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NEW SET BY JOHN SCOTT-TAGGART

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POPULAR WIRELESS AND TELEVISION TIMES

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AT THE SHOW
MIDLAND PLANS
THE B.S.R.A.

RADIO NOTES & NEWS

ROAD CODE
CLAP HANDS
QUEER AERIALS

Radiolympia

TAKE a pair of sparkling eyes to this year's Olympia if you can (lucky man), for the last-minute indications as I write all point to it being a great Show for blondes and brunettes. Possibly the recent advances in television have given a new trend to this Exhibition, but whatever the cause it certainly promises to be quite a different Show from any of its predecessors.

Technically the high spots are Television and All-wavers. At the television stands I shall be quite as interested in the customers as in the sets themselves; for although I can understand (approximately) how television works, I do not and never shall understand how guys who look as hard-up as I do can fork out the sixty quid or so that turns Listener into Looker.

Television and Short Waves

AFTER collecting any pamphlets that deal with the hire purchase or other easy way to television I shall specialise on short-wave subjects. My own set is pretty good (touch wood), but I have a feeling that it lets a heck of a lot of good programmes slip through its fingers owing to its having been designed two or three years ago.

It was a forward-looking set at that time, but radio moves so fast that this year's designs may make it look like Lot's wife.

And say, buddy, before you leave the Show be sure and nip across to the "P.W." Stand, No. 13, where you will see Mr. Scott-Taggart's new design—the "All-B.B.C." set—and other fine home-constructor receivers.

Twenty Miles Up

THE stratosphere balloons which, weighing only a pound or two, nevertheless carry wireless apparatus as much as twenty miles up into the sky and send back information about the weather there, are marvels of careful design.

Some little time ago I told you how the American types recorded humidity and atmospheric pressure. Now comes the news that the German balloons record temperature by utilising the effect on the expansion of two kinds of different metals. As the metals expand or contract, according to the balloon's position in space, they alter the capacity of the transmitting condenser, and so alter the note received by observers on the ground. As it is known how the note will vary with temperature changes the received frequency will tell exactly how hot or cold the balloon is finding itself, hours after it has been lost to sight above the clouds.

My Word — By The Editor

OLYMPIAN BATTLE

Radio has become so familiar a thing that it is taken for granted. It has completely lost its novelty and very few to-day pause to consider the wonder of the mystic ether link that joins millions of listeners to the stages, concert halls, sports grounds and arenas of the world.

With the vanishing of the romantic element in the vehicle which brings broadcast programmes into the homes of the people, it is inevitable that critical faculties should achieve freer play. The policy of our B.B.C. is criticised and the programmes are criticised. Which is a good thing, for without the stimulation of criticism there can be no real progress.

But are radio sets sufficiently criticised? We do not think they are. If they were, then performance standards similar to those set up for cars would be demanded—and given.

But, fortunately, though the average listener does not appear to know or want to know much about technical specifications, there is a safeguard, and that lies in the enthusiastic competition that exists in the Radio Industry where dozens of mighty firms strive to outshine their competitors. In this battle the front line is occupied by technicians and designers and research engineers combing the world, as well as their own brains, for ideas, ideas, ideas!

Radiolympia reveals evidence to those who can see through pretty cabinets and colourful dials, that the honours of this friendly battle are widely shared.

Progress in the Midlands

THE news of B.B.C. interest in a site for a new Midland Regional station in Birmingham, fronting Islington Row, confirms what was said twelve months ago by Percy Edgar, Midland Regional Director.

Announcing that plans were being drawn up to provide Birmingham with a worthy B.B.C. headquarters, he said that the expansion of Midland activities had placed Birmingham at the top of the B.B.C.'s building list. Twelve or thirteen studios will be necessary in the new radio centre to cover the standard broadcasting requirements, but in addition there is television to take into account.

Birmingham, with its direct co-axial cable link to London, is marked out as the first provincial centre of television, and next year ought to see television programmes going out from the new Midland Regional.

Sound Work

STUDENTS of the sound wave, and of the tricky art of recording, ought to get acquainted with the British Sound Recording Association, which is doing valuable work in this field.

It will shortly issue the first number of its Journal, which will include articles dealing expertly with various aspects of sound recording. A leaflet describing the Association's activities and stating conditions of membership can be obtained from the Hon. Sec., Jas. F. Butterfield, B.S.R.A., 44, Valley Road, Shortlands, Kent.

A series of visits by members has been arranged, including a tour of the B.B.C.'s Recording Departments at Broadcasting House and Maida Vale. It is hoped to arrange visits to a film studio and also to a commercial recording studio where sponsored programmes for Continental radio stations are produced.

A Whoopee Year

A WEEK'S holiday with pay has just been granted to the Marconi chaps at Chelmsford—climax of a year of improved conditions. Six months or more ago the works were extended, enabling better working conditions to be introduced. Then a pension scheme was drafted, and facilities for afternoon tea in the workshops, morning tea in the workshops, and a 5-day week of 45 hours, in place of a 5½-day week of 47 hours.

The final week's holiday with pay envelope thrown in has marked out 1937 as a whoopee year. Students of economics will rejoice at all this—but all the really creamy rejoicementation took place in Chelmsford when the boys and girls drank the tea and opened the envelopes.

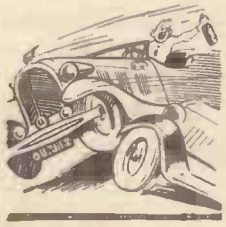
(*Continued overleaf.*)

NEXT WEEK: **SECOND GREAT EXHIBITION NUMBER**

FIRE CHIEF'S SUCCESSFUL RADIO EXPERIMENTS

Code of the Road

THE broadcasting of police-court proceedings arising out of motoring offences is one method adopted in America of combating the road-hog. It sometimes has unexpected results.



On one occasion the announcer said, "Let us go over to —— Police Court for this morning's cases. For while decent people have been using the roads carefully this week-end, there have been many careless, selfish and downright wicked fools driving to the danger of their fellows."

Everybody recognised the voice in the first case on the list. It belonged to a well-known radio preacher who had been caught speeding on his way home from broadcasting a sermon on "Consideration for Others."

S O S Surprise

S O S messages keep us waiting so frequently that we may sometimes wonder how often those messages reach the people they are intended for. Here is one curious instance against which the chances seemed millions to one.

It concerns an African chief who bought a radio set and gave the tribal witch-doctors the surprise of their lives. Nightly the whole kraal listened to every programme they could tune-in, understanding nothing but approving all.

One day the chief invited the local "Sanders of the River" to hear his "voicey box," and that worthy man happened to arrive just as the time signal was radiated.

Before the News there was one S O S—it was for the white man's brother, to say that their mother was dangerously ill. By hurriedly leaving Africa he arrived in England in time to see and cheer his mother—a remarkable instance of the long arm of radio coincidence.

Neck or Nothing

AS you will know, it is not unusual for people who broadcast to receive legacies from total strangers whose fancy has been taken by something they had heard on the radio.

Not long ago the lady who conducts a series "Your Clothes and How to Wear Them" was telling her friends that some kind-hearted old lady, enraptured by a talk on "Neck-wear," had left her 14,000 dollars in her will.

Alas, it turned out there had been a slight mistake in the message received over the 'phone! What the old lady had done was to leave the broadcaster a collection of 14,000 collars!

Has the Runner Been?

CONGRATULATIONS to Mr. G. S. White, Chief Officer of the Chippenham, Wiltshire, Fire Brigade, on his recent radio success.

He has been experimenting for some time with portable transmitters for fire service use, and a recent rick fire in a remote spot gave him the chance of a try-out in working conditions.

The apparatus succeeded in keeping in touch between men working at the rick and the men at the pumping engine, some three-quarters of a mile away.

This is a great advance on the old method of employing a fleet-footed runner, or even a mounted runner, to maintain communication. For radio not only travels faster and farther, but it also has no punctures and stops for wetting that whistle.

FROM RADIOLYMPIA

In addition to to-night's relay from Olympia, two further broadcasts are scheduled to take place on August 30th in the Regional programme and on September 4th in the National. Each will run for one hour, and each will include Bobby Howell and his Orchestra, Paula Green, Louis Levy and his Symphony (with Janet Lind and Gerry Fitzgerald), the Dagenham Girl Pipers and Drummers, and Donald Thorne and Harry Farmer at the organ.

The earlier show will also bring to the microphone the Royal Mastersingers, Murray and Mooney, Phyllis Robins, Mr. Flotsam and Mr. Jetsam, and Ethel Revnell and Grace West, who, by the way, write all their gags in little school copy-books.

Among the stars in the second show will be the Heron Sisters; Mamie Soutter; Forsythe, Seamon and Farrell; Payne and Hilliard; and Leonard Henry.

The programmes have been devised and will be produced by Jack Swinburne, and Sutherland Felce will be the compère.

"CHILDREN OF THE STARS"

Another edition of the popular revuette, "Children of the Stars," devised and presented by Ralph Coram, will be produced by Ernest Longstaffe in the Regional programme to-night. During the twenty minutes of the programme listeners will hear Frank, Louie and Ronnie Formby, children of the famous George Formby; and Patricia Burke, daughter of Marie and Tom Burke. Ralph Coram, who will also compère the broadcast, is a son of the ventriloquist "Coram." Percival Mackey and Wilfred Parry will be at the pianos.

"Kidnapped"

GRUMBLING authors who say that the B.B.C. hardly troubles to read the plays submitted to them must be staggered over this case of the two thirteen-year-old London schoolgirls, whose detective play "Kidnapped" has been accepted for broadcasting. The two girls—Noreen Scott and Stella Reichenberg, of Devonshire Road, Walthamstow, E.—stayed in every night for a week to write the play, to be acted at school.

It was so good that their teachers thought that they had copied it out of a book, so Noreen and Stella sent it to the B.B.C. for an expert opinion. (The play deals with the adventures of "Inspector Hornleigh," whose crime investigations have been the subject of a number of recent 'Monday at Seven" broadcasts.)

A week after posting the play they were told it was going to be broadcast. Good for you, Noreen! Splendid work, Stella!

Clap Hands, Here Comes Charlie!

IT is a long time since we had one of those arguments about who is the youngest broadcaster on the air, but I hope that the strange case of little Charlie Marcombe will never be forgotten.

Charlie was a precocious five-year-old who had often seen his big brother start up an amateur transmitting station and speak into the mike. One day big brother had gone across to see a pal's set, leaving the radio shack unlocked.

The two pals were yarning away when they tuned-in the surprise of their lives—a powerful, childish, and clearly recognisable voice reciting bits of "Hickory Dickory Dock."

Big brother ran home faster than the mouse ran up the clock, and there he found young Charlie mercifully missing the high voltages around him and happily showing off before the microphone!

Listen to This

WHATEVER view the British Government may take of broadcasts in a foreign language, it is clear that Germany attaches great importance to them. The other day a woman and five men were sentenced to various terms of imprisonment, up to as much as two and a half years, for "high treason" at Bremen. Their offence was listening to the Moscow radio programmes. It was alleged that they formed a group for regular listening at the house of one of the men and his wife.

Queer Aerials

BECAUSE of the excellence of modern sets, listeners are apt to regard any kind of old aerial as being good enough. So the B.B.C. has issued a reminder that the better the aerial, the better the results obtainable.

Some listeners, from sheer cussedness or love of experiment, will always try the oddest aerials that imagination can suggest. One of the queerest ever chosen was the pipe of an artesian well. It went straight down into the ground for thousands of feet, and the eccentric who thought of using it swore that it was a wow.

Another genius thought of using one of the loftiest conductors in the Western Hemisphere by running a wire up to the giant metal Statue of Liberty. A knowing lawyer, however, successfully opposed by pointing out that it was not allowed for in the bye-laws, and would certainly amount to "taking a liberty."

ARIEL

ROUND THE STANDS

In this section we give a comprehensive review of the excellent selection of sets and components on view at Radiolympia.

This year's Show is outstanding for its large variety of all-wave designs, and in several instances the wavelengths covered include that of the television sound transmissions from Alexandra Palace.

All those who are able to should visit Olympia and see for themselves the latest developments of radio.

The Exhibition is open from August 25th to September 4th, the hours being from 11 a.m. till 10 p.m. and the price of admission, 1/6 daily.

THE AMALGAMATED PRESS, LTD.

Stand No. 13.

This is, of course, where we shall be, and we hope all readers who visit the Show will make a bee-line for this spot. We shall have plenty of interesting things to show them. For example, there will be the original model of John Scott-Taggart's newest set—the one which is described in this issue. Also, the S.T.800 will be available for inspection.

One of our most topical (and, at the same time, historically important) exhibits will be some of the apparatus used in our pioneer television research. As many of you will know, POPULAR WIRELESS designed the very first cathode-ray television receiving equipment; and when we say *first*, we mean first! Not merely the first cathode-ray gear described in a magazine, but the first practical application of the cathode-ray principle to television reception. And this, of course, in the days when, except for "P.W.'s" pioneering, television was confined to crude mechanical systems. We also conducted the first transmission tests on ultra-short waves. That was from the ill-fated Crystal Palace. But the tower from which were radiated these precursor ultra-shorts still stands proudly above the blackened ruins.

A POLAR DIAL

The Polar Micro Horizontal Drive made by Wingrove & Rogers, Ltd.

But to revert to the Radio Show. We have up our sleeves a grand surprise for the special benefit of those of our readers who go to Olympia. Clearly, it would not remain a surprise if we were to tell you all about it now, so we don't propose to spoil our effect by doing so! Let your curiosity get the better of you, and roll up to Radiolympia, even if you have to travel a considerable distance to do that. We are sure you will be far from disappointed.

AERIALITE, LTD.

Stand No. 28.

Of specially topical interest is the Aerialite Di-Pole Aerial. We say "topical," for this is an all-wave Radiolympia, and on the short waves it is very desirable to employ a dipole in order to keep the signal-noise ratio as high as possible.

At the present time, you don't see many di-poles about, comparatively speaking. That is to some extent due to the fact that all amateurs do not realise their advantages. But when television becomes popular, then in many cases dipoles will have to be used. What becomes imperative on the extremely low waves is highly desirable on the ordinary shorts!

Aerialite are aerial specialists, and they are showing mastless types, aerials for cars, indoor aerial fittings, invisible aerials, insulators, stranded wire and so on.

But, additionally, they have their Percolite and Aerialite batteries, microphones, loudspeakers, chargers, mains units and short-wave adaptors to contribute to a comprehensive and interesting display.

AERODYNE RADIO, LTD.

Stand No. 52.

A portable set having a 6-in. moving-coil loud-speaker and turntable which provides an out-standing performance, but weighs only fourteen pounds, is to be seen on this Stand.

And among the other Aerodyne sets deserving particular notice is a six-valve superhet (A.C.) which embodies the "Magic-Eye" Tuning Indicator.

And how is this for marshalling electrodes? The four-valve A.C. superhet covering short waves as well as medium and long employs this valve combination: triode hexode, H.F. pentode, double-diode pentode. Now work out how many electrodes there are!

ALL POWER TRANSFORMERS, LTD.

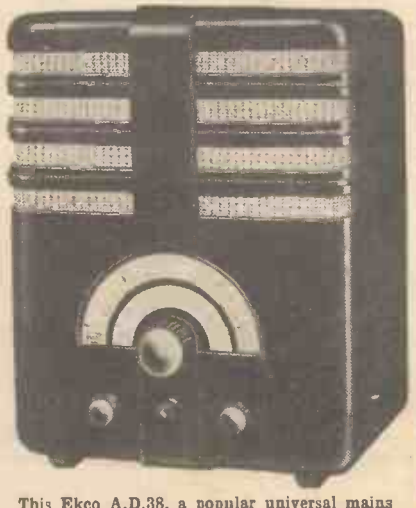
Stand No. 209.

Are showing this year their usual ranges of transformers and chokes, with many additions and improvements. Small transformers and chokes to Crown Agents' specifications are exhibited, also those suitable for marine, high voltage cathode-ray and transmission.

Among the many new components exhibited are the following: Vibrator units for 6- or 12-volt

(*Continued overleaf.*)

IN THE EKCO RANGE



This Ekco A.D.38, a popular universal mains receiver, is continued for the new season.

SEE "P.W.'s" PIONEER TELEVISION APPARATUS

(*Continued from previous page.*)

accumulators, two A.C. to D.C. conversion units, one having an output of 230 volts at 550 milliamps and the other 230 volts at 275 milliamps; a metal rectifier L.T. charger for charging 2-, 6- or 12-volt accumulators at 1 ampere, and a similar unit having a 6-volt winding to supply current for an inspection lamp in garages. Both are fitted with ammeters.

A particularly novel item is a small unit for stripping the insulation from the ends of insulated wires.

ARDENTE (R. H. DENT, LTD.)

Stand No. 2.

The name of Ardente will first be associated in the minds of readers with successful deaf aid appliances, but Ardente's acoustic activities extend far beyond that single, if important, branch of the science. For example, on their Stand you will see some advanced P.A. apparatus, including super-power plant for use in large open spaces where the noise level is low — parks and beaches, for example. It is also suitable for small areas with a high noise level such as speedways and roller skating rinks. There are also attractive portable outfits manufactured by Ardente for dance bands and so on.

Then there is an Ardente two-way loud-speaking inter-communication system that ought to attract the attention of heads of businesses. With it chiefs of departments can converse with other chiefs in remote parts of a building, or with their assistants, as readily as if they were all in the same room.

ARMSTRONG MANUFACTURING CO.

Stand No. 220.

High-class sets in chassis form are to be seen on this Stand. They take the form of all-wave radiograms, the majority of which are supplied with matched loudspeakers.

A particularly magnificent instrument is the 1938 Armstrong nine-valver. In addition to a pre-mixer H.F. stage, this has a separate oscillator. It has two large triodes in phase reversed push-pull to give an output of 12 watts. There are four wave-bands ranging upwards from a minimum of 11 metres. The price is 13 gns.

AUTOMATIC COIL WINDER AND ELECTRICAL EQUIPMENT CO., LTD.

Stands Nos. 30 and 166.

Magnificent measuring instruments having laboratory precision at prices within the reach of the average amateur are shown in this display. Consider, for instance, the Universal Avometer.

This compact device has no fewer than forty-six ranges. With it you can measure D.C. currents from fractions of a milliampere up to 10 amperes, D.C. voltages from a fraction of a millivolt to 1,000 volts, and A.C. currents from a milliampere to 10 amperes, A.C. voltages from millivolts to 1,000 volts. Resistances, too, can be measured, and note the "coverage"—$\frac{1}{2}$ ohm to 40 megohms. All this, you will agree, is a marvellous performance for just one compact instrument. Think of the number of separate meters that would be required to do the same work! But its capacity to undertake a plurality of jobs does not end there. It will measure capacities from ·01 mfd. to 20 mfd., and power from 1 mw. to 4 watts, and decibels from minus 10 to plus 15. And the price is only £50? Well, it wouldn't be dear at that. But, as a matter of fact, it's £16 16s.! And now try to work out with a multiplicity of catalogues how much you would have to pay for separate meters to carry out all those functions, and how much space on your bench they'd occupy. You wouldn't have any room for anything else on it!

The Universal Avometer is the realisation of the experimenter's dream, and just about the most useful thing a professional radio man could possibly acquire. For the ordinary constructor there is the AvoMinor, a natty little precision instrument with thirteen ranges for milliamps, volts and ohms covering all the current, voltage and resistance values he is likely to encounter. The price is 45s., complete in a handsome case with leads, clips and testing prods.

Then there is the AvoDaptor, which enables the AvoMeter to be applied to all kinds of valve tests with a variety of valves, and the AvoCoupler for bringing all the seven-pin valves in line; and the Avo Capacity Meter, and the Avo Light Meter, and the Avo Exposure Meter, and the Avo Valve Tester, and the Avo-Oscillator. Every one an invaluable unit for someone. Certainly, the Avo Stand is one that should on no account be missed, for, in addition to these versatile and useful meters, etc., there is also to be seen "Douglas" Automatic Coil-winding machines.

BAIRD TELEVISION, LTD.

Stand No. 87

As pioneers of television, all television enthusiasts will be interested to pay the Baird Stand a visit and to inspect the exhibits there.

Chief in appeal among these are the complete television receivers which have been considerably improved during the past year and which include screens that are among the largest of television sets on the market at the present day.

A. J. BALCOMBE, LTD.

Stand No. 55.

A large range of fine sets. Something quite novel and highly distinctive in the "Armchair Radios." These are designs for lazy, easy listening. An "Alba" of this type alongside your armchair is the equivalent of a coffee or occasional table. The controls of the set are sunk so that a tray or cover can be placed on the top, but even without such a thing as that there are highly polished areas for the accommodation poshly of cigarette ashtrays, etc. (and etc.!).

The article makes a very attractive piece of furniture. It can be supplied fitted with the chassis of any one of three different "Alba" sets of the all-mains, all-wave superhet types.

BEETHOVEN RADIO, LTD.

Stand No. 34.

Lady visitors will be particularly attracted to this Stand, for the new Beethoven sets are very handsome productions. In all the cabinet models the control panel is placed at the top of the receiver and enclosed by the lid, which can be open or shut as required. Therefore, there are no tuning controls visible to interfere with the "lines" of the design.

Twin loudspeakers are to be seen in the all-wave superhet Model A.C. 852, and its other features, such as manual and automatic tone compensation and delayed A.V.C., would appear to us as a proposition of a decidedly attractive nature at 15½ gns.

For the man with a bit deeper pocket there is a twin speaker all-waver radiogram that is produced by hand craftsmanship and not mass production.

BELLING & LEE, LTD.

Stand No. 42.

All those visitors—and there will be a large number of them—who suffer from electrical interference, should make a special point of paying a call at this Stand. Messrs. Belling & Lee are noise-suppression experts. They have scientifically developed apparatus for dealing with all kinds of electrical interference.

There is the "Eliminoise" anti-interference aerial, a well-known and well-tried device for stopping the grunts, raspings, crackles and so on coming in via the ether. It is an improved model that is still stronger and even slightly more efficient. It gives you suppression without serious loss of signal strength, and can be erected as easily as an ordinary aerial. Moreover, eight to ten sets can be fed from one of them without mutual interference, so it is particularly suitable for flats.

There are various types, including some for very special purposes, such as for use in the tropics or for the police and trawler wavebands.

For stopping interference entering through the mains connection there are the Belling-Lee Set Lead Suppressors. A money-back guarantee accompanying each of these provides convincing proof of the makers' confidence in their ability to do their jobs successfully.

Available for inspection at the Belling-Lee Stand is some interference-measuring apparatus constructed to official specification and, even more interesting, some noise locators. This is the first time that such apparatus as this latter has been exhibited at Olympia on the stand of a private firm. It comprises a sensitive portable receiver fitted with a search coil and headphones. One of these is used by each of the Belling-Lee suppression engineers.

Among other notable Belling-Lee exhibits is a complete range of half-wave aerials for television reception. These are designed for either masthead or wall fixing, with or without reflectors.

Visitors should also note the Belling-Lee valve holder for television sets. This is able to stand up to 11,000 volts! And then there is a shrouded plug and socket of the 6,000-volt H.T. type.

All these things by no means exhaust the Belling-Lee range of exhibits. There are many other items that we have no space to list at this juncture.

BENJAMIN ELECTRIC, LTD.

Stand No. 17.

This well-known firm is of course famous for its valve holders. There can be few constructors who have not used one of either their baseboard mounting or "platform" types.

(*Continued on next page.*)

ON THE G.E.C. STAND

The G.E.C. All-Wave 5, a powerful set giving an output of 3 watts. It is designed for A.C. mains operation and covers from 16–50 metres on the short waves.

Below is the Garrard A.C. 6 type B radiogram unit. This is only one of the attractive radiogram units in the firm's extensive range.

AND THE "ALL-B.B.C." SET ON STAND No. 13

It is, therefore, of special interest that at this Show they are introducing for the first time the "Octal," a new design of the chassis type.

But it must also be remembered Benjamin have other components of importance. Notably their "Autocontrola" automatic battery economy unit and the "Transfeeda" resistance-fed transformer.

Then they operate the Magnavox patents and registered designs which figure in certain examples of a distinguished group of loudspeakers. These range from those for radio reception work up to large P.A. models.

BIFURCATED AND TUBULAR RIVET CO., LTD.

Stand No. 151.

The use of automatic feed rivet-and-eyelet-setting machines is now practically universal in the radio trade for attaching components to chassis.

On this Stand is a full range of rivets, eyelets, and tags which are in most general use for this type of work. There is also a full range of samples of completed work showing quite clearly the possibilities of their method of riveting. It will be seen from these completed samples that rivets can be set in very difficult and awkward places, overcoming one of the big difficulties of assembly.

As a predominant number of the machines which they supply are specially designed for the work they have to do, they are not exhibiting actual machines on the Stand; but these are fully illustrated and technical advice available, which should be very helpful in arriving at new ideas for assembly.

R. O. BRIDGER & CO., LTD.

Stand No. 150.

Seamless moulded paper diaphragms for loudspeakers and microphones are specialised products of this firm, and on Stand No. 150 will be found examples of the latest types of diaphragms which are supplied to various wireless set and loudspeaker manufacturers.

BRITANNIA BATTERIES, LTD.

Stand No. 83.

This firm makes those well-known Pertrix batteries, and they are displaying Pertrix standard H.T. batteries and replacement types, Pertrix and Bulldog lighting dry batteries for torches, bicycle lamps, etc., grid bias batteries, and radio accumulators. For export purposes only there are new dry low-tension batteries, and an air depolariser type with an amazing capacity of 600–650 ampère hours. This is fitted with a variable resistance to adjust the voltage supplied to the set to 1·9 to 2 volts, and it has a voltmeter and a switch to put this in and out of circuit.

This firm also markets police and fire brigade lamps of special design, and a Britannia alkaline battery headlamp is shown using an alkaline accumulator guaranteed to last eight years which gives fifteen hours of light per charge. Overcharging or over-discharging or leaving the battery in a discharged state cannot damage it.

BRITISH BELMONT RADIO, LTD.

Stand No. 79.

In addition to the existing Belmont range, two entirely new sets are shown for the first time. The Model 600 is a universal mains all-waver six-valve superhet. Covering from 18 to 2,000 metres, it has A.V.C., a multi-coloured dial calibrated in both metres and station names, an 8-inch speaker, and other modern refinements. The output is 3 watts.

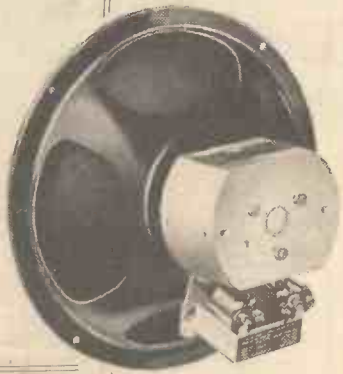
The "Belmont 900" is an all-waver superhet de luxe. It employs four wavebands and can tune down to 6·2 metres. It is claimed that it has a sensitivity such as has not previously been achieved in a commercial production and that this efficiency is present through all its coverage.

It will, of course, receive the sound programmes from the B.B.C. television station at Alexandra Palace. Nine valves figure in this instrument, and technically minded readers will be interested in the following brief specification:

Input circuit is so arranged to eliminate any image or second-channel interference. It is controlled by a H.F. pentode which operates on all bands. A separate oscillator is used which gives oscillation up to the highest frequency. Output is fed to the speaker by two 6F6 pentodes in parallel, which give an undistorted output of 8 watts. Fully delayed A.V.C., 10-inch high-fidelity Belmont moving-coil speaker. Chassis and condenser are rubber mounted, thus eliminating microphony on the ultra-short band. Provision for extension speaker and pick-up. High-fidelity switch, giving constant variable tone control. Tuning is visual and indicated by a cathode-ray magic eye. Multi-coloured oval dial calibrated in metres and station names. Latest octal valves.

A FERRANTI SUPERHET

Housed in a distinctive walnut cabinet with sycamore and ebony inlays, this Ferranti all-waver incorporates a "Magnascopic" dial, an ingenious device for simplifying short-wave tuning. The price is 12 gns. On the left is one of the well-known Westinghouse metal rectifiers—the H.T.14. The loudspeaker (right) is a British Rola of the permanent magnet type. It is priced at 49s. 6d.



BRITISH G.W.Z. BATTERY CO., LTD.

Stand No. 82.

The several new lines shown render the G.W.Z. range a most comprehensive one. There are replacement batteries for practically every popular set on the market and special heavy duty H.T.'s for export.

Also refill batteries for pocket lamps, torches and cycle lamps.

Dry cells, Leclanche cells, and sack elements are shown.

BRITISH MECHANICAL PRODUCTIONS, LTD.

Stand No. 94.

Mention the above name to a radio man not in the trade and he might have to think a moment to place it. But then add that they make "Clix" components and his eyes would at once brighten, for "Clix" products are ubiquitous. Hardly a set but that doesn't use at least something "Clix."

In addition to all those very numerous "Clix" valve holders, sockets, plugs, terminals, and similar devices which are in existence and which seem to cover such a wide field of application in their own particular spheres that there is no room left for additions and improvements, there are, in fact, at this Radiolympia some new "Clix" lines. For instance, there is a dual-purpose crocodile clip which is specially useful for service work, and the "Clix" master plug-socket with a horizontal insulator. And we can extend a hearty welcome to "Long Reach" plugs that are fitted with either one- or two-inch insulators. Some of you no doubt have sets for which these would prove exceptionally useful.

BRITISH ROLA CO., LTD.

Stand No. 41.

The Rola range of loudspeakers comprises no fewer than twenty models, of which there are two new ones demanding special attention. The F742–P.M. is a 9½-inch speaker that is claimed to be exceptionally sensitive, having a flux density of 11,500 lines per square centimetre. In it a new magnet material known as "Alnico" is used.

The F1050–P.M. is a slightly larger model of 10-inch diameter, having a flux density of 12,000 lines per square centimetre and a power-handling capacity of 8 watts at 100 cycles.

For those whose ambitions range even higher there are the giant G.12's. These can handle 24 watts at 100 cycles, and they are available in both energised and permanent magnet forms.

BRITISH TELEVISION SUPPLIES, LTD

Stand No. 47

There are some interesting items among the exhibits on Stand No. 47. Apart from a wide range of B.T.S. components for short waves, there are a number of receivers and chassis designs to be seen. These include a portable, superhet chassis and two amplifiers.

The portable is known as the "Little Princess." It is a four-valve self-contained battery driven T.R.F. receiver with one H.F. stage and a Harries output valve. The price is 8 gns., including valves and batteries.

There are three superhet chassis with 8, 9, or 12 valves, and cover short, medium, and long wavelengths. Each chassis has a resistance-coupled output stage giving an undistorted output of seven watts. These chassis are available in different types of cabinet work with and without gramophone provision.

Of the two amplifiers shown, one, the A.C.67 has a resistance-coupled push-pull circuit with a phase-reversing valve and an undistorted output of six watts. The price is £4 10s. The other, the A.C.14, is a three-stage amplifier with two 25-watt triodes in push-pull in the output stage giving an undistorted output of 14 watts.

In addition to the above, there is the B.T.S television receiver for home constructors, to which further reference is made elsewhere.

BRITISH TUNGSRAM RADIO WORKS, LTD.

Stand No. 36

Valves of all shapes and sizes are to be seen on Stand No. 36. Valves for home constructors, replacement valves for commercial sets, large power valves for P.A. work and even transmitting valves find a place in the wide range of Tungsram valves.

All the latest types are to be seen, including special-purpose valves and valves with the new Octal bases that are intended to one day form our standard type of valve. Anyone interested in any aspect of valve design or operation will find ample to interest him on Stand No. 36, and will find that prices are also most competitive.

Among the new items to be seen on this Stand is a variable-mu 4-volt "Magic Eye," designated VME4, and fitted with a standard seven-pin English base. "Magic Eyes" of American and Continental pattern are also on show.

Another new Tungsram product to be available for the coming season is a variable-mu hexode, VX6, which is in the car-radio range of valves.

(Continued overleaf.)

This Invicta set is a superhet for A.C. mains and costs £13 19s. 6d. It is a four-waveband design, covering—in addition to the short waves—the ultra-shorts from 6·5 to 17 metres.

(*Continued from previous page.*)

Set builders will be interested in the Tungsram double-diode output pentode called the DDPP4B. A universal model is also available. Both of these valves are of the steep-slope variety.

Finally, five new, large power valves have recently been released, and a number of other valves that space does not permit us to mention here.

A. F. BULGIN & CO., LTD.

Stand No. 1.

One of the most diversified displays in the whole of Olympia—particularly for the home constructor and experimenter. Bulgin's standard lines alone make a lavishly interesting show of straightforward lines and ingenious gadgets, but there is to be seen a wide range of entirely new products. Some of the more outstanding are as follows :—

A television aerial kit for fixing to the side of the house or at the top of a mast. It is of the dipole type and is supplied complete with insulators, matched feeder cable, and full instructions for installing it. There is a de luxe version which can be employed as a reflector if required.

A new range of coils for straights and superhets known as "Square-Cans."

A neon output measuring Unit, which, when connected across the output of a set, will indicate signal strengths and expedite ganging and other operations of initial adjustment, etc.

A needle scratch filter, designed to cut off at a frequency of 3,500 cycles for medium-impedance pick-ups, and a scratch filter for Piezo type pick-ups that cuts off at 5,000 cycles.

Several components for television sets, including I.F. and H.F. transformers, and an aerial unit.

We must emphasise the point that these are only a few of the new Bulgin products to be seen at Olympia. There are dozens of others.

But in addition there are Bulgin kits of parts for the construction of remarkably interesting sets and amplifiers. What do you think of this one ? A twelve-valve A.C. all-wave high-fidelity set, with an output of 12-14 watts. The price £15 5s. 0d. There are others of a less ambitious nature. Notably a nice little three-valve all-wave battery outfit at 70s.

Bulgins also have a deaf-aid that is very compact. In short, even more so than in previous years the Bulgin Stand is in every sense of the term a complete radio exhibition in itself.

BURNDEPT, LTD.

Stand No. 85.

The name of Burndept's works at Erith is the "Light Gun Factory." Well, they are certainly shooting out some very interesting radio sets ! For instance, on their Stand at Olympia visitors will have the opportunity of seeing a set that is claimed to be "the first British receiver to employ electron-coupled output valves and aural tuning." This is the Model 259 for A.C. mains which retails at eighteen guineas—a magnificent instrument giving 5 watts of undistorted output power. The aural tuning enables anyone automatically to receive stations "on tune." There cannot be side-band distortion, and all stations that do not reach programme value are automatically rejected.

The "Burndept 259" is one of the very few true all-wave sets on the market. It tunes continuously from 13·5 to 2,000 metres without any of those comparatively large gaps that exist normally. There is a five-range illuminated wave-change switch.

Eight valves are used in an up-to-the-minute circuit, incorporating numerous valuable refinements.

Among the "just-released" sets are a five-valve universal mains superhet all-waver at 10½ gns., and an eight-valve all-wave A.C. superhet console radiogram.

BUSH RADIO, LTD.

Stand No. 70.

Among the newest Bush sets to be seen is the "S.W.41." This is a five-valve superhet all-waver, having an output of 3·5 watts. The price is 10 gns.

There is also a "Super Superhet," using six valves, that embodies a number of definitely intriguing features. First there is a "Magic Eye" visual tuning indicator, and a variable selectivity control enabling "top" to be brought in to a greater extent when the need for keen station separation is not present.

The tuning dial is divided into three sections so that each waveband can be separately illuminated, and there is a novel and ingenious logging device, operative only on the short waves, that gives precise scale readings on that adventurous band.

R. CADISCH AND SONS.

Stand No. T.9.

This firm acts as factors and distributors for a number of well-known firms. The radio receivers and radio gramophones shown include those made by Ultra, Kolster-Brandes, G.E.C., Ever Ready, Alba, Aerodyne, Beethoven, R.G.D., and Vidor.

Other lines exhibited are as follows : Public Address Equipment by Trix Electrical Co., Ltd., Charging Plants by the Westinghouse and Davenset Companies, Loudspeakers of both energised and permanent magnet varieties by Whiteley Electrical, Celestion and Rola, Gramophone Motors and Advertising Turntables by Garrard Electric, and Interference Suppressors by Belling and Lee, Ltd.

IN THE ALBA RANGE

The Model 801 Alba receiver. It is a three-valve A.C. mains design of the all-wave type, costing 7 gns.

The Everett Edgcumbe "Radiolab" all-wave oscillator which has a range of wavelengths from 10 to 3,000.

DON'T FORGET TO SEE THE TELEVISION DEMONSTRATIONS AT THE SHOW. REMEMBER THAT BRITISH TELEVISION LEADS THE WORLD

CELESTION, LTD.

Stand No. 26.

One immediately associates the name Celestion with loudspeakers, and older readers will remember that this has been the trade mark of good quality reproducers for many years. At Olympia this year there are several excellent Celestion models, among which may be mentioned the Standard 8, Junior 8, and the Senior and Junior Auditorium models.

The Standard 8, Junior Auditorium and Standard Auditorium P.M. cabinet speakers incorporate a constant impedance volume control, and these models are obtainable in walnut, oak and mahogany.

All P.M. chassis and cabinet models are supplied without transformer for use with receivers of 1 to 5 ohms impedance output, and are also supplied with Celestion's fully universal transformer.

CHLORIDE ELECTRICAL STORAGE CO., LTD.

Stand No. 32.

Following the Exide "Mass" type low-tension cell incorporating a visible charge indicator, a new range of Exide "Hycap" accumulators specially designed to meet the demands of high-powered modern radio receivers was introduced. This new range, which has proved a great success, is on view at the Exide Stand, together with an attractive display of other Exide and Drydex batteries.

Of particular interest this year are the Exide unspillable cells. These cells bear on their labels details of the receivers for which they are suitable.

The Exide wet high-tension batteries are also to be seen. These are now fitted with a new type of leakage current shield, fitted round each of the terminals to reduce the current leakage across the top of the battery from one terminal to the other.

There is a Drydex H.T. battery for every radio set, and alternative batteries are offered for a number of popular sets.

E. K. COLE, LTD.

Stand No. 69.

For many years Ekco have been in the forefront of set development, and one can always rely upon any new Ekco design embodying the very latest advances in radio technique. The big Ekco innovation is knobless radio, an ingenious scheme by which the usual controls are replaced by milled rims following the curves of the cabinet.

For example, in the A.W.88 model, which is priced at 12½ gns., the built-in controls are placed on either side of the distinctive floodlit tuning scale. The main tuning control is a flywheel running on ball bearings. It spins with the slightest touch, yet is entirely free from back-lash or involuntary movement owing to the use of a special tension device.

The makers have called this method "spin wheel tuning"—a very appropriate name. The

(*Continued on next page.*)

RADIOLYMPIA IS OPEN FROM AUGUST 25 TO SEPTEMBER 4, DURING THE HOURS OF 11 A.M. TO 10 P.M. THE CHARGE FOR ADMISSION IS 1/6 DAILY

(Continued from previous page.)

drive has machine-cut gears and the large rim, which is 14 in. in circumference, permits settings to be obtained with the highest degree of accuracy. The circuit of this particular model is a powerful eight-stage superhet designed for operation on A.C. mains, and the set covers the television sound wavelength in addition to the short-wave range of 16–50 metres—and, of course, the medium and long wavebands. It is excellent value for money.

There are, of course, many other wonderfully attractive designs in the Ekco range. For example, the battery all-wave superhet model BAW98 at 13 gns. This is an eight-stage superhet incorporating super Q.P.P. output and all-wave tuning. The H.T. consumption is 10 milliamps, and automatic grid bias is fitted. The mains version of this set is the AW98, and has a nine-stage superhet circuit with an output of six watts undistorted, "Spin-wheel" tuning and built-in controls are fitted, and, as in the AW88 model, the television sound wavelength is covered.

A feature of this set is the "Mystic Eye" visual tuning device, which ensures perfect accuracy of tuning at all times. It costs 15½ gns.

For those who want "something a little better" Model AW108 is an attractive proposition, with its nine-stage superhet circuit for use on A.C. mains, and its frequency range on the L.F. side of 40 to 8,000 cycles. It is, of course, an all-wave design and incorporates variable selectivity as well as variable tone control. The price is 16½ gns.

The radiogram enthusiast is catered for by the RG109 all-wave A.C. model at 24½ gns. This is a magnificent receiver having an eight-stage superhet circuit and a high fidelity exponential 9-in. moving-coil speaker. The new Ekco "spin wheel" tuning is fitted to this model.

One must not forget the "No H.T." all-wave set at 13 gns. This unique design operates entirely from 2-volt accumulators, no other batteries being required, and these accumulators incidentally are included in the price. For those who have trouble in obtaining dry H.T. batteries or who object to them on principle, this is the ideal receiver.

A. C. COSSOR, LTD.

Stands Nos. 65 and 163.

This well-known firm is showing a comprehensive range of receiver designs, the majority of which are of the all-wave type. The prices will be found very reasonable, and among those sets on view are the Model 484, an all-wave superhet for A.C. mains operation. This set covers from 16–53 metres on its short waveband, as well as the usual medium and long waves. It has an illuminated scale calibrated in wavelengths and station names, a 30 : 1 slow-motion drive, and a coupled volume and regeneration control. The sub-chassis is of the full floating anti-microphonic type. The price of this set is £9 19s. 6d.

Those who prefer a universal mains receiver are catered for by the Model 484U, costing 10 gns.

There is also a Model 485, a four-valve all-wave battery superhet. This covers a waveband on the short waves of 19–53 metres and, like the Model 484, has an anti-microphonic sub-chassis, slow-motion drive and wavelength, as well as station name calibrated full vision scale. There is adequate accommodation in the cabinet for all batteries, and also provision for the use of an extension speaker. This set costs £9 19s. 6d. without batteries.

There are several other attractive designs, including an all-wave A.C. superhet radiogram priced at 22 gns. This has the new Cossor tuning indicator and is equipped with a special concert grand energised moving-coil loudspeaker. The gramophone motor, which is of the induction type, is fitted with a 12-inch turntable.

The least expensive set in the Cossor range is the "Melody Maker," a battery receiver designed for medium and long-wave reception. It is a three-valver of the pentode H.F., pentode detector, and high-slope output valve type. Single knob tuning is provided, as are also selectivity and volume controls. It has an 8-inch moving-coil speaker and provision for connecting an extension speaker and gramophone pick-up. The price without batteries is £5 12s. 6d.

Some of the fixed condensers to be seen on the T.C.C. Stand. This firm manufactures fixed condensers of all types and capacities.

THOMAS DE LA RUE & CO., LTD.

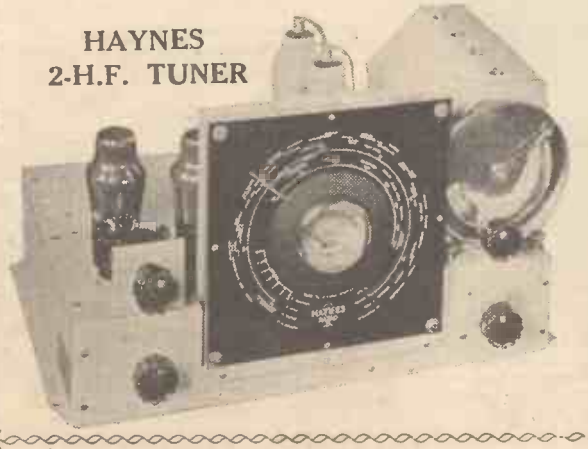
Stand No. 6.

This firm specialises in plastic products, and visitors will be able to examine the display of large-size moulded radio cabinets and a variety of accessories produced by the injection method.

THREE VALVES—ALL WAVES

One of the new Cossor receivers, the Model 484, three-valve all-wave A.C. mains superhet.

HAYNES 2-H.F. TUNER



The Haynes Radio 2-H.F. tuner, Model R2. It is fitted with separate valves for L.F. amplification and amplified A.V.C. There are four variable tuned circuits and a variable sensitivity control.

THE DUBILIER CONDENSER CO. (1925), LTD.

Stand No. 81.

The name Dubilier is well known to all constructors, most of whom will be familiar with it in connection with the manufacture of condensers and resistances. On this Stand will be found a fully comprehensive range of these components in all values and types.

Readers should pay special attention to the ceramic dielectric and silvered mica condensers. In addition, there are the non-inductive tubular paper condensers with both end and side wires, including special high-voltage types for use in television apparatus. Those who are interested in the elimination of outside interference should not miss the anti-interference condenser devices and suppressors for trolley-bus and tram systems.

Metallised volume controls are also available in various values, ranging from 5,000 ohms to 2 megohms. These have a base of special bakelite to which the resistance coating is deposited, cured and sealed at a high temperature, resulting in an element which is hardened, stabilised and permanently bonded to the base. These controls are of the one-hole-fixing type, and in certain models incorporate a switch.

EDISON SWAN ELECTRIC CO., LTD.

Stand No. 57.

The well-known makers of Mazda valves are showing some of the pioneer types, along with a colour film showing modern Mazda valves in course of production.

All the latest types of valve are, of course, on view.

There are also the B.T.H. R.K. loudspeakers and headphones in their latest and improved forms, including the Senior A.C., D.C. and P.M. models, and the Minor R.K. Cabinet model. The 1937-8 Pezolectric pick-up should not be missed.

For those who require a less expensive but nevertheless high quality pick-up there is the B.T.H. Minor, which sells complete with self-contained volume control at 17s. 6d.

There are Ediswan "Extra Life" accumulators for the battery man, and models embodying the "Chargetime" device which gives direct indication of the condition of the battery.

The Ediswan Tungar battery-chargers will also be found on this Stand.

Last, but by no means least, there is the range of Ediswan cathode-ray tubes and Mazda television valves. This exhibit includes a complete television receiver arranged in sections so that some idea of the construction and layout of a typical television set can be obtained.

The multi-colour cathode-ray tube shows what can be done in the matter of colour with fluorescent materials.

EVERETT EDGCUMBE & CO., LTD.

Stand No. 164.

Among the apparatus manufactured by this firm is a full range of electrical measuring and radio testing instruments. There is, for example, a "Radiolab" set analyser and valve tester. This is specially designed for the service engineer and enables all measurements necessary for the servicing of modern radio sets, valves and components to be made.

Another interesting instrument is an output meter, which has been designed to fulfil the demand for a compact and accurate instrument which will measure the gain or loss in the audio frequency circuits of radio receivers. It is provided with three ranges of 0–40, 0–400 and 0–4,000 milliwatts. A decibel scale is also provided to enable comparisons of gain or loss in decibels to be readily made.

(Continued overleaf.)

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A further interesting instrument is an all-wave oscillator having a range of 10-3,000 metres; the output being the fundamental wave throughout, without recourse to harmonics. Each oscillator is individually calibrated.

FERRANTI, LIMITED.

Stands Nos. 21 and 74.

Among the range of Ferranti receivers is the "837" model all-wave A.C. superhet. This is a set employing the new multiple valve circuit and giving 2½ to 3½ watts undistorted output with only 60 watts mains consumption. It has an energised moving-coil speaker, a three-colour dial uniformly illuminated by means of a double concave reflector of special design, extension speaker sockets and a rustproof steel chassis. On the short waves the waverange is 16·7 to 52 metres. The price of this set is only 9 gns.

A de luxe model in the A.C. range is the "1537," costing 17 gns. Here you have an eight-stage all-wave superhet with variable selectivity and a cathode-ray tuning indicator. Other features are the Ferranti "Magnascopic" Dial and two-speed tuning. High quality reproduction has been given special attention in this model.

There are sets for the battery user, these including two all-wave models each employing seven-stage circuits with Q.P.P. output, A.V.C., tone control, "Magnascopic" Dial, two-speed tuning and extension speaker connections. The prices of these two models are 11 gns. and 12½ gns. respectively, the latter model having a highly finished walnut cabinet.

Those who are interested in car radio should examine the Ferranti car radio receiver, which at 12½ gns. represents very good value.

Television is also to be seen on the Ferranti Stand, and the receivers shown incorporate results of long research in the Ferranti laboratories.

FULLER ACCUMULATOR CO. (1926), LTD.

Stand No. 100.

For the coming season the range of Fuller accumulators and dry batteries has been greatly increased, particularly in the case of the latter, which is now very comprehensive with a suitable H.T. battery for every popular radio receiver.

Certain additions have been made to both the jelly and free acid unspillable accumulators, and there is a large selection of accumulators for portable and transportable sets.

GARRARD ENGINEERING AND MANUFACTURING CO., LTD.

Stand No. 37.

Gramophone motors of every description, both clockwork and electric, are included in the Garrard exhibit.

The constructor is extremely well catered for, and he can purchase either a separate motor or the complete radiogram unit comprising turntable and motor, motor-board and pick-up.

These latter units make the construction of a radiogram a very simple matter. For those constructors who are ambitious there are the Garrard automatic record changers for A.C. and universal mains. These play either eight 10-in. or eight 12-in. records automatically.

There are electric motors of the induction type, which, with their turntables, are available from 42s. 6d. upwards.

There is also a new improved RC1A automatic record-changing unit which costs £10 in the A.C. mains version, and £10 17s. 6d. in the A.C./D.C. version. These models will play batches of eight mixed 10-in. and 12-in. records.

GENERAL ELECTRIC CO., LTD.

Stands Nos. 54 and 62.

As in previous years, the G.E.C. are prominently represented.

On Stand No. 62 there is a complete range of new receivers for the 1937-38 season. The least expensive of the A.C. mains models is the A.C.38, which is a straight four-valve set giving a very good performance.

The A.C. all-wave five is an interesting model and incorporates five valves. It is a three-waveband set, covering a short-wave range of 15–60 metres.

Next we have the A.C. all-wave super-six, which is a de luxe six-valve superhet, incorporating the G.E.C. "Tuneray" indicator and giving an output of 3 watts. It is housed in a beautiful walnut cabinet.

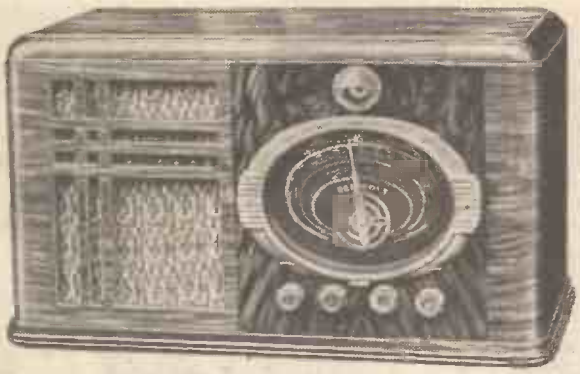
Then we come to the A.C. all-wave Quality Eight, an eight-valve superhet combining very long range with large output power and high quality of reproduction. This model has an output of 6 watts, the output stage being of the triode push-pull type.

Two other receivers to which special attention should be given are the A.C. all-wave six, a powerful set for long-distance listening, which on the short wave covers a range of 13–81 metres. It has a concert pattern speaker.

Also the Fidelity All-wave Eight, which is the most powerful receiver in the entire range.

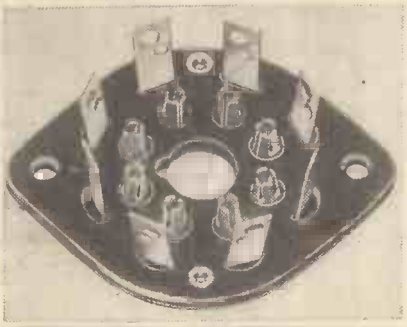
Other designs are an A.C. Transportable Five, a completely self-contained receiver; two radiograms, one of which is a four-waveband model with automatic record changing, and two universal sets for those who prefer a receiver which will work on both A.C. and D.C. mains.

The battery user is well catered for, and the four-valve three-waveband superhet will be found a truly de luxe set of its class.



The Model 700, seven-valve all-wave superhet, made by Belmont Radio. Costing 13 gns., it has cathode-ray visual tuning, and employs Octal valves.

Reslo (Sound Equipment) Ltd., make this neat Dynamic microphone.



Two of the new Benjamin valve holders. The top one is for Octal valves.

A "Solon" 125-watt soldering iron, with a round pencil-point bit, made by Henley's. This shape of bit enables maximum use of the available heat to be obtained.

Another G.E.C. exhibit is a display of Osram valves on Stand No. 54. One of the special features will be the new International range of indirectly heated mains valves. These valves are equally suitable for A.C. or D.C. receivers, and for car radio sets as well. Valves for television, and cathode-ray tubes will form another part of the equipment of this Stand.

GOODMANS INDUSTRIES, LIMITED.

Stand No. 43.

The name Goodman has long been associated with loudspeakers, and visitors to the firm's Stand will find a wealth of new models to interest them.

The Goodman elliptical cone speaker is a new design providing a very wide and level frequency response. Owing to its shape it has the advantage that it can be accommodated in a comparatively small space, the makers claiming that it gives reproduction equal to that of a 10-in. unit, although the space taken up is no more than is occupied by a 6-in. midget instrument. The flux density is as high as 10,000 lines per square centimetre and the price of this permanent magnet unit is £2 6s.

There is also a 12-in. high-fidelity auditorium loudspeaker having a frequency response free from audible resonances from 15 to 12,000 cycles and a power-handling capacity of 12 watts. The chassis is £7 13s.

A slightly smaller version is a 10-in. model costing £3 10s., but having similar frequency response characteristics to the 12-in. model. It will handle up to 6 watts output.

In the last year public address work has been rapidly coming to the forefront, and in connection with this there is a special Goodmans duplex horn P.A. speaker. By the use of a vertical partition down the centre of the horn the effect of two horns set at an angle to each other is produced, this giving a wide angle of diffusion at all frequencies. The price is £4 10s.

GRAMOPHONE CO., LTD.

Stands Nos. 66 and 76.

Two Stands that will be of interest to every radio enthusiast are those of H.M.V. One is devoted to television and on the other is a splendid display of the firm's twenty-two all-world receivers and radiograms. The prices of the radio models range from 7½ gns. for a highly efficient battery three, to 80 gns. for the magnificent all-world high-fidelity concert auto-radiogram covering five wavebands and having an output of 10 watts.

Other H.M.V. ten-valve instruments shown include the Model 650 receiver priced at 24 gns., the Model 655 armchair receiver at 36 gns., and the Model 660 auto-radiogram at 62 gns. All these models cover five wavebands and incorporate variable selectivity, and the highest quality reproduction is given by the push-pull output stage.

A special built-in aerial transformer is fitted and coupled direct to the main wavechange switch, so that the H.M.V. all-wave anti-static aerial, which is particularly suitable for use with these models, is automatically adjusted to the waveband which is being employed.

Visitors to Radiolympia will find the armchair radio receiver a wonderfully intriguing affair. It incorporates a bookcase and has a flat top covered with glass to provide a table of convenient height. There are two high-fidelity elliptical loudspeakers, and all connections to the receiver are carried in a single cable which can be conveniently disposed of beneath the carpet. It is, of course, impossible to do justice to this comprehensive range of receivers in the very limited space at our disposal, but all those who go to Olympia should make a very special point of visiting these two Stands.

On the television Stand they will find a complete range of H.M.V. television sets. There is the receiver for the television sight-and-sound

(*Please turn to page* 589.)

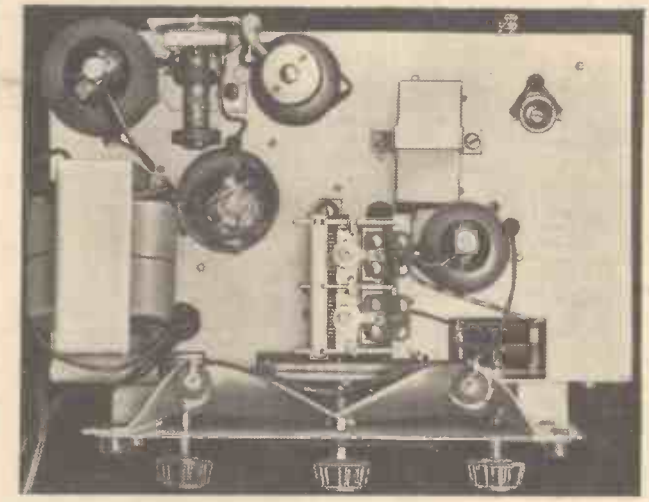
Ferranti "837" challenges comparison

Look and compare FERRANTI 1937 value, reliability and performance with the corresponding features of any other radio whatsoever. The Ferranti 837 Receiver has been designed to be reliable. Rugged, simple construction and new production methods guarantee a dependability and freedom from failure never before obtainable. By the use of new and simplified circuits the general performance has also been made better than in previous sets costing much more. Examination of the rust-proof steel chassis indicates the excellent and simple construction.

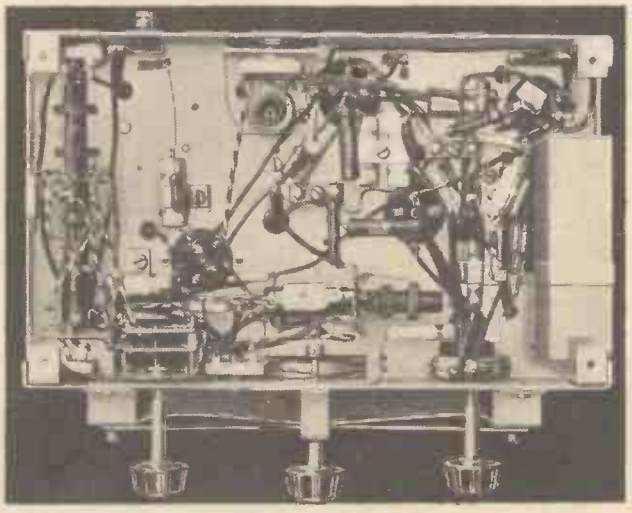
A new multiple valve circuit is used, employing iron cored coils on medium and long waves, giving 9 kilocycle selectivity, the 450 kilocycle I.F. greatly reducing second channel interference on short waves. The performance on short waves from 16·7 to 52 metres is such that whenever short wave programmes may be satisfactorily received on any set the 837 reproduces them well.

A special double concave reflector ensures uniform illumination of the multi-coloured dial, on which a 180 degree scale is provided to assist short wave logging.

The Ferranti energized moving coil speaker gives powerful, good-quality reproduction, being fed from a compensated double diode output pentode giving 2½ watts *undistorted* output, with a maximum of 3½ watts.



837 Chassis, viewed from above



837 Chassis, viewed from below

FERRANTI ALL-WAVE SUPERHET

"837" - 9 GNS.

RADIOLYMPIA—STANDS 74 AND 21 RADIO • CAR RADIO • TELEVISION

The Kolster-Brandes moving-coil extension speaker, type K.B. 626.

transmissions priced at only 60 gns.; the Model 900, giving both television and all-world radio costing 80 gns; and the Model 902, which in addition to these desirable features has also an eight-record automatic changing electrical gramophone, and is listed at 120 gns.

HARRIES THERMIONICS, LTD.

Stand No. 3.

The Hivac Harries all-stage valve was only shown as a pre-production model at last year's Show. This year the actual production valves are to be seen.

One exhibit shows the patent history of receivers and valves with particular reference to the Harries valves and receivers. A demonstration of the power handling capacities of the new Hivac Harries A.C./Q critical distance 60-watt tetrodes is on show.

This firm is introducing a new service for receiver manufacturers. Receivers are designed and a consultant service given. There is also a special service for Empire and overseas manufacturers.

HAYNES RADIO, LTD.

Stand No. 11.

Apparatus of the quality type is a speciality of this firm, the range including tuners and amplifiers in addition to complete receivers.

Among the tuners is the Haynes super tuner, which consists of a straight two H.F. arrangement with diode detection designed for quality of reproduction on both local and distant reception. A moving coil milliammeter is fitted for precise tuning indication. This tuner is also suitable for use on the ultra-short waveband of 7·2 to 7·26 metres. Its price is £18 10s.

There is also the local station quality tuner unit primarily designed for quality reproduction on local reception. The unit comprises a single H.F. stage with diode detection.

Two tuned circuits form a band-pass coupling preceding the H.F. stage, and this is followed by a third tuned circuit feeding the diode detector.

The output from the detector is coupled to an L.F. amplifying valve suitable for feeding into the first stage of an amplifier unit. The price is £7 17s. 6d.

Among the L.F. amplifiers are a 6-watt duophase unit costing £13 15s. and a 14-watt duophase amplifier priced at £18 15s.

Two permanent magnet speakers are shown, one at £7 5s. and the other at £6 15s.

CUTS OUT INTER-FERENCE

Visitors will also be interested in the Haynes "Viceiver," which is a television set costing 120 gns. A 12-inch diameter cathode-ray tube is fitted.

F. C. HEAYBERD & CO., LTD.

Stand No. 25

Specialists in mains transformers, charging units, etc., this firm is showing a comprehensive range of apparatus of interest to constructors and dealers.

Those who wish to charge their own L.T. batteries at home should see the "Tom Thumb" charging unit. Its design and construction are such that the operator need not have any previous experience in battery charging. All that is required is to insert the mains lead into the nearest light or power point, and connect up the battery to the output terminals. It incorporates a metal rectifier and will charge a 2-volt battery at ½ amp. for less than ½d. per week! The size for such a charger is remarkable. It measures 3¼ in. × 2¾ in. × 2½ in. The price of the "Tom Thumb" is 12s. 6d.

HOW TO GET THERE

The list of London Transport facilities given below—which has been specially compiled for "P.W." by the Board—will enable you to determine your best route.

BUS

Route 9. Barnes—Liverpool Street.
" 26. Wandsworth Bridge—N. Finchley.
" 27a. Hampton Court—Highgate.
" 28. Wandsworth Bridge—Golders Green.
" 33. Hounslow—King's Cross (Saturday afternoons only).
" 49. Shepherd's Bush—Crystal Palace (alight at Holland Road).
" 73. Richmond—Stoke Newington.

GREEN LINE COACH

Route A1 and A2. Ascot—Sunningdale—London—Gravesend.
" C1 and C2. Chertsey—Woking—London—Tunbridge Wells.
" D. Staines—London—Sevenoaks.
" G. Windsor—London—Caterham.
" O. Windsor—London—Leatherhead.
" P. Farnham Common—London (Whitehall, Horse Guards Avenue).

UNDERGROUND

Addison Road Station.
West Kensington or Barons Court Stations.

W. T. HENLEY'S TELEGRAPH WORKS, LTD.

Stand No. 20.

This Stand will have a particular appeal for the real radio constructor.

No one who has not handled an electric soldering iron can possibly appreciate its joys. The speed and ease with which work can be carried out is a positive revelation.

W. T. Henley's have always been well known as a firm manufacturing electric soldering irons of high efficiency and moderate cost. There are two types of particular interest, one is the domestic type, which consumes 65 watts and has two voltage ranges of 200–220 or 230–250. It is fitted with

A fine model made by a famous loud-speaker firm—the W.B. Stentorian type 38 SC.

6 feet of flexible cord with a standard lamp holder adaptor. Its price is 8s. 6d.

Then there are the industrial types of iron which comply with Home Office regulations, and are specially suitable for use in workshops or factories. These range in prices from 10s. 6d. for the 65-watt model to 37s. 6d. for the 240-watt model.

Other exhibits are resin-cored solder, a particularly handy tubular solder with a resin filling automatically providing the correct quantity of flux, and Henley slide-back wires, which are specially manufactured for internal wiring of radio sets.

No cutter is needed to strip the insulation from the ends, it being only necessary to press back the insulation between the thumb and finger.

HIGH VACUUM VALVE CO., LTD.

Stand No. 27.

This year Hivac are showing for the first time in its production form the Hivac-Harries All-Stage Valve. This is a multi-grid critical distance valve which, owing to its special construction, can be used in every stage of a set. It may be employed in transformer-fed A.C. receivers or in series heater type A.C./D.C. instruments.

Already one of the oldest firms in the industry have incorporated this valve in their latest receiver.

Other exhibits will be a range of special 2-volt short-wave receiving valves, and a complete range of battery and mains valves.

There will be models of the "Wayfarer" Major portable set and the "Wayfarer" Grand.

Additions to the Hivac valve range which are being shown for the first time at Olympia are as follows:

Q.P.240. A new improved 2-volt battery valve for economy Q.P.P. operation, giving a power output of 1·5 watts approximately.

P X 5. A new 6-watt 4-volt directly heated output triode.

A C/Q and **A C/Qa.** New super-power output tetrodes; the A C/Q being fitted with a 4-volt heater and standard 7-pin base, and the A C/Qa with a 6.3-volt heater and octal base.

A. H. HUNT, LTD.

Stand No. 155.

Messrs. A. H. Hunt supply fixed condensers to British set makers and to many countries of the world.

Various types of fixed condensers, paper, mica, wet and dry electrolytics, etc., are on view, including the new "Little Giants," which are electrolytics for service purposes.

(Continued overleaf.)

THE AVODAPTER

Belling and Lee are specialists in the design of apparatus for the elimination of "man-made" interference. On the left is the firm's "Eliminoise" anti-interference aerial. Right, one of the useful testing devices in the Automatic Coil Winder and Electrical Equipment Co.'s range—the AvoDapter.

(Continued from previous page.)

Visitors to the Stand will also see special testing gear, including the capacitor analyser and signal generator. The Hunt all-wave signal generator is a compact, self-contained battery-operated portable instrument designed specially for servicing and test purposes. It covers a frequency range of 30 megacycles to 100 kilocycles in five bands.

Each instrument is supplied with a hand-calibrated chart to 1 per cent. accuracy. The dial is also calibrated and can be used when rough measurements only are required. Two dummy aerials are supplied with each instrument, one for use on medium and long waves and one for short waves.

INVICTA RADIO, LTD.
Stand No. 56.

Two Invicta sets which are of more than surpassing interest are the models 310 and 330. The first-named, listed at £13 19s. 6d., is an A.C. mains superhet with six tuned circuits, the output valve being an eight-watt pentode. A special feature of this design is the fact that the ultra-short waveband of 6·5 to 17 metres, which of course, includes the television sound wavelength, is covered in addition to the normal short wavebaud of 16·5 to 52 metres.

On the ultra shorts purchasers will have an opportunity of listening for American police cars, and other interesting stations not normally receivable on the average all-wave set.

The Model 330 costs 17 gns. and is an A.C. superhet with 7-tuned circuit. In this receiver there are as many as six wavebands, namely 6·5 to 14 metres, 13–30 metres, 28–75 metres and 75 to 200 metres, as well as the ordinary medium and long-wave broadcast bands.

Here the owner has an enormous scope, and can include trawlers, lighthouses, lightships and a host of other new programmes in his log. A cathode-ray tuning indicator is fitted, and also a Magnavox Magna elliptical cone speaker. The H.F. stage operates an all wavebands except the ultra-shorts.

Dubilier, well-known manufacturers of condensers, are showing a comprehensive range of their components. Here is one of the firm's 8-mfd. dry electrolytics designed for 500-volt peak working.

JACKSON BROTHERS (LONDON), LTD. Stand No. 93

No. 93 is a stand that has much to attract the home constructor, carrying as it does a wonderful variety of types of tuning condenser, dials and coils.

Remembering the many gang condensers, single condensers, and so on, made by this firm, it would indeed be surprising if a suitable component could not be found in their range for almost any job. There are dials calibrated in wavelengths, and midget components as well.

The whole J.B. range of last season is being continued, and an outstanding newcomer is added to the popular Linacore tuning unit. This takes the form of an all-wave Linacore unit which should have particular appeal to constructors in the present era of all-wave receivers and reception.

As a whole, this Stand has one of the finest displays of well-made but competitive priced components in the whole Show.

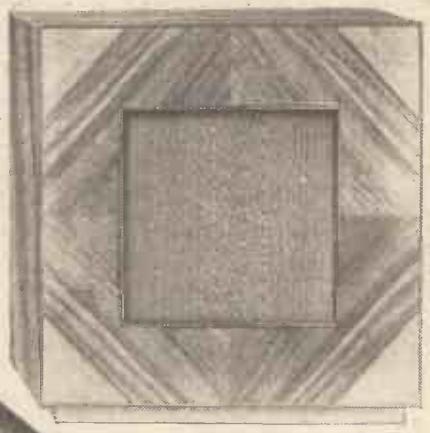
KOLSTER-BRANDES, LTD.
Stand No. 65.

As usual, the Kolster-Brandes range consists of sets to suit every pocket and every type of user. The crowning achievement of this season's Kolster-Brandes range is the K.B.660. An unusually large output of 8 watts given by this set provides an ample margin of power for ordinary domestic reception and enables it to be used for special purposes where great volume is required. Priced at 16½ gns, it has four wavebands, the short-wave sections being 12·5 to 38 metres, and 20–94 metres. There are nine tuned circuits and two intermediate frequency stages in this de luxe superhet. The four-colour "Alphadex" dial has diffused edge lighting, and refinements to which special attention should be given include a cathode-ray tuning indicator, automatic tone compensation, combined manual tone control and mains switch and optional muting. The moving-coil speaker is a 10-in. high-fidelity instrument, and the set is designed for operation on A.C. mains.

Battery users will be interested in the K.B.610, an all-wave superhet costing 11 gns., a powerful receiver capable of tuning-in stations on wavelengths from 16·5 to 50 metres on the short waves. It incorporates delayed A.V.C. and many other desirable features.

There are designs also for either D.C. or A.C. mains, so that the listener whose mains are liable to be switched over from D.C. to A.C. can purchase one of these universal models with the knowledge that it will be equally suitable for both types of mains supply.

There is also the new Kolster-Brandes permanent magnet speaker which has been specially developed to meet the requirements of those who wish to operate an additional speaker in conjunction with their existing receivers. This speaker has an 8-in. cone in conjunction with a special corrugated centring device, and is priced at 2 gns.



The Celestion "Standard 8" Cabinet Speaker, costing £3 10s., with constant impedance volume control and universal transformer.

LISSEN LIMITED.
Stand No. 73.

Lissen Ltd., one of the oldest firms in the radio trade, are showing a comprehensive range of receivers. There are some eleven models, from which most people will be able to find a model to suit their requirements.

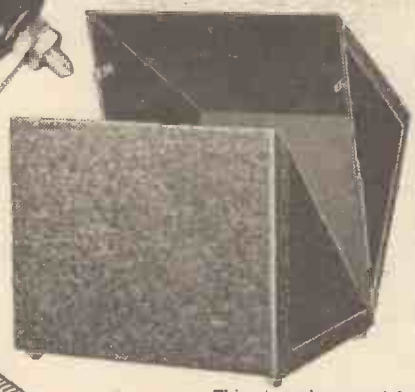
Included in the range are four low-priced models that will make a special appeal. Two of these receivers are all-mains superhets, one also being all-wave, while the other two are for battery operation, one being an all-wave superhet design.

Model 8301 costs only £6 17s. 6d. and is a four-valve, two wavehand superhet for A.C. mains. It incorporates most of the usual refinements to be found on more expensive jobs such as A.V.C., heterodyne band-pass filter, and so on. The other inexpensive mains model is No. 8317. This is a five-valve superhet for A.C. mains. The wavebands covered are 19–50 metres, 198–580 metres, and 850–1920 metres. The cost is £8 17s. 6d.

Model 8318 is a battery counterpart of the 8317 and costs the same.

The fourth inexpensive model is the 8306, a three-valve T.R.F. band-pass set for £5 12s. 6d.

Left; a neat portable, the "Wayfarer" Major, marketed by Hiva.

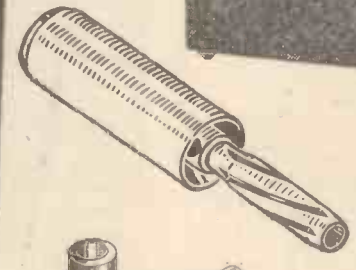


This two-piece metal cabinet made in two die-cast halves, hinged at the back, gives excellent screening. The price undrilled is 27/6 and it is listed in the Eddystone range;

LUGTON & CO.
Stand No. T15.

This firm is a distributor for Messrs. Ferranti and many other large firms, and will be showing a large representative range of sets. But particular interest attaches to their exhibits of goods specially prepared for export to Egypt.

A section of the Stand is also devoted to service equipment for dealers.



Two handy "Clix" lines. A long-reach plug and a dual crocodile clip.

One of the famous Exide "Hycap" cells. On the right is the element removed to show the construction.

THE MARCONIPHONE CO., LTD.
Stands Nos. 53 and 64.

Quality and value have always been expected—and always obtained—from the firm whose very name is based on that of the late inventor of radio. This year the value and quality offered on the Marconiphone Stands is greater than ever, and the magnificent range of receivers is such that there is a model to meet every requirement.

At one end of the scale is the complete radio instrument, giving television, all-wave radio and autogram; while at the other is an inexpensive battery table grand that is unsurpassed in value. The radio receivers are displayed on Stand No. 64.

The Marconiphone range of radio receivers for the new season consists of twenty-three models. Among these are to be found eleven radiograms, seven mains table models, three battery table models, one console and one battery transportable. And evidence of the close attention this firm has paid to all-wave design is illustrated by the fact that twenty-one of the models mentioned cover short waves. Incidentally, seven of these all-wave receivers go down low enough to tune-in the sound part of the television programmes from Alexandra Palace, while three of them go even lower—down to below five metres.

(Please turn to page 593.)

The "Popular Wireless" Stand is No. 13

(*Continued from page* 590.)

These latter are among the most interesting of the new sets to be seen at the Show. They all employ a similar chassis which incorporates a ten-valve all-wave, de luxe superhet circuit. One is a table model at 24 gns., one a console, and one an auto-radiogramophone model at 67 gns.

There are five wave-ranges, two of which cover medium and long wavelengths. The other three provide continuous coverage of short waves from 4·85 to 107 metres. Truly a wonderful achievement in a standardised product.

Another interesting new set is the Model 538 table grand eight-valver, which covers 11–100 metres on the short waves. This set has variable selectivity and a visual tuner, and costs 19 gns.

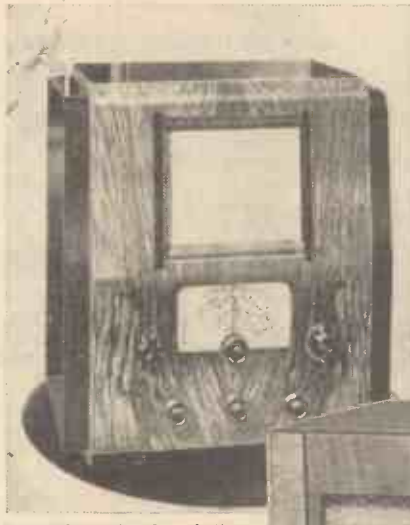
Accessories are also to be seen on the Marconiphone Stand. These include loudspeakers, a high-quality pick-up, and an all-wave static-free aerial.

THE MERCANTILE CREDIT COMPANY, LTD.
Stand No. 215.

The above firm are specialists in hire-purchase agreements for radio receivers. Their business is only with the trade, and they are prepared to finance alterations to premises and the acquisition of new equipment.

MILNES RADIO CO., LTD.
Stand No. 88.

Milnes will be best known to many readers for their H.T. supply units. These are H.T. accumulators which can be so connected that they can be charged from a low-voltage accumulator of large capacity.



The Milnes 5-valve battery all-wave superhet. The class A/B output stage gives a normal output of 1·25 watts.

However, they are showing a range of four all-wave superhet receivers on their Stand at Radiolympia. Two of these are for battery operation and two for mains.

There are four-valve battery and A.C. models covering 18·5–30 metres on the short waves. The mains model is known as the "Mercury," and there is a "Mercury-plus" for use in certain areas where reception is particularly difficult. This model incorporates an extra valve and is naturally somewhat higher in price.

A feature of the "Onyx" five-valve battery set and the "Venus" six-valve mains set is the short-wave coverage. There are six full-scale bands on the short waves, giving an overall coverage from 12·5 to 91 metres. The price of the "Onyx" £14 5s. and of the "Venus" 15 gns.

MULLARD RADIO VALVE CO., LTD.
Stands Nos. 72 and 161.

For the new season tone and quality have been taken as the most important item in the design of Mullard receivers. What is termed "acoustic design" has been employed.

In every model speaker, cabinet and receiver have been designed together, and matched, in much the same way as a violin is made, to give the finest and truest tone. Not only the design, but also the shape of the sets have been considered in the aim for perfect reproduction.

The "Magicontrol" is also a new idea used by Mullards this year. It is the term employed to describe a genuine single-knob control. The one knob is made to carry out the operations of tuning, volume, tone and selectivity control. It is claimed that this control makes it much easier for the proper combination of adjustments to be achieved by the non-technical.

This control is to be found on the M.A.S. 8 model, one of the range of six made by Mullards. It is an all-wave A.C. receiver priced at 15 gns, and includes such refinements as triple-diode circuit, visual tuning indicator, "disappearing scale," tone diffuser, and bass response switch.

PILOT RADIO, LTD.
Stand No. 84.

The full range of Pilot radio receivers, numbering fifteen instruments, will be on view on their Stand. Apart from two popular models which are being continued in the coming season, they are all new releases.

The prices range from 8½ gns. to 35 gns., and provide an excellent range from which to choose.

At the cheaper end of the scale, the B.L.550 receiver is excellent value for money. It is a five-valve superhet receiver for A.C. mains.

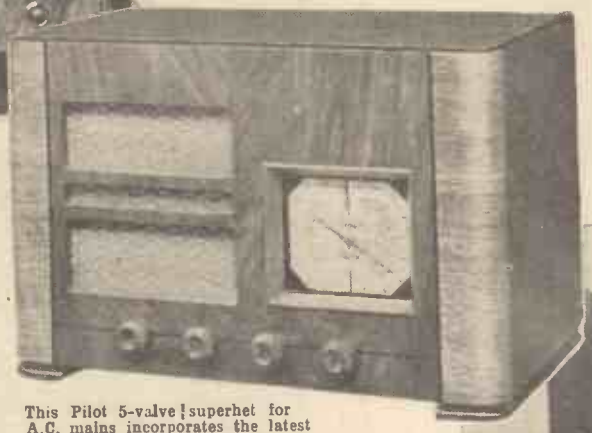
This receiver is of the "horizontal" type in which the speaker is arranged alongside the tuning dial, and employs the latest Octal-base valves.

PYE LIMITED.
Stand No. 60.

Some very interesting receivers are to be seen on the Stand of Messrs. Pye, Ltd., a firm which has for years specialised in producing receivers with good reproduction quality.

Among those deserving special mention is the Q.A.C.5. This is a 5-waveband A.C. six-valve (including rectifier) superhet.

The lowest waveband is from 5·8–12·5 metres, and thus covers the television sound transmission from Alexandra Palace. The two ordinary short-wave bands cover from 11 to 66·7 metres. The Pye features of Planetary Selector Unit and Flywheel Drive Tuning Control are incorporated and the price is 18 gns.



This Pilot 5-valve superhet for A.C. mains incorporates the latest Octal-base valves. It costs 8½ gns.

Two other particularly interesting receivers are the Q.P.P. Band and the Q.P.A.C. battery and mains receivers respectively. These instruments are all-wave portables of the consolette type.

Neither aerial nor earth is required, the sets being quite self-contained. They are priced at 15 gns. for the battery model and 16 gns. for the mains.

We cannot leave Pye, Ltd. without reference to that popular little portable the "Baby" Q, which is being continued. Priced at 8 gns., it is one of the best of real go-anywhere sets, and is available as a mains set as well as battery.

These are but a few examples of the many interesting sets to be seen on this Stand.

One of the attractive receivers in the Pye range for the new season—the Q T R F—a battery three-valve all-waver.

Five wavebands are covered by this Marconiphone ten-valve receiver. On the ultra-short-waves the wave-range is from 4·85–12 metres. The price is 32 gns.

RADIO SOCIETY OF GREAT BRITAIN
Stand No. 214.

All short-wave enthusiasts who have an inkling after transmission cannot do better than visit the R.S.G.B. Stand, where sound advice may be obtained, and where there is some interesting apparatus to be seen. In addition, the fifth and greatly enlarged edition of "A Guide to Amateur Radio" will be on sale, price 6d.

The apparatus displayed includes a crystal-controlled transmitter for use on two adjacent bands without coil changing, a remote control transmitter and receiver, a five-band four-stage amateur receiver, measuring instruments and several 56-m.c. transmitters and receivers.

RESLO (SOUND EQUIPMENT), LTD.
Stand No. 24.

On this Stand will be found high-class microphones, microphone stands, diaphragm type moving-coil speakers and aluminium horns for P.A. work.

At £6 gns. a dynamic type microphone is available. This microphone is claimed to be of special use in theatres and other places where danger of feed-back to the mike may occur, allowing greater volume to be achieved in the circumstances.

A similar type of microphone but priced at £3 15s. is also available.

(*Please turn to page* 615.)

RADIOLYMPIA
TELEVISION TOPICS

By A. S. CLARK

A FIRST quick look round the Radio Show could give one the impression that there was little bar a few complete television receivers, of special interest to the television enthusiast. But this is far from the truth, for a closer and more careful inspection reveals that there are many items of particular interest to such enthusiasts.

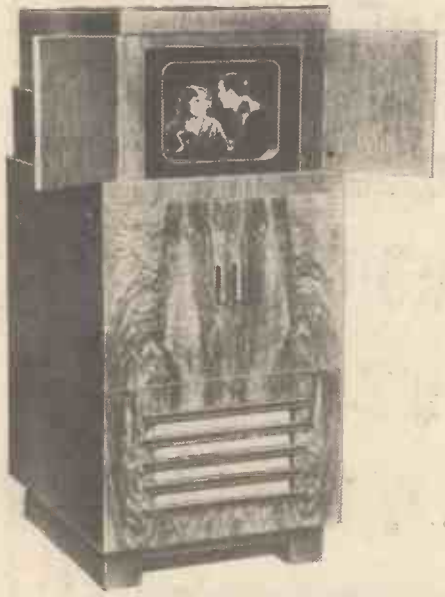
* * *

THE MARCONIPHONE "MASTERGRAM"

Among the complete instruments that are of outstanding interest is the Marconiphone "Mastergram," which is a comprehensive radio entertainer. It includes, apart from television, an all-wave superhet receiver, and an automatic radiogram apparatus. Though priced at 120 guineas, it is excellent value for money, and of considerable interest even to those who could not consider purchasing at this price.

* * *

A COSSOR RECEIVER



One of the Cossor television receivers—Model 137T—in which direct viewing of the tube is adopted.

DRY RECTIFIERS FOR TUBE H.T.

All who have studied television circuits will appreciate the care required in the arrangement of the voltages for the cathode-ray tube. Small currents at high voltages have to be rectified, and there is much to recommend dry rectifiers for the purpose.

A useful range of these are to be seen on the Westinghouse stand. Two types are shown, one for currents up to 2 milliamps, and the other for currents up to 10 milliamps. These rectifiers look very much like lead-in tubes of varying lengths, and in the 2-milliamp type voltages up to 1,400 can be obtained from a single unit. But much higher voltages, even up to 15,000, can be obtained by combinations of several of the rectifier units connected in series and used on a voltage doubling principle. Prices range up to 20s. per single unit.

* * *

A HOME CONSTRUCTOR'S TELEVISOR

Those who are desirous of making up their own television receiver and wish to have the complete design already worked out for them, or who would like to construct certain of the units to a tested design, will find their needs catered for by B.T.S., who are showing on their stand their television receiver which is built up from kits of parts supplied in unit form. The kits for each unit may be purchased separately, or the parts for the whole thing can be bought in one go.

* * *

COSSOR OSCILLOGRAPHS

Cossor television receivers have already made a place for themselves by their fine results, and those visiting the Show will approach their stand to inspect their latest models. At the same time, the television enthusiast will find the Cossor cathode-ray oscillograph equipment of considerable interest.

While not necessarily directly concerned with television, the tubes and other gear are bound to have much to interest those who have studied the operation of cathode-ray tubes from the point of view of television.

* * *

THEY HAVE TWO STANDS

Visitors who arrive at the Marconiphone stand and find there is nothing concerning television on it should not despair. This firm has two separate stands, one devoted to radio receivers and the other to television. The television exhibits will be found on Stand No. 53.

Another firm that is confining its television exhibits to one of its two stands—Nos. 66 and 76—is H.M.V. This firm is showing three models of television receivers all of which give a picture size of approximately 10 in. by 8 in.

TRANSFORMERS FOR TELEVISION

Television receivers require a number of different mains transformers, and all the types required are shown on the stand of Messrs. Haynes Radio, together with full details of their use on high voltages and in time-base circuits.

On this stand will also be seen the Haynes "Viceiver" for television reception. This includes a medium- and long-wave receiver and provision for record reproduction.

* * *

EDISWAN "WORKING MODELS"

Apart from the Ediswan television cathode-ray tubes and Mazda television valves to be seen on the stand of the Edison-Swan Electric Company's stand, there are interesting exhibits that illustrate the working of television. These include a complete television receiving equipment arranged in sections, and a demonstration of the conversion of light into electrical energy.

The latter is achieved by a light motor being rotated by the action of a beam of light on light sensitive cells. There is also a multi-coloured cathode-ray tube to show tones that can be achieved, and an intriguing tube with a long after-glow. In addition a large relief diagram shows the construction of a cathode-ray tube

(*Please turn to page* 607.)

MARCONIPHONE MASTERPIECE

The Marconiphone "Mastergram" television receiver which incorporates an auto-radiogramophone giving all-wave reception. It costs 120 guineas.

THE DIAL REVOLVES

By LESLIE W. ORTON

UGANDA'S NOVEL USE FOR RADIO SETS

The 20-metre Band :: Taking "Dynamite" for a ride :: The Latest from South America

RADIO receivers are put to a novel use in Uganda. Here you may exchange your receiver for a loudspeaker or, in other words, a wife!

In pre-broadcasting days father used to demand an ox or two for his daughters, but now the scene has changed. A particularly attractive girl may bring in a radiogram—I wonder what I could expect for my junk set?

Sons-in-law-to-be have to pay high prices in oxen (the usual but rather unwieldy currency!) to satisfy DX-er dad. Two oxen equal a three-valve set; three a radiogram. Gosh, I shouldn't like to go shopping in London with that sort of "money"—my pockets wouldn't be big enough to hold the change!

Sherlock Holmes Nonplussed!

Variety, they say, is the essence of life, but mystery runs it closely, and gee, boys, the amateur bands have supplied enough puzzles of late to make Sherlock Holmes (not forgetting "my dear Watson!") scratch their heads!

A recent puzzler was G M T F T—possibly a transatlantic aeroplane.

No one can truthfully deny that conditions have been wonderful on 20 metres, and I've found fishing the ether far more profitable than a trip to the river with "block and tackle." YV5BE and YV5AB, Venezuela; EA9AH, Spain; HK4AG, Colombia; LU5TZ and LU8AL, Argentina; CO2HY, Havana; CE1AL, Chile; CT1AJ, Portugal; E12J, Dublin; VE1HY and VE2BG, Canada, have all serenaded me in the night.

North American amateurs have lived up to their reputation for strength, and I've pulled in W1JM, W1CHG, W1BQQ, W2AZ, W2PU, W3DBB, W3MD (using 50 watts), W4IN, W4BY, W4STV, W4QL, W4CYU, W5NI, W8MSF, W8ING, W8GLY and W9BBU at record volume between midnight and 1 a.m. But uneasy lies the head that wears headphones, and so, exhausted, I have then "hit the hay"!

At 7:30 the other morning conditions were amazing, and I tuned-in three Australians (unfortunately unidentified), W1ADM, W3AMH, W4CRA and W6WC, San Francisco. Once again the stumble-block W7 stopped me from receiving from all districts.

By the way, about 4 p.m. the other day I picked up VU2AC, an Indian amateur—reception was pucca!

Heat and Radio Waves

Phew, lads, isn't it hot! As I write I am sitting with my collar torn open at the neck, my sleeves rolled up, and the sweat of honest toil running down my forehead in torrents. The other day the heat got me down and so I packed up my set "Dynamite" and took it for a ride, putting it on the spot in a quiet place miles from the madding crowd. Here, with an aerial slung from a near-by tree I enjoyed myself. Sandwich in one hand, dial in the other, I logged W8XK, Pittsburg, on 13·93 metres; W3XAL, Bound Brook, on 16·87 metres; W2XAD, a mysterious Spaniard on 24 metres, and numerous European stations at excellent volume.

I had intended waiting until dark to see what would come in then, but circumstances beyond my control made me decide otherwise. Seeing several couples hanging around I packed up and beat a hasty retreat,

Cuban amateur and broadcast stations worth searching for.

fearing that oscillations would soon be replaced by osculations—I had chosen a too-cosy nook!

Last-minute News

Here, ye merry men, is the latest "dope" on short waves from America.

YNPR, Managua, Nicaragua, and HP5A, Panamá, are at present testing. The former on 34 metres, the latter 25·6 metres. HP5A announces in English.

From Cuba we learn that COCW is operating on 47·32 metres, and that CO9BZ and CO9BC, both at Havana, are now operating upon 33·5 (approximately) and 32·09 metres.

You have all heard of the Effie Morrissey (W10XDA), at present in the Arctic, but did you know that, owing to the old frequency being poor for transmission up there, he now operates on 17·33 metres?

YV5RJ (47·8 metres) and YV5RP (48 metres) are, according to a report from Venezuela, the latest Caracas stations to operate regularly—they relay YV5RI and YV5RP respectively.

Two Mexican stations, XEWV, Guadalajara and XETM, have been testing rather a lot of late, and there is a good chance of their being heard regularly in this country. XEWV operates on 26·55 metres, and XETM on 26 metres.

And, to end this "flashy" paragraph, I've an excellent bit of news. I picked up a military band programme from W6XKG, Los Angeles, the other day. I'm predicting big things on that band again ere long!

Novel Identification Signal

At 11.25 the other night I was idly swinging the dials of "Dynamite" when I was galvanised into life as effectively as if I had sat on a tin-tack! You see, I had picked up FZF6, Fort de France, Martinique, and I sat glued to the set thoroughly enjoying myself despite the fact that I barely understood a word spoken!

FZF6 operates on 24 metres, and in true French style a low hum is modulated upon the carrier—an ideal identification signal, but I, personally, find it a blessed nuisance when it comes to listening to the programme!

Short-Wave Station Identification

By F. A. Beane

STATIONS OF THE MYSTIC EAST

FROM Khabarovsk, in a region of turmoil, we travel southwards to Hong Kong where a short-wave service has been long established. Originally their station operated exclusively on 34·29 m., with 250 watts power and the call ZBW, but now we find them operating regularly on the more orthodox broadcasting wavelength of 31·49 m., under the call ZBW3, or occasionally as ZBW4 on 19·75 m.

Broadcasts Modern Dance Music

Listen for ZBW3 between 10.00 and 16.00 when interference from the Zeesen stations has abated, but do not be disappointed if you do not log it at the first attempt. The call is usually given as "This is station ZBW at Hong Kong," and modern dance music occupies a prominent part in its transmissions.

Continuing in a south-westerly direction, we make for the neighbouring Portuguese possession of Macao, where is to be found CQN, operating on 31·35 m. every Monday and Friday from 13.00–14.30 B.S.T. Unfortunately there is little likelihood of this station being received in Great Britain, but should any optimist care to search for it, I append the following details: Announcements made in Portuguese, Chinese, English, and occasionally other languages; no interval signals are employed, the music consisting principally of Portuguese and Chinese. The Portuguese National Anthem concludes all programmes.

A "star" of the East is HS8PJ of Bangkok, capital of Siam. Until recently this station was heard consistently each Monday on 15·77 m. between 13.00 and 16.00, but now it is seldom heard, and the schedules, announced by QSL card, are very conflicting. Sometimes it radiates on 32·09 m. on Thursday afternoons, but again little is heard of it on this channel. However, should a programme of Eastern-flavoured music, interspersed with popular dance recordings, be intercepted on either of these wavelengths, one may be almost certain that their origin is Siam. Announcements are given frequently in Siamese, French and English; the time announced is six hours ahead of B.S.T., and an English news bulletin may be heard at 15.00 B.S.T.

An Apology!

Before proceeding with our quest of investigation—in next week's "P.W." I must apologise most abjectly to the owners of Canadian VE9CS for describing it as a *flea-powdered* station instead of a "flea-powered" one. Turn to the August 7th issue of "P.W." and see for yourselves.

IN spite of all that is said now and again, the B.B.C. programmes remain the backbone of etheric entertainment. Back-biting this backbone has never displaced a single vertebra: for the bulk of their entertainment the British people have clung to Nat. and Reg. and only erred and strayed to sponsored gramophone records and advertising crudities when the B.B.C. have been boringly sabbatical or aloof with strong, silent stations.

Television has now extended the spectrum of the B.B.C., and the colossal drop in wavelength to 7 metres has brought with it still another programme—giving those with suitable receivers a choice of three British English-speaking programmes all radiated by the world's model broadcasting authority.

All B.B.C. programmes sent out for listeners in this country, including the television sound transmissions from Alexandra Palace, can be brought in on this, the latest receiver by Britain's leading designer. The "All-B.B.C." Set will also excellently reproduce a score or so of foreign stations.

Following on his principle of absolute simplicity of construction, Mr. Scott-Taggart has again used his famous Uni-plane System, which has proved so successful in previous designs.

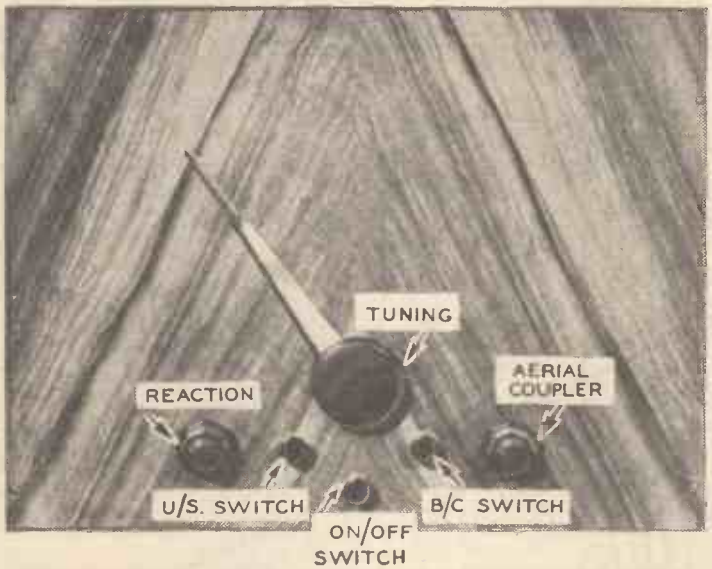
Interesting Programmes

A time is coming when *all* receivers will automatically be designed to pick up the television sound programmes as well as the medium and long. Much interesting matter is now coming over on 7 metres, and though one obviously misses a good deal through hearing without seeing, yet most of the material broadcast suffers no more from lack of visual presentation than ordinary broadcast programmes on the long and medium waves. In other words, the talking, singing, and musical accompaniment to television are every bit as entertaining, as a rule, as what we ordinarily get on what we have hitherto called the broadcast wavebands. You may, of course, get a display of conjuring or a mannequin parade which may or may not make you thirst for the silver screen, but ordinarily you will greatly enjoy the sound programmes.

Incidentally, it has two special merits. As interference problems have not yet arisen, it is possible to extend the sidebands of the sound transmission and so produce a closer approximation to perfect quality; also, as specially selective circuital arrangements are quite unnecessary there is a greater opportunity for quality reproduction in the receiver.

The second merit of the ultra-short waveband is partly psychological and partly a result of technique. In the first place, our attitude is rather different. When listening to ordinary broadcasting we feel more detached, whereas in the case of television we know that there is a vastly closer link between studio and viewer—a link of sound and sight. If, as Rochefoucauld said, speech was given us to disguise our thoughts, then the telephone and radio-telephone were given us to conceal our faces. It is still possible that we may regret the advent of television and its brutal portrayal of the human race—not by a long chalk the most beautiful section of the animal kingdom. But the fact remains that even the television sound programmes, without the aid of the video side, are fuller of life and more stereoscopic in their effect on us.

THE CONTROLS ARE NEATLY GROUPED



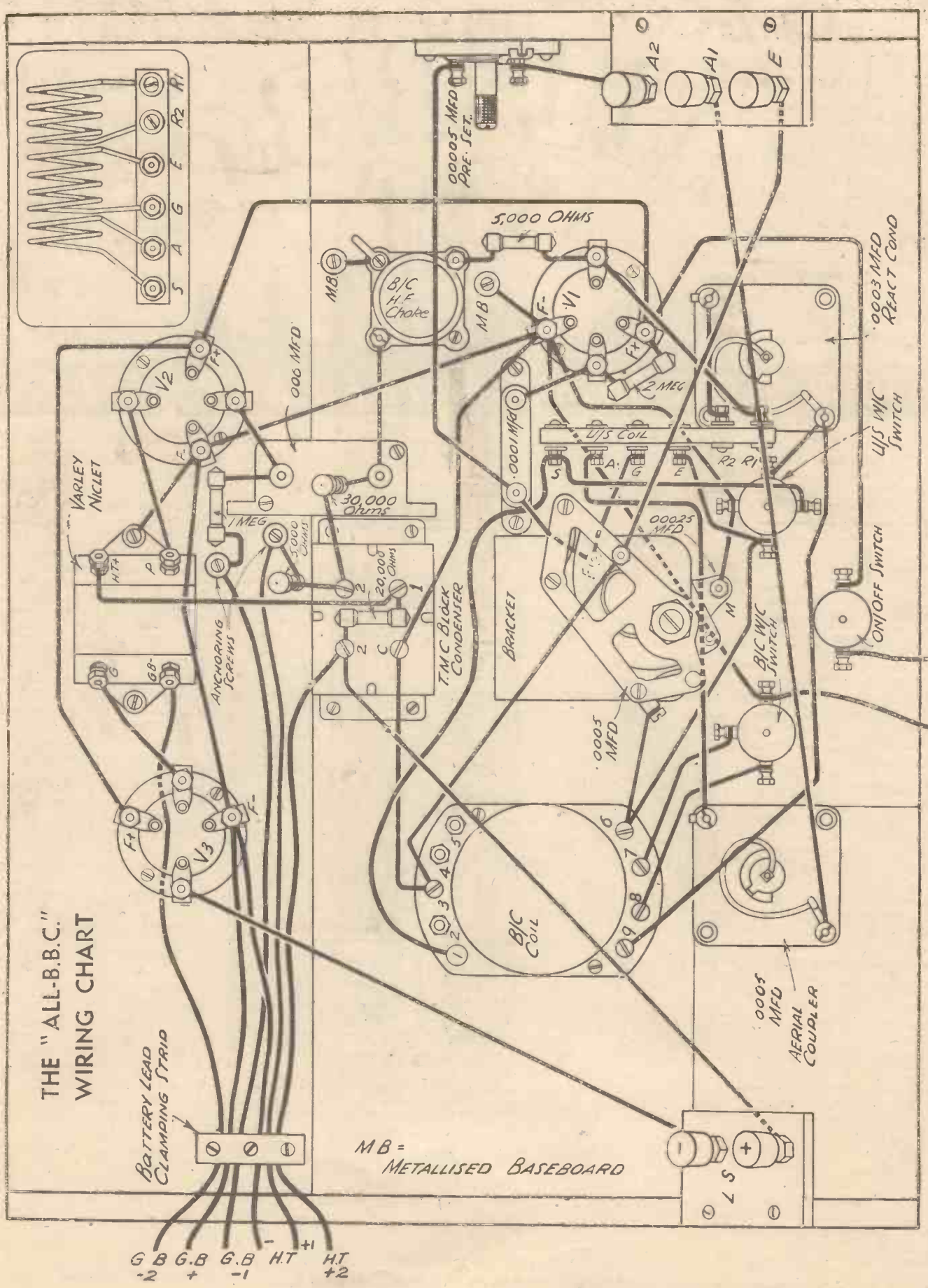
Although there are six controls on the panel, three of these are merely switches. Of the remaining three it will mostly be found that only two—the tuning and reaction—are normally used when selecting stations.

Seen and Heard

Perhaps this is due to the announcers and artists knowing that they are, unlike children, to be both seen and heard. This puts them on their mettle and probably adds to their self-confidence. How often have we heard of the stone-wall effect of an inhuman microphone on the sensitive organisms that broadcasters believe themselves to be!

Certainly we do not get a Hamlet reading his lines in his shirt-sleeves. Television requires that he should indeed be the Prince of Denmark and not a literary gent from Denmark Hill. Do we ever try to picture what goes on behind—or, rather, in front of—the microphone, which is the first link in the ordinary broadcasting chain? Not if we can help it. Imagine an alleged impromptu al fresco debate with four or five gentlemen all reading from their little manuscripts and making bright, carefully typed, strictly rehearsed interruptions. We shall be spared that in our television programmes.

(*Please turn to page* 600.)


THE "ALL-B.B.C." WIRING CHART
MB = METALLISED BASEBOARD
A2
A1
E
S A G E R2 R1
.00005 MFD PRE-SET.
5,000 OHMS
MB
B/C H.F. Choke
V1
V2
V3
F+
F-
.006 MFD
.0003 MFD REACT COND
.2 MEG
.0001 Mfd
U/S COIL
U/S W/C SWITCH
VARLEY NICLET
30,000 Ohms
1 MEG
5000 OHMS
20,000 OHMS
ANCHORING SCREWS
T.M.C. Block CONDENSER
BRACKET
.00025 MFD
ON/OFF SWITCH
B/C W/C SWITCH
L.T.+
L.T.-
.0005 MFD
.0005 MFD AERIAL COUPLER
B/C COIL
BATTERY LEAD CLAMPING STRIP
G.B -2
G.B +
G.B -1
H.T -
H.T +1
H.T +2
S 7

PETO-SCOTT—19th SEASON!

EST. 1919

Heralded with Another Wonderful Range of 1938 Quality Radio

EVERYTHING AT OLYMPIA—CASH—C.O.D. or H.P.

We feature here a few of the items in the new season's range of Peto-Scott productions. Post Coupon for complete Catalcgue. We also give IMMEDIATE DELIVERY of all the 1938 Radio shown at Olympia—Receivers or Components—for Cash, C.O.D. or H.P. Quotations for any item on request.

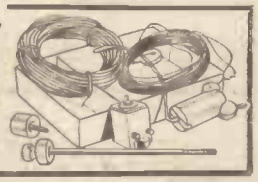
Peto-Scott *Noise-Suppressing* ALL-WAVE AERIAL

Obtain utmost entertainment by using this aerial outfit, the first really economical solution for overcoming the noise of man-made static. Increases signal strength on all bands. Improves selectivity. Waterproof and Weatherproof. Two transformers. Aerial Outfit comprises Duplex lacquered aerials, insulators, waterproof "lead-in" wire, Aerial and Set transformers, assembled and ready with instructions and drawings illustrating the method of erection.

2/6 DOWN

17/6

Cash or C.O.D. or 8 monthly payments of 2/6.

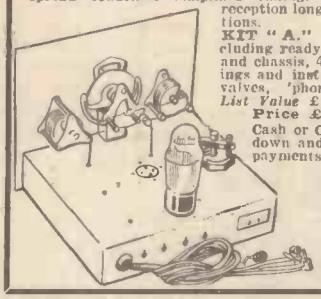


Peto-Scott "DOUBLE 1" *Short Wave* KIT

● 9-80 metres. ● A new 1-valve S.W. Battery circuit giving performance of 2 valves. ● Band-spread condenser simplifies tuning. ● Wonderful reception long-distance stations.

KIT "A." All parts including ready-drilled panel and chassis, 4 Coils, drawings and instructions, less valves, 'phones, cabinet. *List Value* £2/19/5. **Our Price £2/4/0.**

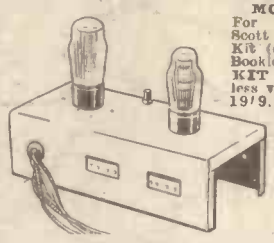
Cash or C.O.D., or 4/- down and 11 monthly payments of 4/-.



4/- DOWN

Peto-Scott 2-valve L.F. AMPLIFIER Kits

Audio amplifier kits for boosting up signal strength to enable speaker to be used in place of headphones. Quality reproduction with even amplification ensured by proved methods of resistance capacity and transformer coupling.



MODEL No. 2. For use with Peto-Scott 1-Valve All-Wave Kit (described in Free Booklet offered below). **KIT "A"** all parts, less valves. *List Value* 19/9. **Our Price 15/-.** Cash or C.O.D.

MODEL No. 1. For use as gramophone amplifier or with almost any 1-valve or crystal receiver. **KIT "A"** all parts, less valves. *List value* 17/6. **Our Price 13/6.** Cash or C.O.D.

Peto-Scott H.T. ELIMINATORS

2/6 DOWN

H.T. for Id. a week! Efficient! Economical! Reliable!

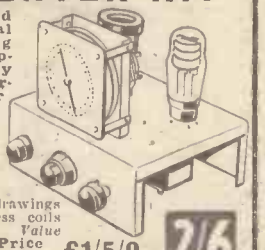
MODEL A.C.12. For receivers operating on outputs up to 12 m/a. For A.C. Mains 200/250v. 40/100 cycles. Output 120 volts at 12 m/a. 4 tappings: 60, 75, 90 and 120 volts. Cash or C.O.D. £1/10/0 or 2/6 down and 10 monthly payments of 3/3.

MODEL M.A.10/30 (illustrated) with TRICKLE CHABGER for recharging 2v. L.T. Accumulator at .5 amp. A.C. Mains 200–250 v. 50/100 cycles. Output 20 m/a at 120v. Cash or C.O.D. £2/19/6, or 5/- down and 11 monthly payments of 5/6.

Peto-Scott S.W. ADAPTOR-CONVERTER KIT

● Simplest and most economical way of adding short-wave reception to almost any type of set. ● Operates as adaptor or superhet converter. ● Simple to build and operate.

KIT "A" All parts, including ready-drilled and enamelled chassis, drawings and instructions, less coils and valve. *List Value* £1/14/4. **Our Price £1/5/0** Cash or C.O.D. or 2/6 down and 10 monthly payments of 2/6. Set of Coils, 9–80 metres, 8/- extra.

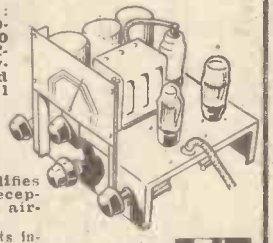


2/6 DOWN

Peto-Scott ALL-WAVE S.G.3 Kit

● 4 Wavebands: 14–31, 28-62, 200-550, 900–2100 metres. ● Self-contained ready-assembled switched coil unit simplifies construction. ● New Peto-Scott Duplex Epicyclic slow-motion tuning system simplifies world-wide reception. ● Screened aircored coils.

KIT "A" All parts including ready-drilled chassis, drawings and instructions, less valves, cabinet, speaker, batteries. *List Value* £4/9/3. **Our Price £3/3/0** or 5/- down and 11 monthly payments of 5/9.



5/- DOWN

PILOT AUTHOR KITS

Mr. John Scott-Taggart's

"ALL-B.B.C." SET

KIT "A" *Cash or C.O.D. Carriage Paid* **£3/2/6**

Comprising complete Kit of parts exact to Mr. John Scott-Taggart's First Specification, including Peto-Scott polished wood panel, side pieces, terminal strips, and materials for Ultra-Short-Wave Coil, less valves and speaker.

5/9 DOWN

Or 5/9 down and 11 monthly payments of 5/9.

KIT "B." As for Kit "A," but with set of specified valves. Cash or C.O.D. Carr. Pd. £3/19/6, or 12 monthly payments of 7/3.

Recommended Peto-Scott P.M. Moving-Coil Speaker, Model 101 ... ... 19/6

Peto-Scott Lightweight Adjustable Headphones, 7/6

—POPULAR AS EVER!—

S.T.800 BATTERY VERSION

KIT "A" *YOURS FOR* **7/- DOWN**

Complete Kit of Components exactly as FIRST specified and used by Mr. J. Scott-Taggart, with Konectakit (Gratis with Complete Kit) but less wander plugs, accumulator connectors, valves, Extractor Kit, Cabinet and Speaker. Cash or C.O.D. Carr. Pd. £3/10/0, or 7/- down and 11 monthly payments of 6/4.

KIT "B" As Kit "A," but with 4 first-specified valves, less cabinet and speaker, etc., £4/16/6, or 9/- down and 11 monthly payments of 8/10.

Peto-Scott HIGH FIDELITY MOVING-COIL SPEAKERS (Permanent Magnet)

Setting an entirely new standard of high-fidelity loudspeaker reproduction. 3 new speakers bringing reproduction of a quality that must be heard to be believed. Each is supplied with the appropriate matched transformer for securing the maximum efficiency.

5/- DOWN

Model GPM/396 (illustrated). 10" reinforced diaphragm handling 6/8 watts peak audio load, ensuring smooth frequency response, nickel aluminium alloy magnet, high flux density of 10,000 lines. Speech coil 15 ohms. Complete with multi-ratio transformer. **Cash or C.O.D. £2/14/6**

Or 5/- down and 11 monthly payments of 4/9.

FREE! TWO INVALUABLE ILLUSTRATED BOOKS FREE!

Peto-Scott RADIO and TELEVISION CATALOGUE

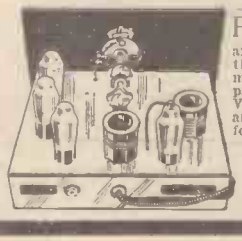
ONCE AGAIN, as for nineteen years past, Peto-Scott heralds another new radio season with a comprehensive range of apparatus covering the needs of every type of listener. No matter whether you require a small condenser or a 9-Valve All-Wave Superhet Receiver, Peto-Scott will supply you by post, either for Cash, C.O.D., or on easy terms, at astonishingly low prices, made possible only by this direct-to-customer method of trading.

Every item in this new range of quality apparatus, including the apparatus featured above, is described and illustrated in a 12-page, two-colour art catalogue sent free to all who post the Coupon. The following are but a few of the items dealt with in this useful little book, "a complete radio shop in itself," enabling you to choose your radio purchases from the comfort of your armchair:

A Brief Outline of the Contents:

All-Wave Kits
All-Wave Chassis
All-Wave Receivers
All-Wave Aerial
Amplifiers
Broadcast Kits
Components
Chargers
Deaf Aids
Eliminators
Extension Speaker System
Gramophone Motors
Gramophone Pick-ups.
Microphone
Portable Receiver
Radiogram-Converter Unit
Short-Wave Pre-Selector
Television Kits
Speakers
Trickle-Chargers
Valves

"The SHORT-WAVE EXPERIMENTER"



PETO-SCOTT'S famous Short-Wave Experts have worked together and produced the PILOT "*Short-Wave Experimenter*," a booklet of 24 pages, illustrating and describing a range of nine wonderful new PILOT Short-Wave Kits. Each of these designs incorporates a *standard chassis and panel*. Commencing with a modest, but super-efficient 1-valve Adapter-Converter, you may, whenever you please, build this up, *on the same chassis*, into varying forms of 1, 2, 3 and 4-Valve Short-Wave Receivers, complete in steel cabinet. No short-wave fan can afford to miss the fascinating hours this booklet will bring him. Post the coupon for your free copy of this 6d. booklet.

PILOT 4-VALVE SHORT-WAVE RECEIVER, MODEL 464 (illustrated). One of the super-efficient world-wide receivers described in the "Short-Wave Experimenter." Employing 4 and 6-pin coils in a wonderful new circuit design, covering 8·5 to 97 metres. **KIT "A."** *List Price* £3/12/6. **Our Price £2/12/6.** Or 4/6 down and 11 monthly payments of 4/10.

POST THIS COUPON NOW FOR TWO FREE BOOKS!

PETO-SCOTT CO., LTD., 77 (P.W.45), City Road, London, E.C.1, or 62 (P.W.45), High Holborn, London, W.C.1.

Please send me ..... for which I enclose £ : : Cash/H.P. Deposit. Also please send me gratis the Peto-Scott Radio and Television Catalogue, and the Pilot "Short-Wave Experimenter." I enclose 2d. (stamps) to cover postage.

NAME .....

ADDRESS .....

.....

All P.O.'s must be crossed and currency registered.

SEE THIS SET ON STAND No. 13 AT OLYMPIA

(*Continued from page* 597.)

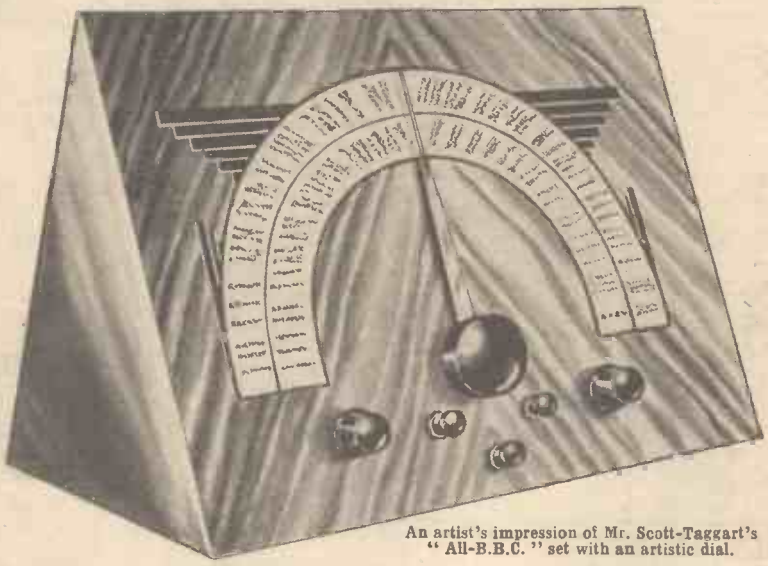
Speeches will come from the heart—or off by heart—certainly not off a quarto sheet.

If the B.B.C. chiefs couple vision with television, they will certainly put exclusive and attractive features on the 7-metre band to encourage the purchase of television sets. This will put the owner of a 7-metre or All-B.B.C. set in a favourable position. He can certainly expect longer programme hours and better programmes as television itself advances.

Furthermore it is quite probable that the ordinary broadcast programmes will ultimately come down to somewhere around 7 metres. Certainly I think we can expect experimental B.B.C. transmissions quite apart from the television programmes.

A Good Family Set

All this—as you may have shrewdly guessed!—is to interest you in a receiver whose primary object is to give you all that the B.B.C. radiate. Such a receiver is my "All-B.B.C." Set. It gives reception on Long, Medium and Ultra-Short wavebands. The B.B.C. also radiate an Empire service, but in this country reception is usually poor and erratic due to reflection phenomena in the upper atmosphere, so in using the description All-B.B.C. I refer to what can be well and regularly received on the loudspeaker.



An artist's impression of Mr. Scott-Taggart's "All-B.B.C." set with an artistic dial.

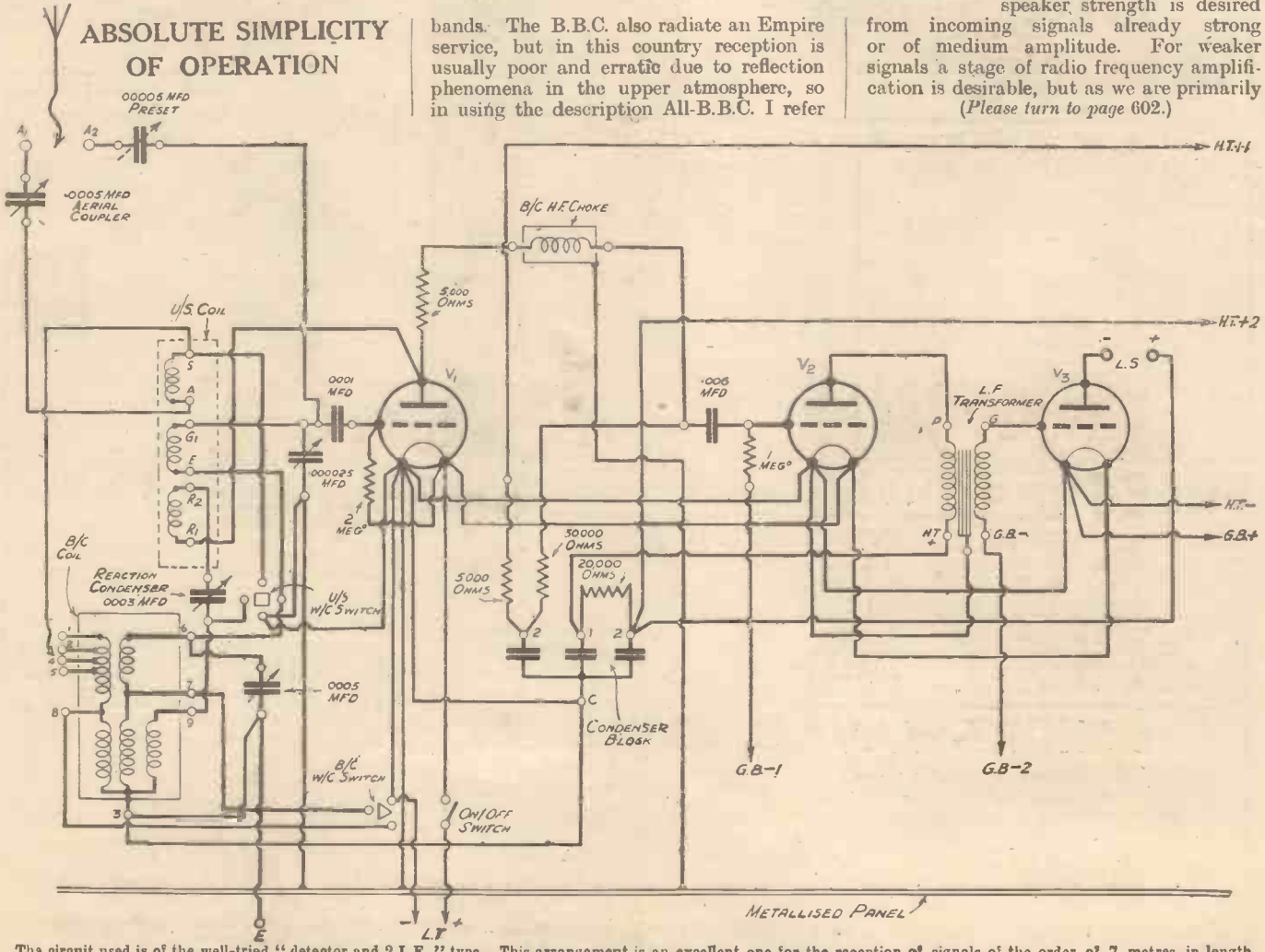
Although primarily for the reception of the B.B.C. programmes, a score of foreign stations may be excellently reproduced, although the weaker stations will certainly be received less effectively than on a set specially designed—as most of mine are—for foreign reception. There are many listeners who are satisfied with fewer stations, provided they come in strongly, and to such the "All-B.B.C." receiver will appeal. Moreover there are many constructors who like a family set not subject to experimentation, and for this purpose my present set, by virtue of its great simplicity of operation, admirably fills the bill.

Straightforward Circuit

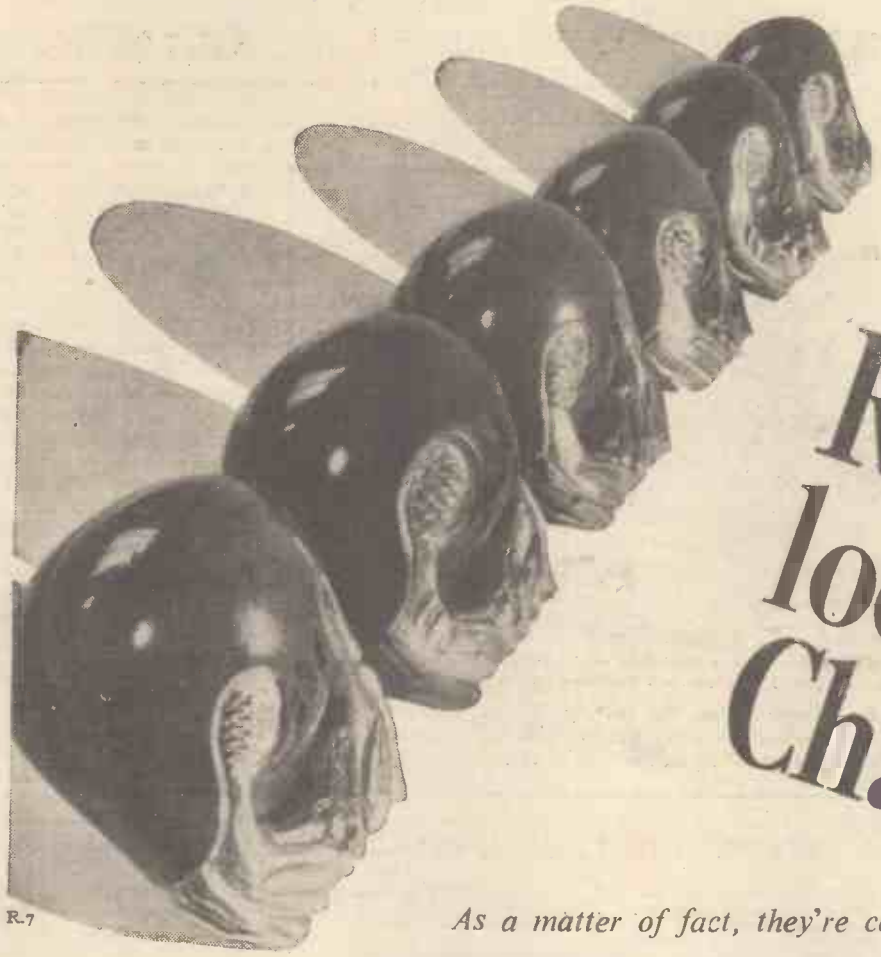
The circuit used is of the well-tried "detector and 2 L.F." type; a most useful combination where full loudspeaker strength is desired from incoming signals already strong or of medium amplitude. For weaker signals a stage of radio frequency amplification is desirable, but as we are primarily

(*Please turn to page* 602.)

ABSOLUTE SIMPLICITY OF OPERATION



The circuit used is of the well-tried "detector and 2 L.F." type. This arrangement is an excellent one for the reception of signals of the order of 7 metres in length and single circuit tuning naturally makes the operation on all three wavebands so simple that no experience is necessary for effective tuning.



Rumba looking Chaps

R-7

As a matter of fact, they're called "temple blocks." They make the rattle in West Indian music. If they sound as weird on your radio as they look in this picture, it's high time you changed to an Exide.

Exide
BATTERIES
FOR RADIO

'Still keep going when the rest have stopped'

EXIDE HYCAP' BATTERY (*High Capacity L.T. Battery*)
For modern multi-valve sets—lasts longer on one charge. For small sets use the Exide 'D' Type. Both have the Exide Charge Indicator. Your dealer will tell you which to use. For High Tension use Drydex.

From reputable dealers and Exide Service Stations. Exide Service Stations give service on every *make of battery.*
Exide Batteries, Exide Works, Clifton Junction, near Manchester. Also at London, Manchester, Birmingham, Bristol, Glasgow, Dublin and Belfast.

--(Continued from page 600.)

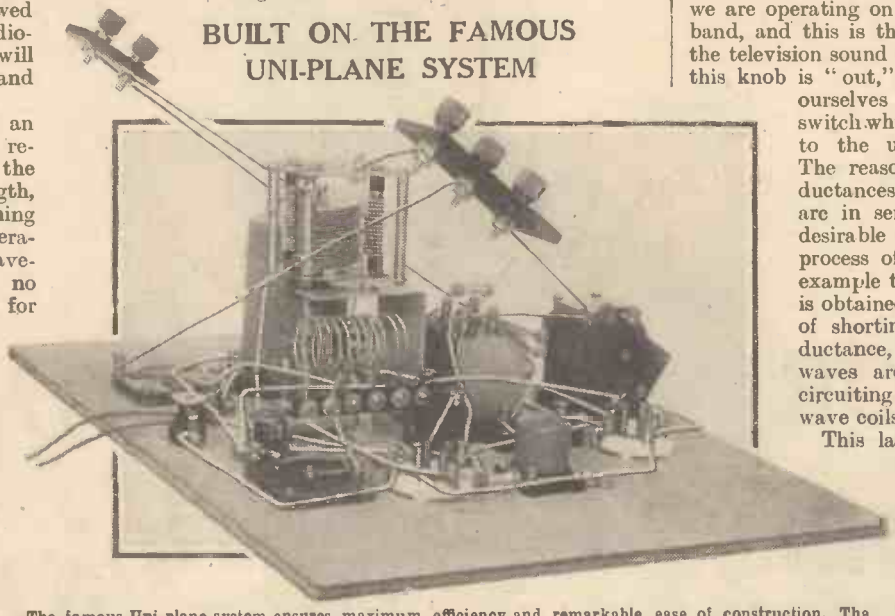
interested in B.B.C. signals on the three bands, a detector followed by two stages of audio-frequency amplification will give us what we want and more besides.

The arrangement is an excellent one for the reception of signals of the order of 7 metres in length, and single-circuit tuning naturally makes the operation on all three wavebands so simple that no experience is necessary for effective tuning even on the 7-metre band. The reason for the simplicity of tuning on the ultra-short waves is that the variable tuning condenser has a maximum capacity of only ·000025 mfd.; very fine tuning is thus made readily possible even with a fairly wide movement of the tuning knob. The condenser for tuning to the medium and long waves has a maximum capacity of ·0005 mfd. There are, however, not two controls for tuning, as I have coupled the two condensers from a mechanical point of view so that the same main tuning knob is used no matter what waveband is employed, the various switching knobs resulting in a change of coils and condensers.

I have not used an all-in unit with switches as I have felt rather shy of such a combination when a 7-metre band is included. The slightest bad contact on the ultra-short waveband can ruin the operation of such a receiver. As usual, however, I have made up and had made up by representative firms in the radio component industry various models of three-band coil units, but finally decided to use an effective dual-band coil of a standard Colvern pattern and an ultra-short-wave coil of my own design. Nothing is forfeited to the compact arrangement of a unit, while great reliability is assured in the switching.

Push-pull switches are used throughout in this receiver. I have a considerable weakness for the strength of these switches. They are readily accessible, mechanically sound and electrically reliable. Their contacts may be cleaned by simply giving the knobs a turn or two, and their operation may be inspected, while one never feels quite certain what tricks a switch may be up to when safe from supervision within the bowels of a tin-can.

Looking from the front of the set one sees three push-pull switches. The middle one which is on a lower level than the others is the battery on-off switch. When the knob is pulled out the set is "on" and vice versa. The right-hand switch is for giving us either medium or long waves: when the knob is out the set operates on the medium waves, whereas when the knob is pushed in the receiver is operating on the long waves.



The famous Uni-plane system ensures maximum efficiency and remarkable ease of construction. The "All-B.B.C." set is adequately decoupled and is suitable for use with either battery H.T. or mains units.

These remarks only apply if the left-hand switch knob is kept pushed in. When the left-hand switch knob is pulled out, we are operating on the ultra-short waveband, and this is the position for hearing the television sound programme. Provided this knob is "out," we need not concern ourselves with the right-hand switch which makes no difference to the ultra-short waveband. The reason is that all the inductances for the three bands are in series and that the undesirable ones are cut out by a process of short-circuiting. For example the medium waveband is obtained by the usual method of shorting the long-wave inductance, while the ultra-short waves are obtained by short-circuiting the medium and long-wave coils.

This latter process is accomplished by the left-hand switch, and so it makes no difference whether or not the long-wave coil is shorted by the right-hand switch, since both long and medium coils are together shorted by the left-hand switch. This left-hand switch is rather interesting because it fulfils other functions. It is a four-point switch, all four points are brought into mutual contact when the switch knob is pulled out, whereas if the knob is pushed in the points are not connected. The switching is thus very simple, although three separate changes are effected in the circuit. The first function is to short the medium and long-wave inductances as explained. The second is to short the common reaction coil which serves both medium and long wavebands but would be a nuisance if left in series with the special ultra-short-wave reaction coil.

The third function is to short-circuit the medium and long-wave primaries of the input R.F. transformers which would otherwise be in series with the ultra-short-wave primary and which would thus weaken signals of ultra-short wavelength. This fact is theoretically obvious and demonstrable in practice.

The tuning circuits are virtually the same for all three wavebands. An input transformer with tuned secondary winding is used in each case, a reaction coil being coupled to the secondary, i.e. the main, inductance. On the medium and long waves the ultra-short waves are left in circuit but do no harm. One cannot, however, reverse the process and leave any larger inductances in circuit when tuning-in on the ultra-short band. The particular coil unit used for the medium and long waves is a standard Colvern type DU which is provided

(Please turn to cover iii.)

FOLLOW THIS LIST CAREFULLY

Component	Make Used by Designer
1 ·0005-mfd. tuning condenser	J.B. as in S.T.800
1 Knob and pointer	J.B. as in S.T.700
1 ·000025-mfd. tuning condenser (with flanged fixing nut)	B.T.S. type S.T.C.425
1 "U" bracket with insulating bushes for mounting above condensers	B.T.S.
1 Flexible coupler for ganging above condensers	B.T.S.
1 Screened broadcast coil	Colvern type D.U.
1 ·0005-mfd. solid dielectric aerial coupler condenser	Graham Farish log-mid-line, (as in S.T.800)
1 ·0003-mfd. solid dielectric reaction condenser	Graham Farish log-mid-line, (as in S.T.800)
1 ·006-mfd. mica fixed condenser	Lissen
1 ·0001-mfd. fixed condenser	T.C.C. type 34.
1 ·00005-mfd. mica pre-set condenser	J.B.
1 H.F. choke	Wearite type H.F.J.
1 L.F. transformer	Varley "Niclet" 3·5/1
1 2-meg. resistor	Dubilier half-watt
1 1-meg resistor	Dubilier half-watt
1 30,000-ohm resistor	Dubilier half-watt
1 20,000-ohm resistor	Dubilier half-watt
2 5,000-ohm resistors	Dubilier half-watt
3 4-pin S.W. baseboard valve holders	B.T.S. type 4CH.
1 2-pt. push-pull on-off switch	Wearite type G.S.P.
1 3-pt. push-pull W/C switch	Wearite type G.W.C.
1 4-pt. push-pull W/C switch	Wearite type G.F.P.
1 block condenser 2 × 2 × 1 mfd.	T.M.C. type B.1007
5 Terminals marked A.1, A.2, E., L.S. —, L.S. +	Belling & Lee type R.
6 Wander plugs marked Grid +, Grid — 1, Grid — 2, H.T. —, H.T. + 1, H.T. + 2	Belling & Lee midget type
2 Accumulator connectors marked L.T. —, L.T. +	Belling & Lee
1 Polished wood panel, 16 in. × 12 in. × ¼ in. (reverse partly Metaplex—see diagram)	Peto-Scott
2 Side pieces (see diagram)	Peto-Scott
1 Ebonite terminal strip, 3 in. × 1½ in. × 3-16 in.	Peto-Scott
1 Ebonite terminal strip, 2 in. × 1½ in. × 3-16 in.	Peto-Scott
1 Fibre battery lead clamping strip	Peto-Scott
12 feet 18-gauge T.C wire	Peto-Scott
5 lengths of 1½-mm. insulating sleeving	Peto-Scott
4 feet 16-gauge T.C. wire for U.S. coil	Peto-Scott
Ebonite base for same, 3 in. × ⅝ in. × 3-16 in.	Peto-Scott
Screws, washers, flex, etc.	Peto-Scott

VALVES

V1.	V2.	V3.
Mazda L2. (met.)	Marconi or Osram L 21.	Hivac PX 230.

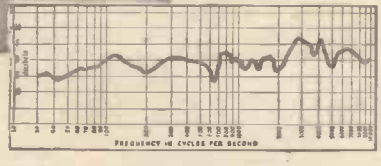
NEWS
FOR 'FIDELITY FANS'

Planoflex

NEW SPEAKER FOR 'QUALITY SPECIAL' SETS

30 cycles to 14 kilocycles—the widest range of frequencies yet covered by a speaker of "domestic" proportions—this new W.B. product covers the band without departing more than a few decibels from the datum line anywhere. BUT—you must have a very high quality special receiver to operate it. Particulars of a suitable set, capable of assembly at reasonable cost, are included with each speaker. For those who can only enjoy the sort of radio which is hardly distinguishable from a personal performance, this new speaker and its set will open up new prospects.

30 cycles to 14 kilocycles



The new Planoflex speaker for special "local-station" sets will make a stir among technicians. Price **£5 5s. 0d.**

RADIOLYMPIA, STAND 75

Shows these and other items

Stentorian ALL-WAVE SETS!

For those who buy 'ready-made' radio

For listeners who listen carefully, but have no time to build the sort of set they like, this new range of sets is marketed.

Although not special "one station" receivers—on the contrary they have world-wide range—their quality of reproduction is well ahead of normal standards.

Prices are extremely moderate, as will be seen on examination—All-Wave Superhet, 9½ gns., for A.C. operation, 8 gns. for battery operation (less batteries); All-Wave A.C. "straight" 4-valve receiver, 8 gns. Self-contained battery sets, 7½ gns. and 6 gns. respectively, including full-size batteries. Attractive H.P. terms are available on all.

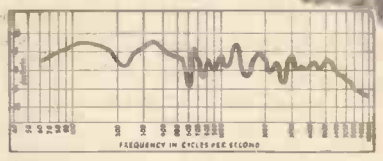
Fidelity & Precision

The makers, in their determination to maintain high quality and precision workmanship, are deliberately restricting output irrespective of demand. There will, however, be enough Stentorian sets to provide stocks for many good dealers.

FOR NORMAL RECEIVERS

Modified Stentorian *brings increased fidelity*

The New Stentorian and its response curve



Any improvement on the well-known Stentorian's amazing ability to "straighten" a long-range set's output curve has by many been considered unlikely. That feat has, however, been achieved this year in an unmistakable manner—as a few minutes' listening will show you. Prices remain extremely reasonable.

Senior (Type 38S)	-	42/-
Junior (Type 38J)	-	32/6d.
Baby (Type 38B)	-	23 6d.
Midget (Type 38M)	-	17/6d.

The first three are also available in handsome cabinets; Senior and Junior cabinet models also incorporate distortionless constant impedance, volume controls and button switches for "Long Arm" remote switching. Your dealer will gladly show them.

HIGH PRAISE FROM WELL-KNOWN EXPERT

Mr. Dowding, the well-known editor of "Popular Wireless," has expressed the following opinion:—"Listeners meeting this latest expression of W.B. quality will be thrilled by its clear expressive bass and crystal clear top notes. The speaker (Senior, 42/-) gives a realism which must be heard to be believed.

SEEN ON THE AIR

By *L. Marsland Gander*

Our special radio-screen correspondent discusses some of the problems of interference with television by nearby electrical apparatus.

Taking a scene in a German television studio. Note the microphone on the floor in front of the artists.

IN connection with legislation which the Government is preparing to make that electrical interference with broadcasting is a punishable offence, the case of television is presenting special difficulties, There is, to begin with, the question of car interference. Will the new Bill for which we have been waiting so long mean that all the cars in the British Isles must fit suppressors to their sparking plugs?

At present, television set owners are negligible in numbers compared with the vast army of car owners, and it is a safe bet that any regulation on the lines I have indicated would cause a storm of protest. Yet electrical interference in all its forms is an intolerable nuisance and an unnecessary one. It is comparable with the smoke nuisance except that it is damaging to nerves rather than to organic health.

Grows Worse Daily

Like the smoke nuisance electrical interference has gone almost beyond control before efforts have been made to check it. The long delay before the Government present their legislation is understandable in view of the highly complex problems involved; nevertheless the position grows worse daily, and it would be of the greatest benefit to television to make a clean start.

When it is realised that there are 2,745,687 motor vehicles of all types in Great Britain, suppression sounds formidable enough. However, it is only the collective cost which becomes frightening. Suppressors for a four-cylinder car cost 15s. 6d. (the price of ten gallons of petrol), and for a six-cylinder car about a pound. I have it on the authority of the Post Office experts that horsepower is not affected by these suppressors, though in fairness I must add that I have also heard other opinions.

As there appears to be general recognition in official circles and places where they count that legislation is long overdue, I had been at slight loss to understand the continued delay until I discovered the existence of yet another committee.

Electro-Medical Apparatus

Far more serious than sparking plugs in its effects on television is the interference caused by electro-medical apparatus. I have already described in these notes the strange effects produced on screens in *The Daily Telegraph* building by diathermy used for treatment of patients in a hospital about half a mile away. Now, in this case, the problem is entirely different, and an official committee of the British Standards Institution is inquiring into the whole question.

On this committee are represented doctors, the B.B.C., the Post Office, the Electrical Research Association and manufacturers of electro-medical equipment. I should like to make it perfectly clear that diathermy is not merely a slight inconvenience to televiewers; it makes satisfactory reception impossible in certain areas.

Hospitals have a severe strain upon their finances, and we need no reminders that they depend upon voluntary contributions. It so happens that diathermy is about the most expensive and the most difficult of all forms of interference to suppress. When a patient is being treated by diathermy for such complaints as rheumatism and sciatica, which benefit from these ultra-short-wave radiations, he himself becomes a transmitter.

To check the interference effectively it is necessary to surround the patient entirely with either "chicken wire" netting on walls and ceiling and floor, or, in a more civilised way, with metallised wall-paper. It is also necessary to cover windows and doors and, in fact, any aperture. The cost of making a room of ordinary dimensions "leak-proof" is from £10 to £15.

Mr. W. T. COOPER

Mr. W. T. Cooper, who carries on a business as a Wireless Repair Dealer at 2, Station Road, Walthamstow, E.17., has called our attention to the sketch on the cover of our issue of May 8th. It appears that by a curious coincidence this sketch, Mr. Cooper informs us, is very like him. The sketch was not intended to represent, and did not represent, Mr. Cooper, or any particular individual at all. It was reproduced in connection with an article in the body of our paper, entitled "Your Set—How it Works," and represented the type of reader who has no technical knowledge at all, and for whom the article was written.

There is another complication. Many of these diathermy sets are portable, and are taken about the wards for the treatment of bed-ridden patients. So it either becomes necessary to paper every room in the hospital with metallised preventive and to stop up every window, or to think of some other way. The other, and more practicable, method is to use a kind of tent, completely enveloping patient and apparatus, but I have not heard whether the medical profession welcome this suggestion.

The first reaction of the ordinary man to all this is: "Why, curative work is a jolly sight more important to the community than your television." That may be admitted straight away. Yet the fact remains that these radiations which leak beyond their proper bounds are as irritating as a bad smell and equally unnecessary. At present there are not many susceptible "noses," but soon there will be plenty.

Who, then, is to pay for suppression? I suggest that the sufferers in a given area should make a subscription, provided one of their number can be persuaded to take round the hat. However, mine is the comfortable task of defining the problem while the committee spend laborious days over the best method of prevention, and later other people ponder the cost. It may be that the grand old milch cow, the British Government, will be called upon to make a donation to hospitals for the prevention of radio interference.

At Radiolympia

Fourteen manufacturing firms are exhibiting at Olympia, and these are some details of two of the Exhibits.

Philips are demonstrating the set with a miniature 4-inch tube which magnifies the picture by optical means and projects it, finally, on to a flat ground glass screen 20 inches by 16. The price of the set, which includes a short, medium, and long wave section, is 165 guineas. The picture is green and sepia. Ferranti's are showing their receiver which incorporates a brilliant black-and-white fifteen-inch tube, showing a picture 11¼ inches by 9.

Here are some of the details of the Olympia television programmes:

August 25. Irene Prador, who has plenty of screen charm; "Picture Page."

August 26. Major Faudel-Phillips gives a riding lesson.

August 27. Television Follies.

August 28. Variety. Bavera Trio, skaters; Charlie Higgins, the North Country comedian.

August 29. Visit to Mr. Middleton's television garden.

August 30. Eric Wild and his Tea-Timers. "The Disorderly Room," featuring Tommy Handley.

August 31. Henry Hall and his Dance Orchestra.

September 1. "Picture Page" again. Wendy Toye, the dancer.

FROM OUR READERS

A FEW LINES FROM "AREA 16"

An interesting letter from a reader in "Area 16" of our "18" Club Map

★

The Editor, POPULAR WIRELESS.

Dear Sir,—Just a few lines from Area 16. Having just received a bumper mail—the first for some weeks—which included several "P.W.'s" which are sent to me each week, I was quite interested to read in the article "Over There" ("P.W.," May 15th) of the American Eclipse Expedition going to "see the sun" at Enderbury Island.

We have just returned from Canton Island, which is forty-five miles W.N.W. of Enderbury. The eclipse was viewed from Canton Island owing to the difficulty in making a successful landing at Enderbury; this island paradise (?), a large coral ring, supports (and only just), five or six palm trees, hundreds of rats, crabs and birds, with a sufficiency of blanket fish and sharks in the surrounding waters. I don't think, however, that the New Zealand or American scientists worried them unduly. U.S.S. Avocet acted as depot ship for the Americans, while we filled a similar capacity to the New Zealanders.

I am sorry I can't furnish much information on reception during the eclipse, which lasted 3 minutes 33 seconds, as W M E F was our immediate interest, broadcasting from Canton Island on 17,310 kc. and relayed through U.S.S. Avocet to the R.C.A.–N.B.C. networks. Incidentally, George Hicks, popular N.B.C. announcer, "did" the eclipse commentary, and even he was speechless at times.

It would be quite interesting to know if any of the "18" Club bagged W M E F direct during tests, etc. It would certainly be a good watch start in the field, wouldn't it?

Just a word in closing about "P.W." We (the staff) find every bit of it interesting, and it proves a real companion on many a long watch—and it has been "Over There."

Wishing you and the weekly every success.

E. HUGHF (Tel. H.M.S. Wellington).

Apia, W. Samoa.

KEEPING THE COST DOWN

The Editor, "Popular Wireless."

Dear Sir,—I read with interest the letter of your correspondent, Mr. Grundy, under the heading "Junk Part Set." You know, when I come to think of it, my short-waver must come under this heading. It's quite an efficient and neat little set, and does not (I am pleased to say) suffer from hand capacity, threshold howl or dead spots, or any other of those troubles of home-brew short-wavers. I attribute this more to luck than sound design, but all leads are short, and the valve holders and coil holder are of ceramic material.

I have Q S L's from U.S.A., Canada, Iceland, Cuba, Argentina, etc., all received on this little "two." The cost? 15s. 9d. without valves. My tuning condenser was a well-known make—solid brass, with ball-bearing movement. This I picked up on a junk stall for 9d. I cleaned it, stripped it down, and reassembled half the plates. I oiled the bearings and, when completed, there was no sign of noise—just a clean, even movement.

I wound my own coils, and can get the set down to below nine metres with no alterations to the circuit. I have also added bandspreading, using the same make of condenser as for tuning, but with two fixed plates and one moving. I enclose a copy of the circuit for anyone who is interested. I use no aerial winding on the coil. I find I get better results by feeding the aerial into the reaction coil. I find this better when on ten metres and below than an aerial winding.

In conclusion, to those who wish to build junk-parts sets I would say "Go ahead," and, providing a little common sense, a little patience and plenty of enthusiasm are used, results will certainly well repay you.

F. C. SMITH.

86, Graving Dock Street,
Barry Dock, Glam.

"HANDS UP," THOSE IN FAVOUR!

The Editor, POPULAR WIRELESS.

Dear Sir,—Although only thirteen years old I am very interested in wireless, especially short-wave work. Judging by the letters which appear very frequently in wireless weeklies, it appears to me that there are many boys, like myself, of ages ranging from twelve or thirteen upwards, who are really interested in wireless and television.

Articles appearing from time to time in wireless magazines, etc., also bear out this statement.

I should like to suggest that a correspondence club be started for younger readers and that a column or two in POPULAR WIRELESS be devoted to the construction of sets within the ability and means of boys.

This could be conducted by someone who knows to what limits a boy may go.

This would, I think, tend to draw together the boys who are interested in the good old hobby.

What do you and other readers think of this?

Wishing you and POPULAR WIRELESS all the best, and congratulating you on your fine article "Marconi—the Man and His Wireless."

STEWART M. RICHARDSON.

Gracedieu, Healds Road, Dewsbury.

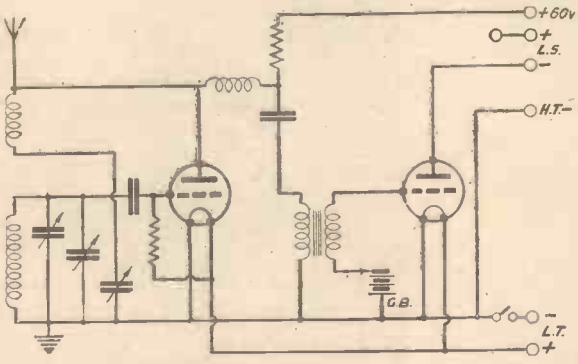
[Let's hear what our younger readers have to say about this.—ED.]

GOING BACK, SOME!

The Editor, "Popular Wireless."

Dear Sir,—I wonder whether the following would be of interest to some of the old stagers that have perused your valuable magazine since its inception? I have often wondered whether I could claim in a way to be the first broadcaster to schools in this country.

A JUNK-PARTS SET



This is the circuit of the receiver referred to by Mr. F. C. Smith in his letter.

Away back in 1920, when living in a village (Cold Ash) in Berkshire, I used to get the French Press from Eiffel Tower each morning and hand it over to the village schoolmaster, who took it as his lesson on the blackboard for the elder boys learning the French language.

The apparatus used was, of course, a home-spun crystal receiver with oscillation transformer, tuned aerial, and primary with secondary of a 7 to 1 step-up tuned by ·0005-mfd. condenser. In the earth lead was a non-inductive coupling with centre tappings to a buzzer, key and battery, which performed two functions, i.e. denoted best point on crystal and when aerial, A.T.C. and primary were in tune with secondary.

AN EASY GUINEA

When you've read these letters, sit down and drop us a line about one of your experiences or opinions on radio. Others will enjoy reading it just as you enjoy reading theirs. And you may at the same time win the Guinea which is awarded each week to the sender of the letter which, in the opinion of the Editor, is the best one. This week it goes to Mr. E. Hugh!

For extreme range such as U.S.A. stations, a one-valve autodyne stood adjacent to the above, coupled to lead-in by a small coupling coil.

W. ISAACS.

Bulstrode, Gerrards Cross, Bucks.

A CIRCUIT WANTED

The Editor, POPULAR WIRELESS.

Dear Sir,—In 1933 I built the S.T.500, and still enjoy the company of that splendid set, even though it sounds a bit out of date. Since then I have been a regular reader of "P.W.," more especially the short-wave section, in which I have come to take a great interest, having been encouraged in this by the interesting articles contributed by W. L. S. on the variety of programmes which one could receive on those shorter wavelengths. I built the "S.W." Three for the States described in "P.W." dated June 20th, 1936, and, although still quite a novice at the game, I have enjoyed many hours of listening and experimenting with this set.

Then came your contributor Mr. Chester, whose every word in his articles entitled "My Short-Wave Adventures" I enjoy to the utmost. I have come to looking forward to reading his articles with as much eagerness as a schoolboy awaiting the next week's issue of the "Wizard." Mr. Chester's frankness, his plainly described experiments, invariably accompanied by a self-explanatory diagram, have done a lot in encouraging short-wave listening amongst constructors. So far as I am concerned, those articles have spurred me on to get every "ounce" of energy from my "S.W. set and to deal with the little snags met with in the same determined way as your contributor.

In the "P.W." issue dated June 26th last, I was greatly interested in Mr. Fred Lanaway's letter "A Challenge to 'S.W.' Listeners," and his splendid log he states he has received. He describes his set as a two-valver of his own design and construction, which, according to the evidence, must be a really good set.

Mr. Lanaway is bound to have caused quite an interest to be taken in his letter, and I wonder if it is possible for him to be approached with the view to having the circuit of his set published in "P.W." I don't think that Mr. Lanaway would have any objection, since he appears to be a staunch supporter of "P.W.," and the publication of his circuit would benefit fellow readers.

Wishing your valuable paper every success.

JAMES INNES.

13, Sunnyside Terrace,
Holytown, Motherwell.

[How about it, Mr. Lanaway?—ED.]

"I SECOND THAT"

The Editor, "Popular Wireless."

Dear Sir,—I have been a reader of "P.W." since October, 1933, when at that time you published the S.T.500. I got a friend to build that set for me, then had him follow on with the S.T.600. Becoming more interested in wireless, especially through W. L. S.'s articles on short waves, I had a go at the construction "racket" myself.

I started off by building the "Short-Wave" Three for the States, published in your paper on June 20th, 1936. Following the instructions given in every detail, I finished the set and, on switching on, got signals first time (beginner's

(*Continued on next page.*)

(Continued from previous page.)

luck, I suppose). A few moments later I tuned-in Zeesen and Rome. After a bit of practice at tuning I was able to pick up all the Continental stations worth while, also a number of Yankees, which included W 3 X A L, W 2 X A D. I have also picked up P R S F and a great number of English and American "hams."

Being spurred on to greater efforts I built the S.T.800, and get excellent results. The performance of that set takes a bit of beating. Mr. Scott-Taggart sure hit the nail on the head when he designed the "800."

In your issue of June 26th I read with great interest Fred Lanaway's letter in the Readers' Page, and by the number of stations that lad logged it is quite evident that his two-valver is "hot stuff," more so when he threw out his challenge with such sets as the "800" and the "Simplex" Three in operation. Now, Mr. Editor, I would very much like to build a replica of Lanaway's set, and respectfully suggest that Lanaway be approached with a view to obtaining his circuit, and, if successful, publish it through the medium of your excellent paper.

I am quite convinced that thousands will try out his circuit. Should you be able to publish this circuit I further suggest that you display a guide to the wiring for the benefit of those like myself who cannot read a theoretical circuit. Thanking you in anticipation and wishing your paper every success.

WILLIAM SMITH.

Police Station, New Stevenston,
Motherwell, Lanarkshire.

RADIOLYMPIA TELEVISION TOPICS

(Continued from page 594.)

COMPONENTS AND FITTINGS

The high voltages of television make insulation an important matter in design of gear for this use. Messrs. Bulgin, well known for their wide range of components of all types, are showing knobs, insulators, fixed condensers, etc.—specially intended for television purposes. Their multi-way high-voltage connectors are particularly valuable for joining-up the various units in a television receiver.

* * *

FOR TELEVISION SERVICING

Among the Weston instruments at the Show is to be seen a multi-range set-servicing instrument that is so designed as to be usable on television receivers. The currents used in some parts of a television set are so small, and the voltages so large, that a special high-resistance high-reading meter is required. And that is just what is to be found in the instrument referred to above.

* * *

LAST BUT BY NO MEANS LEAST

The Baird stand is particularly attractive. Apart from their excellent television receivers there is a layout of a complete block of flats in which television is "on tap." Another exhibit is a new multiplier type of photo-electric cell, and there are examples of the manufacture of television equipment together with working models showing the principles of operation.

CAR PARKING AT OLYMPIA.

Adjoining Olympia and linked to the Main Hall by a private covered way, a huge garage which was opened recently will provide excellent car parking facilities for visitors to Radiolympia. There is accommodation for 1200 cars.

The garage is reached by way of the private road to Addison Road Station or via Blythe Road. It is open day and night all the year round, and charges are from 1/- a car.

MARCONI—THE MAN AND HIS WIRELESS

CHAPTER XV

BY this time the ocean was "an old story" to Marconi; he had crossed the Atlantic more than fifty times without accident of any sort. His invention had added truth to the expression, "man is safer at sea than on the land." But the dangers lurking on terra firma overtook him on September 25th, 1912, when the motor car in which he was travelling from Spezia to Genoa came in collision with a car carrying several Venetian ladies.

Marconi was at the wheel of his car making good speed in order to climb a high curving road through the mountains. A quarter of a mile from Casa de Vara outside of Spezia the other car coming down the hill whirled around a sharp curve, and the two cars crashed. Rescuers found Marconi stunned and clinging to the wheel. He was bleeding from a gash in the forehead. Occupants of the other car, including Commendatore Beltrami and his wife, escaped with a shaking. A naval ambulance from Spezia rushed to the scene. The accident happened at 12.30 p.m.

No time was lost in getting Marconi to the Naval Hospital in Spezia. All the naval and military surgeons available quickly gathered at the bedside. His right eyeball, right temple and cheek were badly bruised. The eye was cut by a splinter of glass piercing the eyeball. Italy was shocked at the news; messages of sympathy came from all parts of the world.

Marconi had been a guest at the Royal Hunting Lodge at San Rossore, and a report of the accident was telegraphed to King Victor Emmanuel, who was one of the first to send inquiries regarding the inventor's condition. The monarch wired to Spezia wishing Marconi a speedy recovery, and requested hospital authorities to telegraph news of the patient's progress twice daily. He dispatched Marquis Sant'Elia, Master of Ceremonies at the Court, to see that everything possible was done for Marconi, and to express fervent wishes for speedy recovery. On October 12th, the King and Queen called at the hospital.

Signor Beltrami, although injured, was deeply grieved over the affair, and said, "I would have preferred to die or to have both legs cut off rather than even without blame to have caused an accident whereof the victim was Mr. Marconi, whom I fervently admire."

The badly wounded eye continued to become worse. The severe contusions and swelling prevented a thorough examination for several days, when it was discovered that the optic nerve had been affected. Marconi suffered neuralgic pains and the visual power of both eyes showed rapid diminution. Dr. Baiardi, well-known surgeon of Turin, was summoned. He decided that to save one eye it would be necessary to sacrifice the other. He called Dr. Fuchs of Vienna, one of Europe's most noted eye specialists, into consultation. It was decided the wounded eye should be removed without delay. Marconi, informed of the critical situation, remarked, "Well, I hope my lady friends will love me just the same." He insisted on walking to the operating-room unaided.

On October 17th, 1912, Marconi lost his right eye. Following the operation this bulletin was issued:

Professor Fuchs of Vienna University and Professor Baiardi of Turin were called in to-day for consultation, and having recognised the necessity of performing the operation of enucleation of the eyeball in order to avoid sympathetic ophthalmia, carried out the operation successfully. The condition of the patient is good and his morale excellent.

Marconi asked to be alone: he wanted to sleep.

DURING THE WAR

Marconi, in his uniform as an officer in the Italian Navy. This photograph was taken during the War, when the great inventor was engaged on special work for the Allies.

Italy was sad, but there was a tinge of joy and of hope in the medical experts' assurance that Marconi's life and sight would be spared. Soon he was seen motoring with his head bandaged, and on November 1st at the Ophthalmic Hospital in Turin Dr. Rubbi of Venice fitted him with an artificial eye, with such perfection that one could scarcely observe it even when face to face.

Dr. Baiardi refused compensation, saying that he had been sufficiently rewarded by the honour of serving the glory of Italian science. Marconi later visited the hospital and left a donation as an expression of his gratitude.

Confinement made the inventor restless; he was anxious to get back to his wireless.

Chapter XVI

A STIRRING SPECTACLE

Volturno afire at sea flashes S O S—The rush to save 657 souls—Carmania turns on her course—Cordon of ships reveal power of Marconi Wireless—A flaming spectacle—A grim scene at twilight—Desperate messages—The rescue across oil-filmed water—Lessons the wireless men learned

IT was a cruel Fate that decided three fearful marine disasters had to test the merits of the Marconi invention. First one ship rammed by another not so far from the shore; second, a great liner in collision with an iceberg far off the nothern coasts; third, a fire in mid-ocean in which a ship was turned into a floating, tossing hell with a frantic crew on board. It was from this terrifying scene that the steamer Volturno broadcast an urgent S O S on October 11th, 1913, right from the middle of the ocean.

Like a miracle wireless turned ten ships flying the flags of six nations from their beaten paths, and they rushed from all directions to the stricken vessel which had turned into a veritable volcano as the flames, intensified by explosions, belched from the portholes and hatches.

Six hundred and fifty-seven terrified human beings huddled on the deck hoping and praying that from below the horizon rescuers would rush to them through the fury of an autumn storm and gale. To them Marconi loomed as a saviour. His wireless held out hope for life as death stalked over a mad white-capped sea, seemingly determined to swallow this ship bound to New York from Rotterdam.

The S.S. Carmania's junior operator was listening-in that morning. Shortly after eight o'clock he picked up three dots, three dashes and three more dots. That combination sends a chill through any wireless man. He ran to the chief operator, who was in his berth after a night on duty at the key, exclaiming:

"There is some fellow who says his ship is on fire. You had better get on to him and see what he wants."

The senior operator in his night clothes ran to the wireless cabin. The earphones were pulsing with the cryptic S O S. He heard the Seydlitz answer, and then asked her to stand by while he received the Volturno's position. He rushed the message to the bridge. The steward woke Captain J. C. Barr, who went on deck immediately.

Barr ordered the Carmania's speed to be increased and she turned her nose into a terrific storm "mad as the sea and wind when both contend."

Great waves tumbled across her bow and swept the decks from end to end. She

(*Continued on next page.*)

(Continued from previous page.)

trembled under the onslaught of the waves and the utmost speed of her engines.

Many of the Carmania passengers were at breakfast. Their first intimation that anything unusual had happened was the sudden and continuous breaking of the green seas on the decks. The wild plunging of the vessel indicated that the Carmania's course had been changed, and that she had turned on an errand of mercy—summoned by wireless.

Soon after noon a curl of smoke was seen on the horizon. The Carmania with double-manned stokeholds and steaming twenty knots was the first to arrive through the foam of the surging sea. She was a glorious sight to those caught as the prey of flames. But the violence of the storm kept her from the blazing crater—an unapproachable hulk. It was two o'clock in the afternoon.

The Seydlitz hove in sight at 3.30 o'clock. The Grosser Kurfuerst and others came in quick succession.

No greater triumph of Marconi wireless was ever portrayed than in the dawn of the next day when the flags of six nations, the United States, England, Belgium, Russia, France, and Germany waved from the masts of a cordon of ships called by wireless to 48.25 N. Lat., and 34.33 W. Long.

There were the Carmania, the Grosser Kurfuerst, La Touraine, Minneapolis, Rappahannock, Narragansett, Devonian, Kroonland, Czar and the Seydlitz. Many of them had rushed up during the night, with their waving searchlights and blinking lights adding cheer to a frightful situation.

Each ship told the same story of the spectacle of horror she met when answering the far-flung S O S. Through the gloom and fog of the dying day they saw a vivid crimson shape, waxing and waning in irregular pulsations, and through the glare sharply outlined against the cloud-shrouded background they saw the pitiful figures of the ship's company huddled together on the stern. As they watched they saw the glowing mass leap to a scarlet apex and then die down. An instant later they heard a roar that defined the sudden flare to have been an explosion. The ship was blazing from funnel to forecastle.

A terrific storm was raging. No small boat could live in that chaotic sea. The rescue ships with hundreds of passengers on board were helpless to assist the emigrant vessel wrapped in flames fanned by such a gale. There were plenty of volunteers ready to go over the side to the rescue, but the weather defied them. The terror-stricken passengers could be seen on the poop deck while officers and crew made every effort of stop the advancing fire.

The Carmania and others on the scene hoped to complete the rescue before nightfall. But the mountainous seas made it impossible as the helpless spectators watched the doomed ship in silent agony.

Grim was the scene in the twilight of that day. Panic-stricken emigrants leaped into the sea to a certain death, but it seemed the only escape from the fire. Those along the rails of the rescue ships saw lifeboats collapse against the Volturno's veering sides and spill their human freight. Searchlights revealed the tiny specks of humanity struggling in the icy water. Darkness and the whistling gale added to the terror of the heart-rending scene as the floating furnace with heavy blasts of pungent smoke illuminated by the flames revealed the Volturno was still afloat. The sky was lit with a lurid glare.

The Grosser Kurfuerst at 9 p.m. lowered the first boat manned by broad-shouldered Teutons who had spent their life at sea. Perilously the little craft bobbed up and down in the troughs of the sea. Only the great searchlights of the Carmania kept it in view now and then. The German sailors came back at 11 o'clock with twenty-one persons rescued. The boat went back with a fresh crew and returned at 2.30 a.m., with eleven survivors.

Then the Volturno wirelessed, "Do not send any more boats until daylight."

Desperately, Captain Inch, in a final appeal before flames licked up the wireless cabin, and sent the aerial crashing to the deck, flashed:

"Cannot something be done to help us? We must abandon ship. Our plates are buckling. Stand in close. I may have to jump for it."

As soon as Captain Barr of the Carmania had realised the situation he ordered his Marconi operator to get in touch with an oil steamer he had talked with earlier in the day. It could not be so far away as distance at sea is measured. An abundant supply of oil seemed the only means of subduing the violence of the waves to facilitate rescue operations.

The Carmania's spark located the oiler Narragansett, whose captain flashed this jocular reply through the midnight air:

"I'll be up with the milk at six in the morning."

True to his word he arrived at five o'clock with two hoses ready and began drenching the water with oil.

And at dawn the wind abated. It was a stirring spectacle when the parade of liners put off their boats, which danced over the shimmering oil-filmed waters to the work of rescue. They saved 521. Had all remained aboard the burning vessel all would have been saved. The panic that made 136 leap overboard and take to the boats too soon led them to destruction.

The last to leave the doomed ship was the heroic Captain Inch; with him were his dog and the ship's papers. The sailors of the Kroonland took them off at eight o'clock that morning.

"There were a series of explosions," said Captain Inch. "The third was terrific. It wrecked the saloon deck and the walls fell

(*Please turn to page* 611.)

ONCE more, my dear friends, I have to announce the arrival of recordings of the Aldershot Tattoo. What a yearly event it is becoming! Yet it seems that the public does not tire of these records, which to my mind are always much-of-a-muchness in their entertainment value. Massed bands, a thousand instrumentalists, fanfares, marches, commands, epilogue, drums and fifes—what more could you want in the way of military musical colour? And you have it all on these records. As usual H.M.V. are the recording enthusiasts and the records are worth hearing by all who like that sort of thing.

Personally—and please throw no eggs—I am of a lower brow, and greatly prefer to hear Cicely Courtneidge on H.M.V. B8588 giving us *Why Has a Cow Got Four Legs?* and *The South is the Place For Me*. To those whose martial breasts I have insulted I proffer my humblest apologies.

With the death of Gershwin I expected a flood of "Rhapsody in Blue's" and others of his numbers. So far a few have materialised, but I expect someone will soon do a Gershwin Memories disc, and it should be worth looking out for. Meanwhile, for those who are fond of his tuneful dance music let me recommend Louis Levy and Co. in *Shall We Dance?*, an H.M.V. record (BD435). *Sentimental Fool* on Col. FB1655 by Carroll Gibbons and the Savoy Hotel Orpheans is also worth hearing.

A Mantovani Series

Mantovani has made a series of Columbia records which will surely go well; they are not new, but they should be borne in mind. Of these I like his rendering of the famous *Speak To Me of Love* (FB1664) and *Let's Dance at the Make-Believe Ball-room* (FB1640).

And right at the back of all my crowd of readers—(doesn't he flatter himself?—Ed.) I hear murmurings of disapproval. The "swing" fans are muttering that such records are but milk and water to the real enthusiast. Maybe, but they are tuneful for all that, and a whole host of us like them.

But to satisfy the swingers—and does anyone really know how to describe swing properly (a dictionary description I mean, not a picturesque impression)?—you may be interested to know that H.M.V. have swung right over to swing and have included quite a number of swing records in their latest lists.

So we have Lionel Hampton and his Orchestra playing *Buzzin' Round With the Bee* and *Whoa! Babe*, and they are said to have so enthused a well-known authority on dance music that he declared them to be the greatest example of *real* Swing Rhythm that have been put on to wax. So get them and you will know what "real" swing is. Or won't you?

I do not dislike swing, let me assure you of that before you storm Tallis House after my blood. I just cannot get hold of a satisfying definition of it, and that fact annoys me.

Here is a "jam" session. Remember the B.B.C. efforts at these so-called extempore playings? Though how it can be truly extempore after rehearsal I do not know. H.M.V. have issued a session on B8580, and it includes the numbers *Honeysuckle Rose* and *Blues*, played by Tommy Dorsey (trombone), Bunny Berigan (trumpet), "Fats" Waller (piano), Dick McDonough (guitar), and George "Georgia" Wettling (drums). Go to it, lads, and have a good exciting eighteenpence-worth!

A fine recording from "Paganini" is offered by Parlophone of Evelyn Laye and Richard Tauber singing *Nobody Could Love You More* and *Love Never Comes Too Late*. It is a ten-inch record sold at four shillings and is well worth hearing—and getting. The number is RO20339.

Tauber sings alone on RO20338, another four-shilling ten-incher, whereon he gives us *Girls Were Made to Love and Kiss* and *Beautiful Italy*. Evelyn Laye sings alone on R2347, *Love Live for Ever* and *My Nicolo*. The three discs make a very fine series of the operetta.

Tuneful Organ Numbers

Cinema organ records are not plentiful when one considers the number of cinema organs throughout the country. Just one or two a month by the various record firms seems to be the limit. Accordingly the Parlophone record of Robinson Cleaver (F827) playing a medley is worth noting. He has chosen some tuneful numbers, including the hackneyed but still popular "Harbour Lights," and the record is well recorded. Quentin Maclean on Col. FB1619 is another good record, but of quite different style. It consists of Eric Coates airs and includes "Knightsbridge" and some of his well-known ballads. The title of the record is *Knightsbridge*.

Do you want sentiment with a capital "S"? Try Hildegarde singing *Good-night, My Love* on Col. FB1641. Do you want military music? Try the *Coronation Music* as played by the band of H.M. Grenadier Guards, Col. DX778.

Perhaps you prefer something really historic. Then get the official record of the *Coronation Service* in Westminster Abbey in fourteen discs at five shillings each. The souvenir album costs £3 15s., and is issued by H.M.V. The record numbers are RG1-14, and they can be had in special automatic-changer couplings under the list numbers RG7000-13. The broadcast speech of H.M. the King to the Empire is available on RG15 at five shillings.

These are records that will be of intense interest to everybody, and in years to come will be of the utmost historical value. Expensive? Well, don't forget that the profits are going to a charity nominated by H.M. the King.—K. D. R.

"'OPPING 'OLIDAY"
National, September 15th.

The original version of this programme, which was produced in 1934, was probably the first recorded feature. Every year thousands of men, women and children from the East End of London, who would otherwise have no respite from the stifling atmosphere of the back streets, turn their only chance of a holiday into a lucrative business by going to the hop gardens of Kent to strip the bines. Laurence Gilliam, who will produce the programme, will include in it records of the scenes of excitement when the "'oppers' special" departs from London Bridge, and sound pictures of the work in the hop gardens themselves and in the oasthouses, where the hops are laid out on shelves to be dried, and finally of one of the traditional sing-songs celebrating the end of the picking, from a village inn in Kent.

MARCONI—THE MAN AND HIS WIRELESS

(Continued from page 609.)

in. I had asked the senior Marconi man Pennington to call for help. He informed me that he'd got a reply from the Carmania, who wanted to know our position. I said, 'You make the call again and I'll bring the position to you.' While the boats were being put out I took the ship's position to the Marconi house."

The Volturno was left a derelict. The British cruiser Donegal was dispatched from the west coast of Scotland to destroy the hulk.

The account of the senior operator of the Volturno emphasised that the lessons learned from the Republic and Titanic had not been in vain. The second operator had rendered invaluable aid during the trying hours. The value of emergency batteries was proved. When the main source of current supply from the ship's dynamo was destroyed the extra batteries enabled the Volturno to use its wireless eight hours longer than would have been possible had not the suggestions made after the Republic disaster been followed.

And the Volturno proved that ships should carry three operators so that at no time would the wireless receiver be without a human ear. Furthermore, lifeboats should be equipped with emergency wireless outfits or automatic senders so the rescue ships could trace them in the dark with the radio compass should they become lost. The value of a radio direction finder on larger ships was evidenced by the fact that the Grosser Kurfuerst found the Volturno drifting twenty-four miles from the position that was broadcast.

Inspired by the rescue of the passengers and crew from the Volturno, *The Daily Telegraph* on October 15th, 1913, said editorially :

But for the invention of Marconi, we should be mourning to-day a holocaust of the seas of unparalleled horror, the overwhelming by fire in mid-Atlantic of six or seven hundred men, women and children.

There is nothing, perhaps, less noble in the record of our times than the indifference with which the patient research in the service of humanity is rewarded. The practical scientist who bridged the oceans and contracted continents within the span of electric impulse never received from any State a fitting recognition of his triumph.

He has, it is true, like the inventor of a knife-cleaning machine or of a roadsweeper, received patent rights, which he can exploit commercially. The country where he was born has conferred on him some slight titular honour. English and Scottish universities have admitted him to honorary degrees. But for the rest of the country of his adoption and of his mother's birth, the country on which he has showered such untold benefits, has been content to single him out as an unwilling participant in an unsavoury scandal.

This is the recognition which England has given to the man who, above all others, has done the most to rob the sea of its terrors.

Surely the time and occasion have arrived when the State may well revive, if that be necessary, its standard of honour, and grant to the wizard who enabled such a triumph to be achieved in the name of humanity some fitting token of England's gratitude for the great permanent addition he has made to what may be described as our armoury of mercy.

Marconi had seen his invention serve mankind, to save hundreds of lives at sea and countless minutes for the business world.

As 1913 closed its pages, he reflected :

I have examined and am responsible for the designs and apparatus installed on more than 1,000 ships. I have arranged all the details of the wireless plants of four stations of 2,000 or more miles range, namely, Clifden, Glace Bay, Coltano and Massana ; together with at least twenty other stations in England, America, Italy, Africa and Spain having ranges of 1,000 miles and upward.

I have crossed the Atlantic sixty times in ships fitted with wireless.

An inquiring reporter asked if he was dreaming of new wonders. He replied :[1]

Inventors are too visionary. The reason ? It is not far to seek : the inventor is a man of scientific knowledge, of imagination and of enthusiasm.

These three make a good team if they are kept " pulling together " ; but every now and then an inventor allows his imagination and enthusiasm to run away with his scientific knowledge.

I try to keep my eyes and ears open.

[1] *The New York Times*, March 24, 1912.

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QUESTIONS AND ANSWERS

By K. D. ROGERS

INSERTING A PICK-UP IN A MAINS SET

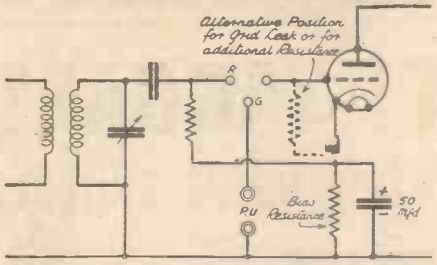
HOW IS IT DONE?

T. G. S. (Burton).—*I want to insert a pick-up in the detector circuit of my mains set. How is it put in? How are the bias and switching arranged?*

It is quite easy. You have to break the grid circuit of the detector valve and also its cathode circuit. At the moment the grid probably goes to the grid condenser and leak, while the leak goes to the cathode and to earth, or perhaps they go separately to earth or chassis.

If they do go separately you will have to disconnect the grid leak from earth and take it direct to the cathode point of the valveholder. Disconnect the cathode connection from earth and connect it to one

THE NEW CONNECTIONS



How a radiogram switch can be inserted into a mains circuit—see answer to T. G. S. (Burton).

side of a resistance—of value between 500 and 1,000 ohms probably. You must get the value from the makers of the valve. Ask them the correct bias resistance value for that valve.

The cathode also goes to one side of a bias condenser of about 50 mfd. A dry electrolytic is used for this, and the positive end is the end connected to the cathode.

The other end of the resistance and the condenser negative point must be connected to earth or chassis—to the point to which the cathode went before you started the alterations.

Now the grid. Disconnect from the grid of the valve holder the grid leak and the condenser. Instead, connect to grid the centre point of a two-way three-point radiogram switch. One side of that switch is then joined to the grid condenser and leak, and the other side is taken to one of two pick-up input terminals. The remaining terminal is taken to earth or chassis.

Now all you have to do is to connect the pick-up and its volume control to the input terminals on the set and place the switch in the pick-up position and there you are.

When the set is required for radio the switch is moved to the radio position. That is all that has to be done. The valve is automatically biased when the pick-up is used and the bias is taken off when radio is on.

Some people like to leave the grid leak connected direct to the grid instead of taking it with the grid condenser to the radio side of the switch. It certainly obviates a "plonk" in the loudspeaker when the switch is moved, for it prevents an open grid for that fraction of a second when the switch is open. But it depends on the value of the grid leak how much such a connection will reduce the bias on the valve, and how much it will affect the pick-up volume.

I think it is better to change the leak over, and if you want to obviate the "plonk," or to reduce it, connect a 5-megohm resistance from grid to cathode. This will not affect the bias to any extent; it will prevent the open grid, and it will not upset the grid leak value of the receiver when operating on radio.

CHANGING THE CENTURION

A. W. (Haslingden).—*I have the S.T. Centurion, described last year, and would like to convert it into the more modern one published this year—the Super Centurion. Can I do this without buying another set of coils?*

Yes. The alteration in the coils can be carried out fairly easily. Send them to the makers who have undertaken to make the necessary alteration for a fee of 3s. 6d. Then you can go right ahead and convert the set.

THE A.C. BAND-PASS

H. T. W. (Coulsdon).—*I read with interest the article on the A.C. Band-Pass three-valve set in the August 7th issue. I am seriously considering the construction of the set, but am not sure whether a slight alteration to the circuit would be an advantage.*

Do you consider it would be an improvement to use a set of band-pass coils which would bring the band-pass section between the H.F. and detector valves instead of having it on the grid side of the H.F. valve?

I rather feel that it would be a good idea to feed the band-pass with a bigger input because of the inevitable initial loss that occurs in band-pass circuits.

I do not think it would be an improvement to do what you suggest, and the Research Department also rather deprecated the scheme.

While it is true that a band-pass circuit does take away from the overall sensitivity of a tuned stage the loss of signal strength is not as bad as you appear to imagine. I think it is safe to say that a Ferrocart band-pass unit will give every bit as good a sensitivity curve as an ordinary air cored single circuit tuner. That is saying something when one considers the added selectivity that accrues when the band-pass is used.

But that is by way of a side issue. I cannot see why the interposition of the band-pass between the H.F. and detector valves should increase sensitivity.

Look at it like this: Suppose you have a signal coming into the aerial with a value of 1. The amplification of the first valve is, we will say, 10. And for the sake of argument let us assume the loss of strength due to band-passing is as much as 50 per cent. It is not actually, but round figures will illustrate the point more easily.

Thus at the grid of the first valve you have a value of 1 multiplied by ·5—or, in other words, ·5. Then you have the amplification of the valve giving a ten times step-up, and the output is therefore 5. That 5 gets on to the grid of the detector through the tuning circuit.

Now what happens if you put a plain tuning circuit in the aerial and transfer the band-pass to the inter-valve position? The aerial input is 1. No loss in the tuning circuit is experienced, so we can reckon that we get the 1 on the grid of the H.F. valve.

Now what happens? Do we get any more from the H.F. stage? We do not. We have to consider

that ·5 of the band-pass circuit and the amplification of the H.F. stage is reduced to 5. So the grid of the detector gets 5—the same as it did before.

So no matter what the position of the band-pass unit the total amplification will be the same.

Now then, does it matter which side of the H.F. valve the band-pass unit is connected? I think it does.

The whole idea of a band-pass tuner is to increase selectivity without upsetting the quality of reception of the desired station. And if it is to increase selectivity surely the band-pass section should be placed in the position where it is likely to do that to the greatest degree.

In furthering this argument, one must remember that every valve has what is termed a threshold point, a signal strength point below which the valve really does not "get hold" of the signal and amplify it properly.

Also, it is obviously much easier to cut out a weak signal by some tuning device than to cut out a stronger signal on the same wavelength, or at the same wavelength tuning separation from the required signal.

Thus a band-pass circuit is surely likely to do better placed in the aerial circuit—for all that circuit's damping powers—than it is in the intermediate H.F. stage. In the aerial circuit the unwanted signal will be weaker than it will after the H.F. valve has amplified it, and it is not unlikely that the unwanted signal will be so weak at the valve grid that it will fail to receive the full amplification of the valve—it may be below the level of valve noise in some cases after the band-pass circuit has dealt with it, though a single tuned circuit might not have the effect of reducing it so much and thus, when passed to the valve, it would be amplified to a considerable degree. That amplified signal would then be passed to a band-pass circuit which would obviously not have the same chance of cutting it out as it would when the signal was weaker.

It may seem to you that I am straining at a gnat and swallowing a camel. You may say that the weak signal will be amplified by the same degree either way. But it does not seem to work out like that, whatever the theory may appear to indicate.

I like my band-pass in the aerial stage and I am convinced it works better as a selective device there. You may not be convinced about it. If not, let me know why and I may consider your reasons worth while putting forward to others in these columns.

RAISING THE TONE

C. G. S. (Oxford).—*I was much interested in your reply of how to raise the tone of a set ("P.W.", July 17th), but I am a bit dubious of that 3-henry choke. Most of the chokes advertised seem to be 20, 30 or 100 henrys. Can you get a 3-henry choke?*

Would the control be as effective if the variable resistance were in parallel with a ·25-mfd. condenser and in series with the speaker? I have a spare control, and don't want to buy the choke unless necessary.

I do not think you will experience any difficulty in getting a 3-henry choke from any of the good makers of chokes. They are not standard, but they are not expensive.

The idea of placing a variable resistance in parallel with a ·25-mfd. condenser and in series with the speaker is certainly a bass reducer, and should work fairly well, as you state that the speaker is choke-fed. You may have to play about with the capacity of the condenser a bit before you get the desired control, but the resistance value should be O.K. It will give you minimum bass when the resistance is at maximum value, and the bass will not be affected when the resistance is at a very low value. Certainly I should try it, though I prefer the choke scheme myself. However, having the parts on hand, I should certainly try the condenser and resistance idea.

With regard to the last part of your letter, the old super-power valve (P.240) certainly does not give much amplification, and you would probably get better results by substituting a more modern steep-slope valve. But in doing this you must not be led away by amplification factor only. The point is, will the valve you are thinking of using give the same maximum power output when fully loaded as you can obtain with a fully-loaded P.240?

If it will not, it is not much good. You would do better, in such a case, to stick to the present power valve and increase the amplification of the intermediate stage by using a steeper-slope valve there.

Using a Milliameter

The reason why your pick-up is not loud enough on the two stages may be that you are not fully loading the output valve, or it may be that you are dissatisfied with the volume that it is possible to get out of the set even with the output valve fully loaded.

Stick a milliameter in series with the last valve plate circuit, turn the volume control fully up and see if the needle kicks. If it does not, it is ten to one that you cannot get sufficient out of your pick-up and intermediate stage to load the output valve. If it does kick, either you are overloading the output valve or the previous stage.

With no kicks anywhere you can be sure that you are not getting the most out of the set, and it would be a good plan to put a steeper-slope valve in the intermediate stage.

Personally, I should be inclined to alter your set to some extent. Bearing in mind that you say it has two L.F. stages after the detector, and that they are both transformer-coupled, there is little wonder that you do not like the quality of the pick-up when it is inserted in the detector stage. Two transformer-coupled stages are not usually very nice to listen to.

I should seriously consider altering the detector stage to resistance coupling. Then you will probably find that not only will the maximum signal strength in radio still be quite sufficient, but that the quality will be better. Further, you will probably be able to put the pick-up in the detector grid circuit and fully load your output valve.

TECHNICAL JOTTINGS

Items from a Radio Expert's Notebook

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

Bandpass Filters

I HAVE mentioned bandpass circuits in these Notes once or twice lately, and there is a practical point which I think it may be worth while to mention which, incidentally, arose in some experimental work we were doing just lately. The point is in regard to the *wiring* of a circuit which, in the case of a bandpass, may have a very important effect upon the characteristics. The arrangement of the wiring conductors is an important matter, as everybody knows, in any modern high-efficiency receiver, but there are some additional points with regard to the bandpass which I think you ought to keep in mind.

Stray Capacity

What always causes trouble with incorrect wiring is the existence of stray capacity effects. If this effect exists with a bandpass circuit you will get a characteristic curve for the circuit which is either too peaked or too broad. It is, therefore, very important when wiring up such a circuit to take care that the wires do not run too close together. In particular, the connections to the tuning condenser may, if not properly placed, cause a capacity-coupling effect which will entirely upset the tuning. Not only this, but the sensitivity and the selectivity of a receiving set which incorporates a bandpass filter may be affected to an important extent by the manner in which the filter circuit is wired up.

Direct Comparisons

I have actually made direct comparisons between two sets which were identical, or supposed to be identical, in all respects except in regard to the wiring of the bandpass filter. In the one the filter was correctly wired and in the other it was wired fairly efficiently, and I must say the departure from the best arrangement was not apparently very serious. Nevertheless, there was quite a difference in the performance of the two sets which, after very careful examination, we could attribute to no other cause than the inefficient wiring of the filter in the one case. To make doubly sure, the wiring to the filter was rearranged to be like that in the better set, and after this was done there was virtually no difference between them.

High-Efficiency Receivers

As I said before, in these days of compact sets, screening and high efficiency, the arrangement of the wiring is most important, but, in general, the set itself will be a commercially manufactured outfit or, if it is home-made, the constructor usually has all these points in mind. Where people go wrong is in the adding of *extra* circuits—such as, for instance, the bandpass filter arrangement which we have been discussing above—to a commercially made set or even to a home-constructed set. For some curious reason the constructor, or the experienced amateur, seems to regard

(*Please turn to page* 615.)

ON THE SHORT WAVES

POINTS from the POST-BAG

W.L.S. Replies to Correspondents

LOTS of newsy letters this week, so I must deal with them as shortly as possible. P. A. Y. (Bedford) reports good reception from K 6 O Q E (Hawaii) on 20 metres. QSL cards to Hawaii may be sent through A. R. R. L. Headquarters, 38, La Salle Road, West Hartford, Connecticut.

H. J. B. (Manchester) is still playing about with aerials and has rebuilt the set, which now goes right down to "five." He reports that during the day 20 metres (in which he can't work up much interest, being a 10-metre "fan") is alive with locals, but in the evening DX is good, particularly from South America. Stations mentioned are P Y 2 B A, P Y 2 F F, C X 2 A K and K 4 S A (Porto Rico). This last-named is a very old friend, and it's nice to hear him again.

Early in the Morning

In the early mornings H. J. B. has heard Australians, W6 and W7 stations and K 6 N Z U (Hawaii).

W. S. (Brighton) is holiday-making, on a farm, with a most unpromising indoor aerial, but is thoroughly annoyed to find results considerably better than he can muster up on his red-hot dipole at home! But he suffers (on the farm) from foul mains and severe interference from milk-cooling machinery.

S. J. (Croydon) has been playing with a stunt that I used to be fond of. He unearthed an old pair of phones during a "Five Hours Back" programme, connected one carpiece to the detector of his broadcast receiver and the other to the output of his short-waver. In other words, London National in one ear, W 3 X A L in the other. He found the signal wandering from ear to ear slightly, but otherwise it was not frightfully obvious that anything out of the way was going on.

A. G. E. (Llanelly) and others ask for a detailed layout of a good short-wave converter that will be really efficient on the 10-metre band—when that band comes back into the public eye once more. I hope to show this very shortly; in fact, I may be able to make one up and give full constructional details.

The "Simplex" Two

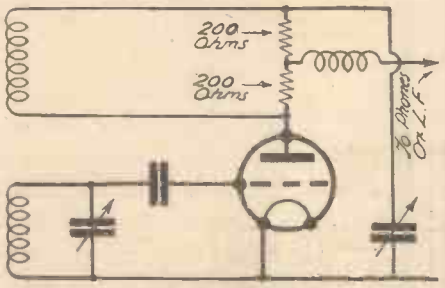
C. A. W. (Fransch Hoek, South Africa) is going to introduce the merits of the "Simplex" Two to that part of the world, and asks sundry queries about types of valve and loudspeaker which will be suitable for use with the set. I can only advise him to try all that he has, and to stick to the best! I have no preconceived ideas on the subject, and used all sorts of funny things myself with that particular set.

A. E. (Portmadoc) is making the "Simplex" Three, and asks about alternative valves for that. His suggestions are perfectly O.K. He passes on some more funny "call-sign illustrations": W 3 A P O, "Apples, Potatoes, Onions"; W 3 B P H, "Three Big Panama Hats"; W 3 M D (as an alternative to "Mussolini Dynamite"!), "Mud Duck." Add one heard by myself—W 5 L P, "Five Little Pigs."

E. G. H. (Andover) has made up the band-spread single-valver that I recently described and is delighted with it, but now he wants to add an L.F. stage. This is another subject that I must get back to before long, and I hope to give a diagram next week of a general-purpose L.F. stage for adding to any efficient single-valver. (Note that word "efficient"!)

G. N. N. (Taunton) regards his short-waver chiefly as a means of polishing up his Morse before he takes his P.M.G. Certificate, and asks if I know of definite times and wavelengths for news broadcasts in Morse on short waves. I'm afraid I don't, but I know that if you punt round between 20 and 35 metres there are always plenty of automatic C.W. stations putting out stuff at almost any speed between 18 and 40 w.p.m. Perhaps if any readers know of regular Press broadcasts at 18–22 w.p.m. they will be good enough to let me know of them?

GIVES IMPROVED CONTROL



This scheme has been devised by S. A. K. (Dorking) for improving reaction control. Note that the lead to the phones or L.F. stages is taken from the centre tap.

D. E. W. (Swansea) tells me that my pages have all been cut out and made into a book with sticky tape! What a responsibility I have to carry! He has trouble with a modified "Simplex" Two which oscillates violently round one half of the dial and packs up on the other. Of course, I always tell people who suffer from this sort of thing that they are trying to couple the aerial too tightly—but possibly the coil windings might be improved, tighter reaction coupling and not so many turns.

A New Reaction Scheme

As D. E. W. says, however, that the set has only been going three or four days, I dare say a little playing around will enable him to spot the trouble and put things right without further ado.

The sketch on this page shows a scheme devised by S. A. K. (Dorking) for improving reaction control, and I have tried it since I referred to it last week. It certainly does its stuff, and I can recommend it to anyone who wants to make a smooth control even smoother. The 200-ohm resistances seem to be of the right size. Note that the reaction condenser is taken from the end of the coil as usual. It is only the lead to phones or L.F. amplifier that is taken from the newly made centre-tap.

F. W. P. (Yeovil) tells me that the station which a reader thought was V O T Y was most probably V O G Y, of the Dominions Broadcasting Co. at St. John's, Newfoundland. He operates at the bottom end of the 20-metre amateur band.

Short-Wave News

ACTIVITY on all the short-wave bands seems to be increasing, although I suspect that this is due to the stations rather than the conditions. Whatever the cause, however, our fine burst of August sunspots has certainly livened everything up, and we have the well-known phenomenon of good conditions attracting more stations on to the air, with the consequent crowding out of everything and everybody.

Lively 49-Metre Band

I was surprised to find, a few nights ago, how lively the 49-metre band was. My attitude to this band, for a few months, has been that "you can't touch pitch without being defiled," and I have recoiled from the idea of getting tied up in the chaos that generally reigns on "49."

With my new pre-selector unit, however, in front of the big superhet, I find that the chaos no longer exists for me, and I have been able to identify station after station, the only trouble being the high level of atmospherics.

After all, one Colombian is about the same as another, and there isn't much fun in sitting on one for hours to see whether he is H J 1 X Y Z or H J 2 Z Y X.

There has been also a marked improvement in the 17- and 13-metre bands. Some of the Americans on 13 metres have been perking up surprisingly well, although W 8 X K is nothing unusual. And on 19 metres we have had the unusual phenomenon of W 2 X A D, W 2 X E and W 8 X K rolling in night after night at just about the same strength.

A New Amplifier

That, by the way, will be remedied when X A D gets that new 100-kilowatt amplifier stage in action!

Amateur bands have been much the same as usual, except for an apparent shortage of phone on 20 metres. I have listened there on several days when conditions have been really quite good, and yet have heard very few phones that were not on the weak side. In spite of this, C.W. signals from all parts have been very strong.

One night at about 9 o'clock on 20 metres I heard all continents in six minutes with J 2 C C, V K 2 A D E, L U 8 D J, S U 1 K G, several North Americans and loads of Europeans.

Although 10 metres have not "officially" opened up yet, it is well worth while listening round the band occasionally, as DX signals are breaking through from time to time. I have heard a lone South American or South African nearly every time I have listened there, but never a sign of a "Yank."

Probably the 9-metre broadcast stations will start squeezing through before the Yanks are in full blast on 10 metres.

There is a nasty noise on the 19-metre band, just about on W 1 X A L's spot—that is to say, between W 2 X E and W 8 X K. It is, I think, a picture transmission station; it certainly is *not* our friend of the wailing noises. W. L. S.

TECHNICAL JOTTINGS

(*Continued from page* 613.)

the precautions which he takes in building the main part of his receiver as being not so necessary in regard to the addition of these extras.

Need For Wiring Care

Always bear in mind that the *added* part becomes in effect part and parcel of the main circuit and requires every bit as much care and attention as the rest. In fact, it requires *more* care, because it is almost inevitable that the leads to this added portion will not be quite so convenient to dispose of as if it had been intended to be included in the original layout. Care in the matter of efficient wiring will repay you time and time again in the stability, efficiency and general performance of your receiver.

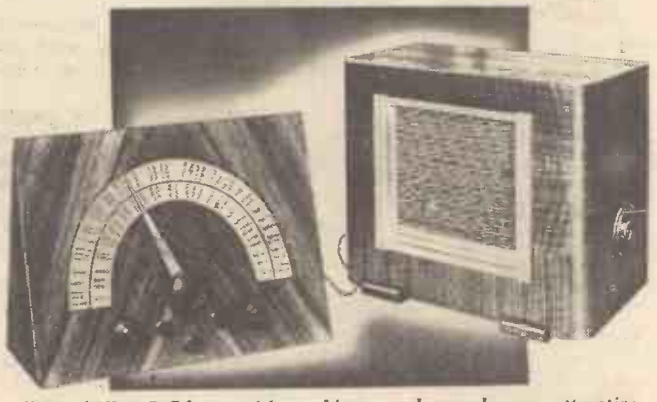
ROUND THE STANDS

(*Continued from page* 593.)

R.G.D., LTD.
Stand No. 67.

Those who are interested in high-class designs can usually find something of special interest on the R.G.D. Stand, since this firm specialises more particularly in the higher-priced type of radiogram.

They are showing radiogram models ranging in price from 35 gns. to 120 gns.



"The 'All-B.B.C.' set with a cabinet speaker makes an attractive combination. The photo shows the W.B. Stentorian 38 SC."—Editor.

NORMAN ROSE (ELECTRICAL), LTD.
Stand No. 207.

Stand No. 207 should be a "rendezvous" of all who service radio receivers, for "Service to Service Men" is a slogan of Messrs. Norman Rose, Ltd. The range of testing equipment made by this firm is featured on their Stand, and includes the Norman "Omnisection" Valve Emission Tester and "Norman 94" Set Analyser.

The latter instrument provides A.C. and D.C. readings of current voltage and resistance in 22 ranges. Calculations are practically non-existent with this instrument, and it also provides a complete test for valves.

The "Omnisection" requires no technical knowledge to operate. It shows whether the value is O.K. in one simple operation.

(These instruments are manufactured for supplying to the trade, namely, to genuine service engineers.)

This firm also has a large range of serviceman's material which includes inexpensive replacement condensers, resistances, accumulators and so on.

THE SCOTT INSULATED WIRE CO., LTD.
Stand No. 156.

Those who construct their own coils will find items of interest on Stand No. 156 in the gallery. Apart from samples of the wires made by this firm, they are also showing some of the more important materials used in the manufacture of their wires, and illustrating the various processes from the raw stage to the finished article.

Wire which is but two-thirds of the diameter of the average human hair is exhibited. This wire when insulated with enamel and a silk covering is but little thicker than a human hair. One pound of the wire has a length of twenty-four miles.

SELECTA GRAMOPHONES, LTD.
Stand No. T13.

This is a factor's stand, and therefore mainly of interest to dealers. Apart from sets, all makes of B.V.A. valves and gramophone records (for which the firm is the oldest established factor in the trade) are on show.

STEATITE AND PORCELAIN PRODUCTS, LTD.
Stand No. 152.

The use of ceramic materials for high-frequency work is rapidly becoming very popular. The ceramic material Faradex, for example, has dielectric constant of 80 and an extremely low dielectric loss at high frequencies.

Then there is the well-known Frequentite, which has a power factor comparable with fused quartz, great mechanical strength, permanent rigidity, and complete resistance of climatic conditions.

Among the exhibits are coil formers, trimmer bases, aerial and stand-off insulators, and a series of large pieces for high-power short-wave transmitters. Other interesting exhibits include dies for pressing ceramic powder and test apparatus for measuring power factors of test pieces at wavelengths down to five metres.

STRATTON & CO., LTD.
Stand No. 23.

Messrs. Stratton & Co., Ltd., the makers of Eddystone components, are one of the leading makers of high-class short-wave components. They make components for both receivers and transmitters, and it is probably correct to say there is hardly a single amateur transmitter in this country who has not got an Eddystone component somewhere in his gear.

They are showing their complete range of components on their Stand. These include chiefly: coils of all types, variable condensers, insulators, and instrument knobs of a variety of types.

Typical of their quality components are their two-gang condensers. These have special Calit high-frequency insulation, are of all-brass construction with heavy metal bearings, are essentially rigid, and compact in size. They cost 15s. and 17s. 6d. respectively for 40 and 150 m.mfd. each section.

A full-vision, two-speed dial at 8s. 9d. is also excellent value because of its fine construction.

THE TELEGRAPH CONDENSER COMPANY, LTD.
Stand No. 38.

As all constructors know, this firm specialises in the production of fixed condensers of all types. Paper, mica, wet electrolytic, dry electrolytic, and condensers for transmitting purposes are all to be found in profusion on their Stand.

Amongst the more common paper and mica condensers are to be seen non-inductive paper tubulars, and special types for use under tropical conditions and for car radio work.

Among the electrolytics, a special feature is made of the surgeproof "Voltage Regulating" wet ones, which include a new 32-mfd. pattern and types specially designed for use in universal mains receivers.

(*Continued overleaf.*)

(Continued from previous page)

An interesting exhibit is constituted by the transmitting and high-voltage smoothing condensers as used in broadcasting stations here and on the Continent, which are shown.

VARLEY (OLIVER PELL CONTROL, LTD.).
Stand No. 99.

Varley, the coil specialists, are introducing a number of new lines, and they are lines which, backed by the quality for which this firm is well-known, should appeal to set-builders and prove very popular.

Probably most interesting of all is the 2-gang 3-band superhet coil unit for 465-kc. intermediates. This unit covers 17–51 metres on the short waves, 200–550 on the medium and 800–2,000 on the long. It comprises aerial and oscillator coils, complete with trimming and padding condensers, and is intended for use with any straight 2-gang condenser.

With this unit the design and construction of an all-wave superhet with single-knob tuning becomes a practical proposition to all constructors.

Constructors who build their sets on metal chassis will also welcome the range of I.F. skeleton-type transformers. These are fitted with fixing bolts for chassis mounting and loose leads. They are also suitable for servicing jobs.

There are three in the 465-kc. class—an ordinary type, one with the grid lead at the top for use with top-grid valves, and a variable coupling model. The first two are priced at 7s. 9d., and the third at 8s. 6d.

At 7s. 9d. each there are two models for 110-kc. working, one with grid lead at the top.

A useful filter that is being introduced is for 465-kc. working near the coast, or in other districts where Morse stations produce troublesome interference. It comprises a coil and trimming condenser in a screening can. The price is 4s. 3d.

WESTINGHOUSE BRAKE & SIGNAL CO., LTD.
Stand No. 77.

Dry rectifiers have much to recommend them, whether for H.T. or L.T., or some other purpose; and, as usual, the Westinghouse people are showing a most useful range.

The H.T. units can be used in voltage-doubling circuits or as half-wave rectifiers, and vary in outputs from 130 volts at 20 milliamps up to 500 volts at 120 milliamps. The prices range from 10s. to 30s.

The L.T. units are for 2- 6- 9 or 12-volt outputs. Here prices vary from 6s. 6d. to 47s. 6d.

Rectifiers are also available for measuring instruments and high voltages. Then there are the famous Westectors which are for rectifying high-frequencies in radio receivers in place of diode valves. These are in half-wave and full-wave types at 5s. and 10s. respectively.

Other interesting lines on show are all sizes of battery chargers for operation from A.C. mains and a photo-electric cell at 40s. This is ideal for experiments in control by means of light.

WESTON ELECTRICAL INSTRUMENT CO., LTD.
Stand No. 167.

Precision-measuring instruments are the feature of this Stand. In particular, the Weston Super-Sensitive Analyser is of interest. On its D.C. volts scale this instrument has the unusual resistance of 20,000 ohms per volt.

The necessary batteries are self-contained, and the resistance scales measure up to 10 megohms, the first scale division on the lowest range being ·02 ohms. Measurements of capacity and output are also possible with this instrument.

The price is £22 4s.

WHITELEY ELECTRICAL RADIO CO., LTD.
Stand No. 75.

This Stand is doubly interesting in that, apart from a completely new range of Stentorian speakers—the traditional W.B. product—there is also a fairly comprehensive range of receivers—an entirely new activity for this company.

There are improved extension speakers with new cabinets from 29s. 6d. to 63s. All but the smallest of these are fitted with a new W.B. feature. This is a "constant impedance" volume control for maintaining full quality at all volumes.

Then there is an interesting demonstration of the "Long Arm," an effective and efficient form of remote control worked from the extension loud-speaker.

Among the chassis speakers on show, the "Planoflex" is most outstanding. It is a completely new design suitable only for use with quality amplifiers. An almost linear response with full output is claimed between 30 cycles and 14 kilocycles.

For users of normal receivers there is a complete range of new chassis evolved from the well-known Stentorian basic design, embodying technical modifications that improve performance. Prices range from 17s. 6d. to 42s. The two larger models are adaptable for extension use with the "Long Arm" by means of a small extra accessory.

Elliptical speakers and energised speakers are also on show.

The new receivers have been designed with special regard for the company's reputation for high tone-fidelity, and it is stated that whatever the demand for these new receivers production will definitely be limited with a view to obtaining a high order of reliability.

The models include a four-band A.C. superhet, a four-valve all-wave battery superhet, a five-valve all-wave A.C. superhet, a three-valve A.C. all-waver and two battery transportables—all at competitive prices.

WINGROVE & ROGERS, LTD.
Stand No. 44.

Polar condensers and drives have ever been popular with constructors, due to their fine quality of manufacture. The same standard is maintained in their exhibits this year, but improvements and new lines are in evidence.

This new H.M.V. eight-valve all-world receiver incorporates fluid-light tuning and has an undistorted output of 5 watts. It costs 19 gns.

The range of gang condensers comprises the Bar 2 and 3-gang and the Midget 4-gang, all of which are available as straight or superhet types, the latter being supplied for 465- or 110-kc. I.F.'s.

To meet the demand for a slow-motion drive suitable for "all-wave" tuning, they have produced the Micro-Horizontal Drive, the outstanding feature of which is that both 50 : 1 and 10 : 1 ratios are controlled by one 2-inch diameter knob. It is fitted with a station name scale, and both wavelength and degree calibrations are shown. The price is 9s. 6d.

The V.P. Horizontal Drive is continued, but is brought up-to-date by the station name scale being provided in future.

A new line is the 2-gang mica dielectric trimmer, which is available in a comprehensive range of capacities. The price is 2s. in each case. Polar-N.S.F. volume controls, resistors and fixed condensers are also on show.

WRIGHT & WEAIRE, LTD.
Stand No. 165.

Among the items shown on this Stand are two new lines, the "Triogen" three-range coil and the "Wearite" universal power transformer.

The first covers 19-48, 200-550 and 900-2,100 metres, and has built-in trimmers. An incorporated wavechange switch is supplied, and the price is 9s. 6d., plus 1s. 6d. for switch spindle and position register.

The "Wearite" universal transformer is designed to meet the demand for a cheap single transformer with a variety of outputs which can be adapted to suit any type of valve or circuit, and will not become obsolete. It is all right for use with the new octal-base valves.

GETTING A JOB

STARTING on a career was probably never a very simple business, but it was certainly at no period so fraught with difficulties as it is to-day. Putting aside the purely economic question (which would require a volume in itself) we venture to offer "P.W." readers a few suggestions on one particular aspect of the problem.

Nowadays, the applicant for any position offering more than the most meagre prospects of advancement finds himself confronted with the obstacle of the examination system. For those seeking a post in commerce or industry, no less than for the prospective doctor, dentist, solicitor or civil servant, the first necessity is the attainment of a recognised educational standard, as measured by one or other of the well-known school-leaving examinations conducted by the Universities. The standard most frequently demanded is that of London Matriculation, though some employers will accept the somewhat easier "School Certificate." But, unhappy the candidate who has neither "Matric." nor "School Cert."!

There must, we feel, be many readers who, for one reason or another, failed to pass their school-leaving examinations, or are leaving school without taking it. These may be interested to hear of an old-established coaching establishment—the Central Tutorial Classes—at which tuition is provided for both School Certificate and Matriculation, as well as for the higher professional and University examinations. The address is: Vernon House, Sicilian Avenue, Bloomsbury Square, London, W.C.1. A postcard, addressed to the Principal and mentioning POPULAR WIRELESS, will bring full particulars.

THE BRITISH SHORT-WAVE LEAGUE

A special message to all members

AN informal gathering of members of the above society will take place at Radiolympia on Saturday, August 28th. For various reasons several members have found it impossible to arrive there at the originally proposed time of 13.00, therefore the following arrangement has been decided upon:

Members interested are requested to gather near the Stand of POPULAR WIRELESS at 13.00 if possible, where they will be met by fellow members and the Secretary of the B.S.W.L., and possibly by other League officials. For those unable to gather there at that time a second "look-out" for other members will be made at 14.00 close to the Stand of a contemporary. All members are requested to wear the League badge, and to bring along any items of interest such as unusual QSL cards, photos, journals, or small gear likely to interest fellow members. It is hoped that arrangements will be made for a "mass" tea at a neighbouring restaurant after a tour of the Show.

All interested are earnestly requested to drop a postcard to the secretary, F. A. Beane, 2 C U B, British Short-Wave League, Ridgewell, Halstead, Essex, without delay. The secretary will also be pleased to send details of membership to all non-members sending a 2d. stamp to cover postage.

THE "ALL-B.B.C." SET

(Continued from page 602.)

with several tappings on the medium-wave primary, i.e. the coil in the aerial circuit. As, however, I am using a variable aerial "coupler" in the form of a ·0005-mfd. variable condenser one can get all desired degrees of signal strength or selectivity by altering the coupler and leaving the tapping so that the whole of the primary is used.

The use of a ·0005-mfd. aerial coupler for the ultra-short waves may seem unexpected, but it must be remembered that the coupler is used in conjunction with a transformer arrangement. Actually I have provided for experimental purposes an alternative aerial terminal connected through a very small adjustable pre-set of ·00005-mfd. maximum capacity, joined to the grid end of the main ultra-short-wave inductance. The transformer system is thus altered to a simple single circuit fed directly through a ·00005-mfd. condenser from the aerial. As the connection is directly to the aerial a much smaller pre-set is used. Actually, little if any difference in efficiency will be noticeable as regards the two systems of connection to the aerial, but the 7-metre band will afford excellent opportunities for experiment for a long time to come, and the amateur can assist effectively and simply in much of this work.

THE POWER SUPPLY

Batteries: H.T. 120 v. — Drydex, G.E.C., Aerialite, Milnes H.T. Unit, Lissen, Fuller.
G.B. 16·5 v. — Drydex, Lissen.
L.T. 2 v. — Exide, Lissen, Fuller.

Mains Units: Ekco, Atlas.

SUITABLE LOUDSPEAKERS

W.B., Rola, Wharfedale, Blue Spot, Amplion. (No significance attaches to the order of makes.) J. S.-T.

The rest of the circuit adheres to usual conventions, except perhaps in that no ultra-short-wave choke is used, but instead I have inserted a 5,000-ohm resistor between the anode of the detector valve and the ordinary R.F. choke for use on the medium- and long-wave bands.

The circuit is adequately decoupled for mains units which may be employed in place of an H.T. battery. Excellent quality of reproduction is obtained with this receiver and the output valve, a PX 230 is the "size" I have favoured in recent sets where a rather larger output volume is desired or where quality of reproduction is an important factor—or, rather, where it is more important than usual. Naturally, such a valve when used to give maximum output will consume more H.T. current than a smaller one, but one is told on biblical authority that one cannot make bricks without straw, and a bigger output from a given type of valve and H.T. voltage always calls for more H.T. current. But for ordinary use one can always "dim the wick" by reducing the standing H.T. current by increasing the negative bias on the grid of the last valve.

Mr. SCOTT-TAGGART
will give further details of his
"ALL-B.B.C." SET
in next week's "P.W."

INDEX TO ADVERTISERS

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