a large stand and seemed to be packed with exhibits without having an air of crowding. The arrangement of the hundreds of constructional brochures was striking.

Mostly Kit Sets.

The main apparatus shown comprised the two three-valve kit sets, the Ready Radio "303" Kit, and the "Meteor" S.G. Three. The first is claimed to be the simplest kit set ever designed. There are only four component units to mount, and five wires to be connected. The circuit comprises that ever-popular one of detector and two L.F.

On the other hand, the "Meteor" S.G. Three is, as its name indicates, a three-valver of the S.G., Det., L.F. type. It covers three wavebands, viz., short, medium and long.

The constructor will be additionally attracted to these sets by the fact that handsome walnut cabinets, with self-contained loudspeakers, are available for them.

Many and various were the methods adopted for drawing visitors' attention to individual stands. One which was both apt and intriguing drew my eyes towards the Superial stand.

I expect most of you know that the New London Electron Works give a £100 guarantee against lightning damage with their Superial super-aerial. Well, there was a large picture on their stand of an aerial attached to a house. Forked lightning

was stabbing at this aerial with alarming frequency, but there was no need for an explosive effect—because the aerial was Superial!

An interestingly instructive exhibit drew my attention to the Benjamin stand. Here the already famous Benjamin Transfeeda was shown sectionally. There were two points to note about this. Firstly, the object aptly illustrated that new tendency to make interiors as "clean" as exteriors.

I call it a new tendency, but, of course, I am generalising. Anyway, it is an indisputable fact that five or six years ago it was only a comparatively few firms who were so painstaking—one might almost say honest—as to devote as much care to the "innards" of radio gear as they did to its superficial appearance.

It was almost a common practice to bury the hidden parts of components in pitch compounds so that their close examination was practically impossible.

But nowadays there are concerns which deliberately invite inspection of the insides of their products so that potential customers can see for themselves that there has been no scamping. And as an instance of that we have this Benjamin Transfeeda.

This device incorporates all the essential parts for parallel-fed L.F. transformer coupling, although it is a quite small article. Its separate parts, as was clearly to be seen from the above-mentioned show exhibit, are as nicely finished as though they were themselves to be exhibited and sold as individual components.

Attention to Quality.

The second point is that the Benjamin Transfeeda denotes a stage of development in the design of L.F. amplifiers. Parallel-feeding is not a particularly new thing, but it is only recently that it has become popular.

Indirectly, this is probably due to the

popularisation of the moving-coil loudspeaker. This has necessitated greater attention being paid to the quality of output of radio receivers. When there were few loudspeakers in existence capable of giving quality reproduction there was no general demand for "straight-line" amplification.

But now there has been such an improvement in the response of the average loudspeaker—which is, of course, the moving-coil—the ideas of designers regarding L.F. amplifiers has to some extent had to be revised.

Amplification plus purity is needed in the most inexpensive apparatus, and it is here that the parallel-fed idea comes into its own. The necessary apparatus for this is far from being costly, and as it is now available in convenient unit form its application is being widened almost daily.

Popularising the Radio-Gram.

This year's show marks the beginning of another and even more important phase, the popularisation of the radio-gram. This past year the ordinary mechanical type, with the exception of portable models, has virtually disappeared from the market, and at least two of the largest manufacturers no longer list them.

But I do not think that radio-grams have replaced them completely as yet. I believe we have been passing through a kind of transition period where many people have hesitated to purchase mechanical gramophones, but have not bought radio-grams because these have been rather new conceptions, and the public is notoriously suspicious of anything savouring of novelty.

But I agree with the executive I spoke to on the subject for a few minutes at the Climax stand, that in all probability this coming season will largely be a radio-gram

(Continued on next page.)

WHAT I SAW AT OLYMPIA

(Continued from previous page.)

season. The commercial radio-gram is now a stabilised commodity both in point of price and of efficiency. It is no longer an experiment.

The Climax all-electric radio-gramophones is excellent proof of this fact, by the way.

Of course, many listeners will use their existing gramophones in combination with the latest radio receivers, for providing a good pick-up is used, it doesn't matter a scrap what the "grammy" is so long as it has a good enough motor to keep its turntable steadily rotating at the correct speed.

A Useful Combination.

Such a combination is a radio-gram. There is provision for the connecting up of a pick-up to use in such a scheme on most of the modern better-class sets. For example, it is a feature of the Ferranti super-heterodyne receiver. And who would buy a new mechanical gramophone when an old one and a pick-up will suffice to turn the Ferranti super into a topping radio-gram.

On the radio side you could want nothing better, for the Ferranti super is a first-class production. Needless to say, its L.F. side is thoroughbred Ferranti, and you don't find kinks in the curves of Ferranti amplifiers!

Before we leave the subject of radio-grams I must make mention of the huge Garrard electric gramophone motor which I saw. I fancy it must have been the largest working model at Olympia. It was

a perfect model and its bright finish made it a superb exhibit.

From this my mind at once jumps to the working model of the Lewcos potentiometer. The Lewcos potentiometer embodies an ingenious and novel principle. There is a circular plate held away from the resistance element at its centre. But this plate tilts so that a part of its edge comes into contact with the resistance track.

To see a large model of this component with its huge tilting plate sweeping round all but made me feel dizzy. However, I must say it was a striking demonstration of the effectiveness of the scheme and of the general soundness of the design of the Lewcos potentiometer.

Another large model was shown by J.B. It was a model of one of their excellent variable condensers. And I thought its effectiveness was heightened in this case by the fact that the model was not a fantastic giant but was no larger than was necessary clearly to enable the finer points of design of the component to be examined. There is a certain point beyond which in cases an enlargement may become a monster!

"I SING ALL THE LOW NOTES!"



Mr. Jetsam (in the light suit) stole a march on his partner, Mr. Flotsam, by getting a private view of this radio-gram.

But this was not the case with the big valve models shown by Cossor either. At the Cossor stand I was specially interested in the metallised valves they were showing, because it was about a year previously that a Cossor technician first asked my opinion as to the future of the metallised valve. At the time I must admit I had slight doubts. I was a bad prophet, for I did not see a big future for the then new valve development. I believe I am correct in saying that Cossor introduced the metallised valve, and in so doing opened up wonderful new possibilities in the design of H.F. amplifiers. It has enabled these to be simplified enormously.

But then, Cossor were always enterprising and seem to have an uncanny intuition in valve matters. They did stout pioneering in mains valves as well. They were also among the very first to visualise the possibilities of kit sets and their present "Melody Maker" has a number of famous and successful models behind it.

Very Striking Display.

I thought the method of displaying T.C.C. condensers was most striking. The various types were standing in illuminated show-cases shaped like large T.C.C. condensers. T.C.C. are condenser specialists, and they provided visitors with the opportunity of seeing practically everything that is worth seeing in modern fixed condenser technique.

There were large condensers such as have been ordered by and are used in some of the biggest broadcasting stations in the world, and there were, at the other extreme, tiny condensers such as figure in the grid circuits of valve receivers.

Another intriguing idea in presentation was embodied in the Lotus display where the chassis of one of the latest Lotus sets was stood on a mirror so that the under-

LISTENING TO GRANDFATHER



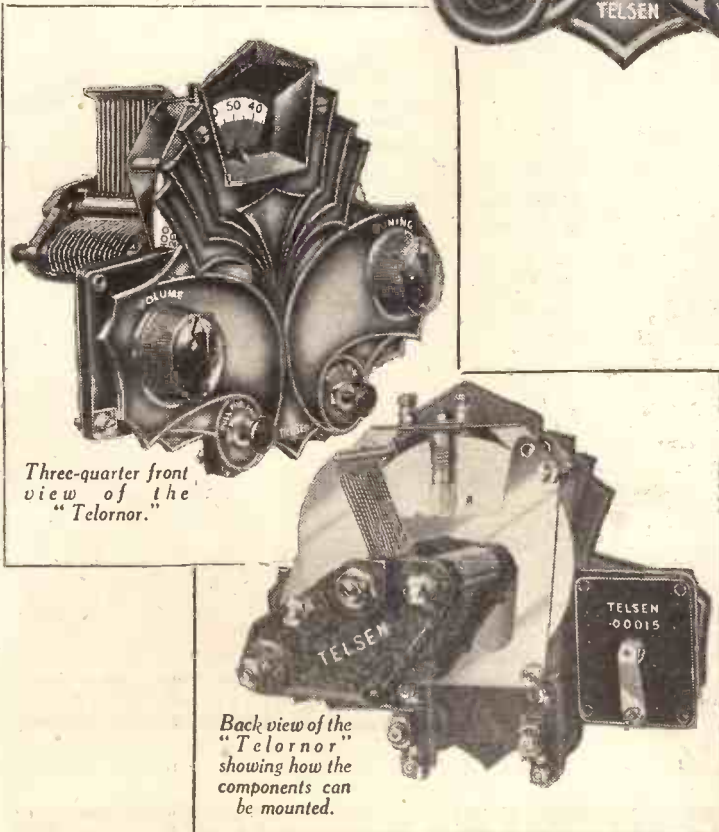
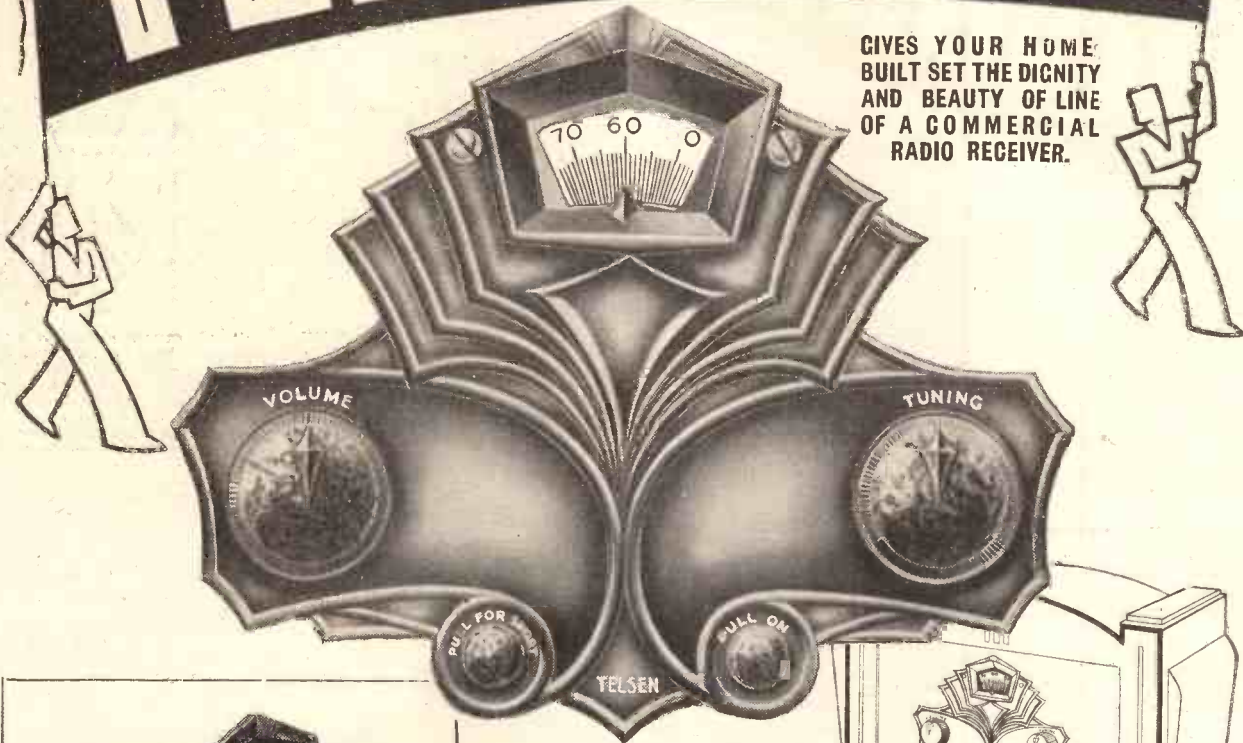
Three of Mr. J. H. Thomas' grandchildren listening to their grandfather's speech from Ottawa at the opening of Radiolympia. His remarks met with their entire approval.

(Continued on page 927.)

TELSEN

TELORNOR

GIVES YOUR HOME-BUILT SET THE DIGNITY AND BEAUTY OF LINE OF A COMMERCIAL RADIO RECEIVER.



Three-quarter front view of the "Telornor."

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

GIVE your home-built set the dignity of an expensive commercial radio receiver with the new Telsel TELORNOR. It makes better sets easy to build! The handsome silver oxidised escutcheon plate, embodying an illuminated variable ratio slow-motion Disc Drive, adds immensely to the "good looks" of your set and permits, with the minimum of trouble, a very effective grouping of your Volume, Tuning, Push-Pull and On-Off controls. Ask your dealer to show you a TELORNOR. It will make your set a set to be proud of—in appearance as well as in performance.

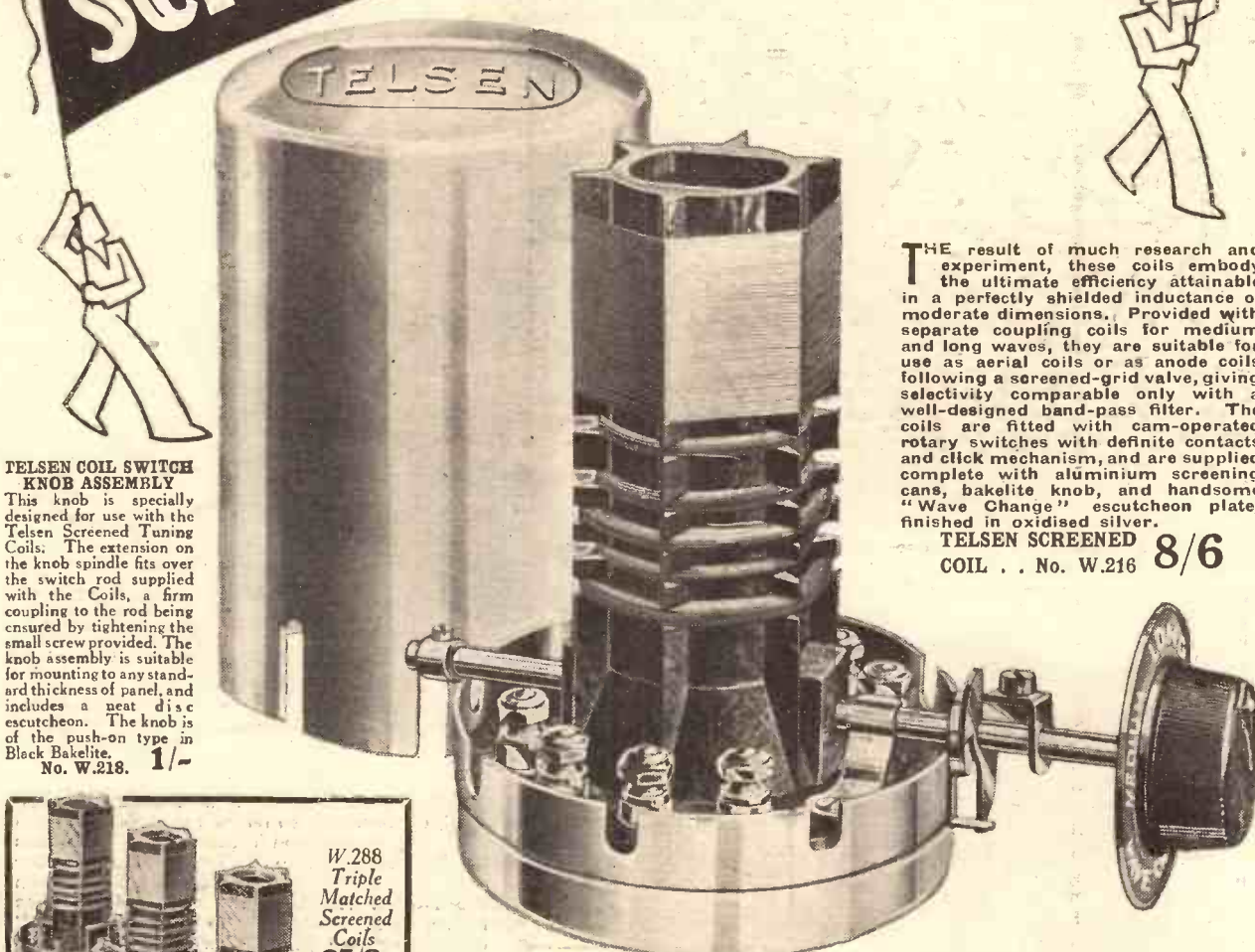
No. W.206.

7'6

TELSEN
RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

TELSEN SCREENED TUNING COILS

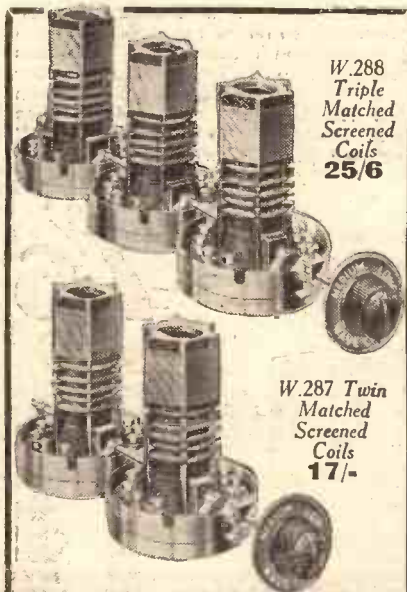


THE result of much research and experiment, these coils embody the ultimate efficiency attainable in a perfectly shielded inductance of moderate dimensions. Provided with separate coupling coils for medium and long waves, they are suitable for use as aerial coils or as anode coils following a screened-grid valve, giving selectivity comparable only with a well-designed band-pass filter. The coils are fitted with cam-operated rotary switches with definite contacts and click mechanism, and are supplied complete with aluminium screening cans, bakelite knob, and handsome "Wave Change" escutcheon plate, finished in oxidised silver.

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

TELSEN COIL SWITCH KNOB ASSEMBLY

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



TELSEN COIL SWITCH COUPLING ASSEMBLY

When it is desired to mount two or more of the Telsen Screened Coils in a line parallel to the panel, and to control the wave-change switching by a single knob on the panel, this switch coupling assembly will be found indispensable. The link arms of the coupler are fitted over the switch rods of the coils, and adjusting slots are provided in the link bar to allow for the spacing of the coils varying from 3 in. to 6 1/2 in. The whole assembly has a neat nickel-plated finish, is perfectly smooth and positive in action, and free from backlash. No. W.217 6d.

TELSEN

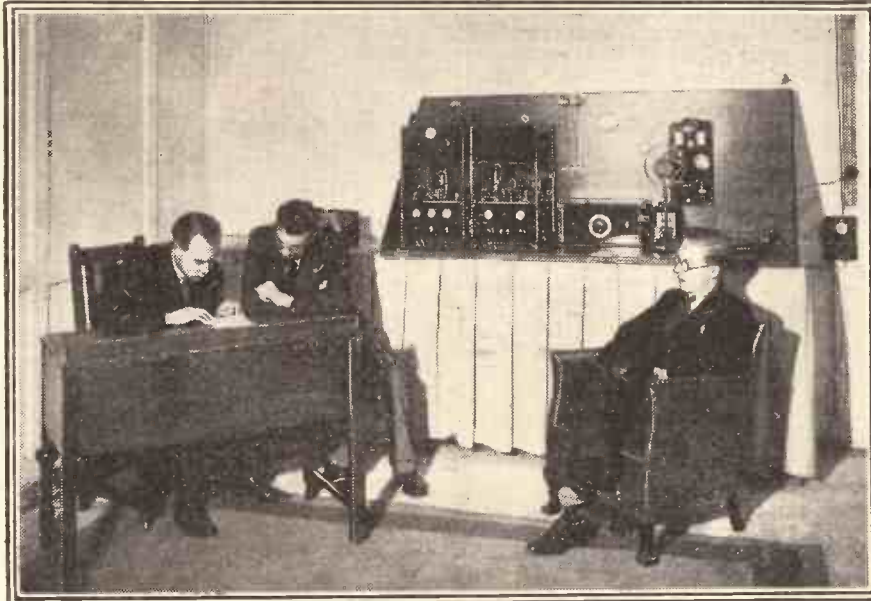
RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

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

WHAT I SAW AT OLYMPIA

(Continued from page 924.)



The advance guard of the constant stream of visitors who made our stands the most popular meeting-place for radio enthusiasts from all parts of the country.

neath parts of it could be inspected easily. The Lotus Table Console set was worth examining, for it includes many up-to-the-minute features, including a variable-mu valve.

Up-to-date Coils.

I found quite a number of visitors examining the model of the "Modern Wireless" "Diodion" set, which was on the Colvern stand. They were also obviously interested in the many Colvern coils shown, and that is not to be wondered at, for whatever progress and development occur in coil design you can be sure that Colvern are actively interested, even if such have not been directly inspired by Colvern themselves.

In view of the hot weather which we were having during at least the early run of the exhibition, Messrs. Wingrove & Rogers were fortunate in being able to show large representations of their famous trademark—the polar bear. It constituted such a marked contrast to the current thermometer readings that visitors looked, smiled, and—did not pass on; they were held by the fine display of Polar condensers.

Well-made Transformers.

I was surprised by the size of the Slektun range of components. I, of course, knew all about the very excellent Slektun L.F. transformers, and I had previously seen and admired a Slektun mains transformer. But I also learned that there are Slektun aerial and H.F. coils, Slektun H.F. chokes, and Slektun balanced-armature units. It is very obvious Slektun is forging ahead.

R. & A. were exhibiting one of their popular moving-coil speakers in section,

it had been cleanly cut right in halves so that the moving coil itself could be seen snugly fitting into the gap between the magnet pole-pieces.

Appreciated By All.

This is the kind of exhibit which all can

where inevitably there will be hundreds of keen, qualified critics!

And this reminds me that the criticism of members of the public appeared to be both keen and informed this year.

Of course, it was only occasionally that one overheard what could be styled "technical" questions, but the stand attendants were often called upon to deal with intelligent catechisms concerning the potentialities of the various receivers.

Band-Pass Tuning.

Marked technical differences between them were obviously widely appreciated. For example, I noticed that the Varley "Square-Peak" sets occasioned considerable interest, and visitors were wanting to know exactly what "Square-Peak" meant.

When they were informed it indicated a perfect application of the "band-pass" principle, they would pursue the matter further and ask questions about band-passing.

By the way, I should mention that I gathered most of the facts upon which I base the above conclusions on conversations in the general assembly. At the "P.W." stand there were callers who knew all about such things as band-passing, and who visited us to discuss radio matters rather than ask questions about it!

Mains Sets As Well!

I paid two visits to the Blue Spot stand. On the first occasion I spent most of the time examining the Blue Spot receivers, and was specially interested in their fine five-valve mains operated outfit. But I subsequently realised that I had come away without inspecting their moving-coil loudspeakers. But I think you will agree that this was pardonable in view of the fact that I was suddenly button-holed by a man I hadn't seen for five years.

He had just come back from America and was full of praise for—British radio!

"CAN I FIT A PICK-UP?"



A "Modern Wireless" technical expert gives his advice on a question which was frequently asked this year.

REALLY the reception of Continental stations is wonderful nowadays.

I am writing this at midday, whilst in a corner of the room the loudspeaker is bringing in the programme of the Poste Parisien. The volume control has to be turned a long way down to prevent the room from being too well filled with sound!

Let's see if anybody else is at work. Here's Hilversum, anyhow, coming in well: no distortion, no fading, fine quality.

Just above the Poste Parisien's settings is Brussels No. 2, also providing first-rate loudspeaker reception. Langenberg is good, but not quite so strong as the others; Brussels No. 1 up at the top shows volume and quality that suggest midnight rather than midday.

Coming Thick and Fast.

Several other stations are heard at moderate loudspeaker strength, but their transmissions are not quite powerful enough to drown all background noises.

So much for broad daylight on the medium waveband. And what about the evenings? As soon as daylight shows the first signs of fading—or even some little time before that—stations begin to come in thick and fast.

I SAID once before that I did not think short waves and heat waves went well together. Now I am quite sure on the subject, after limping round Radiolympia with two rabid short-wave fans who were intent on discovering every stand on which the barest sniff of short-wave equipment might be found.

By some curious misprint the temperature on the first day was given as 99 degrees. It was, of course, 199 degrees!

As a matter of fact there was more of interest to short-wave folk at this year's Show than I can remember at any previous one. If one only knew where to look, short-wave gadgets of all kinds abounded, and at least eight firms were featuring complete receivers.

No Dry Batteries.

I noticed, too, some extremely nice "anode converters" designed to go with the better-known proprietary short-wave sets for overseas use. One good, big six-volt accumulator thus supplies H.T. and L.T., automatic grid-bias eliminating the need for any dry batteries at all.

Ask any overseas listener what he thinks of dry batteries and you will see that this is a sound step forward.

I was quite surprised to find that more than one exhibitor outside the Show was able to give quite a good demonstration of the reception of W2XAD during the evenings. Car ignition along Hammersmith Road rather upset the apple-cart, it is true, but, after all, it's something to get a "Yank" at all under such conditions.



Some practical distant-programme notes compiled by a special contributor who nightly searches the ether in order to obtain really up-to-the-minute information for "P.W." readers.

The lowest part of the band is not very promising as the tuning dials are moved slowly upwards from their lowest settings. Many heterodynes and patches of complete jamming are encountered, and a glance at the Brussels laboratory report for the previous month shows that this is not to be wondered at owing to the wavelength wandering that is taking place.

Fécamp, to give one example, never used the same wavelength on any two of the thirty-one nights of July, and his wobbles were such that he wandered during the month over nearly three complete "channels."

Clear of Interference.

The first station worth listening to is Nürnberg on 238.9 metres. He is clear of interference, but there is some fading. Next we find Trieste on 247.4 metres, and here we have a station really worth listening to.

SHORT-WAVE NOTES



News and views regarding an exciting and fascinating waveband.

By W. L. S.

Two readers suggest this week that the "C.T.A." station reported by "W. H. R." recently was the Canada-London 'phone service from C.G.A. Quebec. This seems quite feasible to me.

H. A. W. (Wallasey) has been visiting the same haunts in North Wales as those that were recently invaded by "Bonzo," "Buzz" and myself, and inquires whether the Cefn Du station at Carnarvon does anything nowadays, and what?

Rather Remarkable.

So far as I know, H. A. W., this station continues the old service that used to be handled by M.U.U. years ago. It works on "ultra-long" waves only. Yes, when you see the country round that part it is rather remarkable to think that the American stations roll in so well.

My joint remark a week or two ago about the I.S.W.C. and the I.S.W.R.L. has

Some Splendid Stations.

There is some jamming just above, and Turin on 273.2 metres is the next heard station. Plenty of volume and fine quality here. We have now reached a small patch containing some excellent stations. Besides Turin, there are Heilsberg, Bratislava and Hilversum between 273.2 and 298.8 metres.

The next first-rate patch extends from 321.9 to 345.2 metres. Here we obtain excellent reception from Gothenburg, Breslau and Poste Parisien, Brussels No. 2 and Strasbourg. Both Milan and Brno are heard, but it happens that neither of these is having one of his good nights.

Above the London Regional Hamburg is suffering from a heterodyne, but Frankfurt on 389.6 metres is clear and the volume is satisfactory. Bucharest is barely audible on 394.2 metres, but immediately above the Midland Regional, Sottens gives a good account of himself.

stirred up the local dove-cotes, as I thought it would at the time. I am now the centre of a raging massacre between the supporters of the two bodies. For this reason I absolutely decline to say another word about either of them. It won't be safe to venture out alone if this goes on.

Still the logs are pouring in from all quarters. The best seems to be a list of about 40 or 45 broadcasting stations, claimed by seven or eight readers. I will publish a summary of the best logs later on.

Private Information Bureau!

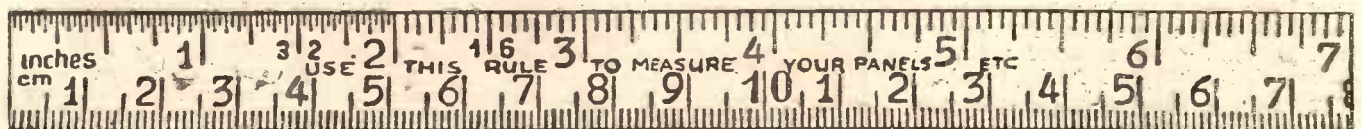
One short note in passing. Will all the readers who start their letters "Dear W. L. S." I have read your notes so long that you are quite an old friend. Here are eight questions for you to answer—please remember that my post reaches a height of over one foot per week!

Much as I should like to answer them all in detail, it is quite impossible, unless I give up writing these notes altogether and set up as an information bureau!

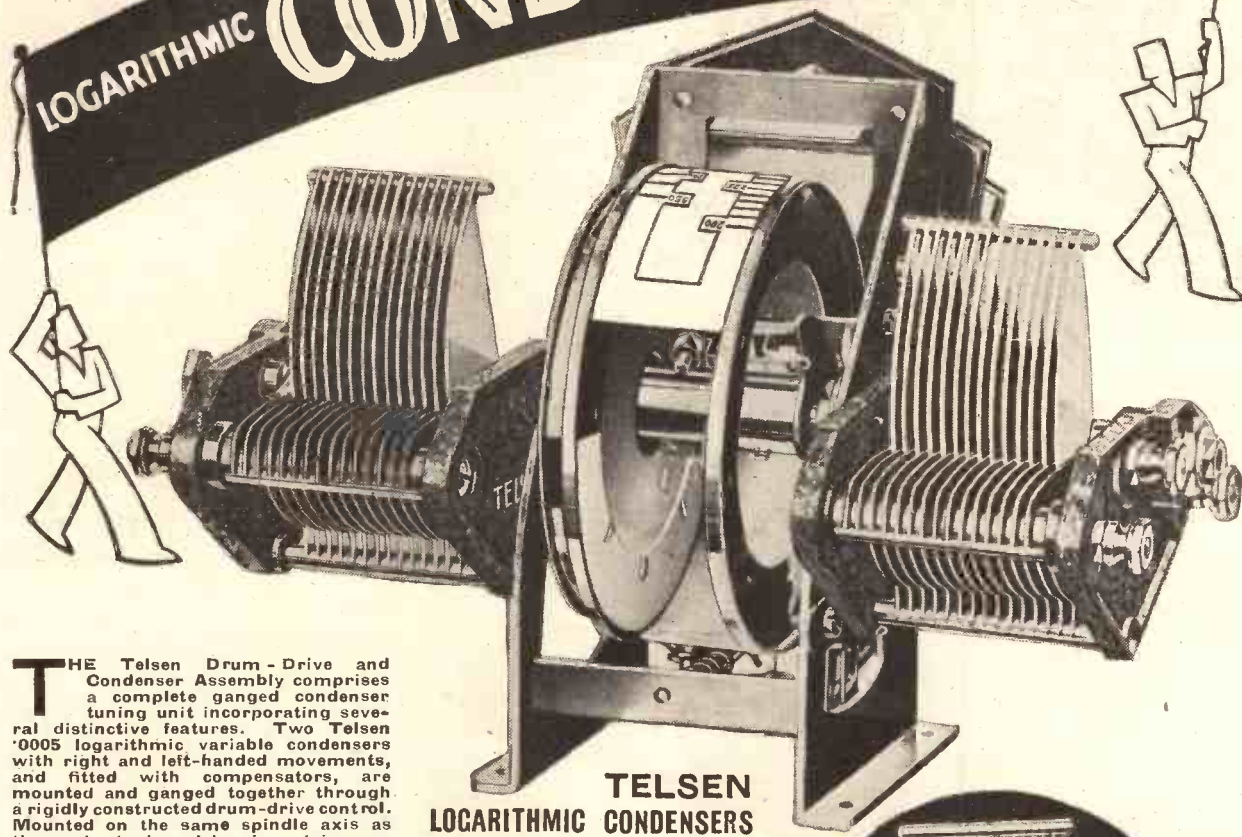
For the benefit of a dozen or so who have logged "P.A.-0 ASD," I may say that he is a Dutch amateur working on the 75-85-meter amateur band, probably on about 83 metres.

Patiently Waiting.

The Eclipse is, of course, all over by now, although at the time of writing I am still patiently waiting for the time to draw near. As soon as I have any interesting news it shall appear in these columns.



TELSEN LOGARITHMIC CONDENSERS and DRUM-DRIVE



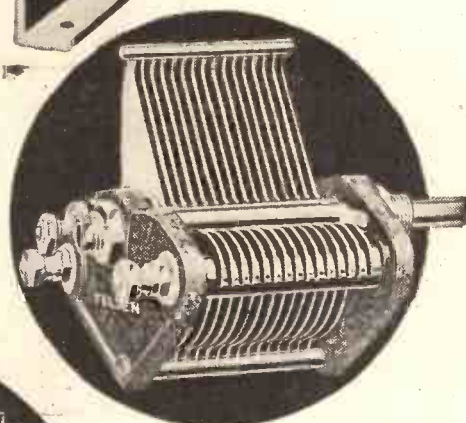
THE Telsen Drum-Drive and Condenser Assembly comprises a complete ganged condenser tuning unit incorporating several distinctive features. Two Telsen '0005 logarithmic variable condensers with right and left-handed movements, and fitted with compensators, are mounted and ganged together through a rigidly constructed drum-drive control. Mounted on the same spindle axis as the main tuning drive is a trimmer, giving a swinging movement of about 20° to the stator vanes of the right-hand variable condenser, thereby enabling perfect matching of the condensers to be maintained throughout the Tuning Range. Two scales are supplied with the unit, one marked in wave-lengths and one in graduations from 0-100. The Scale is illuminated and has the additional advantage of being easily removable when it is desired to fit one of special calibration. The escutcheon is handsomely finished in oxidised silver and knobs of the push-on type are fitted. Provision is made for panel and base-board mounting, and a double-ended spanner is supplied free with the unit for fitting the variable condensers. Full instructions for mounting are included with every unit. No. W.262. Price

17/6

TELSEN LOGARITHMIC CONDENSERS

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

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



TELSEN DRUM DRIVE

Follows standard practice generally, but embodies several detail refinements, among which may be instanced the cord drive, arranged to reduce wear to a minimum and to prevent over-run, and the rocking stator trimmer, which gives a variation of 20°, and visual indication of setting. For use with Telsen screened coils, an extra scale, marked in wavelengths, is supplied free of charge. Illustration shows escutcheon, handsomely finished in oxidised silver. No. W.255. Price

8/6

TELSEN

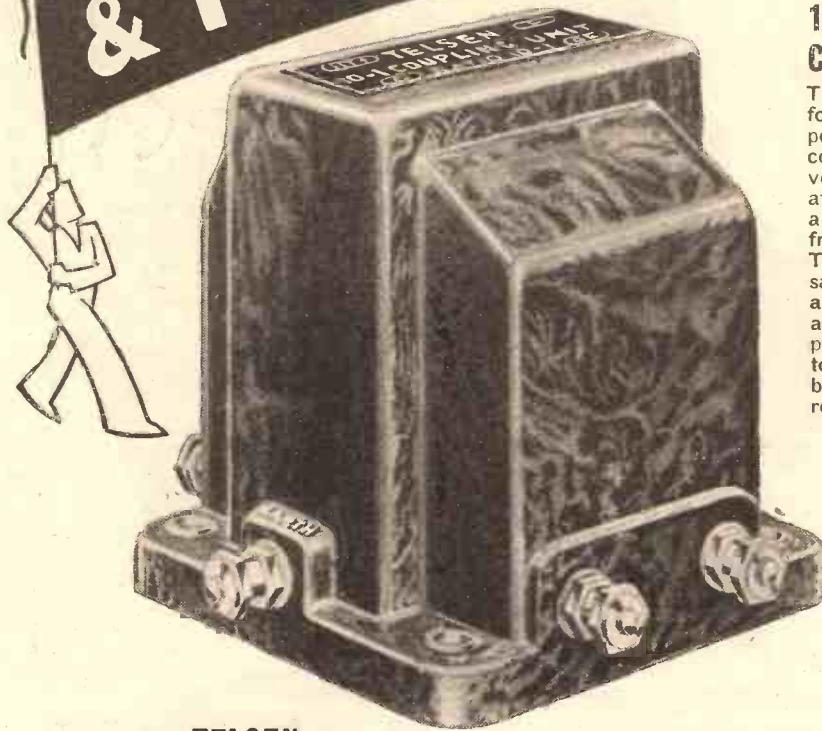
RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

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

TELSEN

10-1 COUPLING UNIT & 1-1 COUPLING UNIT



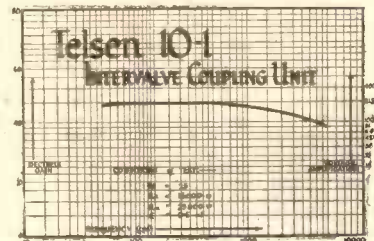
TELSEN 10-1 INTERVALVE COUPLING UNIT

This is a filter-fed transformer using a high permeability nickel alloy core, which enables a 10-1 voltage step-up to be attained while preserving an exceptionally good frequency characteristic. The response is compensated in the higher frequencies for use with a pentode valve, this combination giving an amplification greater than anything previously achieved, equal to two ordinary L.F. stages, but with better quality of reproduction.



12'6

No. W.215.



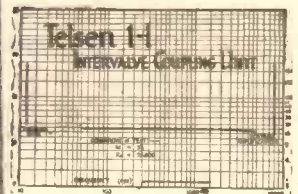
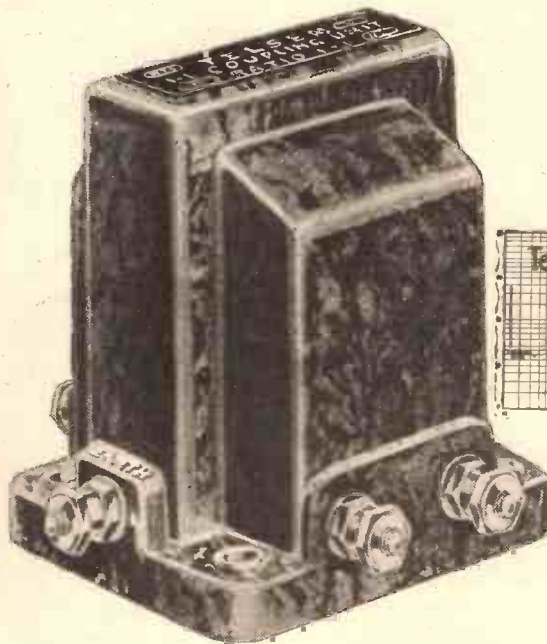
TELSEN

1-1 INTERVALVE COUPLING UNIT

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

7'6

No. W.214.



TELSEN

RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

CAPT. ECKERSLEY'S QUERY CORNER



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

S.G. ANODES — GRAMOPHONE REPRODUCTION — CARRIERS AND SIDEBANDS.

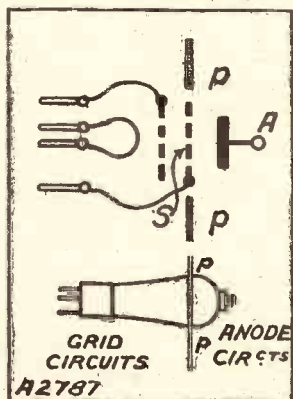
Ensuring Real Screening.

J. S. (Salisbury).—"Why should a screen-grid valve have its anode connected to a terminal on the top of the glass bulb? Would it not be very much more convenient to have an extra pin on the base of the valve?"

It's a matter of construction. A screened-grid valve is designed to have an earthed metallic screen between anode and operating grid and between anode and grid circuits.

Now, the idea is that the grid and the filament and these associated circuits shall all be one side of the screen, P, and that part of that screen shall be the screening grid S, while the anode and all the anode circuits shall be on the other side of the screen P, and screening grid S.

ARRANGED IN LINE



The screening electrode of an S.G. valve separates the grid and anode, and the external screen should be arranged to line up with it.

So it's much easier to poke the valve through the screen P so that P lies close to S and makes a complete screen while keeping all the anode circuits, including the anode terminal, on the other side of the screen.

Choke Coupling for Amplifier.

H. G. (Palmer's Green).—"The quality of reproduction afforded by my gramophone amplifier does not seem to be as good as I originally expected. The amplifier consists of two resistance-coupled L.F. stages feeding into an L.S.5A output valve, which is coupled to the moving-coil loudspeaker by means of a step-down transformer of suitable ratio.

"This transformer is of quite small dimensions, and I think that possibly the core is not adequate to prevent saturation. Would it be a satisfactory solution to use a choke

and condenser to bypass the anode current from the transformer primary, and should this result in improved quality being obtained?

"The choke used would be of ample size for the purpose, and a large condenser of 4- or 6-mfd. capacity would be employed."

Yes, it might help. I cannot obviously help you without further quantitative data. Certainly the method of choke-coupling described by you should be satisfactory.

By the way, and in case this doesn't make all the difference, have you tried decoupling all stages? I think it's worth while if you are using "straight" amplification—I mean if you are *not* using push-pull.

Use push-pull if you can!

A Question of Sidebands.

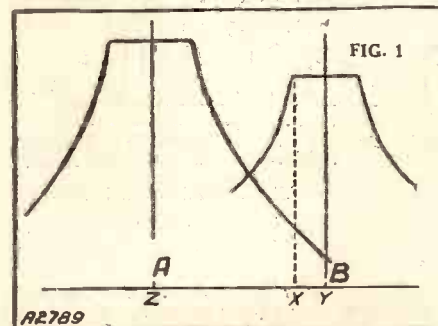
B. M. (Stratford).—"I understand that highly selective receivers can now be developed so that modulation interference between stations is negligible. It is, however, not yet possible to eliminate the high-pitched whistle, due to two adjacent carrier-waves heterodyning, without sacrificing the higher notes in the final reproduction.

"Would it not be possible to group stations in pairs *very close together* with respect to wavelength so that the heterodyne note was of a *very low* frequency—say 25 cycles?"

"As most sets do not reproduce notes lower than 50 cycles, the heterodyne problem should be solved by this expedient. Is there any snag?"

The only reason why modulation interference can be eliminated more easily than carrier heterodyne interference is that the latter is much stronger.

HETERODYNE INTERFERENCE



Illustrating how two broadcasting stations, separated by 9 kc., overlap and produce heterodyne troubles.

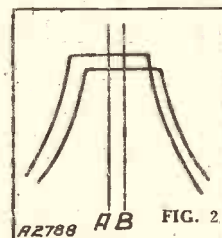
Don't address your letters direct to Capt. Eckersley; a selection of those received by the Query Department in the ordinary way will be answered by him.

Fig. 1 shows two stations with carriers A and B 9 kc. apart. The skirt things are the sidebands, as average energy over the scale of frequencies.

Note that carriers are much bigger than sidebands and hence B's interference with A may be negligible at frequency x (say 8,000 cycles), but pronounced at y = 9,000 cycles = carrier-wave heterodyne frequency.

With decent filters you can eliminate carrier heterodyne—it's really quite easy;

SIDEBAND JAMMING



If two transmitters are on almost the same wavelength, heterodyne interference might be eliminated, but the sidebands would then give trouble.

but the silly manufacturer won't do things so long as he can sell sets the same as everyone else!

But if you put B on top of A you might eliminate heterodyne interference because it would be of a low-note character, but you wouldn't eliminate sideband interference.

You cannot work two stations doing different programmes on practically the same wavelength without their being certain to interfere.

How could you "tune out" one when they both have the same "tune"—I mean wavelength? See my Diagram 2—look how they interfere!

If the stations transmit the same programme and share the same wavelength there is a practical result, but only because the programmes are the same. Read any paper on the subject!

FROM THE TECHNICAL EDITOR'S NOTE BOOK.

Tested and Found-?

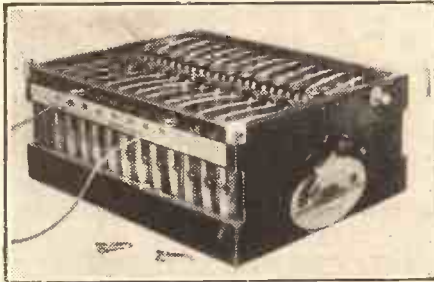


THE MILNES H.T. UNIT.

ALTHOUGH H.T. dry batteries are better and cheaper than they used to be, it cannot be said that they are a perfect solution to the supply problem. For one thing they need constant replacement, and so their first cost is far from being their only cost.

Then there is the indisputable fact that

AN EXCELLENT ALTERNATIVE



The Milnes unit is an excellent alternative to other methods of deriving H.T., for it possesses a self-switching device that enables it to be re-charged from a 6-volt accumulator.

many buyers of batteries habitually over-run them. They die such lingering deaths in the hands of the average listener, who is obviously not going to purchase a replacement until his existing battery is on its very last legs—especially in these days of depression!

Double-Duty L.T.

And so his results will gradually depreciate, and the sinister thing about it is that he will be one of the last to realise it as, for the sake of our argument, he is a day-to-day observer of the battery's condition and its effect on his reception.

All this throws a very favourable light on the Milnes H.T. Unit as an alternative to the dry battery, for with one of these in your possession your H.T. remains as "well up" as your L.T. all the time, because when you are not using the accu-

mulator for its L.T. purposes you use it to charge an H.T. battery of cells.

You require, for most sets, a 6-volt L.T. accumulator, but you can parallel its three cells when it is needed for operating the set and so none of the cells stand idle.

The Milnes unit comprises a battery of almost everlasting Edison type cells, which, by means of a series-parallel switch, are switched into parallel for charging (from the L.T.), and series for working as an H.T. battery.

As Good as Mains.

These cells do not suffer from the disadvantages of the lead type, for they are immune against sulphation, and under- and over-charging do them little or no harm.

Moreover, as no acid is used there is no corrosion and the alkaline solution which is employed actually serves to preserve the steel plates that figure in the system.

The attention which has to be given to the unit is to keep the solution level up with distilled water and that only has to be done two or three times a year.

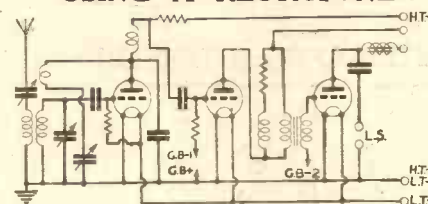
It all sounds almost too good to be true, doesn't it? And yet we have had one of these units on test for some long time now, and there is every evidence in support of the claim made by the makers that it is "indestructible."

And it supplies its H.T. current with a regularity and evenness more reminiscent of mains than batteries—even batteries of such a notably outstanding type.

GRANTONA CONES.

The moulded diaphragms which now figure in most inexpensive moving-coil speakers have brought yet another industry into closer contact with radio, and that is the industry of paper-making.

USING A RECTATONE



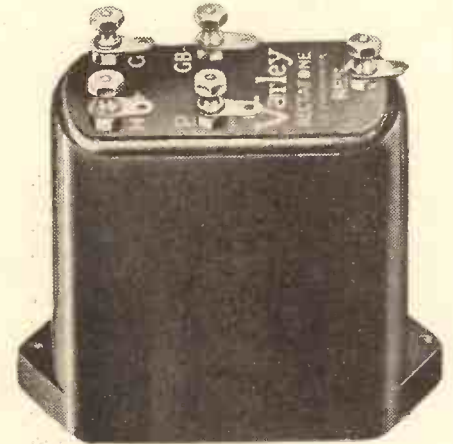
Showing the simple circuit connections of a Varley Rectatone L.F. transformer and its associated resistance.

Quite recently Messrs. R. O. Bridger & Co. evolved a new method of moulding seamless paper cones, and in co-operation with one of the oldest and best paper-makers they are now able to produce any type in any quantity sized, doped and cut ready for use. I have tested samples of their "Grantona" cones as they style them and find them to be perfectly satisfactory in every way.

HIGH NOTE CONTROL.

In any high-selectivity circuit there is bound to be a loss of high notes. A wide audio response is impossible unless a gener-

TWO PURPOSES



The Varley Rectatone can be employed as a straightforward high-class L.F. transformer, as well as a combined transformer and correcting unit.

ous frequency spread from the fundamental carrier-wave is admitted. But it is possible to apply audio compensation so that the loudspeaker response is corrected. And this is, in fact, done in some modern sets.

It is a sound scheme and will probably be exploited even more in the immediate future. The need for greater and greater selectivity as the months pass, and more stations come "on the air," and old stations increase their powers, is apparent; but quality of reproduction must not be allowed unduly to suffer.

A Resistance Adjustment.

Therefore, the Varley "Rectatone," which comprises a convenient method of applying the required high-note compensation principle, should meet with a growing demand.

Essentially, it is a high-class L.F. transformer and can, indeed, be used purely and simply as such. But it incorporates an additional winding which, in combination with an external resistance, enables a marked high-note emphasis to be obtained.

It deals equally with frequencies up to 1,000 cycles and above that there is an even but sharp rise in amplification.

The degree of this "high-note" lift is controllable by the external resistance.

Manufacturers and traders are invited to submit radio apparatus of any kind for review purposes. All examinations and tests are carried out in the "P.W." Technical Department with the strictest of impartiality, under the personal supervision of the Technical Editor. We should like to point out that we prefer to receive production samples picked from stock, and that we cannot in any circumstances undertake to return them, as it is our practice thoroughly to dissect much of the gear in the course of our investigations! And readers should note that the subsequent reports appearing on this page are intended as guides to buyers, and are, therefore, framed up in a readily readable manner, free from technicalities unnecessary for that immediate purpose.

TELSEN CONDENSERS

BAKELITE DIELECTRIC



TELSEN Bakelite DIELECTRIC TUNING CONDENSERS

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

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

2/6

TELSEN Aerial Series CONDENSER

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

Capacity '0003 - - - W.205

2/3

TELSEN DIFFERENTIAL CONDENSERS

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

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

2/6

TELSEN

RADIO COMPONENTS

TELSEN REACTION CONDENSERS

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

2/4


2/6

GOOD RADIO IS A JOY FOREVER

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

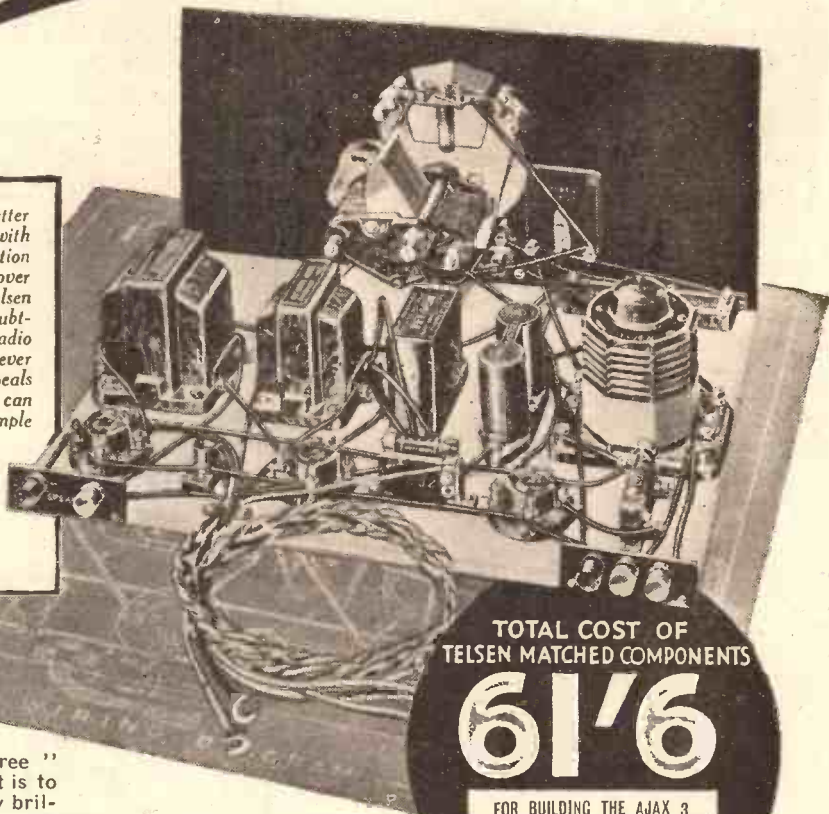
The **TELSEN**

AJAX 3



Bigger . . . better . . . packed with valuable information from cover to cover—the new Telsen Radiomag is undoubtedly the finest radio sixpennyworth ever offered. For it appeals to all—and all can profit by it. In simple language, illustrated by photographs and diagrams, and complete with 3 full size 1/- blue prints, it tells you how to build the latest circuits—how to modernise your existing set . . . how to rectify little faults . . . how to get the best out of your set in every way.

Get a copy Now!



TOTAL COST OF
TELSEN MATCHED COMPONENTS

61'6

FOR BUILDING THE AJAX 3,
including panel, base-
board, terminals,
battery cords and all
accessories.

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

TELSEN

RADIO COMPONENTS



"TELORNOR" CONSTRUCTORS' OUTFIT
Contains all the sundry requirements for the construction of any type of receiver circuits using the "Telornor." Of these the Telsen "Triple" 3, the "Ajax" 3, and the "Nimrod" 2, are excellent examples. All are supplied neatly packed in a carton together with instructions.

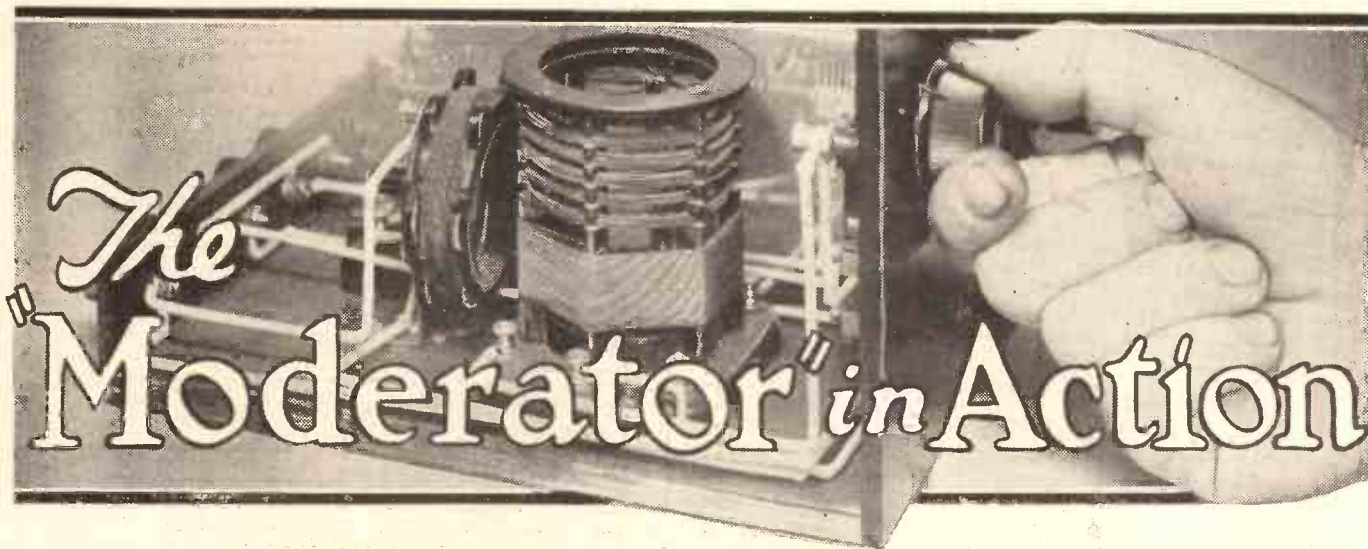
Cat. No. 220
3'6

Included in the Outfit are the following components :

Specially cut and drilled crystalline-finish Panel. 14" x 10" Baseboard. 8-way Battery Card. Complete set of Wander Plugs, suitably engraved, and Spade Terminals. Terminals for Aerial, Earth and Loud Speaker.	Engraved Terminal Strips. An ample supply of 22 S.W.G. Tinned Copper Wire and necessary Sleeving for wiring up the set. A double-ended Spanner for mounting the single-hole fixing components.	A 4-way Spanner, for tightening up all Terminal Nuts. All the Wood Screws and sundry other small accessories contributing to the complete assembly of the finished Receiver.
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GOOD RADIO IS A JOY FOREVER

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



THE relative positions of the Moderator coil and the dual-range coil form a most important feature of the design of the "Moderator" Two receiver.

When they are placed more or less exactly as shown in our photos and in the wiring diagram which appeared last week, the greatest possible power is obtainable, for you have the condition of closest practical coupling.

If the Moderator coil is fixed to the base-board by means of only one screw, it can be made to swivel away from the dual-ranger and thus provide a simple method of varying the coupling.

For Abnormal Conditions.

The majority of constructors, however, will not need to do this, but when the local stations come in with abnormal strength it may be necessary to loosen the coupling by this swivelling-away method.

Even so, it should be noted that the volume is not likely to drop to the level of that given by an ordinary two-valver in which a conventional selectivity scheme figures.

There is a midway point between the closest and loosest Moderator coil coupling where a decided "band-pass" effect is obtained, though there is no great advantage in striving for this.

But the peak tuning which follows a rather loose coupling and a discriminate use of reaction contributes a striking compensation for the failings of the average loudspeaker.

Extremely Flexible.

However, it is only a few who will find the need to experiment on any of the above lines; in most cases the "Moderator" Two will provide full satisfaction without its flexibility being taken to its limits. That, of course, is one of the outstanding attractions of the set.

It is possible for the inexpert listener to do more with it than an expert could with moderately costly and complicated apparatus of a normal kind. And the experienced constructor is able to extend the receiver and accomplish real feats of DX reception.

Some further notes on "P.W.'s" "little set with a big punch." By G. V. DOWDING, Assoc.I.E.E.

Similarly, that inexpert listener will be able to do more and more as soon as he becomes acquainted with the finer points of the set. And that without recourse to internal adjustments.

But in all instances it is necessary to fix upon a Moderator coil tapping to suit the aerial system with which the receiver is employed.

Before we deal with that I must say a few words about the accessories. The types and makes of batteries, etc., advised are clearly tabulated in the accompanying list.

The "Moderator" Two will work a moving-coil loudspeaker, for its quality is first class. We tested it with a senior type fitted with a large baffle-board, and the

bass was surprisingly robust for so small a set.

If you have the power mains laid on you will want to employ a mains unit instead of an H.T. battery; and we can assure you that this will be perfectly satisfactory, for the "Moderator" Two is also extremely stable.

Incidentally, it is one of the advantages of employing only two valves that rocklike stability is practically inevitable, even despite accidental or deliberate departures from layout design.

Economical H.T. Consumption.

When it is necessary to use an H.T. battery only the small, standard size need be bought, for the "Moderator" Two does not require a large and greedy super-power valve.

As a matter of fact, the consumption of H.T. can be kept down to very low limits by discriminate adjustments of the grid bias. The grid-bias voltages recommended by the valve makers are an ideal; they enable the greatest possible undistorted volume to be obtained from the valve in question.

But you may not want the maximum power output of which the valve is capable. In fact, the volume that you find satisfactory for normal home listening may be well below this.

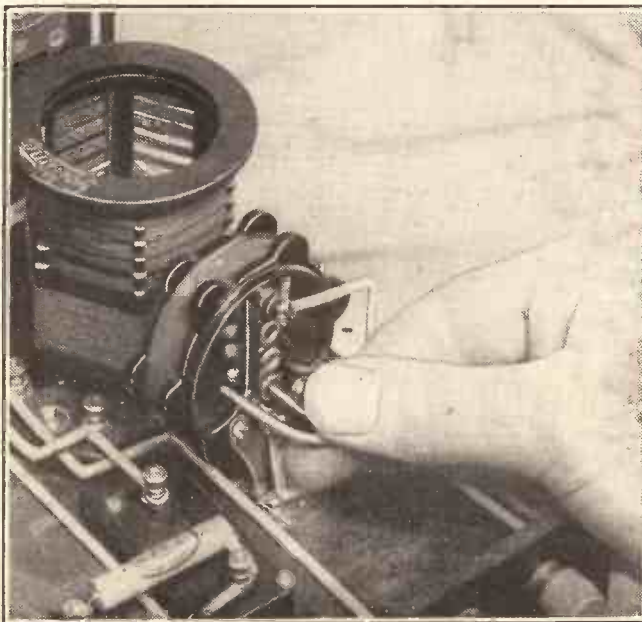
In such a case there is no reason at all why you should not increase the grid bias a little and so cut down the H.T. current consumption. Anyway, always remember that it is economical to work with as many grid-bias volts as you can plug in.

G.B. Considerations.

And now for the operation of the "Moderator" Two. Give the detector about 60 volts H.T. and the power valve as much as you can. Use the maximum available for this always. If you have a 120-volt battery, then the power valve ought to have the full 120 volts together with the G.B. recommended, or as much more as you can apply without distortion occurring.

(Continued on next page.)

SET FOR SURPRISING SENSITIVITY



Having initially decided upon the Moderator coil tapping to use, your "Moderator" Two is permanently adapted to give optimum results under your own particular local conditions.

THE "MODERATOR" IN ACTION

(Continued from previous page.)

In regard to the tuning controls and adjustments, I think it might be most helpful if I give in detail a personal account of how I went about the job of testing the set in my own home.

Well, first of all I carefully checked all the internal connections—just a quick routine "once over." This, you may think, was unnecessary as the instrument had been built and tested at Tallis House.

A Good Test of the Wiring.

But it had had a rather rough journey in the back of my car and had, at least once, rolled off the seat on to the floor! "You should have been more careful?" Not at all; it was a good mechanical test of wiring joints and components!

I then carefully joined up the batteries, making sure that I connected the wires to

the set first so no unconnected "live" leads were left to dangle should I suddenly be called away. I left H.T. negative disconnected for the time being.

After that the loudspeaker was put on and the aerial and earth leads connected. I inserted the valves, carefully making sure that all the pins of each made good contacts with their respective sockets.

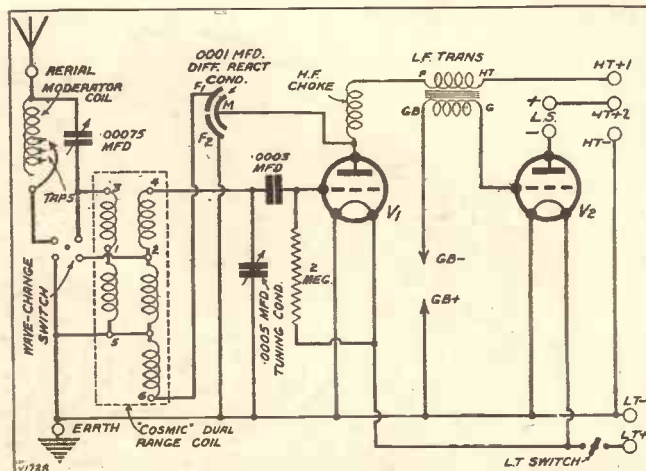
I inserted the grid-bias plugs and, pro tem, placed the Moderator coil plug in the top coil tapping socket.

The reaction control was turned to minimum (as far round in an anti-clockwise direction as it would go), and the Moderator condenser was set about half-way, I pulled the wave-change switch out for medium waves.

Then I made a comprehensive, meditative survey of the whole outfit. I lit a cigarette and spent two or three minutes on this; more haste less speed, is an excellent motto for the radio enthusiast!

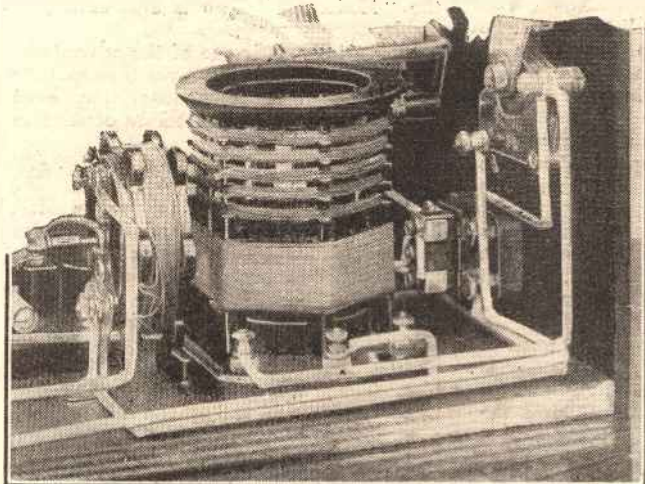
Finally, I joined up H.T. negative and switched on the L.T. I then swung the tuning condenser slowly round until I could hear the London National station fairly strongly. He came in at about 34 on the

A THOROUGHbred "P.W." CIRCUIT



It looks simple, and it is simple, but this circuit has ten years of intensive creative design behind it.

PUTTING UP THE POWER



When the Moderator coil is in this position and as close as possible to the tuning coil, maximum power is achieved.

dial. (The dial was marked 0-180.) I twisted the Moderator condenser knob first in one direction and then in the other, and noted that there was an increase in strength when it was turned about three-quarters of the way round from minimum capacity (this capacity should be given when the knob is as far over anti-clockwise as it will go).

Deciding the Moderator Tap.

Back to the main tuning dial, I searched for London Regional, and found him easily enough at about 100. But the Moderator condenser would only increase the volume a little, although I felt if I could go on turning it in a clockwise direction the volume would get greater and greater.

So I tried another Moderator coil tap, and could, with the middle one, easily get London Regional at full strength and weaken him by turning the Moderator condenser in either direction from this point. But could I do the same with the National? I tried. There was certainly

(Continued on page 939.)

WE RECOMMEND THESE MAKES OF COMPONENTS AND ACCESSORIES

- 1 Panel, 10 in. x 7 in. (Peto-Scott, Lissen, Goltone, Wearite, Permeol, Becol).
- 1 Cabinet to fit, with baseboard 10 in. deep (Peto-Scott, Cameo, Osborn, Lock, Pickett, Gilbert).
- 1 0.0005-mfd. variable condenser, with slow-motion dial (J.B., Polar, Ormond, Wavemaster).
- 1 0.00075-mfd. solid-dielectric variable condenser (Polar, Ready Radio, Telsen, Sovereign).
- 1 0.001-0.0015-mfd. differential reaction condenser (Ormond, Polar, Lissen, J.B., Igranic, Cydon, Telsen, Ready Radio, Peto-Scott, Graham Farish, Wavemaster).
- 1 Cosmic dual-range coil (Goltone, Wearite, Sovereign, Lewcos, Peto-Scott, Ready Radio, Tunewell, Telsen H.F. coil).
- 1 Moderator coil (Ready Radio, Peto-Scott, Goltone, Sovereign).
- 1 4-point push-pull switch (Telsen).
- 1 2-point push-pull switch (Telsen, Ready Radio, Lissen, Wearite, Tunewell, Peto-

- Scott, Graham Farish, Goltone, Bulgin, Ormond).
- 1 L.F. transformer (Slektun 1:5, R.I., Ferranti Telsen, Lissen, Igranic, Goltone, Varley, Graham Farish, Tunewell).
- 2 4-pin valve holders (Bulgin, Lissen, Telsen, Ready Radio, Wearite, Igranic, Ormond, W.B., Benjamin, Clix, Goltone, Graham Farish).
- 1 0.003-mfd. fixed condenser (Lissen, Ferranti, Telsen, Graham Farish, Igranic, Dubilier, T.C.C., Sovereign, Goltone).
- 1 H.F. choke (Lissen, Telsen, Lewcos M.C., Tunewell, Peto-Scott, Ready Radio, Varley, R.I., Wearite, Goltone, Sovereign, Graham Farish, Watmel).
- 1 2-meg. grid leak (with holder if required). (Dubilier, Igranic, Lissen, Graham Farish "Ohmite," Telsen.)
- 1 Terminal strip, 10 in. x 2 in.
- 9 Indicating terminals (Bulgin, Belling-Lee, Clix, Igranic, Goltone, Ealex).
- Battery plugs and spades (Belling-Lee, Goltone, etc.).

Flex, 18-gauge wire and sleeving, etc.

ACCESSORIES.

- LOUDSPEAKER.—Ormond, Celestion, Blue Spot, H.M.V., Marconiphone, R. & A., Epoch, B.T.H., W.B., Clarke's "Atlas."
- VALVES.—1 Det. Marconi H.L.2., Mullard P.M.1H.L., Mazda H.L.2, Cossor 210 H.L., Osram H.L.2, Tungram H.210, Lissen H.L.2, Eta B.Y. 2020.
- 1 Power. Mullard P.M.2, Mazda P.220, Marconi L.P.2, Osram L.P.2, Lissen P.220, Cossor 215P., Tungram P.220, Eta B.W.604.
- BATTERIES.—L.T., 2-volt (Ediswan, Exide, Pertrix, Lissen, Oldham).
H.T., 120-150 volts, to supply 10-12 m/a (Ediswan, Pertrix, Drydex, Magnet, Lissen).
G.B. to suit power valve (Ever Ready, Siemens, Pertrix, Lissen, Drydex, etc.).
- MAINS UNIT.—To supply 15 m/a or upwards at 150 volts (Atlas, R.I., Heayberd, Tunewell, Regentone, Ekeo).

The TELSEN JUPITER S.G.3



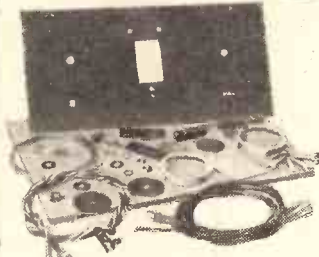
TOTAL COST OF TELSEN MATCHED COMPONENTS
77/-

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



Utilising a brilliant circuit arrangement devised by Telsen technicians, ensuring the highest amplification under all conditions, with extreme selectivity, exceptionally wide range and superb quality of reproduction. Free full-size 1/- blue prints of this and other Telsen circuits, together with full instructions and a wealth of interesting and valuable information, including particulars of the improved and

now all-embracing range of Telsen Radio Components, at the still lower prices made possible by Telsen's enormous sale, are contained in the new, bigger and better issue of the Telsen Radiomag. Get a copy NOW—price 6d. from your radio dealer or newsagent.



DRUM DRIVE CONSTRUCTORS' OUTFIT

Contains all the necessary requirements for the construction of the TELSEN "JUPITER S.G.3," but the constructor will find the outfit of great value in the building up of any receiver circuit employing the drum drive condenser assembly, No 219 **3/6**

The Outfit Contains the Following :

- 1 Metal Panel with attractive crystalline finish, specially cut and drilled for mounting the Telsen Drum Drive, and other panel-mounted components normally required in a ganged condenser receiver.
- 1 Baseboard 14 by 10 in.
- 1 Aerial and Earth Terminal Strip
- 1 Loudspeaker Terminal Strip
- 2 Red Terminals complete and mounted in holder.
- 2 Black Terminals complete and mounted in holder.
- 7 Wander Plugs mounted in holder.
- 2 Spade Tags
- 1 8-way Battery Cord
- 1 Cord Clip.
- 2 Large Insulating Washers.
- 1 Small Thick Insulating Bush.
- 1 Small Thin Insulating Bush.
- 2 Spacing Nuts for the reaction and aerial series condensers.
- 2 Spacing Nuts for the "On-Off" Switch.
- 1 Wave-Change Escutcheon with two screws and nuts.
- 1 Separator Escutcheon.
- 1 Volume Escutcheon.
- 1 "On-Off" Escutcheon.
- 2 Height Plinths for the matched screened Coils.
- 1/4 in. of 3 mm Sleeping (black).
- 1/4 in. of 3 mm. Sleeping (red).
- 20 feet of 1 1/2 mm. Sleeping (green).
- 21 feet of 22 S.W.G. tinned Copper Wire.
- 1 Double-ended Spanner for lock-nuts.
- 1 Fourway Spanner.
- Assortment of 1/4 in., 3/8 in., 1/2 in., 5/8 in., and 1 1/2 in. Wood Screws.

TELSSEN RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

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

TELSEN

H.F. CHOKES



TELSEN BINOCULAR H.F. CHOKE

In H.F. amplification the performance of a choke is of supreme importance. The Telsen binocular H.F. Choke is called for wherever the highest efficiency is required. It has a high inductance of 250,000 microhenrys, low self-capacity, and a negligible external field, due to the binocular formation, making it the ideal choke for a high class circuit. No. W.74.

5/-



TELSEN STANDARD H.F. CHOKE

The Telsen Standard H.F. Choke utilises the minimum baseboard space. It is designed to cover the whole broadcast band, has very low self-capacity, and is highly suitable for reaction circuits. The inductance is 150,000 microhenrys and the resistance 400 ohms. It has proved very popular and has been incorporated by set designers in many of the leading circuits. No. W.75

2/-

TELSEN

RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

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

THE "MODERATOR" IN ACTION

(Continued from page 936.)

no margin, but full strength could still be achieved.

Now for a little distance, and also to test the higher reading effectiveness of the Moderator. I searched for the North Regional (480 metres) having first twisted the Moderator condenser as far clockwise as it would go. (Remember the Moderator is a tuner; it doesn't need the close adjustments of the ordinary tuning condenser, but it requires to be set approximately or roughly for bands of stations.)

I had to use reaction for the North Regional, as I fully expected. But I soon found him, and discovered that the Moderator just squeezed him in. There was no margin at all. But this was quite in order. You see what I had done?

You Are Bound to Gain.

I had located a Moderator coil tapping which enabled me to get full "moderation" on both a 261.6-metre (London National) and a 480-metre (North Regional) station. It is true, there were "fringes." I couldn't "moderate" up to Budapest, 550 metres, or down to Toulouse, 255 metres.

But I was able to tune both stations in at good volume. And the point I must make very clear is that whatever you do with the Moderator is clear gain. You work from ordinary single-circuit standards upwards.

I could use different Moderator tappings for the very "short" and for the very "long" medium waves and actually get full moderation all round the tuning dial, but I did not feel it to be necessary, and nor will most of you.

The tapping I had decided upon which

gave me London National and North Regional at full power was good enough for all purposes. It became my permanent adjustment, and thenceforward there was no need to refer to the interior of the set.

Having fixed this, I experimented with some of the more difficult stations. I had a shot at Hamburg (372 metres). I set the Moderator condenser at a half-way position and then went to work with the tuning and reaction condensers. (You soon get the

straightforward selectivity control on the long waves. Daventry 5XX was easy to pick up, but he still came in when I tried Radio-Paris.

So I reduced the Moderator condenser capacity a little and cleared him out of the way. I fixed this Moderator condenser adjustment for future use by memorising its position. It is unnecessary to keep altering the Moderator condenser for different long-wave stations.

Having listened a while to Radio-Paris, I went on to one or two other long-wavers, and then switched off. It was an interesting test, and I trust my account of it will prove of use to "P.W." readers.

Responsive Controls.

There will, of course, be many who do not need station searching information such as is given above. There are the constructors who have previously gained a fair amount of experience in the handling of the controls of radio sets.

They should be delighted with the "Moderator" Two and its unusually responsive controls. But there are one or two features concerning these which may be new even to them.

For example, the Moderator condenser has an extremely slight effect on the reaction. This will not in the ordinary way be noticeable, but when a weak station is being coaxed in, and it is desired to go fairly close to the "edge" of oscillation, the Moderator condenser will

MAKE YOUR OWN COMPROMISES



At any time the Moderator condenser can be adjusted in order that you can make your own compromises between power and selectivity for any station. You do not have a fixed compromise inflicted upon you as in most sets.

knack of placing the Moderator condenser approximately.)

I found Hamburg at about 116 on the tuning dial, going very, very slowly with the tuning and very gingerly with the reaction. But the London Regional was interfering badly.

Now came the chance for the Moderator. I couldn't have Hamburg at full power and retain sufficient selectivity to keep that powerful local out.

I must compromise, so I tuned away from the London Regional with the Moderator, slightly readjusting the tuning condenser in the process.

With a little "wangling" I got Hamburg quite clear, and this was something of a feat for a two-valver under my own particular local conditions.

On Long Waves.

After listening to a little German (and not being able to make much of it) I paid the Midland Regional a call, and then went on to Madrid and Vienna.

Surfeited at last with medium-wavers and convinced that the "Moderator" Two was a winner on at least that band, I went over to the long-wavers by operating the wave-change switch.

I set the Moderator condenser at maximum, for it becomes a

FOR "MODERATOR" OPERATORS.

How to install and work the "Moderator" Two for best results. The following points are, however, intended only as reminders, they are dealt with in greater detail in the accompanying article.

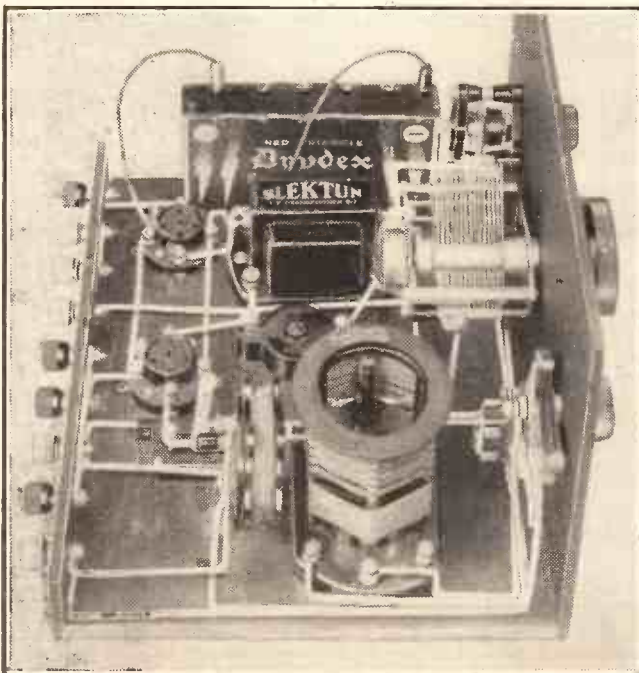
1. Carefully check the wiring.
2. Connect up aerial and earth, loud-speaker, H.T., L.T., and G.B. batteries
3. Insert the valves in their holders.
4. Set Moderator condenser approximately half-way and reaction condenser at minimum.
5. Switch on for medium-wave reception.
6. Fix upon the Moderator coil tapping to use. (Remember, the Moderator coil is out of action on the long waves but there is no need to withdraw its plug.)
7. Test for long-wave reception. The Moderator condenser now acts as a straightforward series-aerial condenser.
8. Now commence your tour round the European ether.

be found to act as a fine "vernier," and the smaller movement required for this will not upset its "Moderator" effectiveness.

There is a slight tuning linkage between the Moderator and grid circuits so that big variations of the Moderator condenser may necessitate slight corresponding adjustments on the main tuning dial, although this applies only to the question of *weak distant stations*.

I stress that because the "Moderator" Two is far from being a finicky set to handle.

CUTTING DOWN H.T. COSTS



By carefully adjusting the grid bias the H.T. can be reduced to a very low level without affecting quality (see text.)



BBROADCASTING makes a very great appeal to me. I can never overcome the thrill of speaking and playing to thousands of people whom I have never seen, living, many of them, in places I have never even heard of. Although I am no stranger to the broadcasting studio, I invariably listen for the postman's knock the following morning, in order to see what strange coincidence his postbag will produce!

A week or so ago a letter reached me from somewhere in America—Chicago, I think it was—making some very nice remarks about the programme, and then going on to say that the writer was none other than the eldest brother of "Jimmy" Seed, one-time captain of the Sheffield Wednesday Football Club, and now manager of Clapton Orient! Such are the fantastic facts thrown up by wireless correspondence.

Out of the Ordinary.

In front of me as I write is a postcard bearing the inscription, "London by Floodlight, Thames House." Now that does not seem anything out of the ordinary, does it? But let me show you the reverse side:

"Dear Mr. Hylton,—I am a Londoner living in North Dakota. I have been here just three years and am terribly homesick, dying to see dear old England again.

"It was a great treat to hear you so clearly over the radio to-night. I hope you can do it again often; it reminds me so much of home.

"This picture was sent out to me by my mother, because she thought I would like to see some views of 'home.'"

The writer was a young lady, and I think it requires very little imagination—if any at all—to picture her in her lonely "diggings," thinking and dreaming about England. How glad I am to feel that I was able to bring a little bit of her Homeland to her in far-away Dakota! Even if it made her shed some tears, at least I know they were happy ones.

Not all my letters are so emotional, however. Frequently I receive some very good tips on studio technique.

I can recall one man out in Hollywood who actually sent me three whole pages of

A lively contribution in which the popular dance-band leader and broadcaster recounts, at first-hand, his experiences and impressions of entertaining via the radio.

notes on his impressions and ideas of my broadcast. Of course, not everything he said was dead on the mark, but it was astounding how correct most of his suppositions were about the composition of the band and their positions in the studio.

Never Satisfied.

He gave me more than one good tip which I was able to make use of next time my boys appeared before the microphone.

Studio technique is one of the things which always worry me. I have never been satisfied with our performance yet, and I do not suppose I ever shall be.

I wish some way could be discovered of

JOLLY JACK



Jack Hylton, the jolly conductor, whose band has delighted the hearts of so many listeners with its captivating rhythm.

obtaining the opinions of every listener, as we can of every member of the audience in the theatre. As it is, I have to rely upon my instinct and experience outside the studio.

The responsibility is enormous and, while I do not shirk it, yet I would give almost anything to know—really know—what Mr. Average Listener and his wife think of my band.

There is one thing I do know, however, and that is that it is just as essential to put on a "show" whether you are on the stage or in front of the microphone. It is not sufficient merely to play the numbers, no matter how popular or catchy they may be. Something must be done to put them over.

What Worries Me.

Something must also be done to break up the show into contrasting items, or the listener will become weary by the sameness of it all. But just how this is to be done is what worries me.

I wish Sir John Reith would write a book about it: "Hints to Dance Bands," or something like that. Then I could conduct with my baton in one hand and a well-thumbed page in the other!

The power of the microphone is colossal. If you gave me a good number which had never been played anywhere, I could make the composer's fortune in a week simply by playing it once over the air.

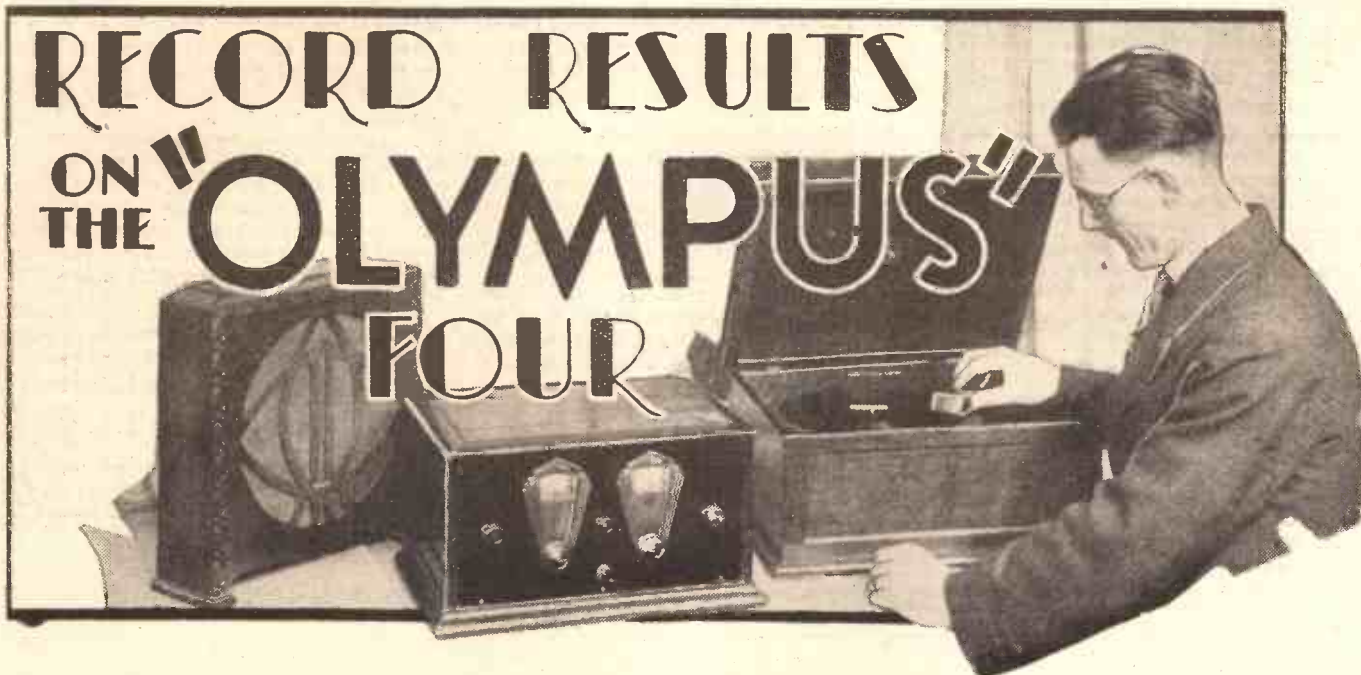
Cannot Cope With Demand.

Some of the numbers which I played during my American broadcast in December of last year have gone into thousands in sheet music and tens of thousands as gramophone records. A representative of an important music publishing house on this side of the Atlantic has just returned from the States, and he tells me that a certain number I played is still the sensation of that country, and that the gramophone companies cannot turn the records out fast enough to cope with the demand.

And that broadcast is now months old! How many tunes normally last half this time? Such is the power of wireless.

Of course, the reverse is equally true. The microphone is the most heartless and unforgiving medium I have ever come across.

(Continued on page 970.)



THERE is no doubt that many constructors of the "Olympus" Four will like to use the set to play gramophone records: in other words, they would like to fit a pick-up to the receiver.

This would turn it into a radio-gram receiver and enable either radio or record results to be obtained. The conversion or, rather, addition required in order that this may be accomplished is very slight and very easy. There is only one extra component, and it is fitted in a few minutes.

An Easy Modification.

Slight alteration in the wiring of one section of the set is required, but the necessary modification to the leads can be carried out with the greatest ease.

In order that a set be available for both radio or gramophone (one at a time, of course), some switching scheme has to be used so that the grid of either the detector or one of the L.F. valves is connected to the radio or the pick-up input, whichever is required.

The Pick-Up.

For the benefit of those who may not be acquainted with the gramophone pick-up we should explain that it is a device something like a soundbox, which is used on all radio-gramophones. It takes the place of the soundbox used in the ordinary gramophone, and it is connected to a valve amplifier which amplifies the electrical impulses supplied by the pick-

By the few simple additions described in this article, you can quickly convert the "Olympus" Four, "P.W.'s" famous exhibition receiver, for record reproduction. The cost of the parts is very small, and the extra pleasure and entertainment obtained will amply repay for the little time and trouble required for the conversion.

up, and the result is the record played through a loudspeaker instead of the horn of a gramophone.

Actually no sound (or very little, and what there is not wanted) comes from the

pick-up itself: it merely converts the wobbles in the record into electrical impulses, whereas the soundbox converts them into sound straight away. In the radio-gram the conversion into sound is done by the loudspeaker.

A Simple Type Control.

In the case of the "Olympus" Four, the added component is a simple type of switch which is fitted on the panel between the two Telexors. The switch is of the single-pole double-throw, or the change-over type, and is controlled by a rotating knob and spindle.

It is mounted by the usual single-hole method, but the switch itself is mounted on a small right-angle bracket, which in turn is mounted on the panel by means of a small bush. Control of the switch is carried out by means of a length of extension rod.

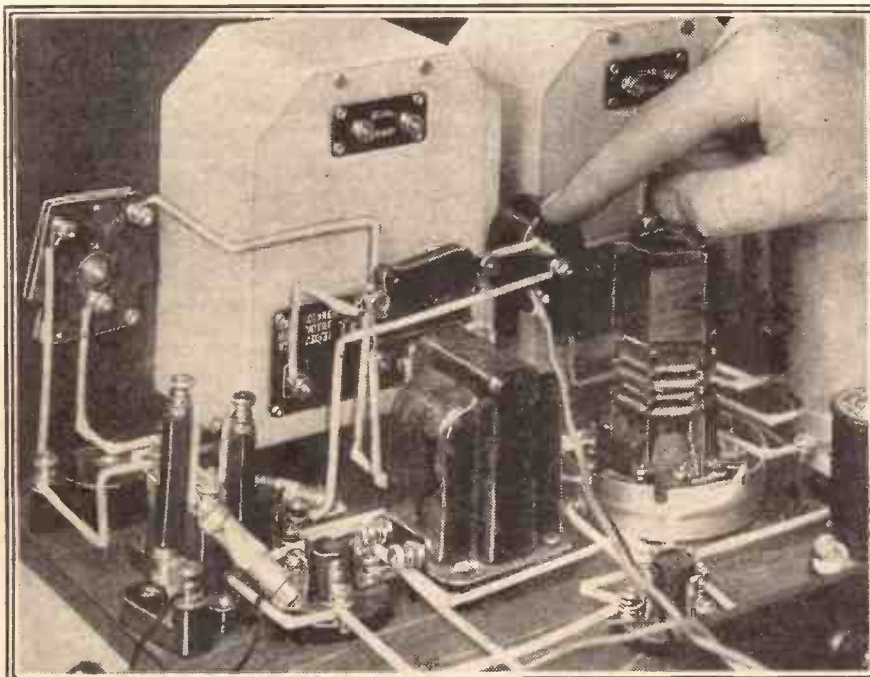
Its Position.

By this means the switch is mounted clear of the two Telexors, and its position can be clearly seen in the photograph.

For drilling purposes, there being no separate diagram, the following positions of the hole should be noted. Its diameter is $\frac{5}{16}$ in, and the distance up from the bottom of the panel is $3\frac{1}{4}$ inches, and the distance from the right is 7 inches.

It will be seen that the switch is in the centre of the panel, measuring lengthwise. In this position it is
(Continued on next page.)

THIS LITTLE SWITCH DOES THE TRICK



The switch that changes the set over from radio to records is mounted between the two Telexors, the slight alterations necessary to the wiring being plainly depicted on the next page.

RECORD RESULTS ON THE "OLYMPUS" FOUR

(Continued from previous page.)

quite symmetrical, and the appearance of the panel-front is in no way spoiled by the addition of the radio-gram switch.

The switch should be so mounted that the three terminals run from top to bottom, the oval of the switch being vertical. This is important if the connections are to be easily carried out.

Alterations to Leads.

The diagram that accompanies this description shows some of the connections dotted, and some as full lines. These indicate respectively the leads that are on the set and which have to come off, and those that have to be fixed.

In order to carry the alteration out

properly it is advisable to have on hand for reference the wiring diagram of the set in the Aug. 20th number; then it will be clearly seen which leads have to be removed and how the new ones will take their places.

New Position for Grid Condenser.

The first thing to do is to remove those wires that have to come off. Then remove the grid condenser from the detector valve. This is to be suspended from one of the wires attached to the switch, and it is a good plan to fix this next. The diagram shows it quite clearly. With the condenser suspended between the top terminal of the switch and the G terminal of the second Telexor we can proceed to put in the rest of the wires shown as full lines.

So we join up the G terminal on the Telexor to terminal 8 on the second coil, from which terminal we have removed the wire to one side of the grid condenser when it was on the baseboard. Then join the grid of the detector valve holder to the centre terminal on the switch. That completes the "stiff" wiring; all that remains to be done is to connect the pick-up itself, passing the leads carefully through the cabinet at a convenient point, to the remaining terminal on the switch in the case of one of the two pick-up leads, and to a wander-plug for insertion in the grid-bias battery in the other.

Pick-Up Bias.

The new grid-bias plug is inserted in 1½ volts negative, and can be left in that position permanently, whether or not radio is being received. For the reception of radio the pick-up switch is turned to the left, and the set is tuned-in in the usual way. For record playing the switch is turned in the opposite direction, and the pick-up is placed on the record. In this case the tuning of the set makes no difference, and a word must be said about the control of volume.

In most cases the volume provided by the pick-up will have to be reduced, and unless you have a pick-up that is combined with a volume-control, one of these should be fitted on the motor-board of the gramophone, close to the pick-up.

This will mean slight alteration to the connections between the

pick-up flex and the set. The volume control takes the form of a high-resistance potentiometer (the resistance will depend on the make of pick-up, and the maker's recommendations on the matter should be studied, but usually it is about 250,000 ohms), and this is connected directly across the pick-up leads.

We have three terminals on the volume control, and we proceed as follows: The two outside ones are connected to the two pick-up flex leads, or the terminals on the pick-up from which are taken the flex leads to the set.

ALL YOU NEED.

- 1 Rotary change-over switch (Ready Radio).
- Metal bracket for mounting the switch. (see text).
- Length of extension rod and collar to fit switch (Wearite).
- Bush for extension rod through panel (Wearite).

The centre terminal of the volume control is then connected to the bottom terminal of the pick-up switch on the panel, the lead that went to it having come previously from the pick-up and having been removed.

The grid-bias lead is left as before; that is, it is connected to the pick-up as before, though this also means that it will be connected as well to one of the outside terminals of the volume control.

There is one point to watch here: It concerns the two outside terminals of the volume control. In order to allow of increase of volume to occur with the volume control turned clockwise, the grid-bias lead which goes from the common junction between pick-up and volume control should be connected to the terminal on the volume control that lies at the extreme left of the slider's travel.

Let us explain. As you turn the knob, the slider inside the potentiometer goes round an arc, from one of the outside terminals to the other; the centre terminal is connected to the slider.

By careful examination it is possible to see which terminal the slider is likely to end up at as it goes round its path. The other terminal is the one at which the slider starts. This latter is the terminal to which the grid-bias lead must be taken.

Details of the Bracket.

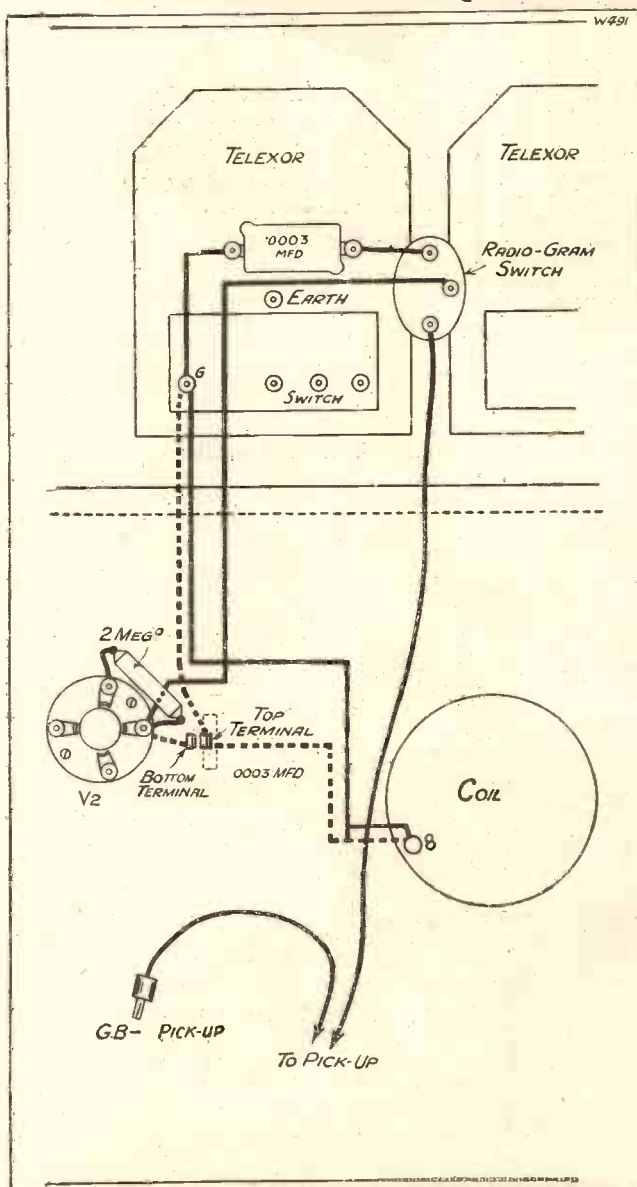
By the way, the bracket for the switch is easily made from a piece of $\frac{1}{16}$ in. aluminium. A piece is cut $\frac{3}{16}$ in. wide and $4\frac{3}{8}$ in. long. This is bent U shaped so that the ends (or vertical portions of the U) are $\frac{3}{8}$ in. long, leaving the back of the U $2\frac{5}{8}$ in. long.

Next comes the drilling of the two holes in the short ends of the bracket. These are of equal diameter, one taking the spindle of the switch and the other the bush that fixes the bracket on the panel and takes the short extension rod.

The holes are $\frac{5}{16}$ in. diameter, and are situated exactly in the centre of the ends of the bracket; that is $\frac{7}{16}$ in. down and $\frac{3}{8}$ in. from the sides.

The extension rod need be only about 3 in. long, allowing plenty for protruberance through the panel. It is fixed to the switch spindle by means of a collar, and at the other end runs through the panel, and to it is affixed the control knob.

THE EXTRA WIRES REQUIRED



The additional wiring required is shown as heavy black lines, while the original leads that must be removed are given in dotted form.

TELSEN

DUAL-RANGE AERIAL COILS

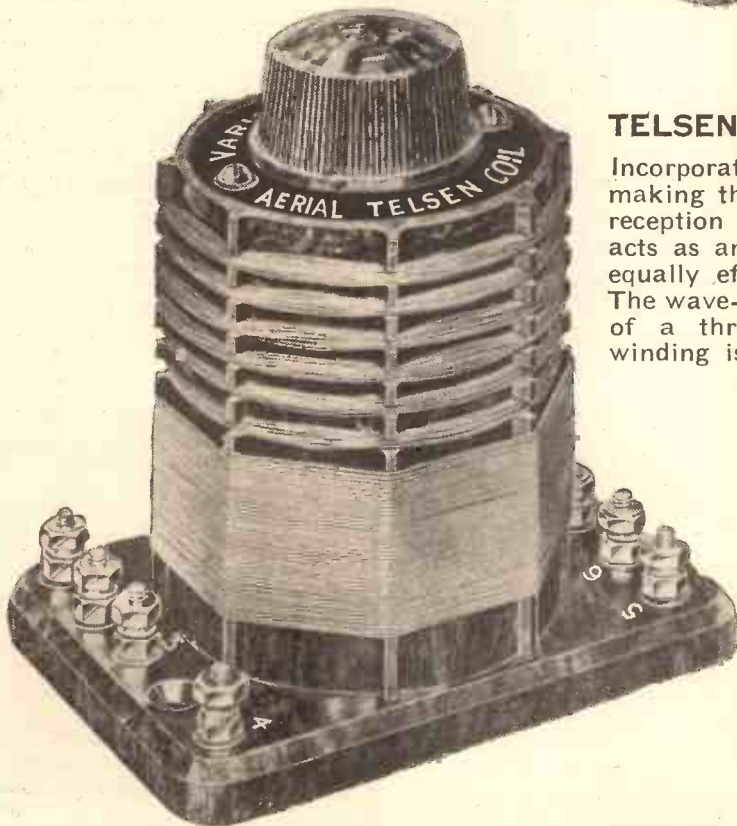
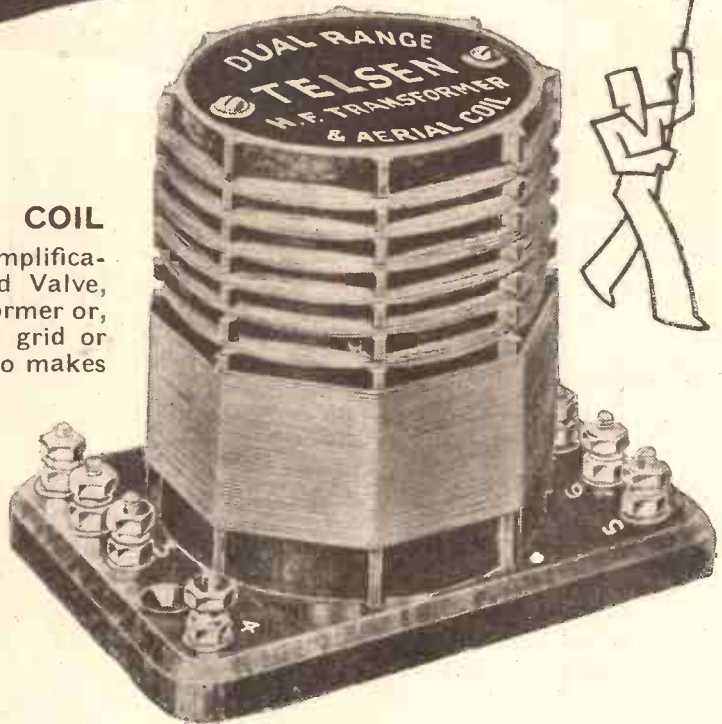


THE TELSEN H.F. COIL

May be used for H.F. amplification with Screened Grid Valve, either as an H.F. Transformer or, alternatively, as a tuned grid or tuned anode coil. It also makes a highly efficient Aerial Coil where the adjustable selectivity feature is not required.

No. W.154

5/6



TELSEN DUAL-RANGE AERIAL COIL

Incorporates a variable selectivity device, making the coil suitable for widely varying reception conditions. This adjustment also acts as an excellent volume control, and is equally effective on long and short waves. The wave-band change is effected by means of a three-point switch and a reaction winding is included.

No. W.76

7/6

TELSEN

RADIO COMPONENTS

GOOD RADIO IS A JOY FOREVER

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

TELSEN MANSBRIDGE AND MICA CONDENSERS

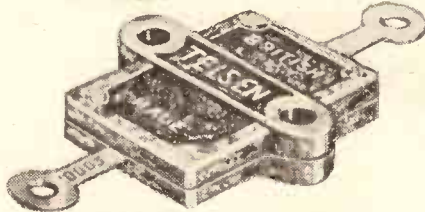


TELSEN MANSBRIDGE TYPE CONDENSERS

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



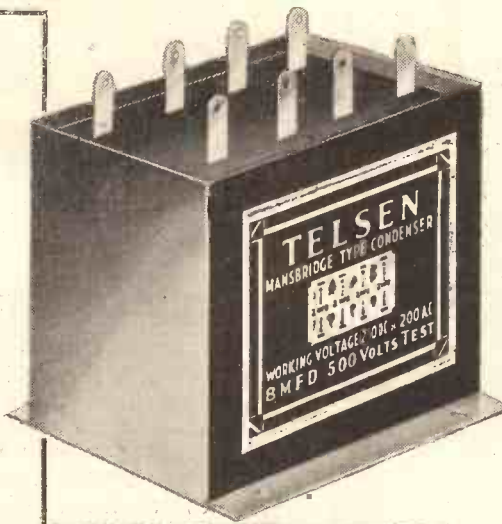
CAP. 500 Volt Test		1,000 Volt Test	
MFD.	NO. PRICE	NO.	PRICE
.01	W.232 1/6	W.239	2/6
.04	W.230 1/9	W.237	2/9
.1	W.231 1/9	W.238	2/9
.25	W.229 2/-	W.235	3/-
.5	W.228 2/3	W.235	3/3
1	W.227 2/3	W.234	3/6
2	W.226 3/-	W.233	5/-



TELSEN TAG CONDENSERS

This type is of extremely compact and sturdy construction. It may be mounted on either insulated or metal panels by utilising the two baseboard screw holes in the neatly designed moulded casing. The tags enable the condenser to be connected to any other component, either directly or by soldering. H.F. losses are negligible. The capacity is stamped on the soldering tag.

CAPACITY.	NO.
.0001	W.207
.0002	W.208
.0003	W.209
.0004	W.210
.0005	W.211
.001	W.212
.002	W.213



TELSEN MANSBRIDGE BLOCK CONDENSERS

These are contained in metal cases finished in brown and with fixing holes. As with the other types of Telsen Mansbridge Condensers, they are self-sealing, non-inductive and hermetically sealed. Three types, each made having total capacities of 4, 6, and 8 mfd., each type being divided into 2-mfd. sections, so that several arrangements of capacity may be obtained. Neat and substantial soldering tags are provided for each section.

CAP. 500 Volt Test		1,000 Volt Test	
MFD.	CAT. NO.	NO.	PRICE
4	W.175 ..	5/6	
6	W.176 ..	8/-	
8	W.177 ..	10/6	
W.178	..	9/6	
W.179	..	14/6	

TELSEN "MICA" CONDENSERS

The New Telsen "Mica" Condensers represent an important advance in technique: H.F. losses have been practically eliminated even in the larger capacities. In order to distinguish them from the earlier type, now to be discontinued, the new condensers are enclosed in a re-designed case, which, while possessing all the adaptability of the previous one as to flat and vertical mounting, is of more attractive appearance. Grid-leak clips may, as heretofore, be mounted in series or in shunt and are supplied at no extra charge with capacities .0001, .0002, and .0003 mfd.



CAP. MFD.	NO.
.0001	W.240
.0002	W.241
.0003	W.242
.0004	W.243
.0005	W.244
.001	W.245
.002	W.245

PRICE.	NO.
1/-	W.247 1/3



TELSEN PRE-SET CONDENSERS

Very low minimum capacity, giving a wide range of selectivity adjustment when used in aerial circuit. Substantially made, easily adjusted and provided with locking ring. High insulation and low loss.

MAX. CAP. MFD.	MIN. CAP. MFD.	NO.
.002	.00025	W.149
.001	.00052	W.150
.0003	.00016	W.151
.0001	.00005	W.152



GOOD RADIO IS A JOY FOREVER

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

SIDE-SHOWS OF OLYMPIA

(Continued from previous page.)

when I tell you that it was among the best that I witnessed.

I take off my hat to the originality of thought behind the Ekco show, for it was a demonstration packed full of interest which drew attention to the merits of Ekco sets in a manner more striking than all the advertisements in the world!

The demonstration consisted of a direct comparison between record reproduction, radio reproduction and the real thing, and the results were most impressive.

On the occasion of my visit to this particular show the artistes were that inimitable pair, Elsie and Doris Waters, and the audience was first introduced to them by means of one of their well-known gramophone records. Towards the end of the record the reproduction was slowly faded out, a curtain was drawn, and there behind a glass and sound-proof studio were the artistes themselves, whose voices were being picked up by means of a microphone and reproduced through the same Ekco set on which a moment or two previously we had heard the record of their voices.

The Third Link in the Chain.

Quite a convincing show, but the reproduction was so realistic that one began to doubt whether there *was* a glass front to the sound-proof studio! But the Ekco people had thought of that, too, and as part of the demonstration they actually switched off the set for a moment or two during which time it was amusing to see the artistes performing although we couldn't hear a thing!

Finally, the artistes appeared in person on the stage to provide the third link in the chain of comparisons, thus bringing to a close a demonstration which was unique, entertaining and of practical utility. No wonder they had to call the police!

The Gramophone Company, whose show was also at the top of the bill, struck rather an original note by turning their

demonstration room into a fully-fledged private cinema, seating 200 people and equipped with a double set of R.C.A. Photophone talking picture apparatus.

Visitors to this demonstration were exceedingly fortunate in that they were able to see the premier production of the New Era National film called "The Voice Of The World," which is shortly to be released to cinemas throughout the country.

It is for that reason that I do not want to tell you too much about it, because if you take my tip you will make a point of seeing it as soon as it is announced for exhibition locally.

It really is a very fine production, and it enables one to obtain a first-hand insight into the tremendous amount of organisation and research that is behind the modern radio instrument.

To me it constituted thirty-five minutes of first-class entertainment, and the sequences wherein were featured the London Symphony Orchestra (under the direction of Dr. Malcolm Sargent), Ambrose and his Band, Claude Hulbert and Peter Dawson—to mention just a few of them—were excellent.

The main theme behind "The Voice of the World" is an illustration most strikingly portrayed of the effect that radio has had upon the life of the world, and the Gramophone Company are to be congratulated upon the whole-hearted but unobtrusive way in which they have co-operated in the production of this film. Be sure not to miss it when it is in your district!

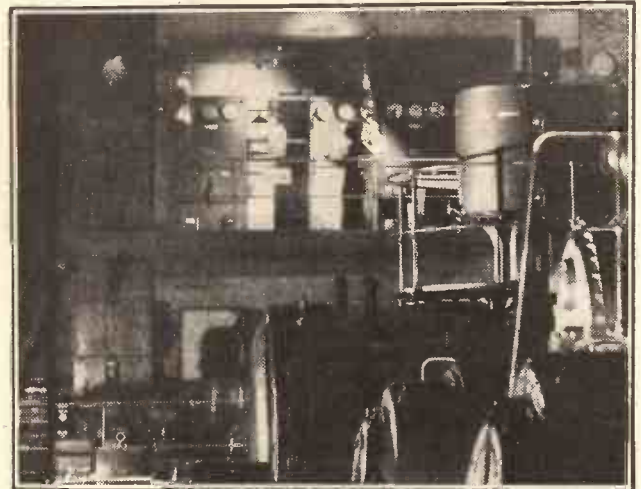
A little less than twelve months ago—at the last radio exhibition, to be precise—the Marconiphone Company produced a show which ultimately toured all over the country and which succeeded in mystifying

almost everyone who saw it. It was clever, to say the very least of it, and the title of "Marconiphone Magic," by which it was known, was about the most apt description that could have been given to it.

A Very Pleasant Surprise.

As a matter of interest, Marconiphone with their "magic" show were, I believe, pioneers in this out-of-the-ordinary show idea, and as I approached their demonstration room this year I found it difficult to believe that they could possibly have bettered the last effort!

PROVIDING THE POWER



This is where the power came from to run the cinema show which was so successfully staged by the Gramophone Company.

But I was in for a very pleasant surprise!

This year's Marconiphone show—"The Love Nest," as it is called—is an astonishingly good performance. It combines the characteristic humour of that rare pair Enid Trevor and Claude Hulbert with a mystifying performance that is both entertaining and demonstrative.

Add to that the subtleties of our "negro" friends Alexander and Mose, whose cross-talk provides an amusing prologue, and you will have an idea of this latest Marconiphone subconscious salesman!

When the curtain is finally rung down on this year's Radiolympia, the Marconiphone show is going on tour, and so I do not propose to shatter your illusions by telling you how it is done. But at least there can be no harm in putting you wise to the fact that the artistes do not appear in person, even though—no, I won't spoil it! But do make a point of seeing it if it comes your way.

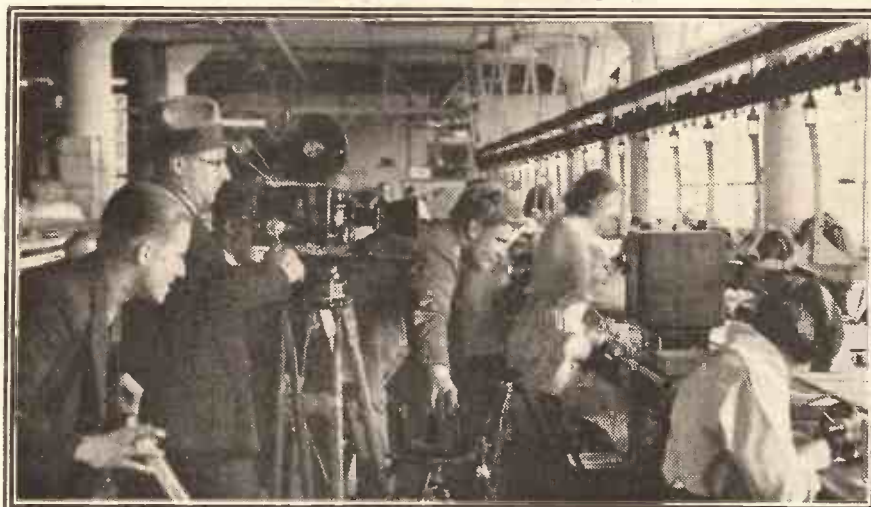
More or Less Orthodox.

Beauty and art were the predominant features of the G.E.C. side-show, which was my next port of call, and although their demonstration was on more or less orthodox lines, I feel that they are to be congratulated upon their efforts to produce an original display.

The demonstration room itself was divided up into nine miniature stages, each one most artistically arranged to create an appropriate atmosphere for the set displayed. For instance, the back-cloth and surroundings of the stage on which was displayed the G.E.C. "Carnival" receiver

(Continued on page 949.)

"THE VOICE OF THE WORLD"



A "still" from the highly successful New Era film—"The Voice of the World"—which was shown for the first time at Radiolympia in connection with "H.M.V." products.

The first kit-sets to bring LASTING QUALITY to the battery-set user

A new Detector-2L.F. Kit Set incorporating many important modern developments. Chassis construction—only five wires to connect—built in twenty minutes. Superb moving-coil reproduction at its best.

'303' KIT MODEL

Complete Kit of Quality Components with set of three Mullard Valves.

£3.10.0

Or 7 monthly payments of 11/9

'303' CABINET MODEL

Complete Kit and Valves as above with beautiful walnut cabinet fitted with new type moving-coil speaker.

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O. P. Kandall, B.Sc., the designer.

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Full constructional details with photographs and diagrams

PRICE 6°

READY RADIO

A new all-wave screened-grid three incorporating Micalog tuning. Guaranteed reception of at least thirty stations on medium and long waves in addition to short-wave stations from all parts of the world. Amazingly selective. Superb quality.

"METEOR" S.G.3 KIT

Complete Kit, together with three Mullard Valves.

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"METEOR" S.G.3 CABINET MODEL

Beautiful walnut cabinet, fitted with moving-coilspeaker, and complete with Kit and Valves.

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Or 12 monthly payments of 17/-

To **READY RADIO LTD., EASTNOR HOUSE, BLACKHEATH, S.E.3.**
Please send me free, the "303" and "Meteor" S.G.3 Book

Name.....

Address.....

Please put a cross against the "303".....
set in which you are interested. "Meteor" S.G.3.....P.W.2.A.

Free

Post coupon now for your copy of the 20-page Book illustrated above. We will also tell you about our REGISTERED USERS SCHEME—your Guarantee and Safeguard.

Bring your set up-to-date with the "MICALOG"



The tuning condenser of the future. Combines all the advantages of a solid di-electric condenser with the efficiency of the best condenser obtainable of any type. Smooth and silent action, self-cleaning plates, positive contact to moving vanes.

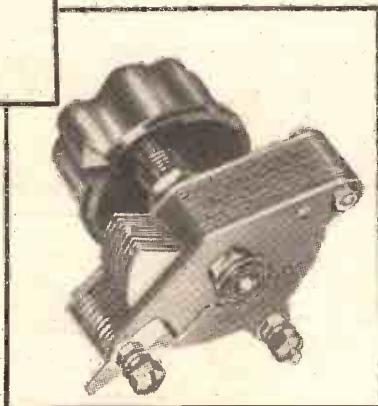
Capacities '0003 and '0005 mfd.

Price each

3'6d.



Ready Radio Differential Condenser (illustrated above). As specified for all modern reaction circuits. '0001 and '00015 mfd. Price 2/6d. each.



Ready Radio Log Law Condensers (illustrated on right). In all standard capacities from '0001 mfd. Prices from 1/9 including knob.

Free

Send for your free copy of the new 1/- 36-page Book of Kendall-Price Circuits. It contains full constructional details of ten new sets and shows you how to modernise your present set at the cost of only a few shillings.

To **READY RADIO LTD.**, Eastnor House, **BLACKHEATH, S.E.3.**
Please send me the Kendall-Price Book of the ten circuits—free.

Name.....

Address.....

If you wish to have, with your free book, ten full-sized blue prints, enclose 1/- in stamps with this coupon. P.W. 2B.

READY RADIO

SIDE-SHOWS OF OLYMPIA

(Continued from page 946.)

left no room for doubt as to which model it was.

The stage breathed the spirit of carnival, and it was carried out in a way that simply compelled attention.

The same thing was true of all the other

"MRS. WATERS' DAUGHTERS"



That inimitable pair, Elsie and Doris Waters, who contributed to the great success of the Ekco "comparisons demonstration."

settings. There was the old Viking ship with its crew to draw your attention to the "Viking" receiver, a clever impression of endless space to provide an appropriate setting for the super-heterodyne model, a zealous-looking gentleman armed with pliers and a screwdriver to proclaim the arrival of the new Osram "Music Magnet" kit, and so on.

The Ideal Setting.

But the G.E.C. were not alone in their efforts to combine radio and art. In fact, the demonstration theatre of the Telsens Electric Company was, I think, one of the most tastefully arranged in the whole show.

The moment I entered it there was a restful and cooling atmosphere about the whole place which, in the sub-tropical conditions under which my visit was made, could only have been due to the artistic use of delicate pastel shades, and, in the circumstances, it was absolutely the ideal setting for the high-class demonstration I witnessed.

The convivialities of the surroundings can be exemplified in no more appropriate way than by telling you that I was genuinely sorry when the doors were flung open to signalise the end of the performance! Judging by the crowds that were queuing up to get in, there were others who thought the same about it as I did!

The next side-show in which I found myself was, I think, one of the most amusing of the whole lot. It was the demonstration of "Varley's."

Easily Taken In!

The first part consisted of a rather mystifying cross-talk between three of their new "Square Peak" receivers, and it was supplemented by a spot of the "Maskelyne" stuff performed by a young

lady who passed a hoop over two of the sets in such a way that it seemed as though they could only be supported by thin air! That was one of the reasons why I stayed behind afterwards, only to find out how easily I had been taken in!

But it was the second part of the Varley show that caused everyone such amusement, and it was a happy thought that sponsored the idea.

It consisted of a talking picture in which a Varley set was seen making itself! First of all the valveholders shuffled into the picture and fastened themselves into position

on the metal chassis, to be followed in a most mirth-provoking manner by the condensers, coils, transformers, and finally the wires!

Mass Production.

The whole show represented mass production with a vengeance, and the effect of seeing components dance about on their own to the accompaniment of the weirdest sounds ever was most stimulating. It put me in a good humour for the rest of the day!

It is interesting, by the way, to note

the use to which the films have been put in radio salesmanship. This co-operation has never been so marked as at the 1932 show.

While the above were perhaps the most out-of-the-ordinary shows to be seen in Radiolympia's annexe of melody, and the ones, therefore, which come within the scope of the present article, I feel that it would not be right to draw this article to a close without reference to some of the other demonstrations.

It is true that most of them were carried out on more orthodox lines, yet they were none the less entertaining, and I enjoyed my visits to the demonstration rooms of Messrs. Lissen, Messrs. Celestion, Messrs. The British Rola Co., Messrs. Lotus Radio, and Messrs. The Blue Spot Company—to mention just a few of them—every bit as much as to those I have described above. But limitations of space necessitates my drawing the line somewhere, and so I have just endeavoured to give you an idea of the less orthodox demonstrations. I am only sorry that you couldn't have been with me on my tour! Still, better luck next time!

"DID YOU KNOW THAT?"

More Random Facts for the Listener

The British Empire short-wave station will probably be working in full swing by Christmas.

The receiving end of the new Anglo-Egyptian telephone service is at Baldock, in Hertfordshire.

Television programmes have recently been experimentally broadcast by the Paris Ecole Supérieure station on 447.1 metres.

The Berlin lady announcer was engaged on a three-months probation basis, to discover whether the German listeners preferred her to male announcers.

The highest aerial masts in the world devoted solely to broadcasting are those of the Radio Excelsior station at Buenos Aires.

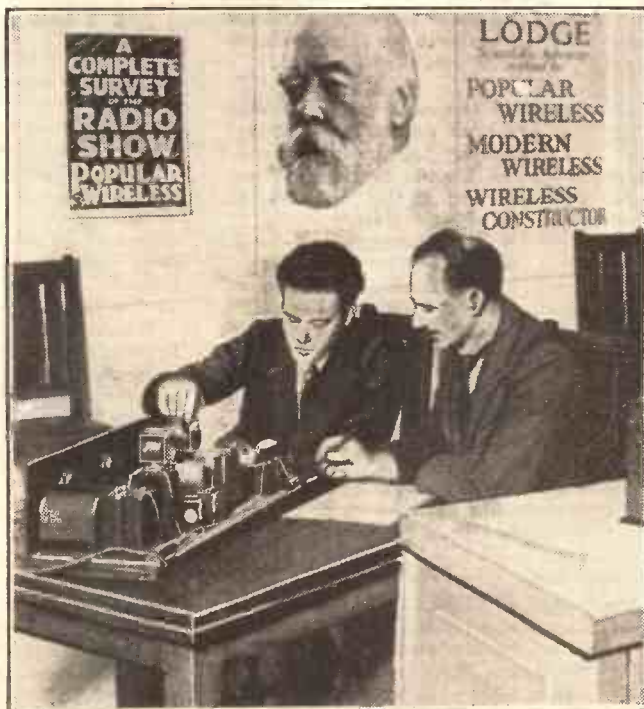
The ultra short-wave transmitter which works from the top floor of Broadcasting House, London, is one of the Marconi S.W.B.4. type, with an aerial output of about 300 watts.

An earth clip is good for the water-pipe earth connection, but a better method is to get a plumber to "sweat" a joint.

A new Hungarian short-wave station for communication with the U.S.A. is working on 21.92 metres. It is situated at a place called Stuhlweissenburg.

The Swiss broadcasting authorities are building a new station at Monte Cenere, near Tessin, for Italian-speaking Swiss. It will be opened about the end of the year.

TECHNICAL ASSISTANCE



One of our Technical Staff is clearing up a few knotty points raised by a visitor, while in the background is seen a portrait of Sir Oliver Lodge, "P.W.'s" Scientific Adviser.

THE MIRROR OF THE B.B.C.

By O. H. M.

B.B.C. AND THE TRADE

THE CHRISTMAS EVE BROADCAST—ROUND THE EMPIRE
PROGRAMME—TALKS POLICY—FOREIGN RELAYS

THE B.B.C. is to be congratulated on its effective co-operation this year with the Radio Manufacturers Association at the National Wireless Exhibition.

The exhibit was worthy of the B.B.C., and it fitted into the scheme of things at Olympia. Some alarm, however, has been created by the publication of a list of specially recommended trade sets and components regarded as the first instalment of a longer list for the use of those concerned in broadcasting equipment in schools.

It is true that this was published under the direct authority of the Council for School Broadcasting, and there was a disclaimer in small type of B.B.C. responsibility. The fact remains, however, that it was a B.B.C. publication, and all correspondence arising therefrom was to be directed to Broadcasting House.

I think this was a cardinal mistake, which is bound to create justifiable ill-will in the trade. The B.B.C. should continue to maintain its policy of absolute neutrality in all such matters as distinguishing between the merits of trade products.

Mignon Nevada.

I hear that there is a good prospect of this great artiste being included in the programmes in the autumn, possibly during the birthday week.

The Christmas Eve Broadcast.

The Christmas Eve broadcast to the Empire, which had been so carefully planned for last year and which had to be abandoned owing to trouble with an American-controlled telephone company in Canada, is being revived.

I understand the cause of the trouble last year has been removed. Moreover, Mr. Cecil Graves, the newly-appointed Director of the Empire Station, is determined to carry through this project as the first great effort of his new service.

The plan last year was to extend the old B.B.C. idea of a "Round the Stations" programme to a "Round the Empire" programme. There were to be contributions from Australia, New Zealand, South Africa, and several parts of Canada.

This year the plan will be more comprehensive still and, if the programme is successful, it should occasion many thrills throughout the length and breadth of the British Commonwealth of Nations. An interesting point is that there is already an express desire for the relaying of this programme in the United States.

Talks Policy.

Although it is generally admitted that the Autumn and Winter Talks Programmes are a considerable improvement on what has gone before, there is a feeling amongst critics that talks as a whole are still not regarded as being necessarily of some entertainment value. The ground covered and the range of interest are certainly

wider, but palatable treatment and presentation are still lacking.

It seems to me that this will always be the case as long as Talks are separate from entertainment and therefore do not have to conform to a basic entertainment criterion.

Those Foreign Relays.

The B.B.C. pays increasing attention to relays from abroad, particularly of opera. The technical arrangements are excellent, there being the same high standard of care at the point of origin and along the route as there is in England.

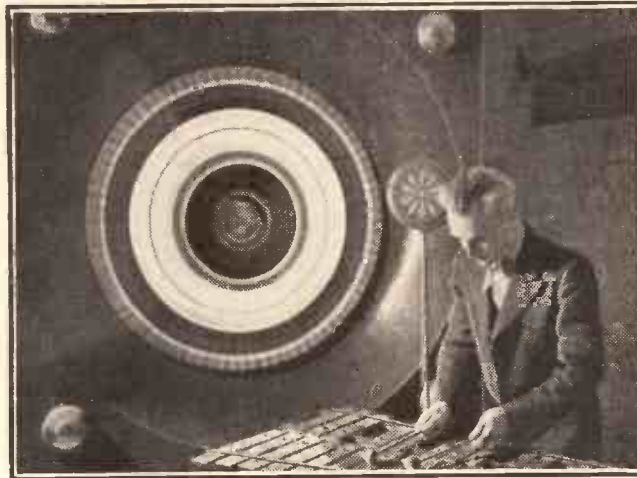
The repeater stations appear to be working well. So far so good; but my postbag leaves me in some doubt as to whether the same high praise can be given the programmes selected for relay.

Even opera lovers are a little mystified that the B.B.C. should choose such rare and difficult productions as some of those recently put over in this series. I think I see the influence of the "music purist" in this business.

Even if the foreign relays are to replace opera no longer provided here, this is no reason for not taking popular operas from abroad.

Incidentally, I am glad to hear that rapid progress is being made with the technical arrangements for relaying from Italy with the same regularity and clarity as is now done from Germany. When the Italian relays are incorporated in the British programmes let's have the really popular operas done as only Milan can do them, and everybody will be satisfied.

TURNING MUSIC INTO LIGHT



A new American invention that turns music into various tones of coloured light. It is said to be invaluable for testing singers' voices, and promises to have a great future.

THE LISTENER'S NOTEBOOK

A rapid review of some of the recent radio programmes.

WHEN Molière is broadcast, all France tunes in. At least, so I am told.

When the B.B.C. essays a similar broadcast of our great national dramatist, all England, or so it seems, sees in it an occasion for attacking the B.B.C. policy (which, incidentally, the B.B.C. quietly ignores), and for renewing the highbrow versus lowbrow controversy.

Whatever the facts may be, I think it futile to argue on the one hand that English listeners are like the French in their wholehearted love of big classical drama. England is certainly not like that.

Shakespeare is *not* in every Englishman's blood, at any rate to the extent that Drinkwater believes it to be. The study of a Shakespeare play at school seems to be a very effective means of ridding the blood of at least this element. "I have not been a student, nor even a reader of Shakespeare since my schooldays" is a common confession.

On the other hand, I am glad the B.B.C. does not accept this attitude of mind as final, and so turn its back on Shakespeare. That it is alive to the attitude is clear from the fact that a Shakespeare broadcast is given only on rare occasions.

Were these occasions more frequent, then complaints by listeners would be more justified, particularly when the complaint concerns the question of alternative programmes. But so long as the B.B.C. is disposed to show discretion in the way it forces big literature and kindred subjects on us, the more likely is it to stimulate our interest in these subjects. 'Tis the same with big music.

At the same time, I do feel that whenever—no matter whether the occasion is rare—the B.B.C. broadcasts big music or literature, it ought always to exercise discretion and make a point of giving a popular alternative on the other wavelength.

Popular Alternatives.

This would not only deprive the grouser of his opportunity to grouse, but also, if the practice were always observed, it would silence him for ever.

And what is a popular alternative? No one knows this better than the B.B.C. itself.

One thinks immediately of Vaudeville, Music Hall, Bands of all sorts, dance, brass, military and novelty (whatever that

(Continued on page 971.)

KENDALL-PRICE S.G. FOUR

Should give 40 or 50 stations on the speaker after dark with ease and great volume. S.W. stations from all parts of the world whenever conditions permit

The ever-popular 3-valve set is not unlike the medium power motor-car, in that it will do almost everything a reasonable owner can ask of it, yet does not quite please him at times, because it has occasionally to work hard to meet the demands he makes upon it. Consequently, he sometimes feels that if only it had a little more power it would be much more satisfying to use, for it could then do its work easily and without effort.

To anyone who feels so, a four valver is the obvious prescription, and I am including a four-valve version of the wonderful all-wave S.G. circuit in this book, for I feel that this circuit is an ideal basis for the really high-powered set. It has an ample reserve of selectivity to match the increased magnification given by the extra valve, and it is capable of excellent quality of reproduction.

The general arrangement of the H.F. circuit of this 4-valve receiver is closely similar to the corresponding portion of the 3-valve version, and I would ask the reader just to glance through the chapter on the 3-valve

battery set, in order to familiarise himself with it. It is the same extraordinarily efficient circuit, capable of results that I have never known to be equalled by any other equal combination of valves, and it can be depended upon to give a truly superlative performance.

Actually, the performance really merits that over-worked word "wonderful," and even with a decided

poor aerial, it should satisfy any possible demands. Naturally, this set will get a great many more stations upon the loudspeaker than the 3-valve equivalent, amazingly good although the latter may be. The reader will, I hope, realise that this is extremely high praise, because I am prepared to say in all seriousness:

*This is one of the 36 - pages in the new book of **READY RADIO "Prize Circuits"** - price 1/- Post coupon now and we will send you your copy **FREE!***

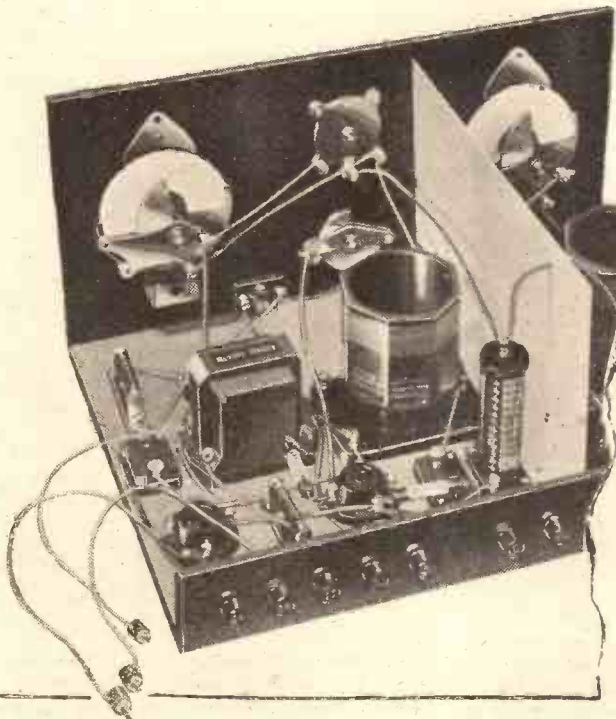
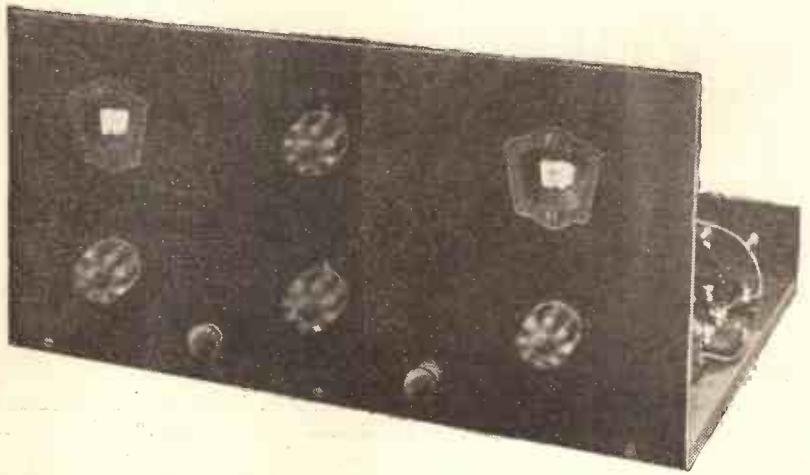
To **READY RADIO LTD.**, Eastnor House, **BLACKHEATH**, S.E.3.

Please send me a free copy of the Kendall-Price Book which contains full instructions and diagrams showing how to build 8 modern sets and 2 Power Units.

Name

Address

If you wish to have, with your free book, ten full-sized blue prints, enclose 1/- in stamps with this coupon. P.W. 20.



THE DIARY OF A WIRELESS OPERATOR AT SEA, 1916-1918



TORPEDOES AN EVIL DREAM—TEN DAYS IN A U-BOAT—A MISERABLE QUARTERMASTER—"ENGLISH BREAKFAST."

NOVEMBER 18TH, 1918.—Well, if the Armistice lasts there won't be much excitement at sea now. Submarines will only be conspicuous by their absence, and torpedoes an evil dream of the past.

We need no longer fear being chosen for commodore ship, and zig-zag routes are taboo and something too unspeakable for words.

Double watches are over, navigation lights are all going—which alone seems very strange—and there is no need to get into one's bunk with a life-saving waistcoat for company.

Here are one or two messages I managed to pick up relating to the Armistice:

"Eiffel Tower, Paris. German G.H.Q. Spa via Nauen Radio (Poz) Steiner leaves G.H.Q. 8 p.m. via St. Quentin Row Clear for car Inform arrival via F.L.—G.H.Q."

"Marshal Foch, G.H.Q., Spa. Committee for delegates as arranged to be altered to 10 a.m. Route Givet-Clumay."

"Spa: Grosser Haupt Quatier, via Poz. (Nauen). To Marshal Foch, G.H.Q., via F.L. Communiqué No. 64/65. Il fait accompli. Max."

Here's another message which I picked up during the last trip. It was sent out from the Azores to all stations, and was as follows:

"An aeroplane has left Nova Scotia for Ireland and England. The plane was able to send but not receive wireless messages, and has not been seen at times scheduled. All ships sighting it should report their positions by radio."

Food for Thought.

NOVEMBER 25TH.—Thirty miles north-east of Malta. Yesterday morning we had an official inspection conducted by the Captain and a few of the officers who formed his staff, consisting of the Chief Engineer, the Chief Officer, and the Purser. From the first the entertainment gave

promise of much variety and abundant food for thought.

Obviously, as regards smartness, we have got a Tartar in our new captain. This is his first trip to sea for some time. During the last two years he has been a prisoner in Germany.

Lost a Lot of Weight.

It appears he was torpedoed and taken on board a submarine, where he was kept a prisoner below hatches for ten days. He tells us that during that time over eight British ships were sunk. He was treated fairly well, but while a prisoner at Ruhleben food got scarcer and scarcer, and as far as I can gather he must have lost a good deal of weight, for he is very thin and emaciated.

TERRIERS OF THE FLEET



Commanded often by an R.N.V.R. officer and manned by a tiny crew, the Royal Naval motor launches (you can see two of them above) did invaluable work during the war as observation craft. Many of the M.L.s. can still be seen to-day—converted into very comfortable motor yachts.

However, being an ex-R.N. Commander, he is very hot on discipline, cleanliness and everything that goes to make a ship really ship-shape.

The crew's quarters were inspected first and, judging by the subsequent account given by a demoralised Quartermaster, the Captain had quite a lot to say regarding the fo'c'sle in general.

Having reduced the Quartermaster to a state of abject misery, the Captain and his retinue swept majestically aft and there inspected the guns and their attendant angels. The Captain watched four misfires on the 4-7 without any apparent concern, but at the fifth he went off the deep end and made some very lurid observations.

Second Wind.

Stung by the Captain's language, the chief gunner got his second wind or something and, marvellous to relate, hit the target bang in the eye with the sixth shot.

Honour vindicated, and basking in a chorus of congratulations, the gunner retired mollified.

In due course the wireless room was inspected, and I listened without fear of censure to the Captain's remarks. Not without effect had a harassed cabin boy been kept hard at it cleaning the place up the day before! I was politely requested to treat myself to a shave, and then the great man relieved me of his presence.

SALONIKA, NOVEMBER 28TH.—From the middle of the Bay, Salonika is quite a fairy city, but seen from close quarters it is a remarkably dirty hole. Looking at it from the ship, the town presents a curiously unreal appearance—more like a mirage than a solid and substantial city.

Roman Ramparts.

Built on a range of hills, and extending right and left half-way round the Bay, Salonika, in the early morning sunshine, presents a very beautiful scene. A conspicuous feature of the place is its countless minarets. At the very back of the town, and on either side, are the old Roman fortifications and ramparts—a long series of stone walls, loopholed and turreted at intervals.

On the quay is the White Tower, which is grandiloquently described on picture post-cards as "the favourite promenade of the citizens of Salonique." The streets are all rather badly paved with cobble stones, and after more than four years wear and tear from A.S.C. lorries one can imagine the state they are in!

The ravages of the great fire are more marked when one walks farther into the town, but along the water-front the buildings have been more or less repaired.

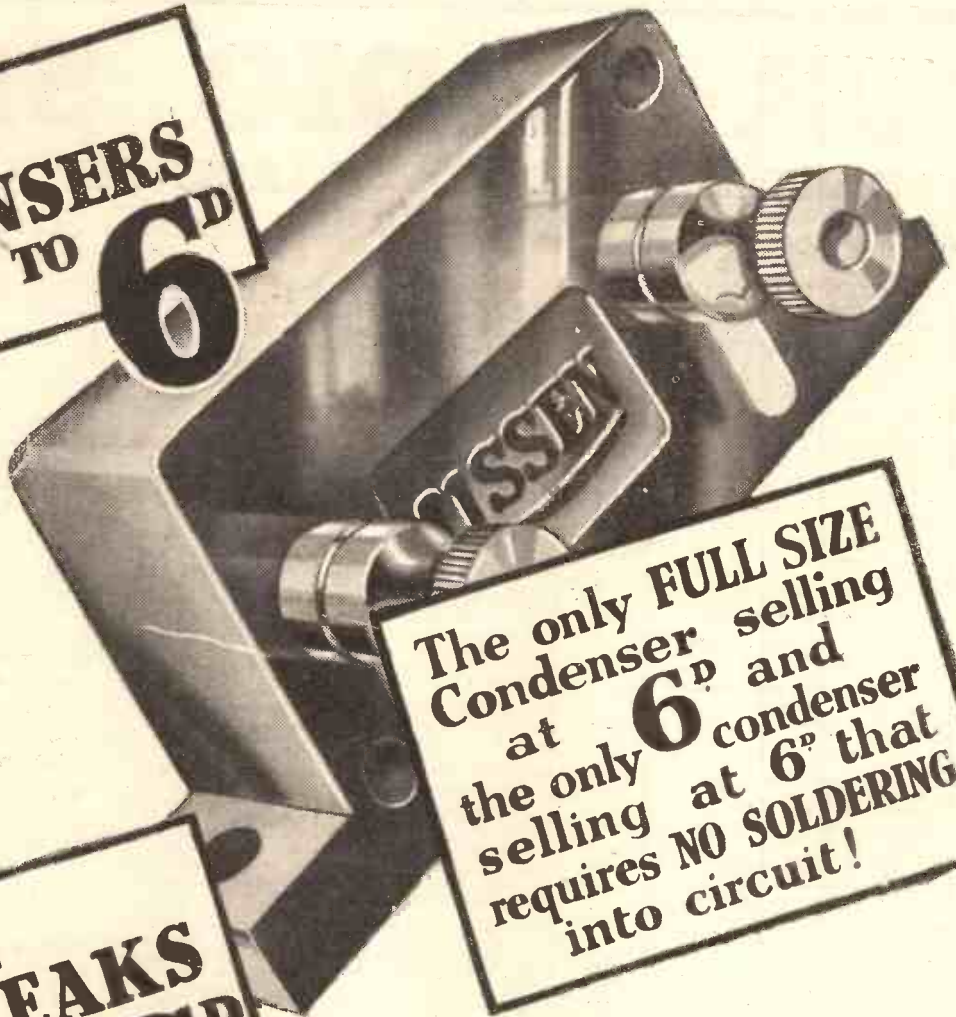
Luxuries are Expensive.

As far as I can see there are no shops of any size, and only one or two cafés of a better class which obtained recognition among the English troops by displaying placards advertising that "You can have English breakfast here," or more significantly, and more to the point, "English whiskey sold here."

I have heard one or two adverse comments from Scotsmen on the latter. It is only when the bill is presented that one realises that luxuries are expensive in Salonika.

(To be continued.)

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CONDENSERS
REDUCED TO 6^{CD}**



The only **FULL SIZE**
Condenser selling
at **6^p** and
the only **6^p** condenser
selling at **6^p** that
requires **NO SOLDERING**
into circuit!

**LISSEN
GRID LEAKS
REDUCED TO 6^{CD}**



Full size and silent
in circuit. Unvarying
no matter what the
conditions or the
current load!

LISSEN FIXED CONDENSERS AND GRID LEAKS

OUR RADIO SHOW

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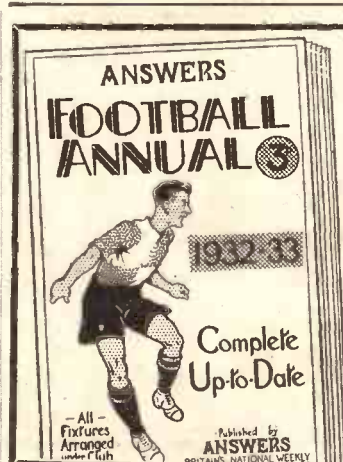
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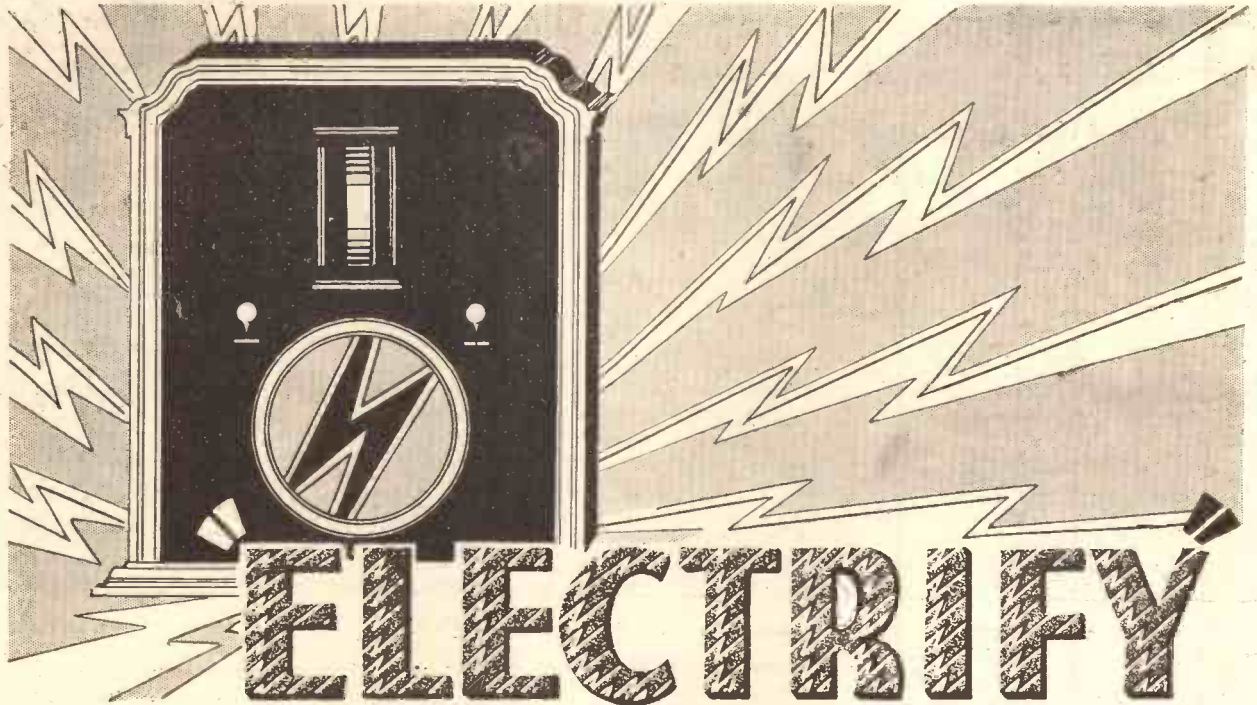
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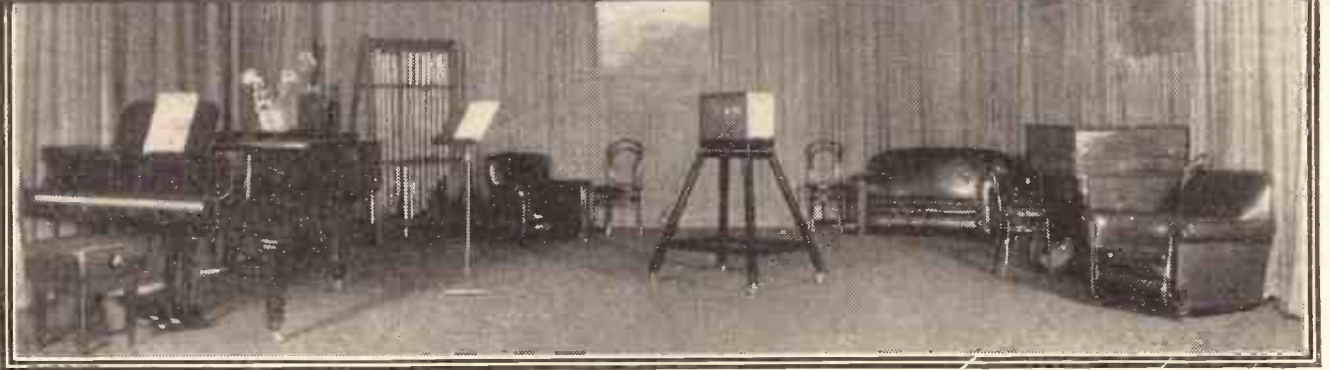
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GLASGOW'S STUDIOS



I WONDER how many people in Scotland realise that drastic alterations have been made at Glasgow to bring the studios into line with those in Edinburgh. I confess that the alterations I found, and the new plans in progress, were a surprise. I visited Glasgow a good while back, when the foundations were first being done at Westerglen, and the studios just off George Street were exactly as they were when the Glasgow station first opened.

Bringing Them Up to Date.

It was a pleasant surprise to see the commencement of work on studios which, when finished, will be more modern even than those which I have visited at Edinburgh.

Not knowing that these alterations were on foot, I went to the Glasgow building to learn the latest facts about the new land-lines connecting up Glasgow, Edinburgh and the main 5 X X cable with Westerglen, and the line for the special programme through to Aberdeen.

I found that owing to the new change-over—"decentralisation," I suppose the B.B.C. would call it—Glasgow is now not quite such an important link in the S.B. chain.

Big Changes.

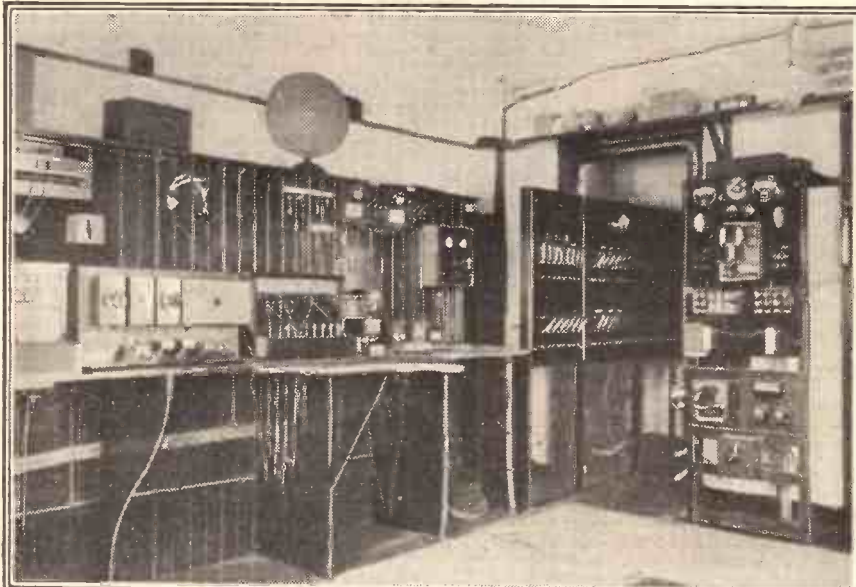
I spent a hectic evening some three years ago in a radio revue production in the old Glasgow studios. There was the main one, which is now stripped of its drapings and being fitted up with sound insulating board, as used in London.

The studios at Glasgow, in conjunction with those at Edinburgh, are employed for most of the material broadcast in the Scottish Regional programme. To equip them for this purpose they have been completely modernised, in the manner here described by OUR SPECIAL CORRESPONDENT.

There was a smaller studio where the actors spoke, and an ante-room, all too tiny and incredibly stuffy. Here there used to be a gramophone and a little switchboard, giving the people in the other studios the cue when to stop speaking.

It was modern radio-play dramatic control in its primitive form.

WHERE THE OUTPUT CENSOR PLIES THE CONTROLS



In the control-room, where the tone and volume of outgoing programmes are checked. It is here that the engineer sees that no undesirable distortion gets to the transmitter, and he also combines the outputs from various studios when this is necessary.

But everything primitive has been changed. The engineer-in-charge, who was then busy on the wiring of the landline control boards and programme meters, showed me how the studio people had given the Glasgow studios a new lease of life.

There was a suggestion for shifting the studio centre, but the present position in the city is so convenient that instead, they decided to modernise.

Cutting Out the Curtains.

Over a ton of grey curtaining has been cut down, and vast expanses of insulating board put in its place. Futurist decoration was being carried out at the time of my visit!

The old curtains had always shown the true height of the room, but above the dummy ceiling formed by the sound-insulating board were conduits for forced air ventilation. The main studio used to open out on to the quiet expanse of a Glasgow square. The new main studio is quite cut off from the outer world.

In the little studio of former days, where the "effects" gramophone used to live, they have made vast changes.

Central Control.

All the radio-play gear has been shifted into the station control-room, and they have a proper dramatic control-panel now; not quite so futurist as the Raymond MacGrath affair at the top of London's "petrified battleship," but just as useful, and similar in

(Continued on page 958.)

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GLASGOW'S STUDIOS

(Continued from page 956.)

appearance to the dramatic control plant at Manchester.

The main studios always had a built-in silence cabinet, but in the new layout they have modernised this and there will be the same kind of announcing and control gear as in Edinburgh.

I won't dare to venture into the Glasgow-Edinburgh studio discussion. Having been in Glasgow for two days, I have realised how keen Glasgow listeners are that plenty of the programmes should originate there, and not in Edinburgh.

In the new Glasgow studios their wish is fulfilled.

A Fine Trio.

When Edinburgh opened with its trio of fine studios, the Glasgow centre was in comparison hopelessly out of date. It did not matter so long as the Glasgow and Edinburgh studios each supplied their own relay. Directly Westerglen opened and both cities supplied the programmes the rivalry was keener.

Glasgow simply had to be modernised, and my opinion is that in another month, when all three studios are in full going

order, listeners to Falkirk will notice the difference.

The Scottish Regional transmitter will have six of the very latest studios to supply its programmes, which gives it an excellent chance of competing, on a more or less equal footing, with London.

Shielded Cables.

For convenience, the Glasgow engineers have put all the mechanical plant in an out-building, whereas previously it was in the basement of the old house in which are the Glasgow studios.

The control gear is the same as at

Manchester. That is to say, the very latest. All the cables are shielded. There is no possibility of interference on the studio lines.

Programme meters are fitted so that the lines through from London can be handled just as they are at Edinburgh. With the old slide-back meters the control was not sufficiently accurate and it was not advisable for them to be used on the new B.B.C. cable networks.

In talking with the Glasgow authorities, I learned how keen they are on the new headline panels!

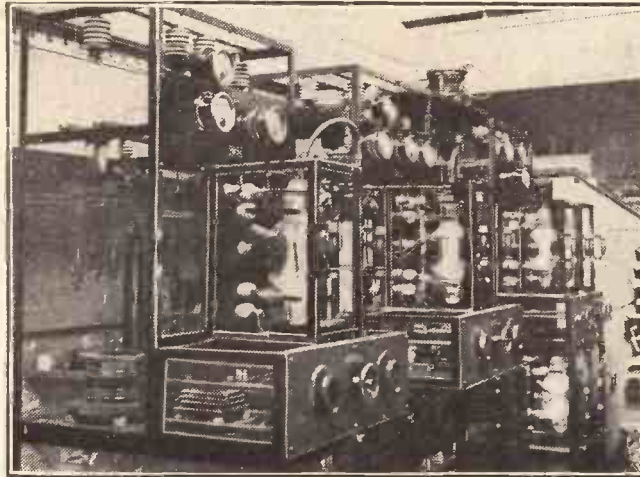
Generally all the Glasgow programmes go to Edinburgh, where there is the junction point of the line going to Westerglen. This is only right, as Edinburgh is still the central control point for Scotland.

An official whom I met at Glasgow had been engaged on the wavelength changing and general business associated with Aberdeen, the only relay left in Scotland. He told me that the new headline arrangements now made it possible for Aberdeen to take a large number of the Glasgow programmes when, before, it had to be content with the London National programme.

It is probable, however, that Aberdeen may soon build up a studio centre of its own as a supplement to those now operating so successfully at Glasgow and Edinburgh.

Mr. Cleghorn Thomson has a warm corner in his heart for local talent.

NO MORE TO GRACE THE ETHER!



The old Glasgow transmitter is now closed down and the new Falkirk station, which replaces it, is providing an immeasurably better service.

AN extremely ambitious scheme of broadcasts concerning the life and art of Midland counties is to be launched by the Midland Regional station. When, some years ago, the B.B.C. did a series of "national programmes," featuring various foreign countries, it was suggested that English counties should be similarly feted on the wireless, but it has been left to Midland Regional to carry the idea into effect.

Programmes featuring Worcestershire, Lincolnshire, Derbyshire and Herefordshire are definitely fixed. Others are "in the air." Each county will be made a central feature of Midland Regional programmes during a selected week. Worcestershire, for example, will be the first, and the week beginning October 17th has been chosen.

Country Folk Lore.

On the 17th a talk about the county and a radio pageant of its history will be broadcast. The next day there will be a relay of the opening of the new Worcester bridge by the Prince of Wales, then on the 19th a talk on county folk lore, on the 20th a gramophone recital of Worcestershire music, and later in the week relays from factories to typify the industrial side of the county's life.

The Duke and Duchess of York are expected to visit Lincoln in November and their visit will probably coincide with the Lincoln radio week.

This is one of the biggest undertakings ever attempted by a regional station and, properly handled, the County Programmes should attract widespread interest.

MIDLAND & WEST REGIONAL NOTES

From Our Special Correspondent.

Incidentally, Worcester comes into the Midland Regional programme also on September 7th, when an orchestral concert in connection with the Three Choirs Festival will be relayed from the Public Hall at Worcester. The London Symphony Orchestra will play, conducted by Sir Ivor Atkins.

Mr. Charles Brewer returned from his holiday full of ideas which will be reflected in the lighter side of Midland programmes during the next few months. There is a definite demand from listeners for local programmes of dramatic and revusical fare, and this, combined with the success of Mr. Brewer's National broadcasts, leaves no doubt that in the lighter side of broadcasting Midland is setting other stations a very hot example.

Mr. Brewer will reintroduce his "Vignettes of Variety" programmes on October 1st.

Until the Watchet station opens West Regional is severely limited in local activities, but a very bright idea recently developed is the series of programmes entitled "Discs" or "Marooned with a Gramophone." The idea is that notable people are asked to imagine that they are marooned on a desert island—with a gramophone. They give a recital of the records they would most desire in such

circumstances. Two captains of the Glamorgan cricket team, J. C. Clay and Maurice Turnbull, gave the recital on August 19th.

And up in Birmingham Robert Tredinick is, of course, still going strong with his gramophone recitals. You will hear him on August 30th and September 5th.

A First Relay.

The first relay ever given from the Hippodrome Theatre at Coventry will come into the Midland programme on September 14th—a two-hours broadcast of Francis Laidler's new revue, "The Big Show." The revue should be good, and Charles Brewer's witty commentary is always worth hearing on these occasions.

I am able to give details of an interesting move by a Birmingham radio firm, apparently to combat the activities of the radio relay exchanges. The firm intends to offer the public a three-valve all-mains receiver with moving-coil loudspeaker on payment of a small deposit (possibly £1), and a fee of 1s. 6d. a week.

They will service the set for four years, when it becomes the user's property. Output from the works will start at 400 sets per month.

Bristol Radio Week will be held from September 18th to 24th. A broadcasting studio is to be erected at the Colston Hall so that visitors to the Bristol Radio Exhibition may see broadcasting in progress, and during the week the West Regional programme will be fully representative of the musical, literary, and dramatic activities of Bristol.

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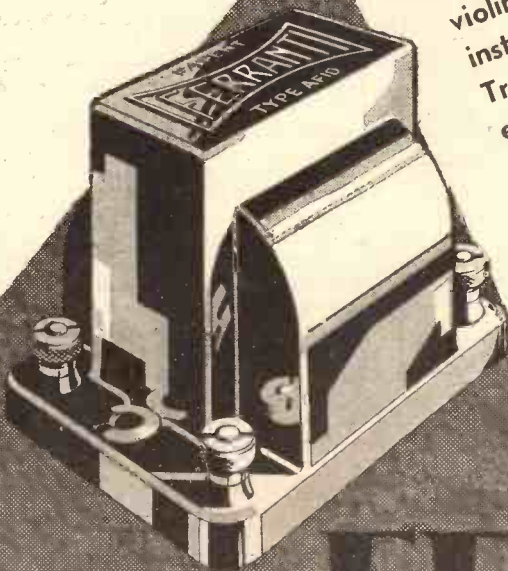
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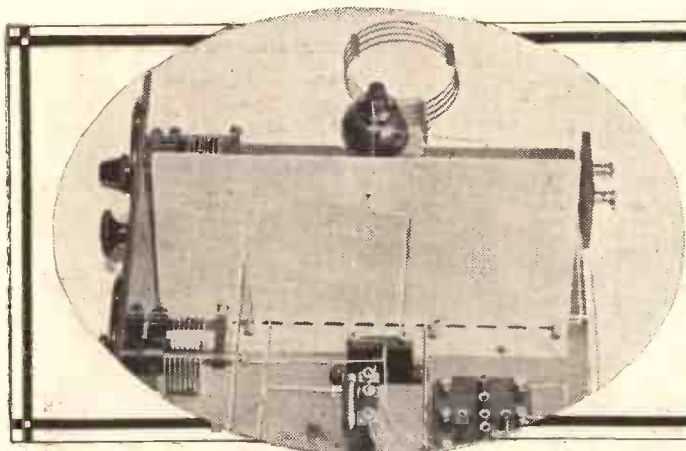


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S.G.'s FOR SHORT-WAVES

A FEW years ago it was generally supposed that screened-grid H.F. amplification was of very little use to short-wave enthusiasts. A few of the more experimentally-minded of them discovered that it made their sets easier to handle, without giving much in the way of amplification, but decided that it was hardly worth the trouble.

Since then, however, much work has been put in on the subject, and the valves themselves have been considerably improved, with the result that a very different state of affairs now exists. It is common knowledge that a man who knows his job can get a lot of benefit from a screened-grid stage, and that the difficulties met are more in the nature of small practical points than fundamental snags.

Their Little Troubles.

Having encountered them all myself, I feel that a few words about some of these small points may be the means of helping "P.W." readers out of their little troubles, and I propose to deal very quickly with them as they arise. The diagram on this page shows an excellent form of S.G. amplifier, suitable for use in front of a short-wave set of practically any type. I have not bothered to draw the detector circuit completely, since it is unimportant as long as it works!

The aerial is, of course, removed from the detector and put on to the grid circuit of the S.G. valve instead. The most easy way to provide an efficient coupling is to take the aerial, via a small condenser, to the top of the grid coil. The condenser may be of the pre-set type, and should have a maximum of about .0001 mfd. and as low a minimum as possible.

The grid circuit of this valve should be, as nearly as possible, a duplicate of that used with the detector. The coil should be wound in the same way and the variable condenser should be of the same capacity. This will ensure that the tuning of the two circuits will be more or less "in step," making for easy operation.

Certainly Lose Efficiency.

The plate of the S.G. valve is taken straight to positive H.T. through a high-frequency choke, 'a.' This choke may be home-made, but if it is a commercial product it should be a "short-wave" choke. Do not try to use an ordinary broadcast-band choke in this position, or you will almost certainly lose efficiency.

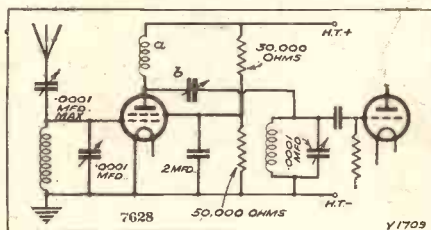
Those short-wave enthusiasts who have been under the impression that screened-grid H.F. amplification is of little use to them can take heart from the S.G. advantages described below

By W. L. S.

The plate is coupled across to your detector grid circuit through another small condenser, which may be of the same type and value as the aerial series condenser. It is very desirable that this should be adjustable, although, once you have found the correct value, it is in no sense a tuning control. Do not mount it on the front panel.

In the circuit shown in the diagram you will note that no provision is made for adjustment of the screen voltage, which is supplied by a "fixed potentiometer" in the form of two resistances. "Spaghetthis" are very suitable for this job. With the values shown, i.e. 50,000 ohms from the screen down to earth, and 30,000 ohms to positive H.T., the screen will be receiving $\frac{2}{3}$ of the anode voltage. This is, of course, 75 volts with a total H.T. of 120, and is a little higher than most people seem to use for this purpose, although it checks up well with the valve-makers' recommendations in the majority of cases.

HOW IT'S DONE



An excellent example of how screened-grid H.F. amplification can be used in front of almost any type of short-waver, thus simplifying tuning, abolishing "dead-spots," and minimising hand-capacity effects.

If this scheme is used with a battery-operated set it is, of course, necessary to take steps against the constant drain from the battery through these resistances when the set is switched off. This may be stopped either by the simple expedient of remembering to pull out one of the H.T. plugs, or by providing a three-pole switch that disconnects L.T. and H.T. simultaneously.

You will have gathered from the foregoing that there is no difficulty about the construction and the addition to your set of a

unit of this kind. Let us now see what crops up under the heading of "operation." You are not at all likely to be troubled by instability, particularly if you arrange a metal screen between the S.G. stage and your detector circuits, remembering to keep the H.F. choke on the "detector" side of the screen.

The Obvious Remedy.

Tune in your detector grid circuit in the usual way, and rotate your new tuning control—the H.F. grid circuit. You will probably find one of two things: either your detector will stop oscillating over a few degrees, or any signal that you may have tuned-in to will disappear or change in pitch.

If the former happens, it is almost certain that your coupling from the S.G. valve to the detector is too tight. The remedy is obvious—reduce the value of the little condenser 'b' until this doesn't happen. Now tune in carefully to a carrier-wave or a Morse signal, with the detector oscillating. Rotate the S.G. control and see whether the signal still changes seriously in pitch. If it does, this will mean that your S.G. tuning is too sharp.

I have always found that the best remedy for this is to damp the S.G. circuit down a little by increasing the aerial coupling—i.e. increase the value of the aerial series condenser until this trouble disappears.

A Very Simple Operation.

By careful adjustment of the two little condensers you should be able, with very little trouble, to find a setting at which the S.G. tuning condenser acts as if it were a volume control. Signals will come up nicely when it is in tune without disappearing off the dial or even changing in pitch. Also, if you have made the adjustment really carefully, you should find that the settings of your two tuning condensers are almost equal. This will make tuning a very simple operation indeed.

Apart from the amplification that you will be obtaining, you will notice that you have no "dead spots" in the tuning. This is because the aerial is now effectively "de-coupled" from the detector by the intervening valve. Also, if my experience counts for anything, you will find that hand-capacity effects and threshold howl, if they were present before, are now either entirely absent or very nearly cured.

Taking all these points into consideration, I think those readers who have sufficient patience to give a S.G. stage a trial will agree that it is well worth the time,

The Greatest Constructional Chart ever published

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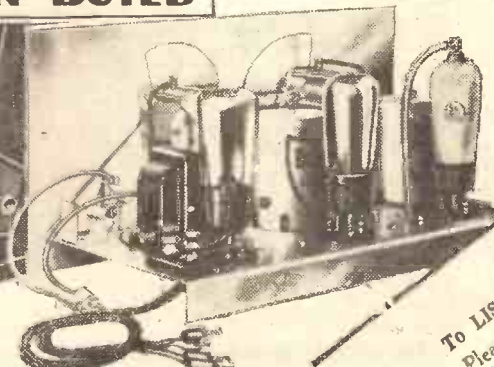


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89'6

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RADIOTORIAL

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

QUESTIONS AND ANSWERS

CAUSES OF CRACKLING.

It is often found that reception, particularly on distant stations and long waves, is accompanied by a background of crackles and similar noises. This may be due to a defect in the receiver, aerial, earth or batteries,

atmospheric disturbances or interference due to electrical machinery.

A brief test may be applied to the receiver by disconnecting the aerial and earth lead-in, and if the noise then ceases it may fairly safely be assumed that the receiver is in order. It should be noted that this does *not* mean that the aerial and earth are in order, and it is advisable to examine the lead-in wires, insulators and the joint between the earth lead and water-pipe or earth tube.

The intensity of the noise caused by atmospheric disturbances varies from time to time, and is usually less in winter than in summer.

Interference caused by electrical apparatus is often similar to atmospheric background, and may be picked up by the aerial or earth, or in an all-mains receiver come in through the mains wiring.

It is often found that a really efficient earth connection, consisting of a large earth tube in moist ground with a connecting lead not over 7 or 8 ft. long is of very great help.

A long earth lead or a connection to a gas- or water-pipe which is some considerable

YOUR BIT TOWARDS ECONOMY

Have you ever thought how difficult it is for a newsagent to order just the right number of copies of any particular paper each week? You can make his task much easier if you place a regular order with him. You will not only help him to order correctly and avoid waste but will make sure of getting your copy regularly each week.

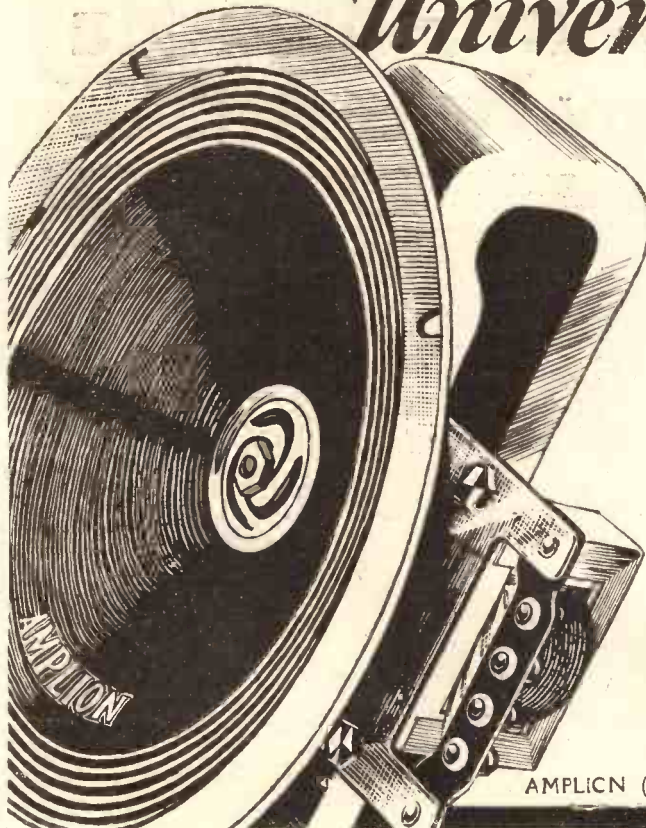
distance from the ground, is usually very ineffective, and in extreme cases no difference can be detected when this is disconnected from the receiver. Gas-pipe earths should never be used.

Sometimes when an efficient earth is unobtainable, a counterpoise may be used instead. This should be as nearly as possible a replica of the aerial, erected at a height of 10 or 12 ft., just as much care being exercised over its insulation as over that of the aerial.

In cases where the interference may be coming via the mains apparatus of an all-mains receiver, it may be found that some form of H.F. filter in the mains leads is of assistance.

(Continued on page 964.)

Universal Application



This is the speaker for small and large sets; a remarkable sensitivity for small receivers and power handling capacity for the larger sets; the speaker will actually handle 5-6 watts input without the slightest sign of distortion.

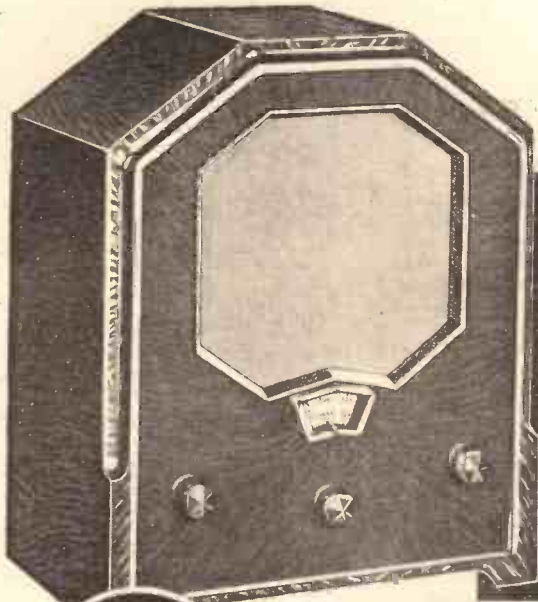
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Finally, consider the price. Less than two pounds for a really first-class British-made Moving Coil Speaker with a performance unequalled anywhere. Ask your dealer for a demonstration—you will be convinced.

39'6

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RADIOTORIAL QUESTIONS AND ANSWERS

(Continued from page 962.)

With A.C. receivers two fixed condensers of .001 to .1-mfd. capacity and high test voltage may be connected in series across the mains leads, the centre point of the two condensers being connected to earth.

Special mains H.F. chokes are marketed by several manufacturers, and one of these may be connected in series with each mains lead, a .1-mfd. condenser being connected across the mains leads on the receiver side.

In general, where interference due to electrical apparatus is thought to be the cause of the trouble we would suggest that the listener should write to the B.B.C., Broadcasting House, London, W., giving details of the trouble. The B.B.C. and the Post Office are doing everything possible to remedy this trouble.

Crackling due to a fault in the receiver may be due to—bad switch contacts, defective components or valves, bad wiring connections, or faulty H.T. and G.B. batteries. The spring contacts of the wave-change and on-off switches should be examined to make sure that a firm springy grip is made, and if the contacts appear dirty they should be cleaned carefully with very fine sandpaper.

The valve pins should be cleaned, and care should be taken to see that they fit tightly in the valveholder sockets.

In some cases the internal connections of valveholders develop faults, and it is worth while examining these. The various joints, terminals and insulated wires in the receiver should be looked over and re-made or tightened up where necessary.

WOULD IT HELP ON SHORT WAVES ?

"Betchabob" (Littlehampton, Sussex).—
"After a friendly dispute about short-wave

work my friend and I have decided that we will ask you to arbitrate.

"The question is, 'Does a grid-leak potentiometer connection (with slider to grid leak) improve a short-wave set as much, or more, than it does an ordinary medium-wave set?'"

Yours is not a particularly easy question to answer, you know, because so many factors are assumed. Theoretically the efficiency of the two types of

DO YOU KNOW—

the Answers to the following Questions ?

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

- (1) What is the correct name of the Swiss Regional station, sometimes called "Beromunster" ?
- (2) What station rejoices in the call-letters J O A K ?
- (3) What do the call-letters FL mean as applied to the call-sign of Eiffel Tower ?
- (4) Which station in Europe will answer your letter over the air if you write and comment on the programmes ?

sets is not such that one can generalise about either, particularly as compared with the other. In fact, in the medium-wave type of set, and even more noticeably in the short-wave type, every set persists in remaining an *individual*, with little peculiarities of its own, which differ slightly from those of a similar set, made of similar parts.

By standardising workmanship and production, tools, etc., manufacturers can get very near to standardising the sets themselves, but—just as

with motor-bikes, or cars, or watches—the "identical" models always differ slightly among themselves.

If such little differences creep in when sets are supposed to be identical, how can one compare a short-waver with a medium-waver which is a different type of set altogether? And if they are not strictly comparable, how can the effect of an improvement on one be compared with the effect of the same improvement on the other?

In a general sense, however, the question is easily answered. Assuming that the potentiometer is adjusted to give the best possible results with the set in question, it is probable that it will be more useful on the short waves than on the medium or long waves.

It is because the short-wave set must be just that little more efficient than the ordinary receiver that the potentiometer control of the grid-leak return has become virtually standardised on short-wavers. And it may therefore be said that, in general, such sets are improved more than those that work only on medium and long waves.

HOURS OF VATICAN CITY.

R. C. (Southampton).—"What are the broadcasting times of the Vatican station?"

From 9 to 9.15 p.m. on 50.26 metres, and from 12 to 12.20 p.m. on 19.84 metres.

LOUDSPEAKER CLICKS WHEN THE SET IS NOT IN USE.

V. B. (St. Leonards-on-Sea).—"I have noticed lately that my loudspeaker has been a bit upset about something when he is supposed to be off duty altogether. It is a three-valve set, detector with two low-frequency made up to the good old 'Magic' circuit, and it still wants a lot of beating in my opinion.

"The set is in the back of the house because the aerial and earth are there, but we use the loudspeaker in the front room, and I have run a couple of wires under the floorboards for this.

"It has been quite O.K. ever since just before Christmas last year, and as I have an invalid mother in the front room I am certain

(Continued on page 966.)

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1 Ready Radio Moderator coil ..	2 6
1 Telsen 4-point push-pull switch ..	1 6
1 Telsen 2-point push-pull switch ..	1 0
1 R.I. Dux L.F. transformer ..	6 9
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1 T.C.C.-0003-mfd. fixed condenser type "S" ..	1 3
1 Lewcos M.C.H.F. choke ..	2 6
1 Graham Farish 2-meg. grid leak, Ohmite ..	1 6
1 Terminal strip 10" x 2" ..	10
9 Belling-Lee indicating terminals ..	2 3
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Popular Wireless (3/9/32)

RADIOTORIAL QUESTIONS AND ANSWERS

(Continued from page 964.)

that up till a few weeks ago it never made a sound that it was not supposed to.

"But now it often gives a little click to itself, perhaps hours after the set was last switched. I have not noticed any difference in reproduction but thought I would mention it when writing in case it is a sign something is misbehaving in some way."

It is just as well you mentioned it, for we are fairly sure it is a high-tension leak.

The loudspeaker does not click unless current is passing through it momentarily, and it is a pretty safe bet that the current in this case is coming from your high-tension battery.

As one side (the positive) of this is permanently connected to the loudspeaker and the other side (negative) is permanently joined to earth, any accidental "earth" that occurs between the loudspeaker and the plate of the valve will result in current-flow which will cause clicks if the short is of only momentary duration.

We should examine those wires under the floor very carefully, as apparently insulation is failing, and this will result in a drain on your H.T. battery.

IN WHICH LEAD SHOULD THE CHOKE BE ?

L. A. (Cranbrook Park).—"When a D.C. mains unit is designed to use only one big smoothing choke this is apparently always shown in the positive lead. Surely it would be better in the negative lead in cases where the positive main is earthed?"

Yes. In such cases the choke is often better in the negative lead.

SHOCKS FROM THE LOUDSPEAKER WHEN AN OUTPUT FILTER IS USED.

Numbers of enquiries have been made as to whether a shock should be possible from the loudspeaker circuit on a set employing an efficient loudspeaker filter circuit.

Between the plate of the last valve and the filament circuit of a set employing such a

filter, one or more large condensers are placed in series with the loudspeaker winding, or with the primary of its transformer. And doubt is often expressed as to whether it should be possible to feel a tingling or slight shock in that part of the circuit which is separated from the plate of the valve by a condenser.

The following letter from an Oxford reader is typical of many.

WHAT'S WRONG?

THOSE WHISKERS!

Untidy leads are always a source of trouble and give rise to crackles, if not to something worse.

Although a nuisance even with low-voltage batteries—such as grid-bias batteries—"whiskers" cause the most trouble on H.T. batteries and similar high-voltage devices.

Mains units and chargers should always be kept perfectly free from stray ends, which is easily done by fitting proper terminals or connectors.



"I have taken in and read 'P.W.' ever since making my first crystal set some seven years ago, and have always regarded your 'Questions and Answers' columns as one of the most interesting and instructive features of the paper. If, therefore, you can give me an answer to the following query, I should be very delighted.

"Whilst fixing up a long extension lead from my set (an ordinary 3-valver, run by an 120-volt battery) to the garden, I happened to hold the two ends of one of the twin wires of the lead and was very surprised to feel a mild but distinct shock.

"The set was switched on at the time, but as it contains an output filter I thought no current could flow through the leads to the loudspeaker. Naturally, I feared the 'filter' had broken down, but on connecting a voltmeter in series in the same lead the loudspeaker worked all right but there was no trace of any current flowing.

STANDING ON BRICK PATH.

"Yet I distinctly felt a sharp tingle which could only have come from a decent voltage.

"It was at the moment the L.S. came into operation!

"I fail to see why I should have felt a current which the voltmeter gave no sign of recording.

"I may add that I was standing on a brick pathway outside the house at the time.

"Of course, it's a quite unimportant matter, but if you could satisfy my curiosity I should be much obliged.

"With good wishes for 'P.W.'"

"Yours faithfully, W. E. P."

The reason why it is possible to feel a shock even in cases where the components, etc., are in perfect order is that quite high voltages are developed across this part of the circuit even though no direct or steady current is flowing there.

When a station is coming through, the varying

(Continued on page 968.)



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HAVE YOU SEEN THE NEW WEARITE SELECTIVITY CONTROL AERIAL-LEAD IN ?

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FOR THE "OLYMPUS" FOUR

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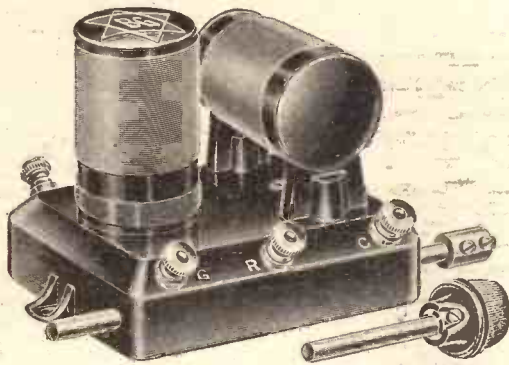
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RADIOTORIAL QUESTIONS AND ANSWERS

(Continued from page 966.)

voltages charge up the filter condenser, but the amount of its charge is continually varying whilst the set is in action; and this variation is quite considerable enough to set up small "shocking" voltages, especially during the louder passages. As these voltages are alternating, they are not indicated by an ordinary voltmeter.

Thus, on a powerful set, it should be possible, even with a perfect output-filter system, to feel a tingling across the loudspeaker terminals when the set is tuned in to a strong station. But the amount of such voltages, etc., will vary greatly with the set itself, with the loudspeaker arrangements, and with the person touching it (according to whether the skin is damp and conductive, or dry and thus comparatively immune).

In no case, however, should such a "shock" if it can be called that, be painful or unpleasant, except possibly on very large sets.

A QUESTION OF OVERLOADING.

R. F. S. (Stamford Hill, London, N.)—
"I am rather a glutton for volume, and although I do not always run the set near the all-out point I do keep the volume control farther towards maximum than most people.

"Bearing this weakness for plenty of punch in mind, I got a man I know in business to make me a really posh L.F. amplifier to drive a permanent-magnet moving coil. And I must say he did the job well.

"Originally, I ran this amplifier off a single valve (detector, of course), but feeling I should like just a little more power I have just been to see him about making me up a two-valver, H.F. and Det., instead of the single detector in front of the amplifier.

"To my surprise he says it can't be done! At least not without introducing distortion which, of course, would be unbearable at big volume.

"He says the single valve is already putting a full load on the last valve, and that if I put another valve in front of it I shall only have

the job of volume controlling down to the original level again.

"Seeing what a good job he made of it in practice, I am inclined to believe he knows what he is talking about; but I thought while writing I would mention this, which seems to contradict much of what we generally hear about adding an H.F. stage for increasing the volume.

"What would be the reason for the extra

still greater volume than at present obtained except, of course, from distant stations.

This is the important distinction that you have not drawn. Where the stronger programmes are concerned (the London Reg. and Nat., in your locality) your output valve is being called upon to deliver the maximum power of which that type of valve is capable.

But when you tune in to a distant programme you get it at a very much lower level of volume: an added H.F. valve would enable you to bring the distant station's programme up to a strength comparable with that of the London programmes.

"P.W." PANEL, No. 87.—ALGIERS.

Algiers is the French-speaking station on 363.3 metres, which is some 3 or 4 degrees above the setting for London Regional.

Its strength is often surprising, considering that it is situated in Northern Africa, some 1,030 miles from London.

The name of the station sounds, to English ears, like "Al-zhay." Occasionally announcements are made in English, other languages used being Arabic, German and Esperanto.

valve being no good to increase the volume at the speaker?"

The volume that can be obtained from the loudspeaker depends upon it and the associated output valve, and if this latter is already being run "all out" nothing you can do to the H.F. stage will enable you to get greater volume.

A "bigger" output valve—viz., one capable of handling a larger grid-swing, is the only way to get

Under no circumstances, however, can it enable you to handle a bigger amount of volume than you are at present getting—it can only enable you to get that same level of volume from other stations as well as the London Regional and National.

SHOULD IT FLASH?

"FRANKENSTEIN" (Stratford).—"I am using a trickle charger with Phillips' valve, and I notice that when I first switch on there is quite a flash inside the valve, after which it continues to glow with a very bright reddish-blue glow.

"I am not worried about the glow, as I find the charger is working O.K. But is it usual to get a flash inside the valve when the charger is first switched on for the night?"

Yes, it is quite usual to get a bright flash which is a good deal in excess of the steady glow. Some rectifying valves seem to flash more than others, but much depends upon the light falling on the valve-holder, for naturally the glow will appear much greater when this is in a dark corner or box than when it is placed where the light from an adjacent window or lamp falls direct on to it.

THE ANSWERS

TO THE QUESTIONS ASKED ON PAGE 964
ARE GIVEN BELOW:

- (1) "Schweizerischer Landessender!"
- (2) Tokio, Japan.
- (3) Eiffel Tower's call-letters were amongst the first allotted in radio communication. They stood, in the first place, for France Lepel—Lepel being the name of a French radio system then in vogue.
- (4) Katowice, on 438 metres.

DID YOU KNOW THEM ALL?

THEY COMPLETELY CAPTURED
Radiolympia

The new



"MANSFIELD"

PERMANENT MAGNET
Moving-Coil Speakers

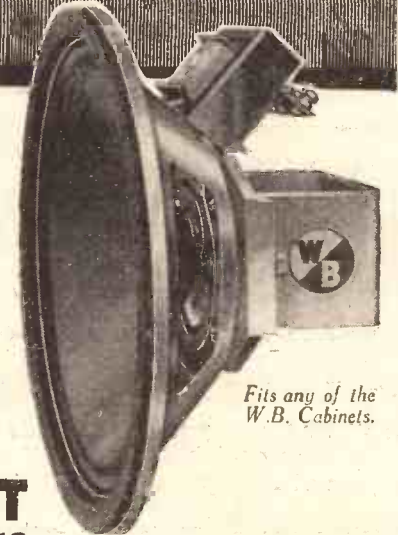
Write NOW for the art booklet, "Speaking of Speakers," giving full information on all the new W.B. moving-coil speakers. They caused intense interest at Olympia. W.B. are and always have been Pioneers and Leaders in this field. Makers also of the famous valveholders, switches and the new Mansfield Kit—the only Kit with a moving-coil speaker. Ask also for special leaflet.



"Mansfield Senior"

(The Improved P.M.4.)

42/- COMPLETE with 3-ratio transformer



Fits any of the W.B. Cabinets.

"Mansfield Junior" (P.M.5.)

27/6 COMPLETE with 3-ratio transformer

"GOLTONE" COMPONENTS AGAIN SPECIFIED AND RECOMMENDED FOR THE

"OLYMPUS" FOUR & "MODERATOR" TWO

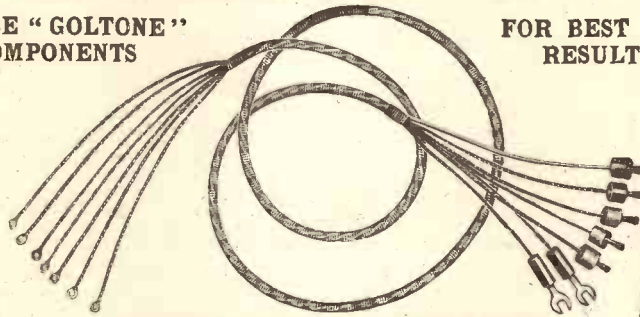
USE "GOLTONE" COMPONENTS

FOR BEST RESULTS.



"GOLTONE" Super H.F. Choke
As recommended.

Baseboard or Valveholder Mounting. R3/46. **4/6**



"GOLTONE" 5-WAY BATTERY CORD
30 ins. long, as used by designer, complete, R40/40, 2/-

"GOLTONE" COSMIC DUAL RANGE COILS AS ACTUALLY USED BY THE DESIGNER FOR THE "MODERATOR" TWO

DW/18 **5/6**

Full particulars of complete range of coils sent on request.



"GOLTONE" Short Wave Choke
Highly recommended by Technical Press.
Baseboard or Valveholder Mounting. R3/26. **2/6**

"GOLTONE" EBONITE PANEL.
Size: 14" x 7" x 3/2"
"GOLTONE" BINOCULAR H.F. CHOKE. R3/36. **2/6**
"GOLTONE" "GRAND" L.F. TRANSFORMER. 3 to 1. **8/6**

"GOLTONE" COMPONENTS are obtainable from all First-Class Radio Stores. Refuse substitutes—if any difficulty write direct.
RADIO CATALOGUE sent FREE on request.

"GOLTONE" PUSH-PULL SWITCH
R26/744 71d. each

WARD & GOLDSTONE, LTD., PENDLETON, MANCHESTER

"NEW SETS FOR OLD"

YOU MUST

have that new set this year and get it at practically half price by purchasing through us, disposing of your old set (if any) at a most generous allowance.

HUNDREDS OF SATISFIED CLIENTS WILL ENDORSE THIS

Just write for particulars, enclosing 11d. stamp naming your old set which we will buy, and the new set you fancy, and a free quotation will follow. Balance payable in cash or Hire-purchase.

FREE Wireless Set to introduce the Radialaddin Club.

Please forward this ENQUIRY FORM (without obligation).

I am interested in purchasing the undermentioned Radio Receiver:

Make..... Model and List Price.....

Present Set: Make..... Batteries or Mains.....

Date of purchase..... Original cost of Set.....

Balance of purchase price would be payable by me as follows:

Plan A. Whole of balance in cash. Plan B. Whole of balance over

Six, Nine, Twelve* months.

*Delete unwanted words.

NAME, in Full (Block Letters).....

ADDRESS.....

RADIALADDIN, Limited,

THE LARGEST RADIO EXCHANGE DEALERS IN THE UNITED KINGDOM
(Dept. P.W.), 47/48, Berners Street, London, W.1. Museum 1821.

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Whole Page £40 Quarter Page £10
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A NEW OSBORN MODERN RADIO CABINET

No. 226. A futuristic design Radio Gramophone Cabinet, 3'4" high, 2'2" wide, 1'8" deep. Space for speaker is 24" x 16". Accommodation for the set and any type of gramophone motor 24" x 12 1/2" high. Size of the baffle behind fret is 24" x 18". Special Silk Fabric is included.

PRICES. Machine ready to Assemble:
Oak £3. 10. 0.
Mahogany .. £3. 15. 0.
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Assembled ready to Polish:
Oak £4. 10. 0.
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All Models Carriage Paid.

CHAS. A. OSBORN, Dept. P.W., The Revent Works, Arlington Street, London, N.1. Telephone: Clerkenwell 5095. And at 21, Essex Road, Islington, N.1. Telephone: Clerkenwell 5634.

Send 3d. in stamps for Beautifully Illustrated New Season's Catalogue.

**JACK HYLTON SAYS—
"I LIKE BROADCASTING."**

(Continued from page 940.)

It hears everything, especially just what you do not want it to. The slightest wrong note is sent out into the ether with an almost fiendish glee.

On the stage, the same mistake might pass unnoticed except by the super-critically minded person sitting in the front row of the stalls. The reason is that, for one thing, the audience is very interested in watching the band, and we put in a lot of "business" on purpose to give them something to look at.

I must say, however, in fairness to listeners, that they never mention any mistakes, even if they do hear them. Their letters are always couched in the warmest of terms.

A Happy Day.

As likely as not, they start, "Dear Jack." Some of them contain queer messages. One, from an English girl who works in Texas, stated that she had not received any reply to her letters home for some months past. Would I try to establish contact for her, and see if the "old folks" were all right?

I have tried to, but, unfortunately, have not been successful so far. Needless to say, it will be a very happy day for me when I can carry out the wish she expressed so sweetly.

I am afraid I cannot help reverting to my postbag; it is so chock-full of surprises. Who do you think sent the next one?

A boy—or, at least, he used to be—who played in those popular old film comedies known as the Hal Roach "Our Gang" series. The boy is a boy no longer and, as is often enough the case, has been obliged to find some other way of earning a living, having found it impossible to repeat his youthful successes before the movie camera.

Although the B.B.C. does not allow any advertising matter in its programmes, there has been quite a lot of discussion on sponsored programmes, opinions varying considerably as to the advisability of allowing them to gain a foothold. I will not enter into the discussion, since it is not my place to, but I think you will be interested to hear one fact which has attracted my attention.

Labelling the Programmes.

My American broadcast, of course, was a sponsored programme. I was hired by the Lucky Strike Company, who make matches, I think, and of all the hundreds of letters which have reached me, scarcely half a dozen have failed to mention the words "Lucky Strike." It seems that American listeners label their programmes with the name of the sponsor.

Many correspondents congratulated the firm on having put on a programme which gave them so much enjoyment. I have looked through the letters several times to try to find an adverse criticism of the system, but in vain. If I were asked to give my impression, I should say that most American listeners take it as *fait accompli*. The only ones who go out of their way to comment do so by way of praise.



Never mind—have a
CAPSTAN

They suit
everyone

10 FOR 6^D

20 FOR 11^D



One of the impressions I have gained as a result of my broadcasts—not only at home and in America, but also all over the Continent—is that the inhabitants of the different countries have much more in common than we sometimes think. The B.B.C.'s motto, "Nation Shall Speak Peace Unto Nation," is not so far-fetched as it might appear to be.

Language may intervene to a certain extent, but the language of music requires no interpreter. Music—and by that I mean entertainment music—has a common appeal to Frenchmen, Germans and Russians.

The demand all over the world is for a "show," and if I were asked what a dance band should set out to provide for wireless listeners, I should answer in that little word "show."

**THE
"POPULAR WIRELESS"
OFFICIAL LIST
OF EXHIBITORS**

Here is a further list of authorised dealers from whom you can obtain details concerning "P.W." star sets.

- SOUTHEND-ON-SEA.**
L. V. Pridge, Warrior Square.
London Radio Supplies, 29, Victoria Arcade.
- SOUTHPORT.**
Wireless Supplies & Repairs, 14, Princes Street.
- SPALDING.**
R. S. Barlow, Francis Street, Hole-in-the-Wall.
- SPELDHURST, TUNBRIDGE WELLS.**
R. C. Woodcraft, Barden Road.
- SPENNYMOOR.**
E. F. Cator, 24, High Street.
- STAFFORD.**
E. B. Clendinnen, 37, Cramer Street.
- STAVELEY.**
H. E. Drabble, High Street.
- STIRLING.**
Lockhart & MacNab, 34-38, Craigs.
- STOKE-ON-TRENT.**
"Bews," Bews Corner, Burslem.
Bancroft Bros., 207, Newcastle Street, Burslem.
- STOWMARKET.**
Stannard & Co., Tavern Street.
- STROOD.**
Clarke & Simmons, 26, High Street.
- SWANSEA.**
Dadem, Ltd., 206, High Street.
G. P. Evans, The Square, Brynhyfryd.
J. Mitchell, 46, Clydack Road, Morriston.
O. K. Radio & Gramophone Stores, Church Street.
Peacocks (Swansea), Ltd., 32-36, Woodfield Street, Morriston.
Tom Roberts' Radio Service, 8a, Humphrey Street.
Snell & Sons, 20-26, High Street, Arcade.
Waldron Electrical Manfg. Co., 6, Portland Street.
- TORQUAY.**
S. J. Searle, 33, St. Marychurch Road.
- TROWBRIDGE.**
A. R. Farr, 7, Islington.
- WALLASEY.**
Cheshire Wireless Co., 98-100, Brighton Street.
- WARMINSTER.**
The Orchestron Radio Service, 10, Market Place.
- WARRINGTON.**
J. Lawson, 26, Horsemarket Street.
- WELLINGBOROUGH.**
Jessops, 2a, Midland Road.
- WELLING, KENT.**
S. A. Holmes, Holmes Street.
- WEMBLEY.**
M. Kams & Co., 3, Central Parade, High Road.

THE LISTENER'S NOTEBOOK

(Continued from page 950.)

implies); in fact, any music which doesn't boast of an Opus No. Something as a subtitle, or when broadcast isn't labelled a recital. These have long since been considered fit fare for the highbrow only.

Of course we do get popular entertainment in plenty. No one can point the finger of scorn at the B.B.C. on that score, but there is often room for improvement in the times when this entertainment is dispensed.

When the only alternative to classical drama is stiff classical music, or when Continental opera has to be had because one isn't in the mood for the Proms., then I think those responsible show either carelessness or indifference to the public taste.

Never has the need for care in alternative programmes been more pressing than it is now that the Proms. are in full swing. There must be thousands of listeners on whom these are completely wasted. If this is so, then provision should be made for those who prefer something lighter.

The B.B.C. can and should serve both the high and the lowbrow at one and the same time. After all, it is a poor night for the lowbrow when both the English stations are for the major part of an evening busy "educating the minds and ears."

Crooning and Mooning.

We welcome an addition to the B.B.C.'s dance band—a man who really sings! Does this mean that the crooner's number is up?

I don't think so, for in numbers of the "Pale Moon" order he is still brought into service. It would seem from this that if we wish to kill the crooner we've got to kill his song first.

I've often wondered why the B.B.C. should think 10.15 p.m. to midnight the best time for studio dance music.

Whether it is for the musicians themselves I can't say. There may be something in the air at that time which is more inspiring to them than the atmospheric conditions of the earlier hours are. But it is certainly very late for the ordinary listener.

If it were only on occasions that listeners were asked to sit up, it would be all right, but, as it is, two alternatives are forced upon them. Either they have to forgo the pleasure of listening to this attractive entertainment, or they are encouraged to adopt the bad habit of retiring later.

Both expedients are undesirable; the first for obvious reasons; the second for reasons which devotees of the "early to bed early to rise" habit would expound better than I.

Jack Padbury's Band.

I am glad to see that the opportunity of hearing a hitherto unknown dance band is sometimes given us. When all is said and done, the number of dance bands that we hear is comparatively small.

We get so used to their style and their repertoire that a new combination often has something quite new for us. That's why I was delighted to hear Jack Padbury and his band. As style in dance music is such an elastic quality, I am all against a monopoly to the favoured few.

Who knows what effect an extended monopoly might have on dance music, with its limitless interpretation?



The
Lively
'O'

Why pay 5/- for 3'6 worth of H.T.?

you can save money with a
Lively 'O' H.T. Accumulator
BECAUSE:

IT ELIMINATES WASTE

When you discard a run down H.T. Dry Battery you are throwing away power. Due to self-discharge the voltage of a Dry Battery continuously falls. Nothing can stop it. Finally it is too weak to work your Set *but there is still power left in it—power you cannot use—waste!* The Lively 'O' H.T. Accumulator is waste-proof. Its famous "air-spaced" construction prevents self-discharge. It is full of life right up to the time when it needs recharging.

IT COSTS LITTLE TO RECHARGE

For only a few shillings—much less than the cost of a new H.T. Dry Battery—the Lively 'O' Accumulator can be recharged—made like new again—full of life and energy, ready to run your Set for another three or four months.

IT LASTS FOR YEARS

Provided it is charged every three or four months the Lively 'O' Accumulator will last for years. It is definitely the most economical H.T. supply you can use. Every Wireless Dealer sells it in convenient 10 volt units.

TWO TYPES:

Standard 10 volt unit
capacity 2,750 milliamps. **5/6**

Extra large capacity
5,500 milliamps (10 volt unit). **6/9**

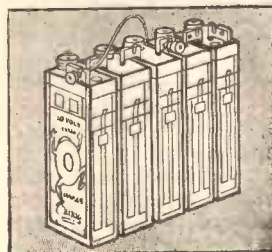
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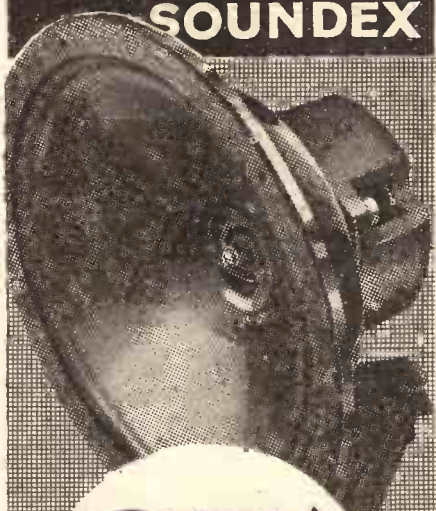
H.T. ACCUMULATOR

PUT THE LIVELY 'O'
INTO YOUR RADIO



PPM

SOUNDEX



27/6

INCLUDING TRANSFORMER

The Celestion P.P.M. Soundex is truly amazing! For such a compact speaker the volume is extraordinary—the tonal quality is perfect, being free from mush or distortion, giving a rich, deep note without boom or vibration. Truly a speaker of which Celestion can be justly proud, a speaker that will amaze you because of its realism.

Whatever your set, the Soundex will improve its quality.

Insist on your local dealer demonstrating the P.P.M. Soundex or write to Celestion for illustrated list.

Only 27/6 including universal transformer.

CELESTION

The Very Soul of Music

Celestion Ltd., London Road, KINGSTON-ON-THAMES, London. Showrooms: 196 Victoria Street, S.W. 1.

TECHNICAL NOTES

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

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

Wired Wireless.

THE possibility of using "wired wireless" has recently come to the fore again, and has been the subject of a good deal of discussion. As you know, "wired wireless" is the system of sending high-frequency currents along electric supply mains or such like conductors. It has been developed quite a good deal in the States, and is undoubtedly a practical system for communication. In one sense it is the same thing as broadcasting, except that instead of being sent out freely into space, the energy is, as it were, chained to definite conductors and follows the line of those conductors or leaders.

The Local Relay Scheme.

This system of wired wireless should not, however, be confused with the "local relay" scheme, by which low-frequency current is supplied direct to the loudspeakers of a system of subscribers. On the relay system one programme at a time is supplied, but on the wired wireless scheme it is possible to supply two or even more programmes and the subscriber can tune-in to one or other very much in the same way as he at present tunes in to broadcast wavelengths.

A carrier-frequency of about 50,000 cycles has been found to be about the highest which can be used with wired wireless without incurring serious losses. There are also various suggestions for sideband transmissions by which the number of alternative programmes for a single conductor can be increased. The advocates of the wired wireless scheme claim that it would effectively serve a large section of the listening public who only want the choice of a very limited number of programmes and would do much to relieve the congestion in the ether.

Visible Tuning.

It is curious how many people are getting to prefer the system of tuning in by which the actual names of the stations are shown up on an illuminated dial. One of the simplest arrangements, of course, is a large celluloid scale on which the names of all the various stations are engraved on two circles, one for the long waves and the other for the medium-wave band. A light is provided, or rather two lights, shining through suitable spots so that the name of only one station at a time is illuminated, and as you switch over the set from the long waves to the medium-wave band, so the "long-wave lamp," so to speak, is extinguished and the medium-wave lamp switched on.

Although this system is very convenient in some ways, I personally have never favoured it very much; I always prefer tuning in by graduations on the

(Continued on next page.)

At last!

PERMANENT EFFICIENT EVER-DAMP EARTHING

A Sensational Radio Invention!

Get the utmost out of your set by fitting FILT—the newest and most efficient earth ever invented—based on a completely new principle.

Its operation is unique. You simply bury the copper receptacle containing the wonderful FILT chemical, which at once begins to spread through the earth, attracting moisture and making a PERMANENT highly conductive area to the depth of several feet.



Never dries up

In all weathers, in every soil, FILT keeps moist and highly conductive. It spreads like a tentacle, earthing your set perfectly and giving you every ounce of power, range and purity, no matter what set you use.

GET A FILT TO-DAY. It is inexpensive, permanent and the most efficient obtainable.

GRAHAM-FARISH

FILT

PERCOLATIVE EARTH

Ask your dealer to obtain, or write direct to:

GRAHAM FARISH LTD.
181, MASON'S HILL
BROMLEY - KENT

PRICE

2/6

COMPLETE

TECHNICAL NOTES

(Continued from previous page.)

dial. Perhaps I may be rather finicky, but I imagine that one gets more accurate tuning by this method.

Selective Indicator.

There is another arrangement altogether for what you might call "illuminated tuning," and that is one which has been used quite a lot in the States. In this arrangement the actual signal from the received station illuminates the dial through the medium of a small neon lamp. When the signal is tuned-in accurately the voltage is sufficient to light the lamp and so to show up the name of the station.

This, of course, is quite a different thing from the illumination by an ordinary filament lamp, because the lighting of the neon lamp depends definitely upon the accuracy of the tuning. In these days of sharp tuning it seems to be an advantage to have some visual indication as to when the desired station is accurately tuned-in.

Of course, one can always fall back on the arrangement of a meter, mounted on the panel or elsewhere, which shows the maximum deflection when the station is accurately tuned.

Short-Wave Reaction.

Nothing is more aggravating, especially when working on short waves, than to have your reaction so that, within the slightest movement of the control, reaction jumps all in or all out; this sort of thing is sometimes called "ploppy" reaction and I expect you have all experienced it at one time or another.

It makes it almost impossible to get the real benefit of reaction in boosting up the strength of signals and if you try by great patience to get half-way between the "in" and "out" positions you generally get fearful distortion.

Detector Operation.

This unstable reaction is due, as a rule, to the conditions under which the detector operates and quite a little attention to this will get over the trouble entirely and give you that smooth control which is so desirable.

The first thing to do is to look into the question of the plate voltage applied to the detector—about 50 to 60 volts is generally quite sufficient, although in some cases a little more may be used with good results.

Often I see people operating sets with a very much higher voltage on the detector, however, so as to push up the sensitivity of the set. This is all very well and makes the set very lively, but it is no use having a lively set if it is completely out of control.

Watch the Bias.

Another point to look at is the question of the positive bias on the detector. Sometimes when this bias is applied to the detector from the positive side of the L.T. battery and through the grid leak it may be too high. It can be reduced to a proper value by using a grid leak of a higher resistance. For short waves your grid leak may be up to, say, 5 megohms, and the grid condenser, say, .0003 microfarad.

(Continued on next page.)

New Times Sales Co

NEW 1933 RADIO ON EASIEST OF EASY TERMS

QUICKEST DELIVERY

ULTRA BLUE FOX. For A.C. or D.C. Mains. 2 valves, detector and power. Moving-coil speaker, with Mazda valves, ready for use. **13/6** With order
Cash £10/10/0
Balance in 17 monthly payments of 13/6.

MANUFACTURERS' KITS

COSSOR MELODY MAKER. Model 335. Complete with Valves, Speaker and Cabinet. Employs Cossor Variable-Mu S.G. H.F. stage, Detector and Power. **10/-** With order
Cash Price £7/17/6
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OSRAM "THIRTY-THREE" MUSIC MAGNET. Complete Kit, comprising all components including Valves, Cabinet with self-contained Speaker. Screen-grid H.F., Screen-grid Detector and Power output. Single-dial tuning, wave-length calibrated. **15/-** With order
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RADIO FOR THE MILLION. "STATION MASTER 3." Battery "Model A." Complete with Valves and Cabinet. **10/2** With order
Cash Price £5/11/0
Balance in 11 monthly payments of 10/2

ACCESSORIES

GARRARD INDUCTION GRAMOPHONE MOTOR. Model 202. For A.C. Mains. Mounted on 12-in. Nickel Motor Plate with fully automatic electric starting and stopping switch. **5/4** With order
Cash Price £2/18/6
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B.T.H. SENIOR PICK-UP, complete with Arm and Base. **3/10** With order
Cash Price £2/2/0
Balance in 11 monthly payments of 3/10

FIRST WITH EASY TERMS in 1924 and Still leading

BIGGEST STOCKS

Strictest Privacy Guaranteed

- R & A "VICTOR" PERMANENT MAGNET MOVING-COIL SPEAKER DE LUXE.** With 6-ratio input transformer and protecting grill. **6/5** With order
Cash Price £3/10/0
Balance in 11 monthly payments of 6/5
- R & A "BANTAM" PERMANENT MAGNET MOVING-COIL SPEAKER.** With 3-ratio input transformer. **5/-** With order
Cash Price £1/7/6
Balance in 5 monthly payments of 5/-
- BLUE SPOT SPEAKER UNIT AND CHASSIS, Type 100U.** **5/5** With order
Cash Price £1/19/6
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- W.B. PERMANENT MAGNET MOVING-COIL SPEAKER, Type P.M.4.** Complete with Transformer. **5/9** With order
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TECHNICAL NOTES

(Continued from previous page.)



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Why Not a Potentiometer?

The foregoing little tips will generally cure the trouble of unstable reaction, but if not, it is best to resort to a grid-leak potentiometer, say 400 ohms total resistance, which may be connected across the L.T. supply. The positive lead to the grid leak is then connected instead to the slider of the potentiometer.

It is obvious that if the potentiometer is in the mid-position you will get half the positive bias and you can get anything from zero up to the total voltage of the L.T. supply by shifting the slider of the potentiometer about into different positions. Not only does this enable you to get different values of bias, but it enables you to make the slightest variations so as to get really the best value, one which will cure the instability and at the same time not detract appreciably from the sensitivity of the set.

Adding a Band-pass Unit

I have had a number of letters from readers with regard to band-pass tuning, which I mentioned in these notes a little while back. A good many sets which are not perhaps quite as up to date as they might be, but which nevertheless give perfectly good service, except for the increasing requirement of selectivity, can be greatly improved by the addition of a band-pass unit.

Sometimes, however, there are certain difficulties in the way of adapting the band-pass unit to an old set and therefore I was pleased a little time back to examine the "Pilot" unit which can be used with a great variety of existing sets.

This unit is contained in a small neat cabinet and is connected to the set by a pair of short leads; by its use the tuning is converted to the band-pass system with a very great improvement in selectivity.

There is no battery or valve to be used with the unit and it covers both the medium and the long waves, the change-over, of course, being made by means of a switch; the use of this switch obviates the need for changing coils.

Simple Tuning.

It is always preferable to screen a band-pass unit and the "Pilot" unit is quite effectively screened, whilst on the front panel it has a condenser scale and a slow-motion control. The adjustment of the band-pass unit scarcely adds anything to the tuning adjustments of the set itself; I was particularly impressed with the adaptability of this unit, and, as I say, it can be added to almost any type of set with plain tuning. It belongs, of course, to the well-known "Pilot" series of Messrs. Peto-Scott, Ltd.

Low-Frequency Howl.

When working with very short waves, or even moderately short waves, you will often find that having adjusted the set for about as much reaction as it will stand, you get a low-frequency oscillation in the form of a loud note or howl from the speaker. I have several times been asked how this can be got rid of, as some experimenters

(Continued on next page.)

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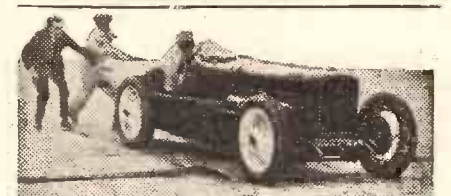
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TECHNICAL NOTES

(Continued from previous page.)

have been troubled with it very much and have found it difficult to eliminate.

In the first place it is often caused by unsuitable transformers, the fault generally being that the impedance of the primary of the transformer is too high. It is obvious that if this be the case and you substitute a transformer with a lower impedance primary you will in all probability do away with the trouble.

Decoupling for Stability.

On the other hand, in case that is not convenient, you can put a decoupling resistance of, say, 50,000 ohms in series with the supply and the high tension end of the primary and also connect the same end of the primary to earth by means of a fixed condenser of, say, 2 or 4 microfarads capacity.

Incidentally, if you care to go away from the transformer coupling to resistance-capacity you can get rid of the trouble in question at one step. But, as I say, in many cases that may not be convenient, and for other reasons you may wish to keep to the transformer coupling as perhaps giving greater amplification.

Another little dodge which is sometimes useful is to connect the detector plate to earth through a small bypass condenser of, say, 0.0001-microfarad capacity.

About Lightning.

I am very frequently asked in the summer months—and the question has cropped up repeatedly during the past few weeks of extra hot weather—whether there is any real danger of a wireless aerial attracting lightning and so being in effect a menace to house and home.

Well, now, this question is really not at all easy to answer because, as the saying goes, no one knows where the lightning strikes. Lightning is proverbially subject to vagaries, and in five cases out of ten when it strikes it seems to ignore completely all theories as to how it ought to behave.

At the same time I cannot say that the addition of an ordinary horizontal aerial is likely to add in the smallest degree to the danger of a house being struck by lightning. It seems to me that if the flash is going to take place in the immediate vicinity of the house it will do so just the same whether there be a wireless aerial there or not.

Have You a Mast?

Of course, if you have a very high mast erected close to the house, then possibly you may be inviting trouble, because one of the generally accepted theories is that, other things being equal, lightning will tend to strike any point which stands out sharply and independently from its immediate surroundings. There is really no more danger with an ordinary aerial than there is with telephone wires or trees around the place.

It is not a bad plan to have an outside lightning switch which connects the aerial direct to earth and short circuits the aerial and earth leads to the set. This is not in order to protect the house from being struck by lightning, but to protect the set

(Continued on next page.)



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TECHNICAL NOTES

(Continued from previous page.)

from any relatively minor discharge which might do it internal damage.

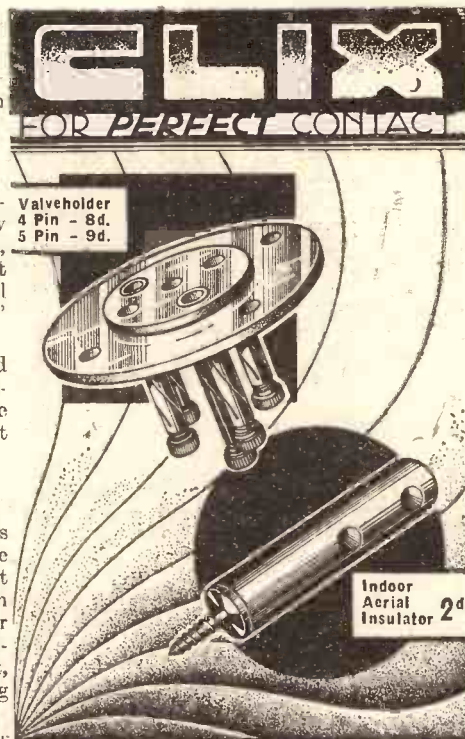
A Popular Belief.

Perhaps, whilst on the subject of lightning, although what I am going to say now has no direct reference to radio matters, I may refer to the common belief that metal objects such as knives, forks, metal beads around the neck and so on "attract" the lightning.

You can take it that this is just an old woman's tale, without the slightest foundation whatsoever; it is about in the same category as the equally popular belief that the sun puts the fire out.

Short-Wave Adaptor.

Interest in short-wave working has increased extraordinarily in the last couple of years, largely of course, owing to the great variety of good things which can be had on the short waveband. Personally, I prefer to use a set specially designed for short-wave work, as I think an ordinary set, originally designed for broadcast and long



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wavelengths and adapted to short-wave working is never quite the same thing.

At the same time there are lots of people now who want to adapt their ordinary broadcast receivers so as to be able to tune-in to short waves. This can be done, and in many cases quite successfully, by the use of a short-wave adaptor.

For a set which already has one or more stages of high frequency amplification you can use an adaptor which really converts the whole thing into a short-wave super-het.

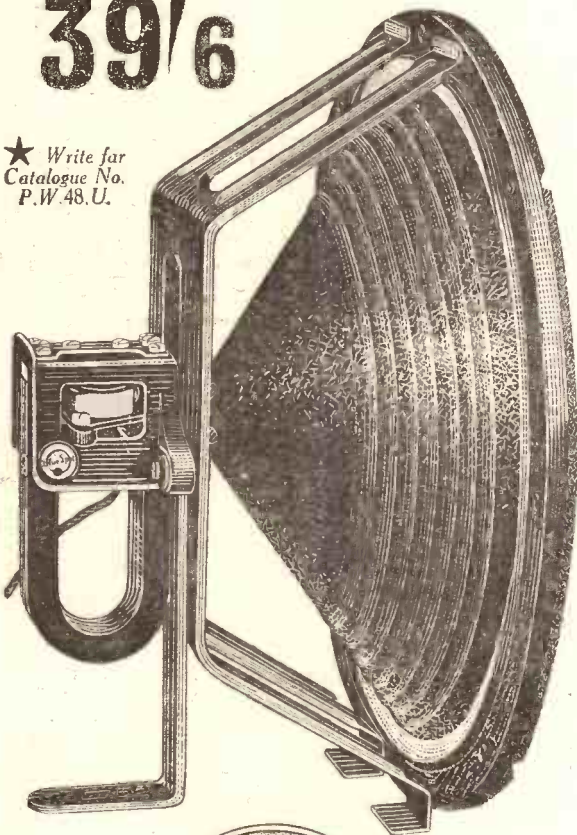
The adaptor contains a first detector-oscillator and sometimes a high-frequency valve and is attached to the broadcast set generally by means of the aerial and earth terminals.

Before attaching the adaptor, the broadcast set should be tuned to as long a wavelength as possible. In this arrangement what were originally the high-frequency stages of the broadcast set become, in the complete super-het. arrangement, the intermediate frequency amplifiers.

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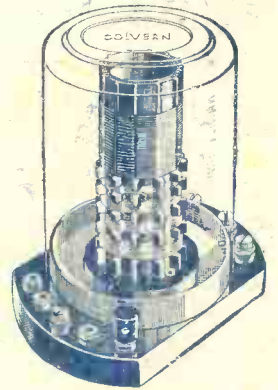
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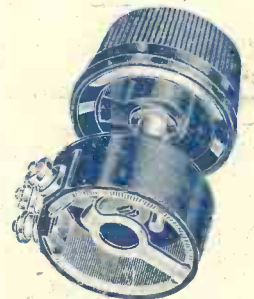
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