

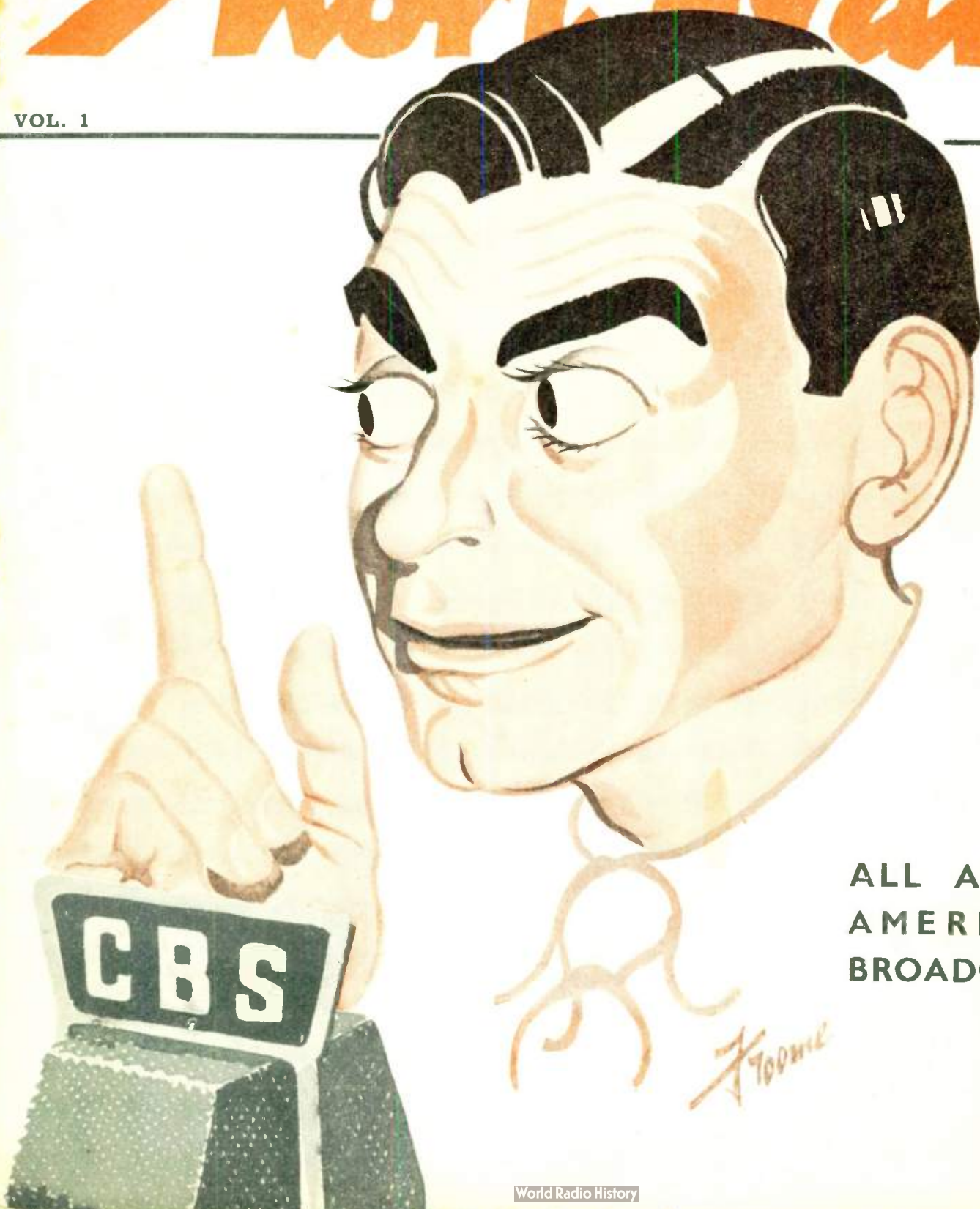
FREE with this **ISSUE** **HOUR** by **HOUR** listening **Guide** for the **SHORT WAVES**

2^D

Short Wave

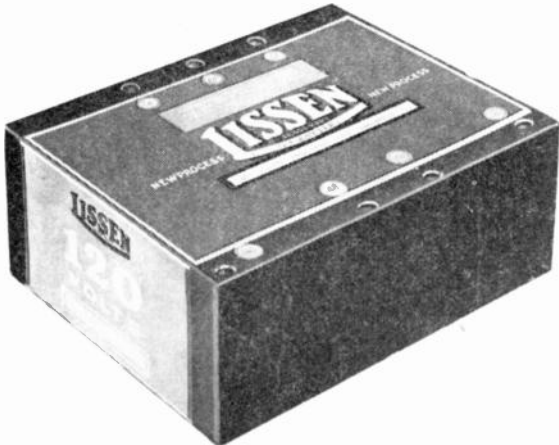
VOL. 1

NO. 2



ALL ABOUT
AMERICAN
BROADCASTS

LISSEN



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The first journal
in Great Britain
devoted entirely to
the interests of the
short-wave listener.

Short Wave

How to get the best
from the Bandsread 3.
First details of a
powerful new all-wave
receiver.

VOL. 1

DECEMBER, 1935

NO. 2

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Round the Clock on the Short Waves

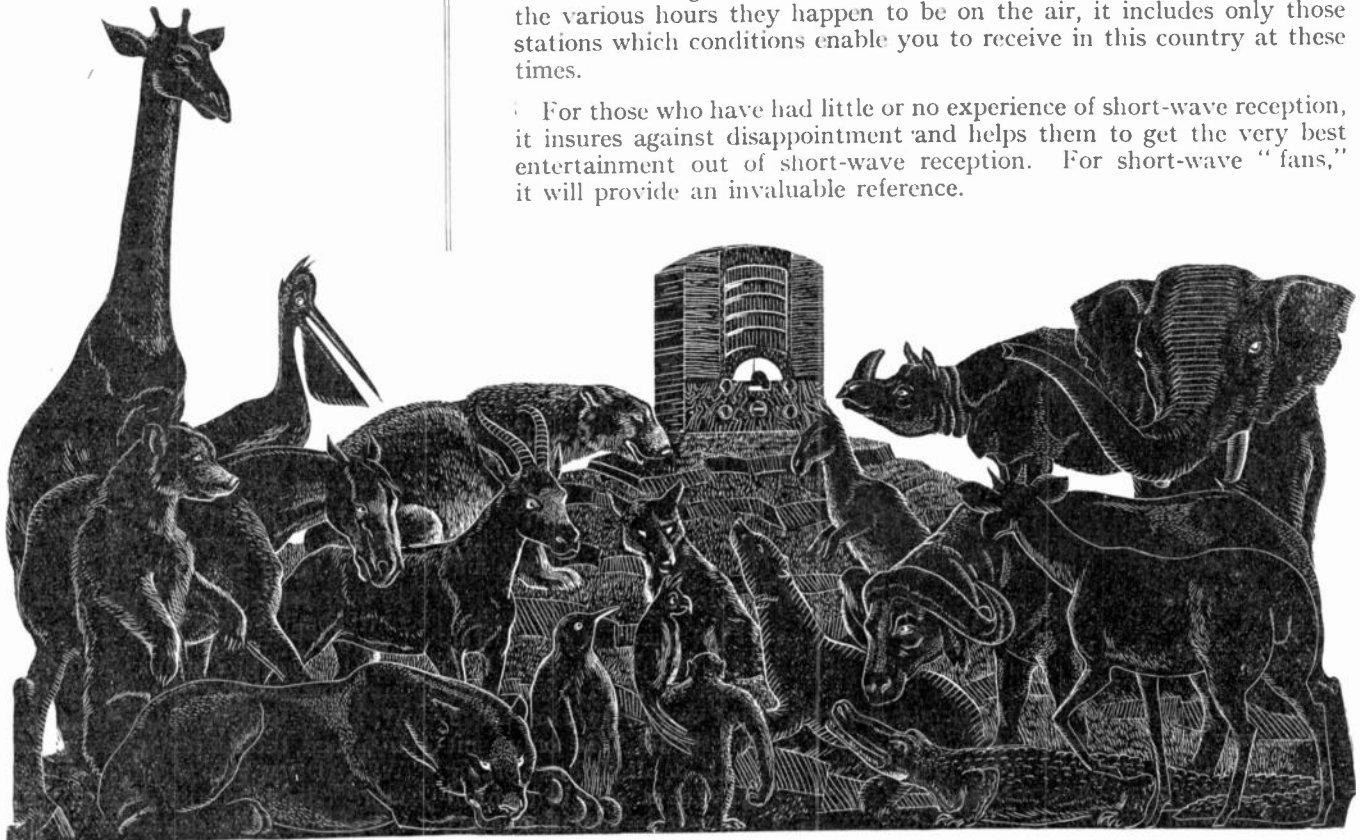
ALL ABOUT OUR WONDERFUL FREE GIFT

For the first time, *Short Wave* have compiled and are presenting free to their readers a comprehensive "Hour by Hour" Short Wave Listening Guide.

The tremendous value of such a guide will be obvious at once to anyone who has had any experience with Short-wave listening. The greatest difficulty confronting the average man with a short-wave set is knowing at what times and on what wave-lengths stations can be received. Now, at any time of the night or day, you can sit down with your set and a copy of the Listening Guide, and know exactly on which wave-bands you can tune-in which stations!

The Listening Guide is not merely a list of stations classified under the various hours they happen to be on the air, it includes only those stations which conditions enable you to receive in this country at these times.

For those who have had little or no experience of short-wave reception, it insures against disappointment and helps them to get the very best entertainment out of short-wave reception. For short-wave "fans," it will provide an invaluable reference.



“SAY, FOLKS!”

Even after the first thrill of tuning in to America has passed, and listening to W2XAD has become as common-place as listening to your Regional Station, you will find yourself tuning in to America regularly for the sake of the programmes which have a “slickness” of their own.

THE old idea that listening to American stations means burning the midnight oil still sticks, so that many would-be short-wave fans lose interest before they have really started. It is ridiculous that after so many years this idea should still really be believed.

It is not quite correct to say that the best time for reception is in the afternoon or early evening but as a

general rule reception of American stations is more reliable during daylight and dusk rather than during the latter part of the evening.

To demonstrate the capabilities of a short-wave set no expert would wait until midnight or after. By that time the only programmes available would be from the American

continent on the 50 metre band, whereas the whole world can be tapped earlier on in the day. My favourite station is, and always has been, W3XAL in Boundbrook, New Jersey. This station

operates on a wavelength of 16.8 metres and can be heard on even the simplest of receivers from about 3 o'clock in the afternoon until at least 6 o'clock in

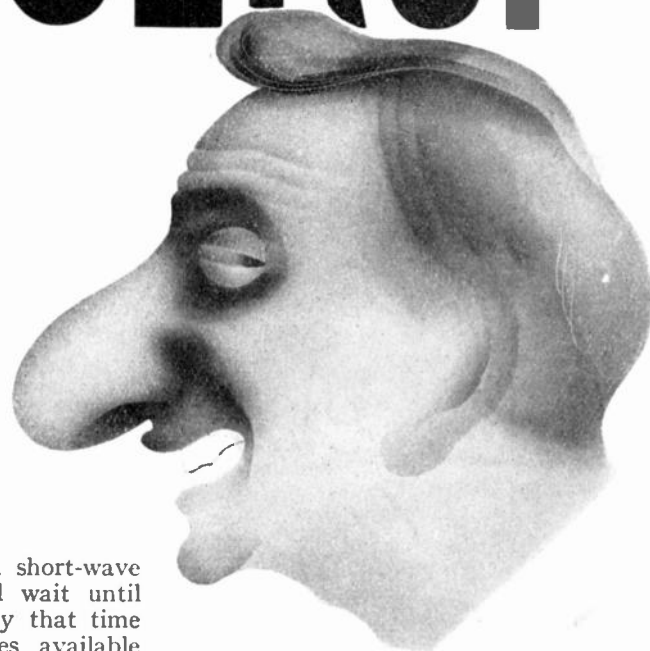
the evening and sometimes later.

To many it may seem rather unusual to hear America in the afternoon, but actually the wavelength used is only suitable for daylight working. Try this station sometime; it is radiating every

*“Was I mortified? Hot-cha-cha-cha!”
Schmozzle Durante needs no introduction.
You may hear him on the air on your short wave set.*

day except Sunday and programmes usually consist of light morning music such as organ solos, comedians, light vocal numbers and very often celebrities such as Bing Crosby, Joe Venuti and his Orchestra, Johnnie Albright the crooner and many others. On the odd afternoons when this station may be having an off period, W8XK and W2XAD are both radiating on the 19-metre band. W8XK is on every day from 5 p.m. at the latest and it is nothing new to hear programmes from Pittsburg until about 8 o'clock.

Afternoon programmes from Pittsburg are usually those radiated by W3XAL, so if one station happens to be bad, there is always a stand-by. W2XAD, while perhaps being a more reliable station than W8XK, is only on three days a week from



Starry-eyed Joan Crawford and many other famous film stars, broadcast now and then in “Hollywood Hotel,” a regular feature programme on the Columbia network.

6 until 9 or during the winter, 9 until 12. At the moment, that is, during November and the early part of December, W2XAD radiates from 2.0 in the afternoon until 9 in the evening on Sundays, and from 7 until 8.30 on Monday, Wednesday and Friday, being increased until 10 p.m. on Tuesday, Thursday and Saturday.

Have you ever heard an American Football game relayed through W2XAD or W8XK on a Saturday afternoon? They start usually about 6 p.m. and go on until as late as 9.30. These running commentaries are really very exciting and you have no idea how many thrills can be crammed into a half-hour high-speed commentary. The nearest English programme I have heard that in any way compares, are

the commentaries on ice-hockey games from Wembley stadium.

These matches are rather blood-thirsty and you get all the details of players being carried off and can actually follow the game in its entirety. The Inter-Collegiate games are particularly good, so make a special point of listening next Saturday afternoon after 5 p.m. These two stations, W8XK and W2XAD have regular programme items which occur every evening or every other evening. Consider W2XAD at 7 o'clock most evenings. They have a popular vocalist who is usually well-known in Europe. This is followed by household chats, which although perhaps are not generally interesting give some rather new angles on everyday domestic problems.



His "Hi-de-Highness" Cab Calloway, world famous scat singer now returned from his European tour, can be heard regularly in American programmes.

Even these few remarks will give a very good indication of what can be heard in the early evening. Perhaps the period between 8 and 11 is even more interesting for those who cannot be home before. Round about 7 each evening, W8XK this time of 25 metres, starts with the normal evening programmes, or rather afternoon, as they are in America. By 9 o'clock this station is coming over at very good strength.

Take a few examples of the programmes given here from say 9 o'clock onwards. Talks on bridge, cowboy adventures, some of the world's best orchestras, including both the Pittsburg and Chicago symphony orchestras. For the low-brow—all the famous "hot" jazz bands—Waring's Pennsylvanians, Cab Calloway, and so on. Actually, there are 15 different items that can be heard from Pittsburg alone between the hours of 9 and midnight.

The stations mentioned are only a few of what can actually be heard. As a general rule over 50 short-wave stations from the American continent can be tuned in between mid-day and mid-night.

Try and forget the notion that listening to America means waiting until after midnight!

AMERICAN MISCELLANY

HOLLYWOOD HOTEL

Saturdays,
2 a.m.

A dramatic musical review featuring all the well known talkie stars—Jean Harlow, Bing Crosby, Leslie Howard, etc., have all taken part in this programme at one time or another.

EDDIE CANTOR'S SHOW

Monday, 1 a.m.

Half an hour of singing and "wise-cracks." Accompanied by an orchestra under Jimmy Grier.

BROADWAY VARIETIES

Saturday, 1.30 a.m.

Half an hour's vaudeville show with Carmela Ponselle, Elizabeth Lennox, Oscar Shaw and other artists famous on Broadway.

TO ARMS FOR PEACE

Fridays, 2.30 a.m.

A half hour programme produced by World Peaceways, consisting of dramatisations, illustrating the horrors of war.

LESLIE HOWARD & CO.

Mondays, 1.30 a.m.

NATIONAL AMATEUR NIGHT

Sundays, 11 p.m.

Amateurs are given an audition on the air without any previous rehearsal.

THE MARCH OF TIME

Sundays and Mondays, 3.30 a.m.

FRED WARING'S PENNSYLVANIANS

Wednesdays, 2.30 a.m.

Symphonic dance orchestra. A combination of Harry Roy and Henry Hall.

TOWN CRIER

Sundays, 12 midnight

NEW YORK Philharmonic Orchestra
Sundays, 8 p.m.

BURNS AND ALLEN

Thursdays, 1.30 a.m.

Cross-talk. Burns and Allen are well-known for their variety turns in this country.

REGULAR PROGRAMMES BROADCAST OVER THE C.B.S. NETWORK.

Have you heard the words that pass *twixt* SHIP

BACK in 1929 when the Post Office really got down to using the radio telephone, short-wave enthusiasts found yet another source of amusement listening to Atlantic telephone conversations. This eavesdropping did not appear to worry anyone in particular until subscribers to the phone service began to object to their private conversations being broadcast.

I remember quite distinctly rigging up two receivers, one tuned to Rugby and the other to Rocky Point near New York. In this way



I was able to listen to the operator in London, talking to the operator in New York, asking for some particular number and later the subscribers at both ends would get into touch and all the conversation could be followed.

Rugby being the terminal point for Europe, all of the other countries wishing to phone New York or any part of America would have to do so via Rugby, so that an almost world-wide link-up could be followed with a short-wave receiver.

Scrambled Speech

The practice of listening to these telephone messages became so widespread that the Post Office were forced to employ means of obtaining secrecy. Ultimately scrambled speech was employed by which the human voice was split into two halves, each half being broadcast on a different wavelength. If these messages were then picked up all that could be heard was a confused jumble of sound.

This very effectively prevented anyone with a short-wave receiver hearing broadcast telephone messages and for a time everything was quiet. It was not until the latter end of 1929 that passengers on board

ships at sea began to clamour for some means of communicating with shore stations. On December 8 of that year the American liner *Leviathan*, bound for Cherbourg from New York, was equipped with two-way short-wave apparatus.

Tests were carried out with an experimental transmitter erected for the purpose at Deal Beach, New Jersey, in the laboratories of the Bell Telephone Company.

The tests and subsequent service proving so satisfactory and reliable, other important liners were equipped in a similar way. A query may be raised that if scrambled speech was employed what was the use of trying to listen to these liner broadcasts. That is the whole crux of the matter. So far secrecy can only be obtained when both the transmitter and the receiver are stationary. If one terminal point is continually on the move it is impossible to scramble the speech.

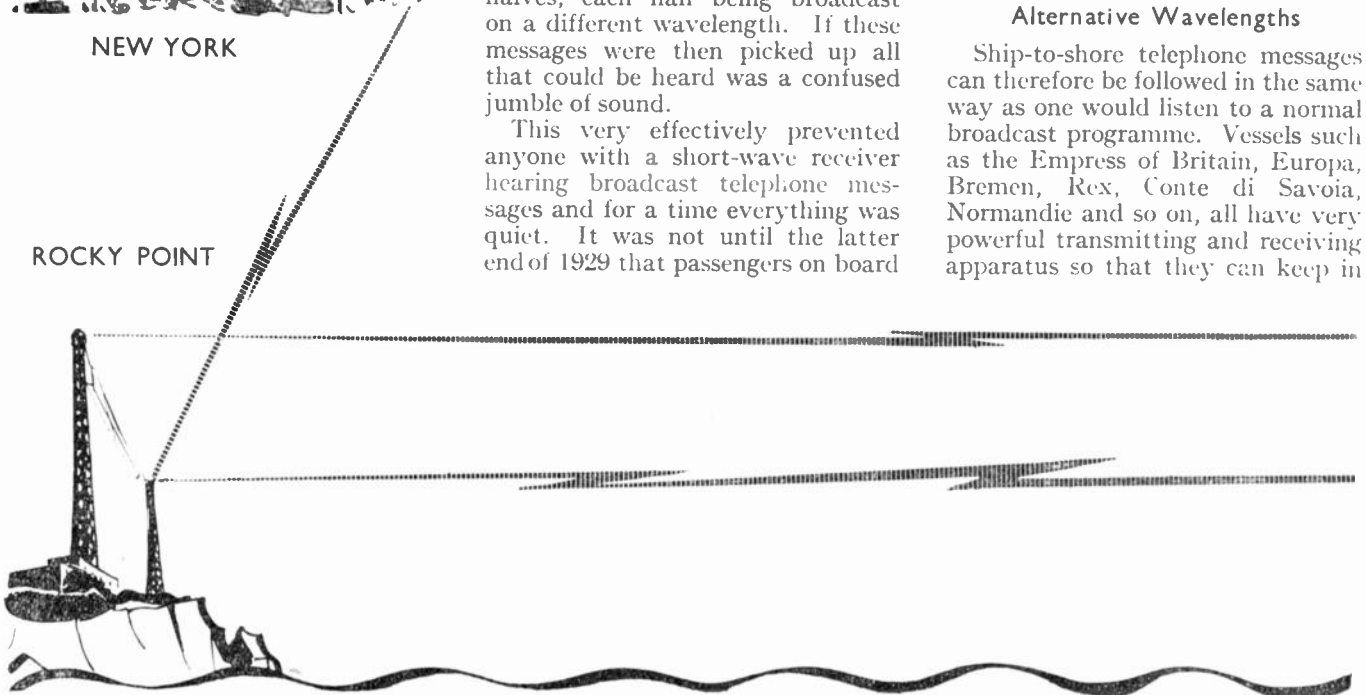
Alternative Wavelengths

Ship-to-shore telephone messages can therefore be followed in the same way as one would listen to a normal broadcast programme. Vessels such as the *Empress of Britain*, *Europa*, *Bremen*, *Rex*, *Conte di Savoia*, *Normandie* and so on, all have very powerful transmitting and receiving apparatus so that they can keep in



NEW YORK

ROCKY POINT



Ships at sea and liners on the American route in particular can be heard all the afternoon and also late at night on the Short waves. Make a special point of listening on the four wavebands and you will find yet another field for experiment.



and SHORE

touch with Rugby no matter in what part of the world they are.

Ships have been allotted four definite wavebands. The wavelength used depends entirely on the location of the ship and is chosen in just the same way as an ordinary broadcast station picks a wavelength to give maximum range. During daylight the 16 metre channel is used, while during evening 22 or 33 metres are used, while late at night, or when the ship is close to shore, the high wavelengths are used.

Notice how the call signs are allocated in the same way as amateur call signs—G for Great Britain, D for Germany, I for Italy, F for France and so on, so that any ship giving, for example, the call sign of D followed by several letters will be of German registration.

Almost every liner of appreciable tonnage is equipped with radio telephony so that business men can keep in touch with their offices and passengers can arrange hotel accommodation before reaching port.

Ship-to-shore telephony differs from the more familiar trans-Oceanic service as with the latter both terminal points are definitely fixed, enabling transmitting aerials to be erected directionally, giving

strength in the desired area. When one end of the service is moving, such as a liner, slightly different methods have to be employed.

It is well known that with short distances over sea, the earth-bound wave is more satisfactory as it is less subjected to fading and is not affected by the Heaviside Layer. The upward wave which is affected by the Heaviside Layer can be made directional and focussed within a comparatively limited area. If suitable wavelengths are used, so obtaining the correct angle of reflection, maximum signal strength can be obtained and a reliable service given.

It will be realised that to use a directional aerial and to focus this on a moving ship for the whole of its voyage would not be a practicable idea, so after a considerable amount of experimental work had been carried out aerials beamed on the main steamer routes were erected.

Equipment of the various liners differs in detail, but, broadly speaking, all ships are similarly equipped. Up to eight carrier frequencies are used, these being in pairs; one in each pair being for transmission to Deal Beach and the other to Rugby. In the actual transmitter the output from a crystal controlled oscillator circuit is amplified and modulated by the speech current

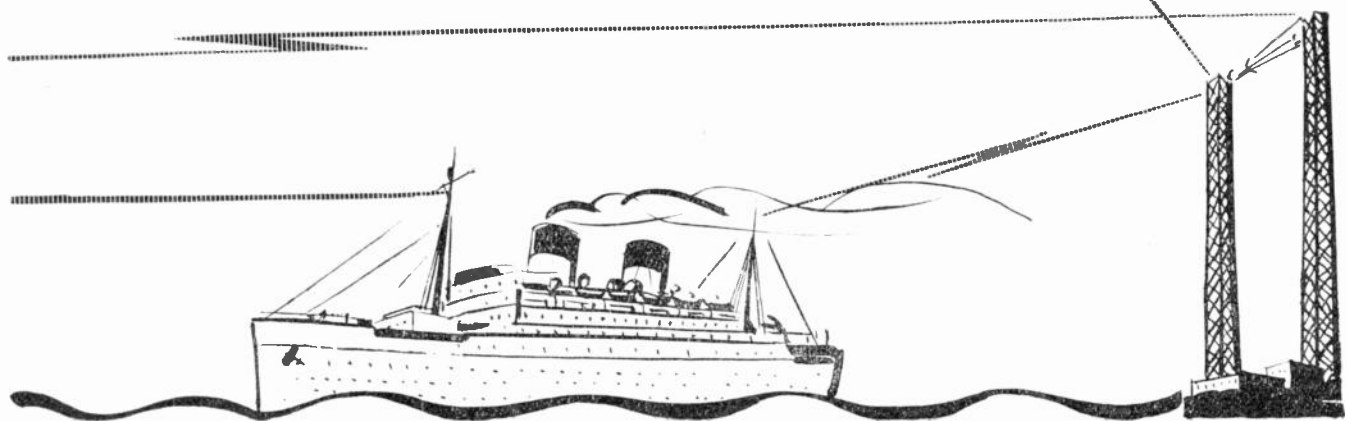
while the carrier and both side bands are radiated. The same basic transmitter is used for all frequencies, a frequency doubling circuit being employed.

On the receiving side the incoming signal is carefully filtered of any extraneous noise, while automatic-volume-control removes all traces of fading, the final effect being perfect clarity similar to a local phone call.



LONDON

RUGBY





The outward messages — those from the normal telephone subscriber—are sent via Rugby on the European side and via Deal Beach on the American side, the replies being received through the Post Office station at Baldock or at Forked River on the American side.

Two-way communication is possible between a liner and Rugby at any distance; for instance, the Empress of Britain while in Sydney

Harbour was talking direct to Rugby. Actually a liner is never more than 1,500 miles away from either Rugby or Deal Beach when on the Atlantic service, but in practice the link is much shorter than this. The Empress of Britain for example 400 or 500 miles out from Southampton and wishing to call New York would first of all ring Rugby. The message would then be sent from Rugby to New York, so taking advantage of the high power used by Rugby.

The illustration on pages 4 and 5 show how this is done. The liner always calls the nearest land station no matter where the message will finally go. A liner off Newfoundland, for example, wishing to call Berlin would first call Rocky Point and then the message would be transferred to Berlin *via* Rugby.

Eavesdropping !

Some hundreds of liners all the world over keep in intermittent contact with the nearest shore station. So that ship-to-shore radio provides

a most amusing source of entertainment.

It is the short cruises that I find most amusing. Husbands separated from their families spend pounds on ringing up to find out this and that, while my earliest recollection of ship phone was hearing a husband ringing up his wife, who had only been away about four days, enquiring as to where he could find collars, shirts and other oddments.

NEW AMERICAN STATION TESTING

An American station, W9XBS, is sending test broadcasts on 46.69 metres around 9 p.m. G.M.T. and asking for reports. Reports are to be sent to W9XBS, National Broadcasting Company, Merchandise Mart, Chicago, Ill, U.S.A.



RADIO ON SAFARI

50,000 MILES THROUGH JUNGLE

This letter was received from a customer by the East Africa Wireless Co., Nairobi.

"I think that possibly my LISSEN (Skyscraper 4) is the most travelled of any Set. I calculate it has done about 50,000 miles in East Africa alone.

It has travelled with me all over East Africa, sometimes in a car; often on the heads of porters. It has been half submerged in a flooded river in Tanganyika. The batteries were ruined, but after a day in the sun the reception was better than ever. It fell off a table one night in the Congo when my tent was blown away in a storm, and lay all night on its side in two inches of mud and exposed to the torrential rains.

Wire over Tree

But, in spite of the hardships it has undergone—the heat has even melted the wax of the condensers—I am pleased to say that it is still as good as ever.

My aerial has never been more ambitious than a 50 foot length of insulated wire, flung up over the nearest tree.

I was listening to Bound Brook one night in the Mountains of the Moon and fell asleep with the set still on; next morning I awoke to hear dance music playing; it wasn't until I got up and went out of the tent that I discovered the aerial had blown down during the night; Bound Brook, however, was as clear as ever!"

ON THE AIR on the HIGH SEAS

Ship stations operate on four wave-bands 16.85 to 18.27 metres, 22.50 metres, 33.93 to 36.58 metres, and 67.87 to 73.17 metres.

GLSQ Olympic	DHAO Albert
GBZW Berengaria	Ballin
GFJY Caledonia	DHRL New York
GMJQ Belganland	DHTY Resolute
GFVV Majestic	DHDL Cap Arcona
GDLJ Homeric	ICEJ Rex
GMBJ Empress of Britain	IBLI Conte de Savoia
GLRZ Aquitania	FNSK Normandie
DOAH Bremen	FNSM Ile de France
DOAI Europa	VQJM Monarch of Bermuda
DHEY Deutschland	VQJP Queen of Bermuda
DHJZ Hamburg	
DOBX Columbus	

Listen to the SHORT WAVE BROADCASTS from

Addis Ababa

Station ETB situated at Akaki, about 12 miles from Addis Ababa, broadcasts frequently in English and French.

Floyd Gibbons, American radio reporter, famous for his commentaries on the Sino-Japanese war, has been sent to Abyssinia to broadcast war news.



All announcements are made in French and English and each broadcast is usually preceded by propaganda in favour of Abyssinia and a few details of how the War is progressing.

ETB radiates irregularly from 7 p.m., while the special broadcasts to America generally take place at 8.30 G.M.T. A Swedish engineer is in charge of the Italian built Abyssinian station, so it is quite a cosmopolitan affair. The power used is 2 kilowatts, which, although not very much,

enables a strong signal to be transmitted to Europe and America.

We have heard several of these broadcasts by ETB and we have found that the best wavelength is 16.42, which is quite reliable until 9 p.m. If conditions appear to be a little dead remember that the 39.37 metre station is also operative and can always be heard after the lower wave length station has faded out.

ETA on 25.10 metres is a commer-

cial station with a power of 1 kilowatt, through which the Emperor of Ethiopia broadcasts to the League of Nations. It has not a regular schedule but is rarely on the air after 5 p.m.

A fourth station not yet listed is radiating on 39.45 metres and sends out special programmes at 6 p.m. most evenings.

IRG the Italian station at Massau, Eritrea, is on 20.35 metres and can be heard every day phoning Rome and JVH in Tokio, Japan, between 10 a.m. and 3 p.m. Massau is the port where the Italian soldiers are being disembarked and for their entertainment musical programmes are relayed via IRG.

Sometimes when conditions are very bad and the Addis Ababa station cannot be heard do not forget to listen in to any of the American N.B.C. short-wave stations which relay at 8.30 p.m. As a matter of fact it is often simpler to listen to Addis Ababa via New York than direct.

The Voice of the National Police

Every South American station has a slogan, and TG2X uses "La VOZ DE LA POLICIA NACIONAL" which, in English, is "The Voice of the National Police." The station is in Guatemala City, and appears to be the property of the National Police. It announces in English and Spanish: wavelength 50-41 metres.

WITH the National Broadcasting Corporation of America relaying hot war news from Abyssinia everyone who has a short-wave receiver wants to know how to hear these broadcasts.

Two American radio journalists, Floyd Gibbons and Bob Martin, are now on the scene of war obtaining all the latest information. They broadcast a snappy *precis* most evenings from the main Addis Ababa station ETB on 39.37 metres 7.62 Mc. and on 16.43 metres 18.247 Mc.

OUR family became radio-minded in 1922 with the advent of the British Broadcasting Company when my father was given a crystal receiver for a Christmas present. The receiver would not work properly when first tried out, and after many unavailing visits to the nearest radio dealer to eliminate the trouble, my father became infected with the radio "bug" and decided that he would like to make his own receiver and learn more about the mysteries of radio communication. He bought a book after book on radio and the crystal set was replaced by valve receivers, until to-day our latest model is an all-mains A.C. radiogram operating on wavelengths between 20 and 2,000 metres, and entirely home constructed.

My own interest in radio began when triodes were the only available valves and when a wireless set looked rather like a miniature of Blackpool illuminations, with its brilliant valves and tangle of wires.

I Build My First Receiver

When I was only 7 years old, I used to make crystal sets which would function satisfactorily on both medium and long wavebands. In



1928, a year later, I completed my first valve receiver—a straight three valve set (I would not be contented

I am the

with a single valver) with each stage transformer-coupled, and with three wonderful rheostats to control the current to each valve (the valves were each rated at 6 volts 1 amp.). Tuning was carried out by the customary variable condenser, whilst reaction was obtained by means of the swinging coil reaction system. Unfortunately in those days the current consumption from both L.T. and H.T. was very excessive, and because of the heavy bills for batteries with which my father was constantly confronted, he persuaded me to dismantle the set and use the components to build a really efficient single valver which he said would give me all that I required.

I may mention that the aerial and earth system in use at that time was considered to be almost perfect; the aerial was over 70 feet long at a height of about 40 feet—well above the surrounding houses—and the earth system was simply a metal bucket sunk several feet deep in the ground.

WHEN to LISTEN for the WORLD'S AMATEURS

When you consider that there are almost 200,000 amateur short wave transmitters in different parts of the world, you begin to realise the variety of transmissions that a short wave set can offer. There are more than 15,000 of these amateurs in this country alone, working on 160, 80, 40, 20, 10 and 5 metres. These various wavebands all have some particular use. The 160 metre band is used when the B.B.C. stations are not broadcasting or on Sunday mornings and Sunday evenings between 6.30 and 8 p.m. 80 metres, owing to Government restrictions, are only used on Sunday, while the 40 metre band is always teeming with stations of every nationality.

Owing to skip distance, 10 and 20 metre bands are of little use for

reception in this country.

Only really long distance stations are heard on 20 metres. Nothing under 1,000 miles is ever picked up. American, Canadian and South American stations predominate, while Australian, Indian and the South Africans come in at regular intervals.

During a short test a Lissen Short Wave Three brought in about thirty 20 metre amateurs in as many minutes. Most of these stations can be heard from about 6 p.m. until midnight. During November peak periods for receiving the stations come between 7 and 9 p.m., when there are so many stations on this band that unless a short aerial is used, difficulty may be experienced in separating them.

There is generally a "dog-fight"

on the 40 metre band, for all the European stations fill the band almost continuous. It is very good in daylight up to 1,000 miles, but after dark English listeners can only hear Spanish, Portuguese and other stations.

In every country over the world these amateur stations inter-communicate, even though the power used is comparatively small.

Normal means of identification are employed, each station having a call sign with a special prefix.

An article on page 22 deals very fully with these call signs and helps you to place their position on the map.

You can also get a lot of fun out of sending reception reports to these stations, and receiving in return a QSL card.

YOUNGEST TRANSMITTER

in the WORLD!

I Discover a New Thrill

Time went on and I continued to build receivers for the broadcast band but when I was ten years old, I became curious and descended into the unknown—for me—short waves. I did eventually get down successfully on the shorts, but after some time I realised that I could make little use of these high frequencies unless I knew the morse code. I started by memorising the alphabet and then the numerals, but even then I was unable to read the commercials and so for the time being I concentrated solely on the short-wave broadcasting stations.

I Learn Morse

A year or so later a short-wave radio society was formed in Derby and I became an active member of the Club. It was decided to institute a morse class for those members who did not know the code and it was there that I became acquainted with amateurs and their work.

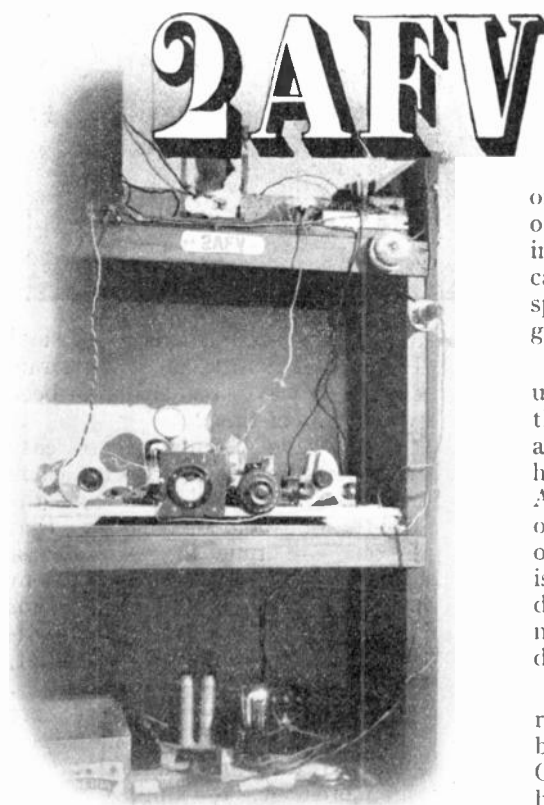
Thus, after a few months, I possessed a fair working knowledge of the morse code and I again settled down to the C.W. stations experiencing more success this time in logging their call-signs.

I discovered the 7mc. (40m.) ham band in the course of my knob twiddling and then I really began to be thrilled; VK's, W's, ZL's, and PK's were common DX to me after a few months listening; but I thought how much more thrilled I would be if I could only obtain a transmitting licence for myself and communicate with the antipodes. I got to know "the ropes" from a fellow ham at the S.W. Club, and he suggested that I should apply for a licence. At the age of thirteen I did so—and got it, under the call-sign of Radio 2A F V.

I Build a Transmitter

I now devoted my spare moments to building the transmitter. After experimenting with a one valve TX and trying various combinations of oscillators, frequency doublers, buffer amplifiers and power amplifiers, I have at present a CO.FD.PA. using link coupling and working on 7122 kc's and 14244 kc's situated

G. A. BRYAN received a transmitter's licence at the age of 13, and claims to be the youngest amateur transmitter in the world. Of course, no one in Great Britain, under the age of 16, is eligible for a full radiating licence, and the licence possessed by Master Bryan only enables him to build transmitters and measure their effects from short distances. Long distance communication, although possible with his apparatus, is not permissible.



very conveniently in the 7mc. and 14mc. amateur bands.

The transmitter is of my own design as are all the radio hook-ups which are to be found at the shack, and I can honestly claim that I have never built a "dud" RX or

TX. All apparatus which I have assembled has always worked except when a mechanical or electrical fault has occurred which has been beyond my control.

On phone I use the Heising or constant current system of plate modulation; the speech input is provided by two carbon microphones and the speech quality is really very good.

Rectified A.C. mains is used as the power supply of the transmitter, and, strange as it may sound, directly heated valves are run off raw A.C. mains without any trace of hum being apparent either on C.W. or phone. This fact is a great saving because directly heated valves are much cheaper than their indirectly heated brothers.

Perhaps a word on the receiver in use at 2A F V may be of interest. The circuit is a O-V-2 designed and constructed by myself to cover all the ham bands, but especially the 14mc. and 7mc. The RX antenna is simply a 20 foot length of copper wire strung up in the rafters amidst birds nests, cobwebs and other rubbish. No earth connection is used neither is it required, since the signal intensity is quite strong enough for anyone who has normal hearing.

THE LISSEN



WAVE - RANGES

13—32 metres

30—80 metres

198—560 metres

877—2,000 metres

17 gns.

On H.P. Terms, 37/- deposit, and 12 monthly rentals of 30/- Or 39/- deposit and 18 monthly rentals of 21/-.

medium wave-band, I tune it in first with this knob turned round clockwise as far as it will go, and when the station is tuned in turn it slowly anti-clockwise. The resulting increase in the quality of reproduction is simply amazing.

When I first bought the Lissen All-wave Superhet, I was so impatient to try it, that I connected it up to what was really a very bad aerial consisting of about 50 ft. of wire which had been blown into a tree some weeks before, and never been hauled out. The Earth was bad too. The total length of wire between the Earth pin and the set being about 40 ft.

Even under these conditions the reception was very good, but was inclined to be a little noisy. I was bothered by all sorts of "frying" noises, and a lot of interference which I did not receive on the ordinary broadcast bands. These noises are the greatest bane of the short-wave listener, but fortunately, as I discovered, an aerial system has been devised which offers a perfect cure for this. This is called the Di-pole system, and is really very simple in construction, and easy to erect. Lissen are now selling a Di-pole aerial kit which costs only £1 5s. Od., and is worth its cost several times over in the freedom from noise which it ensures.

SOME friends of mine came in the other evening, while my Lissen All-wave Superhet was playing, and they stayed to talk by the fire-side. A few moments later the music stopped, and a voice with an American accent said "This is Station WGY and W2XAF"

"I say!" said one of my friends, "Is that really America?" He was amazed, delighted at this novelty, whereas I had been taking it all for granted!

I recount this very ordinary incident only to demonstrate how quickly the Lissen All-wave set had accustomed me to relying regularly on far distant broadcasting stations for entertainment. Almost every night now, since the set has been installed, I have listened to American programmes which come through as clearly as any Regional station in this country, and I enjoyed listening for their entertainment value alone.

The Lissen All-wave set is designed to cover all the wave bands, medium

and long as well as short, but since I have had it installed, I am afraid the short-wave bands have been working over-time!

Short-wave listening is so easy with the All-wave Superhet. There is only one tuning knob, and the slow motion control is so fine that anyone can tune in the sharpest station. I do not know much about wireless myself—I honestly do not know what the knob labelled "variable selectivity" does inside the set, but I do appreciate its usefulness. When tuning on the ultra-short and even the short-wave bands, you can turn this knob anti-clockwise and "broaden" the tuning, so that you are able to tune in many stations which you might otherwise miss.

When you get a lot of stations all jammed together on the dial, as you often do, on the short-wave band you can turn this knob clockwise and separate them. This knob serves another very useful purpose, too, in tone control. When I tune in to my local station on the

All Wave

First technical details of a wonderful new receiver for all-world listening.

THE Lissen All-Wave Superhet is designed throughout as an *all-wave* receiver and is not merely an ordinary broadcast receiver with a few short wave coils added. It covers the whole of the short wave broadcasting bands, including the 13.9 and 16.9 metre bands, which are often omitted.

Freedom from Microphonic Noises

The Gang condenser has a pressed steel frame and die-cast rotors and stators, which ensure complete freedom from microphonic coloration of reproduction on short wave bands.

Ultra Slow Motion Tuning

A two-ratio friction geared drive is used for tuning. The primary spindle has sufficient reduction for accurate setting on medium and long wave bands, yet is capable of moving the pointer rapidly over scale.

A secondary knob controls tuning through a reduction of over 200:1. This is for use mostly on the short waves where extreme accuracy of tuning is essential.

Non-mechanical Tuning Indicator

The tuning indicator employed is of a particularly attractive type. A column of red glow in a neon tube has to be adjusted to maximum length for correct tuning.

Freedom from Squeals and Whistles on Long and Medium Ranges

On medium and long waves, a two circuit band-pass filter is used. This is specially designed to eliminate direct interference from stations (*e.g.*, morse) working on the intermediate frequency, and to eliminate break-through from the medium wave local station causing squeals on long waves.

High Gain H.F. Stage added for Short Wave Ranges

On short waves, an H.F. Stage is added. The object of this is partly to improve the signal to valve noise ratio (which is, as anyone used to work with short wave superhets will agree, the principal limiting factor in range obtainable), and partly to give the extra sensitivity that is really necessary owing to the

All World Superhet

For A.C. MAINS

For 100—150 and 200—250 volts A.C.

extremely low field strengths usual on short waves. In order further to improve the signal/noise ratio, care has been taken, to ensure the optimum aerial coupling and the maximum obtainable H.F. stage gain. As compared with the more usual receiver using a single pre-selector and no H.F. stage, it has also a greatly improved second channel ratio.

New Frequency Changer Circuit

Frequency changer. A special octode valve designed to be suitable for the short wavelengths is employed in a new circuit. The oscillator coils not in use are shorted down to avoid dead spots and special precautions are taken to ensure satisfactory heterodyne volts over all the wave bands. The valve is controlled by the A.V.C.

I.F. Amplifier. This operates on 465 kc., a variable-mu pentode, controlled by the A.V.C., being used. The use of this frequency as compared with 127 kc. has the advantage of eliminating second channel interference on medium waves, the familiar squeals at around 330 and 480 metres being absent.

Variable Selectivity

Variable Selectivity is obtained by mechanically adjusting the coupling of both the I.F. transformers. The band of audio frequencies passed can be adjusted from about 3 to about 7 kc., allowing for both reception of distant stations with high interference level, or of local stations where high fidelity reception is

possible. This feature is also useful on short waves, since when adjusted to minimum selectivity one avoids the common trouble of missing stations altogether (due to the extreme sharpness of tuning on these wavelengths) when searching. This control may also, of course, be used as a tone control.

Double Diode Triode. This valve performs the function of diode detector, audio frequency amplifier, and generator of A.V.C. volts. A small bias is applied to the detector giving an inter-station quieting.

Output Stage. The double diode triode is resistance coupled to a high slope pentode giving some 2½ watts undistorted output.

New Type Loudspeaker

Loudspeaker. A newly developed type of loudspeaker is employed, with an improved top response extending well beyond 5,000 cycles. The bass is also well catered for by the 9 in. cone in conjunction with the generous size of the cabinet.

Variable Quieting Control

Sensitivity and quiet control. This control is an unusual refinement; it adjusts the sensitivity of the set to any desired value and thus only stations above a desired level of strength will be receivable. When turned to its extreme clockwise position (maximum sensitivity) the control is arranged to switch automatically off the inter-station quieting; this is usually advisable when searching for weak short wave stations.

*The World is shrinking!
Day by day,
Short waves are bringing
closer the farthest
corners of the earth.*

+ SHORT WAVE

FIRST AMATEUR CONTACT WITH AUSTRALIA ON 10 METRE BAND

SURREY ENTHUSIAST MAKES HISTORY ON OCT. 13th.

Mr. George Laker, of Cranleigh, Surrey, is the first British amateur to "work" Australia and five continents on the 10 metres band. Below he describes this amazing feat to "Short Wave."

"I have always been interested in the 10 metres band and have built various transmitters during the past five years. My present transmitter is a four stage crystal controlled rig coupled to a voltage-fed aerial 66ft. 6in. long, 55ft. high, with the greatest portion vertical. But, due to the very patchy conditions which have prevailed up to this year, only local reports were obtained.

This year, however, many European stations have been worked, also North Africa, Malta, South America. South African stations came through later, ZSIH of Capetown, being audible nearly every day, often at amazing strength.

October 6th was the first day of the Australian-New Zealand contest, which was to continue from 5 p.m. G.M.T. each Saturday to 5 p.m. G.M.T. on Sunday during each week-end in October. Up to this date Australia had never been heard in this country on ten metres. So as a number of Australian amateurs were known to be on the air, I decided to make a special attempt to hear them and perhaps contact one.

On October 6th at 8.10 a.m. VK4EI QUEENSLAND was heard

calling CQ and later VK2LZ but I was unable to raise either of them. Unfortunately it would be another week before I could make the next attempt as they were only audible for a short period from 8 a.m. to 10 a.m. G.M.T.

On October 13th conditions were again favourable. At 7.30 a.m. VK2LZ New South Wales was heard calling CQ, and after calling him for about five minutes, he replied O. K., and so the first contact between England and Australia was established.

Greetings were then exchanged, serial numbers, weather conditions, here and there, then after a short time we said "good-bye" and wished each other the best of luck.

During the whole day conditions were excellent. At 11.55 a.m. LU1EP Argentine was worked, then FA8CR Algeria, then North America and Europe. Thus five continents were worked in just over five hours.

Conditions remained good for the next few weeks, but appear to have fallen off again. American districts have not been heard for over a week —only SIH and SUI5G Egypt being heard nearly every day."



Wallace Beery to compère N.B.C. Hour.

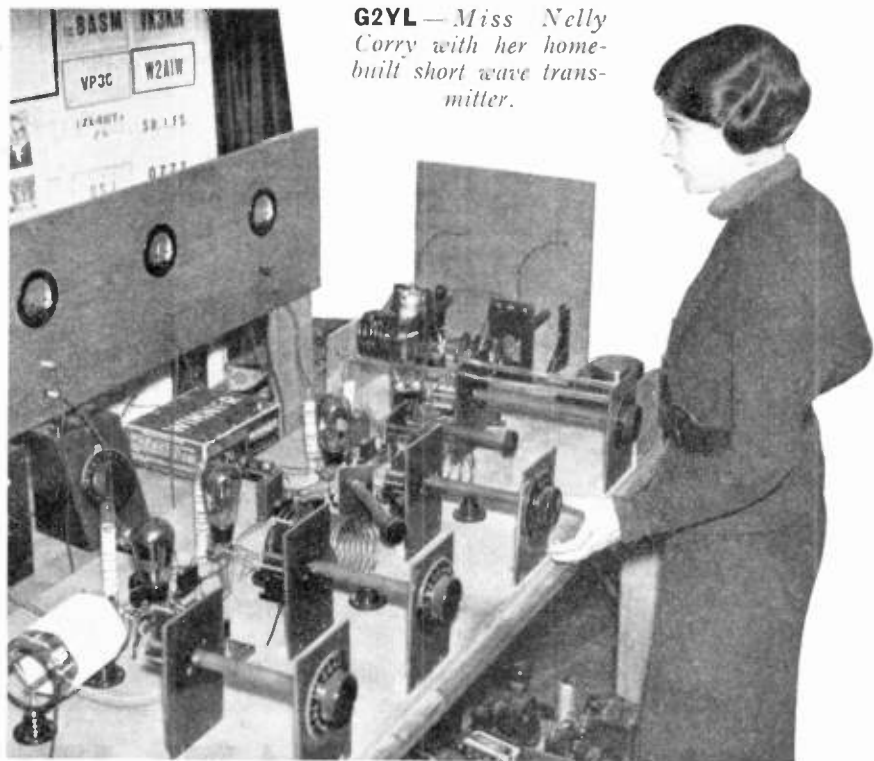
Film Stars continue to be borrowed by radio in the States. Coming after Mary Pickford, Jean Harlow, Eddie Cantor, and many others, Wallace Beery will now be heard regularly each Saturday on the Shell Broadcasts over the N.B.C. network. This celebrated character actor of the screen will be Master of Ceremonies for full hour broadcasts. He will introduce guest stars and take the lead in dramatic sketches. He succeeds Al Johnson, who retired from the series.

NEW RUSSIAN STATIONS

Three huge S.W. Stations are to be built in the U.S.S.R., and the one in Moscow, it is claimed, will be made the "World's largest central S.W. Station," and it will be twice as large as the most powerful American S.W. Stations.



Short waves are becoming NEWS. Almost every week the daily newspapers are giving space to short wave activities all over the world.



G2YL — Miss Nelly Corry with her home-built short wave transmitter.

LONG DISTANCE RESCUE

A cinematograph cameraman lying unconscious and alone in a log cabin in Alaska was saved by a friend, whom he had never seen, in New Zealand, 10,000 miles away.

The cameraman, on solitary location in Toller, Alaska, was a short wave enthusiast and kept in his cabin a short wave transmitter and receiver, with which he amused himself between periods of work.

He got in touch with another short wave enthusiast in New Zealand and from time to time they conversed in the morse code.

During one of these conversations the New Zealand man was alarmed to discover that the signals from his friend became weaker and weaker and suddenly ceased altogether.

S.O.S.

He began tapping out an emergency call and got in touch with a Los Angeles transmitter. Los Angeles happened to be the home town of the cameraman and indeed, by a coincidence, the Los Angeles transmitter knew the man in Alaska very well. The Los Angeles transmitter in turn got into communication with the Toller short wave station, and from Toller a rescue party set out across the snow and arrived to find the cameraman lying unconscious. Fortunately they were in time and with the use of stimulants and artificial respiration, they were able to revive him. Later, Toller got in touch with the New Zealand enthusiast, via Los Angeles, telling him that his photographer friend was quite well and thanking him for his prompt action.

Her transmitter she describes as a "4-stage crystal controlled affair" which she can use on the 40, 20 or 10 metre bands. The transmitter is home-made, but she is at present using a commercially made short wave receiver.

GIRL AMATEUR "WORKS" 5 CONTINENTS ON 10 METRES

Australia contacted again, Second time in a fortnight

Following on Mr. Laker's fine achievement on the 13th, on October 27th Miss Nelly Corry, a young amateur short wave enthusiast, also of Surrey, established contact with five continents in just over six hours, on a wavelength of 10 metres.

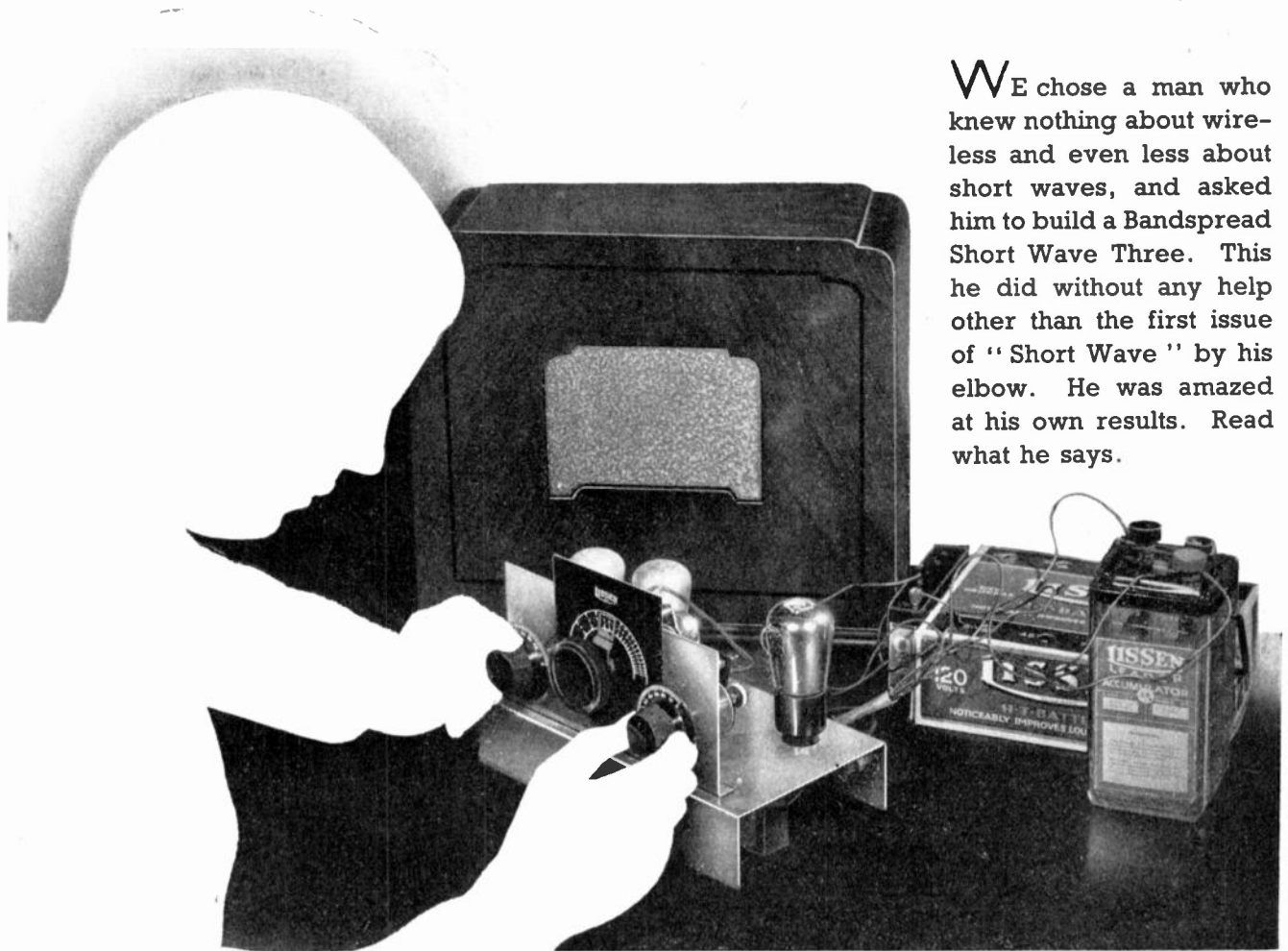
Here is a time-table of her achievement:—

9 a.m. Assam (India)

- 10.30 a.m. Queensland (Australia)
- 11 a.m. Uruguay (S. America)
- 2.5 p.m. Algiers (Africa)
- 3.20 p.m. Florida (U.S.A.)

Miss Nelly Corry told *Short Wave* how she first became interested in short waves.

About four or five years ago she built her first short wave receiver and she became an enthusiastic listener, especially on the amateur bands. She taught herself morse by listening to amateur morse transmissions, and got her transmitting licence in October, 1932.



WE chose a man who knew nothing about wireless and even less about short waves, and asked him to build a Bandsread Short Wave Three. This he did without any help other than the first issue of "Short Wave" by his elbow. He was amazed at his own results. Read what he says.

We make an EXPERIMENT

I HAVE built the Lissen Short Wave Band Spread Three. Firstly, let me say that I am no technician. I possess a commercially built receiver but I have never built a set before in my life—and at any rate up till a few days ago—I thought a grid leak was a job for plumbers. But in spite of such disadvantages, just over two and a half hours after I first unpacked the Kit, I was listening to America!

Silly Mistakes

There may be other readers of *Short Wave* starting from scratch like I did, to build the Lissen Bandsread Three, so I have been asked to note down one or two of the small difficulties I encountered as well as the several mistakes (probably very silly ones!)

which I made.

While constructing I discovered several little things over which I could have saved time. For example, when I came to fitting the switch unit on the chassis I found that I had to unscrew the middle screw which holds the condenser panel on to the chassis in order to pass it through the switch unit. If you remember to leave this screw undone when you are mounting your condenser panel, you will find it saves quite a few minutes time which counts quite a lot when you are as anxious to get your set operating as I was.

I made the same sort of mistake several times when I had reached the wiring-up stage, as I frequently tightened up a nut without looking at the blue print to see if there was

any further connection to be made to the same place.

Fixing the Coil

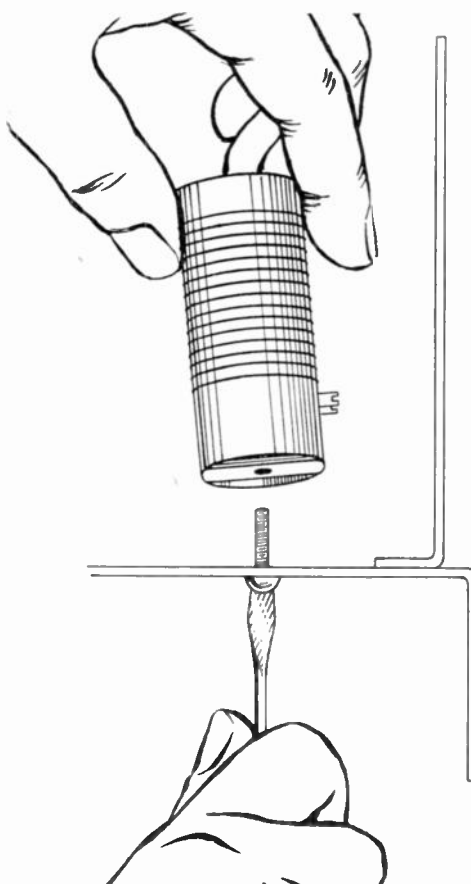
I notice that the writer of the building instructions very thoughtfully made the coil one of the last of the mounting operations, and I certainly spent some anguished moments trying to drop a small and very elusive bolt into the bar which holds the coil on to the chassis. Actually, as I found out afterwards, the coil is simply secured by threading a bolt through under the chassis and screwing up tight through the threaded hole in the cross-strip at the bottom of the coil.

There is another point worth mentioning in the construction of the set and that is in connection 16 on the blue print. When you have connected the long brown wire from the coil to the tag of condenser

at right angles to its normal position so that the bolt does not touch the metal chassis. (I mention this because when my Bandspread Three had been working excellently for several days, it suddenly lapsed into silence and the investigations of a knowledgeable friend found that the breakdown was due to the bolt in question touching the chassis and thus earthing the connection).

Don't Ignore Instructions

I actually completed the assembly of the Set in two hours seven minutes, taking fifty-five minutes to mount the components and the remainder of the time to wire-up. At last I was ready—or so I thought. I connected up aerial and earth, batteries and loudspeaker and switched on. Not a sound—imagine my dismay. Several minutes searching produced no obvious solution, so I referred to my copy of *Short Wave* and a paragraph caught my eye: "a few minutes spent in careful checking of the wiring might save hours of puzzling and scratching your head . . ." Sure enough, I had been too headstrong, too sure all my connections were right. I had forgotten to connect up the blue wire from the coil. Which goes to show that a last minute check over does pay!



The coil is secured by pushing a bolt through the chassis and screwing up tight through the threaded hole in the cross-strip of the coil.

prised at first to discover that I could not get the same results with the Bandspread Three. After my first success in zone 4 I spent a long time in roaming round the dial with discouraging results. I heard plenty of morse and the most uncanny pips and squeals and burring noises—but not much else.

Short Wave was very useful in helping me to find my way round the dial. I began to realise that there were only certain wave-lengths on which broadcasting could be picked up, and these only at certain times of day and night. I found that the tuning was even finer than I had suspected and that sometimes it only required an almost imperceptible movement of the Bandspread condenser to bring a station in at full loudspeaker strength.

Also I found that reception conditions varied from night to night. Some nights fading (which is always short-period fading) would be worse than others. Sometimes there would be more atmospherics too. But every night it was possible to listen to one or other of the American stations and a good many other stations too, at such strength and clearness that the programmes could really be enjoyed. As a matter of interest I have jotted down a few of

— and prove that the **LISSEN bandspread 3**
is EVERYBODY'S
Short Wave Set!

Ready once again. I switched on and found that the set oscillated nicely. More encouraging. Step by step, exactly as in the article headed "Before you Switch on,"
Success!

I began to search zones 4 and 5. There! A voice speaking in German and in English—Zeesen, Germany, calling. My first short-wave station! Then a gentle movement of the

Bandspread condenser and I heard a voice talking with an accent I recognised at once. America! W2XAF—Schenectady!
Exploring

As I have been accustomed to commercial receivers built for the ordinary broadcast bands on which stations come in all over the dial, I was sur-

the stations I have received, together with position on the dials.

Zone No	Bandspread Degrees.	Wavelength	Station.
1	47	25.4 Metres	Rome
4	02	31.28 ..	Philadelphia
4	05	31.32 ..	Daventry GSC
4	08	31.38 ..	Zeesen
4	14	31.48 ..	Schenectady
4	15	31.55 ..	Daventry GSB
16	05	49. ..	Zeesen
16	15	49.5 ..	Cincinnati
16	45	49.83 ..	Zeesen
16	55	50. ..	Moscow

The Radio Society of Great Britain

This Society is the national organisation (under the Patronage of His Royal Highness, The Prince of Wales) responsible for furthering interest in amateur radio. It comprises over 2,500 members, 500 of which are members of the Overseas Section known as the British Empire Union.

The Society offers many useful privileges.

"The T. & R. Bulletin"

The "T. & R. Bulletin" is the official journal of the Society and is published on the 15th of each month. It contains useful technical information on every phase of short-wave radio work.

QSL Facilities

The Society's QSL Bureau is one of the oldest in the world, and handles over 300,000 cards per annum. This service is free to members. There are many other privileges such as Calibration Services, reception tests, slow morse practices, licence facilities, contests and trophies.

All non-transmitting members are issued with a British receiving station number (B.R.S.) which automatically identifies them with the amateur movement.

Full details and a specimen copy of

Join a Short Wave Club

the "T. & R." Bulletin may be obtained from the Secretary, The Radio Society of Great Britain, 53, Victoria Street, London, S.W.1.

International Short Wave Club

This organisation has a membership of many thousands in all parts of the world. Its objects are to help short wave listeners get satisfaction from their receivers and to create friendship among the peoples of the world.

The club celebrated its 7th anniversary in October this year, and

special broadcasts dedicated to it were transmitted from many short wave stations.

There are Chapters of the club in London, Manchester, and Leicester, where members meet each other, and discuss short wave reception and transmission. The London chapter is now one of the most progressive radio societies in London. The monthly journal of the club, "International Short-wave Radio," is distributed free to members. Application for membership should be made to the European Representative: Arthur E. Bear, 10, St. Mary's Place, Rotherhithe, London, S.E.16.

International Dx'ers Alliance

This club is conducted solely for those who are interested in the reception of far distant stations.

Anyone may become an Associate Member on payment of an annual subscription of 5s., and this also entitles him to receive a monthly copy of the club's official organ, the "Globe Circler." For the benefit of European members a British "Globe Circler," is published.

There are two chapters of this club in England, one in London and one in Manchester. Application for membership should be made to the European Representative, F. R. Crowder, Esq., 5, Ebor Place, Hyde Park, Leeds, 6.

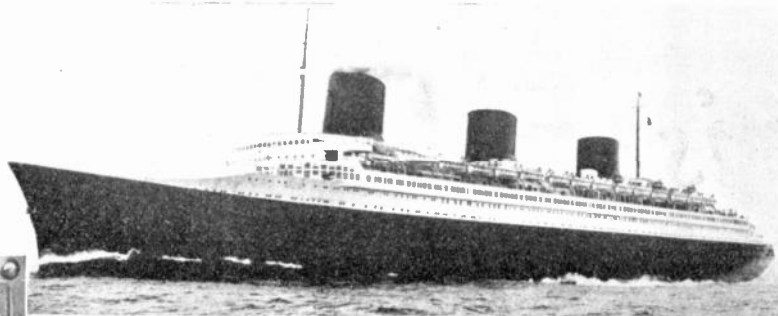
Have you heard the Normandie?

THE *Normandie* is provided with two telegraphy and one telephony transmitters.

There is a short-wave transmitter (2 to 2½ kW.) operating on 10 wavelengths between 15 and 120 metres.

A long-wave transmitter (1 kW.)

Photographs by the Courtesy of the French line.



operates on six wave lengths between 2,000 and 2,400 metres.

And a medium-wave transmitter (600 watts) operates on seven wave lengths between 600 and 800 metres. This can be operated by accumulators at 20 volts in case of failure of the 220 volt mains current.

There are also two receivers—one for the short-wave range, 13 to 250 metres, taking cur-

rent from the ship's circuit via special filters; and one for the medium and long-wave ranges, 350 to 5,000 metres. The latter, usually taking current from the mains, can, if necessary, be operated by means of accumulators. A third receiver, independent of the foregoing, deals with the 8,000 to 20,000 metre waveband, current for this being supplied from the mains.



COLLECT your own “WALLPAPER”

A GREAT deal more interest can be derived from short wave listening by collecting variations of reception from the various stations heard.

To get these variations it is a good plan to have cards printed with your name and address on and as soon as a station is heard put down the particulars, and post the card to the station, along with an International Postage Reply Coupon, which can be purchased at any G.P.O. By sending one of these coupons with your report you are almost certain of receiving a reply from the station. In your report for variation, sufficient of the programme should be described in detail so that it may be readily recognised by the station. Definite particulars briefly stated are preferable to longer but vague reports. To be of the greatest use to the station, reports should contain observations on signal strength, clarity of tone, nature of fading, interference by other stations, static, etc., and also type of receiver, stating whether it has automatic volume control.

A great number of short wave

stations are now sending out some very attractive cards as verifications. VK2ME Australia, send a nicely coloured card

with a map of Australia printed on it, and the Kookaburra bird; H.V.J., Vatican City, send real photographic views of the station, so does TIEP, San Jose, Costa Rica.

EAQ, Madrid, has a card done in black and blue on a white background; CTIAA, Lisbon, has a red, green and white card with views of the station control room and studios on it. COC, Havana, send a black and white card, and several coloured cards with views of Havana on them and VPD, Suva, send a red and white card on which the position of Suva, Fiji Islands, is shown, and a brief description of the place is given.

The above are only a few of the attractive verification cards sent out by short wave stations of the world. The very keen short wave “fans” fasten all their verifications up on the walls of their listening “dens,” and refer to them as “wallpaper.”



True-Story adventures

with the

Bandspread 3

I DIDN'T BELIEVE SHORT WAVES
WERE ANY GOOD UNTIL—

IT was 7.30 in the evening. There was no time to lose. I wanted to hear the broadcast of the Max Baer fight—relayed from America!

Impossible? Or, at the least expensive? Not a bit of it. By the courtesy of Lissen, Ltd., I was provided with a made-up version of the famous "Bandspread Short-wave 3" kit, and I rushed it home, connected up the loud-speaker and batteries, hooked the "earth" to a radiator and the "aerial" to a bit of wire round the picture rail. Crazy? Well, you'll hear.

I heard, too. A bit dubious, I turned the dial and the clever little bandspread control—and in boomed America. Station W2XAF, on 31.8 metres, was literally as loud and clear on the loudspeaker as London or Luxemburg on my own set.

I made a rapid world tour—Rome, Zeesen, Moscow, and then even the 'phone messages of amateurs carrying out tests in America and Canada. That was at 10 p.m. I tuned back to New York and heard the stock market report—then turned in for a few hours' sleep, leaving the set tuned in.

Round about 2 a.m. I was startled up by the voice of the announcer—speaking at the ringside of the Max Baer fight! He gave all the preliminary details while I hurriedly donned a dressing-gown—and then all over the house you could hear the gripping quick-fire commentary on the fight. Even the thud of the blows.

In conclusion I must say that I have no connection with Messrs. Lissen, Ltd., and that this is an impartial report. I have been a broadcast listener for ten years, but I didn't believe short-wave listening was any good. Now I know, for I can let my friends hear American dance music or radio variety whenever they want it.—*Editor of popular Weekly.*

AMERICA IN 15 SECONDS!

Less than fifteen seconds after the set was switched on, the world-famed Amos'n Andy from the American station, W8XK, was heard at a

good speaker volume and of very fine quality. The least touch of the tuning control brought in 2RO, Italy, giving a transmission for British and American listeners. In addition to half-dozen Americans, the powerful Germans, Skamlebaek, Lisbon, Ruysselede, Moscow, Radio-Colonial, Eindhoven, and a score of amateurs from Great Britain, France and South America were picked up in a very short time."—*Well-known newspaper Radio Critic.*

BEST KIT TESTED!

"The results I obtained were truly remarkable, the quality of the reception was excellent, while the range was almost unlimited. I tested the set at various periods of the day, and although I found reception after darkness of higher quality, I found no difficulty in "bringing them in" at almost any period. . . . One of the most remarkable things was the fact, that despite the close proximity of one station to another, the interference between them was negligible. . . with one with another was negligible. . . . To sum up the kit generally, it is only fair to say that it is undoubtedly the best kit tested so far, and it should be remembered that all the writer's tests were carried out at full loudspeaker strength and that the headphones were never brought into use."—*Yorkshire Radio Critic.*

SCHENECTADY WITHOUT AN AERIAL!

"There are occasions when superlatives become futile in attempts to describe something really good, and that is how I felt after testing out my Lissen Bandspread Short Wave Three.

With this set, I feel the whole world is within my reach. The results I obtained can only be described as marvellous. Schenectady

W2XAF is received at full loudspeaker volume every evening, using an ordinary outdoor aerial. Some idea of the sensitivity of the circuit can be gleaned from the fact that this station was distinctly heard on the 'phones with the aerial entirely disconnected from the set!

Both wavelength ranges are alive with stations. Quality and volume of reproduction are excellent, and a commendable feature is the low battery consumption.

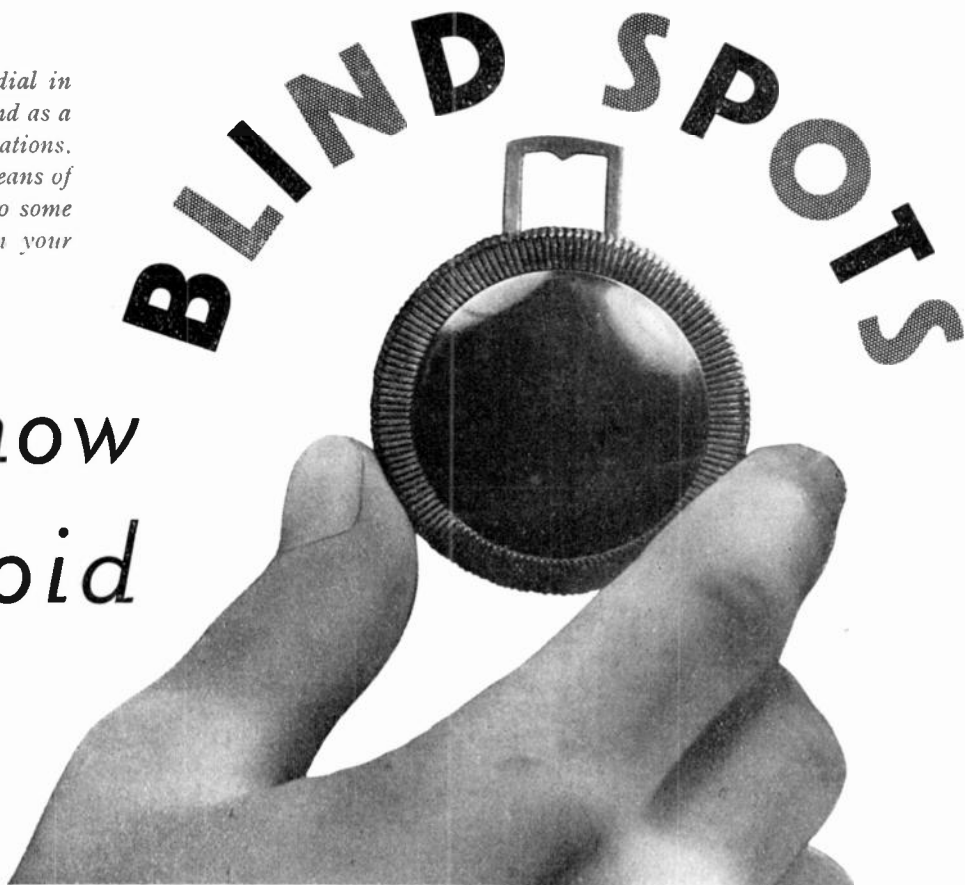
I have no hesitation in recommending this splendid kit receiver to anyone who wishes to explore the short-waves, with certainty of obtaining entertaining and interesting results."—*A. J. P., Glasgow.*

SYDNEY AT GOOD SPEAKER STRENGTH

You may be interested to hear of my experiences with the Lissen Short Wave Bandspread 3 after having had one in use for a fortnight or so. "Locals," such as Rome (2RO), Zeesen (DJA, DJB, DJC, DJN and DJQ), Jeloy (LKJ), Huizen (PHI), Budapest (HAS), Moscow (RW59), Vatican City (HVJ), Radio-Nations (HBL), Madrid (EAQ), Lisbon (CT1AA), Vienna (OER2) and Skamlebaek (OXY), come through at full loudspeaker strength. American stations are also heard excellently on the loudspeaker, particularly Schenectady (W2XAF), Bound Brook (W3XAL), Pittsburgh (W8XK) and Wayne (W2XE). Other distant stations that I have heard at good loudspeaker strength are :—Sydney (VK2ME), Bandoeng, Java (PLE and PMN), Bombay (VUB), Rio de Janeiro (PRF5) and Havana, Cuba (COCH). Of course, if I were to sit up with the set into the "small hours" I could log a great many more stations; but I like to get to bed early!"—*R.M.G., London.*

A blind spot is a portion of the dial in which reaction is not obtainable, and as a result it is difficult to receive stations. Here are some simple ways and means of overcoming this nuisance, and also some tips on how to get the best from your Bandsread Three.

—and how to avoid them



ALTHOUGH the Band Spread Three has been designed to eliminate blind spots as far as possible, there are several factors outside the set itself which may cause them.

A long aerial is often to blame and the remedy may take the form of shortening the aerial to about 40 ft., including lead-in wire, and making this as high as possible. Alternatively the aerial may be "loosely" coupled to the set. A very simple way to effect this is to connect about 1 ft. of insulated wire to the aerial terminal on the set and instead of connecting the aerial direct to the set as previously, simply twist it round this short length of wire. The length of this twisted section and the tightness of the twisting will determine the coupling between the aerial and the set. You will find that the weaker the coupling, that is the smaller amount of twisted portion, the greater the freedom you will obtain from blind spots.

THE IMPORTANCE OF VALVES

In a short wave set such as a Band Spread Three, a "weak"

valve will make its presence felt much more quickly than in an ordinary broadcast receiver. This applies specially to the detector valve, and if this valve is not quite up to scratch, or if a valve with different characteristics has been substituted you may find it difficult to get reaction smooth and uniform over the dial. Consequently if after use the set does not give its first fine performance it would be wise to have your valves tested on a proper instrument, and replace them if necessary.

When you are trying out your set for the first time and feel that the reaction is not all that it may be, try changing over the two K30C valves in the set. Sometimes you will find that one is just a little more efficient as a detector than the other.

DETECTOR H.T.

The position of plug H.T. +1 has a marked effect on reaction. With this plug in the 80 volt tapping of the H.T. battery, reaction might be good over the first half of the scale, but in the second half it may be

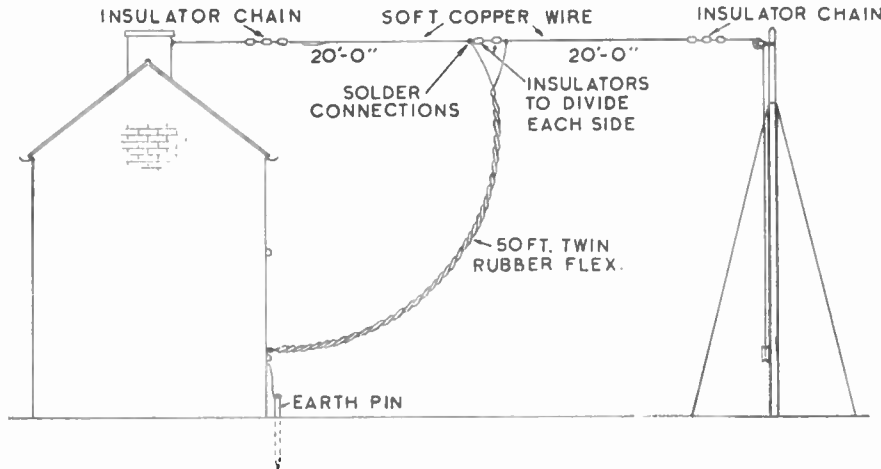
difficult to get any reaction at all, in which case the H.T. +1 plug should be put into a higher tapping. Maybe you will find it better to connect it to H.T. +2 and plug both into the 120 volts tapping.

NOISY RECEPTION

Noisy reception in a short wave set is often caused by loose or imperfect connections in the set itself. These noises are much more apparent than they are in a broadcast receiver, and it is very important to make sure that all components are firmly secured and connected. Often a faulty lead-in wire or a faulty earth wire will account for the most weird noises. Don't break any joints in the aerial system, but always use an unbroken length of wire; if you must make a connection solder it properly.

ERRATIC FADING

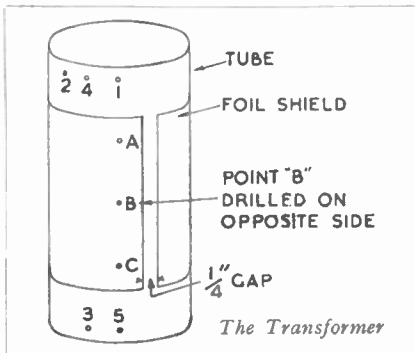
Erratic fading is sometimes caused by a loose aerial swinging to and fro slightly between a wall or a tree. The cure for this is obvious; keep your aerial wire taut and as far as possible clear from earthed surfaces such as walls, etc.



A Short Wave AERIAL designed for NOISE REDUCTION

IN the first edition of *Short Wave* you will have seen the description of "How to Erect a Short Wave Aerial" and now it is proposed to give some details of another type of aerial which has recently been found to offer great advantages.

The aerial last described was a Vertical whose great advantage was its ability to receive equally well from all directions. A disadvantage lies in the fact that it may pick up a good deal of "noise" as well as the desired signal. This gives a poor signal to noise ratio. The noise referred to is electrical interference picked up from the house wiring or nearby electrical apparatus, or passing cars, etc.



A horizontal length of wire elevated at a good height with a down lead to the set can also suffer from this disadvantage and will not have omnidirectional properties. Such an aerial is known as an inverted "L." Blind spots on the reaction control may appear with this aerial. If its total length of top and down lead is 66 feet there may be bad reaction points at 20 and 40 metres.

A very successful aerial is the Dipole matched aerial. This system is very well designed to cope with the noise reduction aspect. Signals received may not increase appreciably in strength but since the noise level is greatly reduced the programme value will rise accordingly.

As this aerial is quite simple to construct, a few details may be of interest. The external construction is most simply seen from the figure, but a coupling transformer is required. The following is a very simple form of transformer which can be easily made up by the

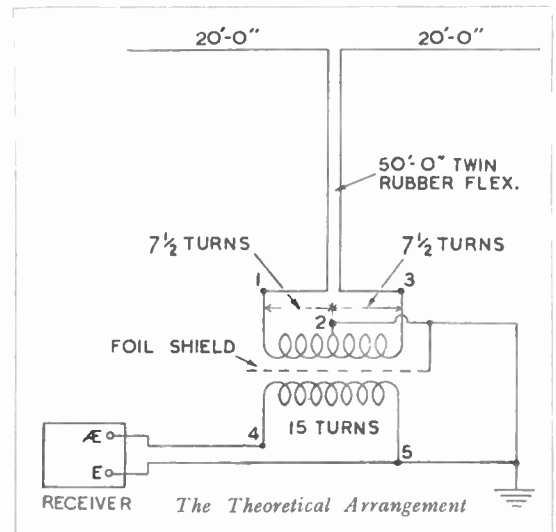
amateur. We require:—

- 1 Paxolin tube 4 in. long by 2 in. diameter.
- 5 Terminals.
- 10-15 feet of No. 18 S.W.G. Copper Wire, D.C. This could be thinner, but do not get less than No. 24.
- 1 Piece of Tinfoil about 7 in. x 3 in. Adhesive Tape.

Drill the tube as shown for the terminals and leads. Wind $7\frac{1}{2}$ turns from 'A' to 'B' joining directly to points 1 and 2. Wind a further $7\frac{1}{2}$ turns from 'B' to 'C' in the same direction, joining to terminals 2 and 3. Wind a layer of adhesive tape over the winding, which should be quite even.

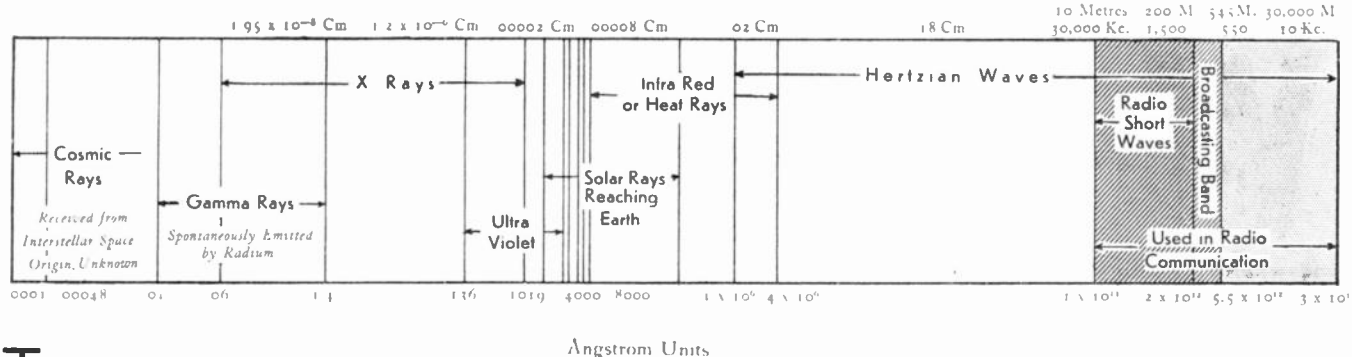
Cut a strip of foil $1\frac{1}{2}$ in. wider than the winding and of such a length as to encircle the winding but not touch at the edges (see sketch). Tape this over to retain in position and wind on 15 turns without a break, joining the ends to terminals 4 and 5. Cover the whole with tape and varnish. A thin clear varnish or shellac varnish could be used.

To connect up join the flex twin



lead to terminals 1 and 3. Join the set terminals marked A and E to terminals 4 and 5, taking the wire from the Earth to terminal 2.

The aerial achieves its object of noise level reduction by the cancelling action of the twin down lead or feeder on any pick-up and the shielding action of the transformer. Any signal pick-up on the 20 feet top portions is conveyed to the set by the transformer coupling.



THE Ether Spectrum is split into more or less defined bands, each band possessing its own peculiar characteristics. The wave-bands used in Radio communication represent only a small part of the spectrum, but more is actually known about them than any of the other bands. That these Radio wave-lengths are divided again into smaller distinct bands is already known to most amateurs, but many are not quite sure as to how and why these wavelengths are segregated.

The DIVISION of the ETHER SPECTRUM

LONG WAVES

Long waves cover all wavelengths over 750 metres, including the ordinary broadcast band carrying Luxembourg, Droitwich, Radio Paris, and so on. This band also extends up to 5,000 metres, carrying the Post Office commercial transmitters, sending out press messages in code, and the Rugby transmitters communicating with ships and sending out time signals on a wavelength of 18,000 metres.

MEDIUM WAVES

Medium wave stations, or those having wavelengths between 200 and 750 metres, are normally used for broadcasting. They carry over 200 European stations, and as a general rule provide strong signals at long distances after dark.

SHORT WAVES

Short waves cover all wavelengths between 10 and 200 metres, although in practice the short wave band should be split into two sections, 10-100 and 100-200 metres.

The band between 100 and 200 metres is used by aircraft, police stations, trawlers, Post Office shore stations, amateurs, and foreign fishing vessels. Each of these sections is given a band between 100 and 200 metres. Only a nominal range of 200 miles or so is expected on these wave-lengths.

The real short waves are between 10 and 100 metres. Between 50 and 80 metres will be found ships, aeroplanes and amateurs on the 80-metre band. Wave-lengths between 10 and 50 metres carry all the normal short wave services.

ULTRA-SHORT WAVES

Ultra short wavelengths or those between 1 and 10 metres, are in a very experimental stage of development. They are commonly called quasi-optical owing to the fact that they act in the same way as light beams. Providing both the transmitter and receiver are on high ground with nothing in between there is no limit to the range covered. 9-metre signals have been known to cover a distance of 6,000 miles over sea, but the 5-metre band has a maximum range of about 200 miles with an average of 20 miles.

MICRO WAVES

Micro-waves, or centimetre waves as they are sometimes called, ex-

tend from 1-metre down to approximately 10-centimetres. These waves are highly directional and are used by aircraft companies for the landing of planes in fog or darkness. They are also used for telephone services over short distances and are entirely free from noise as no static of any kind is picked up.

A micro-wave transmitter installed at Lypne by Imperial Airways is in direct contact with St. Inglebert, 22 miles away across the Channel. The beam is only 30 yards wide at the receiving end. This transmitter is used to inform the French authorities directly a plane is about to cross the Channel.

At the moment, other than for direction finding and the landing of aeroplanes, micro-waves are in a highly experimental state.

EVEN SHORTER WAVES

Below 10 centimetres, the ether waves get shorter and shorter, until they reach almost infinitesimal lengths, and are measured by Angstrom units. One Angstrom unit is 1/10,000,000th of a millimeter, so that a wavelength of one Angstrom unit is 1/10,000,000th of a metre long. All the waves which we can feel as heat, or see as light, are only a tiny fraction of the length of the shortest radio wave.

X-rays are 100 Angstrom units long and the Gamma rays emitted by radium are only 5/100ths of an Angstrom unit long. The very shortest rays, ranging down to 1/10,000th of an Angstrom unit, are the Cosmic rays which are received from interstellar space.

Watch 1 Boy Cast George

A GUIDE to CALL SIGNS

IDENTIFICATION of foreign stations, whether commercial or amateur, is inclined to be a trying business if the international prefixes are not memorised. As there are some 150 different countries, states and dependencies, it is almost impossible to bring to mind whether F stands for France or Finland.

Unfortunately, or perhaps fortunately, whichever way you look at it, these prefixes do not bear any relationship to the name of the country, otherwise there would be the most terrible muddle. New-comers to short-waves often get very worried for they generally know that G stands for Great Britain, but what perhaps about Germany? Would it be G, or D for Deutschland?

About a month ago postal officials from all the countries of the world met and agreed upon a new series of international prefixes by which every country could be instantly identified.

The system was then still further improved by several countries arranging for call signs to be issued that would give a definite indication as to the actual location of the station within the country boundary.

One of the best examples of clever call sign issuing is with the United States and Canada, who have split up their respective countries into areas. The United States prefix is W followed by a number indicative of the area and one or two letters.

W1 includes Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut. A station heard giving a call sign of say W1CAA would be situated in one of those five states. Actually this station is in Massachusetts.

W2 includes New York, Staten Island, Long Island, and the states adjoining the Hudson river, so when listening to W2AGH or any other W2 station a fair idea of its location is obtained.

It is quite a coincidence that the greater the number means that the station is farther away for listeners in this country. It is not strictly accurate but it is a very good guide when listening to American stations. The W3 district includes Delaware, Maryland, and Columbia, while W4, a hard district to log, includes Alabama, North and South Carolina, Georgia, and Tennessee and so on.

Canada is split up in exactly the same way, but only into five districts, being, of course, VE1 to VE5. VE1 is on the east coast and the higher the number, the farther west is the station.

Care has to be taken when listening to stations with similar prefixes. K4, K5, K6 and K7 instead of being in the same country are many hundreds of miles apart. K4 stands for Porto Rico and K5 for the Panama Canal zone. They are fairly close together which is not

too bad. Then K7 is Alaska. Next time you hear, for example, a station giving K7 followed by two or three letters, just realise that this station is not sweltering in the heat in the Panama Canal zone but is probably freezing in the Arctic regions.

Coming closer home, France is split up into two sections prefixed with F8 or F3, followed by two or three letters. It so happens that most of the F3 stations are in Paris, the F8's being elsewhere in the country. French colonies are licensed from Paris and to avoid confusion are given two letter prefixes. A station with the call sign of FA would be Algiers which is reasonably obvious. FT is French Tunis and so on.

It is also a coincidence that Germany be issued with the prefix of D for Deutschland. All German stations have a call sign existing of D4 followed by two or three letters.

An interesting country is Spain, which is again split up as America into nine districts. At one time they simply had a prefix of EA followed by a number, so if you hear an EA1 or an EA416 it is no guide at all as to where the station was actually situated. Now with the nine districts identification is much more simple. The EA prefix is still kept, so when you hear it followed by a figure six and two letters that stands for Balearic Islands or EA8 the Canary Islands, EA9 Spanish Morocco and other Spanish North African possessions.

The first district EA1 followed by two letters is in Northern Spain, while the remaining districts are split up into similar small areas. With regard to Great Britain, as usual, we have our own patent system. English stations are issued with the prefix G followed by figure 2, 5 or 6 and two letters. These figures don't mean anything at all and G5RV might be in Chelmsford, G2DQ might be either

CALL SIGN PREFIXES of the WORLD

AC4 Tibet	K4 Porto Rico, Virgin Islands	VP2 Antigua, Fiji Islands
AR Syria	K5 Canal Zone	VP3 Gilbert and Ellice Islands, British Guiana
CE Chile	K6 Guam, Hawaii, Samoa, (U.S.)	VP4 Trinidad
CM Cuba	K7 Alaska	VP5 Cayman Islands, Jamaica
CN8 (Unofficial, see F8M)	KA Philippine Islands	VP6 Barbados
CO Cuba (phones)	LA Norway	VP7 Bahamas
CP Bolivia	LU Argentina	VP9 Bermuda
CR4 Cape Verde	LX Luxembourg	VQ1 Fanning Island
CR5 Port Guinea	LY Lithuania	VQ2 Northern Rhodesia
CR6 Angola	LZ Bulgaria	VQ3 Tanganyika
CR7 Mozambique	MX Manchukuo	VQ4 Kenya
CR8 Port, India	N U.S. Naval Communication Reserve Stations (on 1715—2000 kc and 3500—4000 kc bands)	VQ5 Uganda
CR9 Macao	NX Greenland	VQ8 Ascension, St. Helena
CR10 Timor	NY Canal Zone	VR British Guiana, Mauritius
CT1 Portugal	OA Peru	VS2, VS3 Malaya
CT2 Azores	OE Austria	VS5 Sarawak
CT3 Madeira	OH Finland	VS6 Hongkong
CX Uruguay	OK Czechoslovakia	VS7 Ceylon
D Germany	OM Guam	VS8 Malaya
EA Spain	ON Belgium, Bel. Congo	VU India
EI Irish Free State	OZ Denmark	W United States
EL Liberia	PA Netherlands	X Mexico
EP, EQ Iran (ex-Persia)	PJ Curacao	XU Afghanistan
ES Estonia	PK Neth. Indies	YI Iraq
ET Abyssinia	PY Brazil	YJ New Hebrides
EZ Saar	PZ Surinam	YL Latvia
F3, F8 Algeria, France, Martinique, Morocco, Tahiti	SM Sweden	YM Danzig
F4 Tunis	SP Poland	YN Nicaragua
F8M Morocco	ST Sudan	YR Roumania
FB8 Madagascar, Reunion (Unofficial, see F8M)	SU Egypt	YS Salvador
FI French Indo-China	SV Greece	YT, YU Jugoslavia
FM4 (Unofficial, see F4)	TA Turkey	YV Venezuela
FM8 (Unofficial, see F8)	TF Iceland	ZA Albania
G Great Britain	TG Guatemala	ZB1 Malta
GI North Ireland	TI Costa Rica	ZC1 Transjordanian
HA Hungary	TS Saar	ZC6 Palestine
HB Switzerland	U, UE, UK, UX U.S.S.R.	AD Nigeria
HC Ecuador	V8 Mauritius	ZE1 Southern Rhodesia
HH Hayti	VE Canada	ZK1 Cook Islands
HI Dominican Republic	VK Australia	ZK2 Niue
HJ, HK Colombian Republic	VO Newfoundland	ZL New Zealand
HP Panama	VP1 Br. Honduras, Zanzibar	ZM Samoa (British)
HR Honduras		ZP Paraguay
HS Siam		ZS, ZT, ZU Union of South Africa
HZ Hedjaz		
I Italy and Colonies		
J Japan		

next door or two hundred miles away and similarly with a G6.

A variation on this is for Irish stations, which are issued with the prefix GI and the same 2, 5 or 6 figures and two letters. This, of course, only applies to Northern Ireland, the Irish Free State having their own prefix of EI2—9 followed by one letter.

U.S.S.R. have their own system

and owing to the size of the country have four prefixes, U, UE, UK and UX. The country, however, is not split into any areas so there is no actual means of obtaining the location of a Russian station.

An interesting variation on these international prefixes is in force in Great Britain. This is the only country in the world that issues permits for transmitting experi-

ments of a non-radiating character. By that a complete transmitter can be built and used with a dummy aerial system.

For such stations a special call sign has been issued, this consists of a figure 2 followed by *three letters*. Notice that no G is used. Naturally it is almost impossible to keep transmissions of this nature strictly within the confines of a normal

house, so occasionally transmissions are picked up.

Australia have issued their call signs in a very sensible manner. The country is again split up into areas and there are actually eight in all. The general prefix is VK followed by figures from 2 to 9 and two letters.

VK2 includes all New South Wales. VK3 Victoria, VK4 Queensland, VK5 South Australia and so on. VK8 is Central Australia and VK9 New Guinea. New Zealand with a prefix of ZL is similarly split.

ZL1 consists of Auckland and district, ZL2 Wellington and district, ZL3 Canterbury and district and so on. Other countries which have extended prefixes are Portugal, CT1; with their colonies, CT2 for the Azores and CT3 for Madeira, and others of a similar kind having extensive colonies. Call signs which are confusion are the new VP and VQ series. VP1 is Zanzibar, but VP2, instead of being in the same area, is Fiji Islands, VP9 Bermuda, VQ1 Fanning Islands, VQ8 St. Helena.

When hearing stations having call signs of this nature it is more important to get the figure following than to worry about getting the VP or VQ, as the case may be.

Commercial stations in various parts of the world have special call signs allocated by the authorities in the countries concerned. Except for the fact that they are picked so not to clash with commercial stations in other parts of the world, they do not appear to have any international system. For example FZS has been allocated to Saigon in Indo-China, the only point of similarity being that the F stands for France and Indo-China is a French possession.



“SHORT WAVE”

work out, for KUP is in San Francisco and by rights should have a W in front of it such as W9XAM in Illinois.

The complete list of prefixes is shown in these pages. As an error in reading a prefix would make a

very big difference to the location of the station, most operators use the international code as a means of preventing any mistakes.

An American station, for example, having a call sign of WICAP, would call WIC, for Chicago, A for Apple and P for Peter, or taking another example, WIBCG, which when sent under bad conditions is often read Watch

One Boy Cast George or WIBCG.

European stations are inclined to use a slightly different code which is just as simply understood. F8MJ would call F8 Morocco—Japan or, Madagascar—Jerusalem. An English station such as G2BG would call G2 Baltimore Gallipoli, or some of the humorous call 5WW 5 Wicked Walter, and 5PP, not 5 Paris Paris, but 5 Peter Pan. G6GO is well known as 6 Glasgow Orange.

This means of identification, or rather of preventing errors, is a very simple one and in the case of foreign stations it is easy to obtain the call sign of a station like F8DR when it is Denmark Roma, whereas perhaps DR would be missed. Keep a copy of this international prefix list for it will very greatly help to increase the pleasure obtained from a short-wave receiver when hearing foreign stations.

EUROPEAN TELEPHONY CODE.

Letter	Word used	Letter	Word used	Letter	Word used
A ...	Amsterdam	J ...	Jerusalem	S ...	Santiago
B ...	Baltimore	K ...	Kilogram	T ...	Tripoli
C ...	Casablanca	L ...	Liverpool	U ...	Upsala
D ...	Denmark	M ...	Madagascar	V ...	Valencia
E ...	Edison	N ...	New York	W ...	Washington
F ...	Florida	O ...	Oslo	X ...	Xanthippe
G ...	Gallipoli	P ...	Paris	Y ...	Yokohama
H ...	Havana	Q ...	Quebec	Z ...	Zurich
I ...	Italy	R ...	Roma		

Most of the commercial stations do attempt to keep to their international prefix. Take, for example, IRG, which is the Italian station at Massau in Eritrea, which is, of course, Italian and I is the Italian prefix. Unfortunately this does not always

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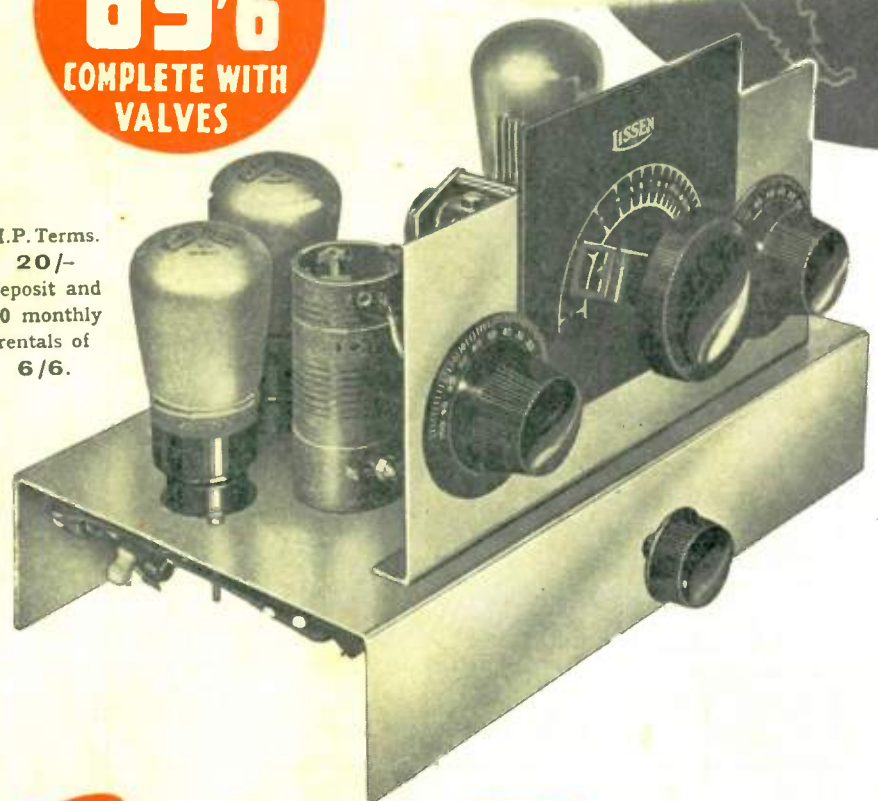
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