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Right: Pietro Mascagni. Below:
Margherita Carosio (Aegloge);
Aureliano Pertile (Nero); Lina
Bruna Rasa (Acte)



Mascagni's NERO

*will be broadcast by Italian and other
European stations on Sunday and Thursday*

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WORLD RADIO



VOLUME TWENTY, NO. 496, FRIDAY, JANUARY 25, 1935

Mascagni's New Opera

NOT for some considerable time has any operatic broadcast been awaited with so much eager anticipation as that which makes the coming week notable in broadcasting annals. Mascagni's new opera *Nero* had its first performance at La Scala Theatre, Milan, last Wednesday week; the first broadcast is arranged for Sunday next, January 27, and that is to be followed by another on Thursday—both of them from La Scala, and both conducted, as the first performance was, by the composer himself. That alone lends the broadcast a distinction which a composer's direction of his own music does not always give. Mascagni has long enjoyed the success as a conductor—of other music as well as his own—which only a born leader of his fellows can achieve. Our older readers may remember the profound impression he made with La Scala orchestra a generation ago, when he took it on tour in Europe. The standard of performance at the Milan Opera House, moreover, is one which makes any broadcast from it an event, rather than a mere incident, in the wireless listeners' calendar: opera that has a sense of unity, an air of being one complete whole, in which solo voices, orchestra, and chorus blend their several tasks in a spirit of team-work for the opera's sake, and not, as can so easily happen, for their separate glorification.

On another page will be found articles on Mascagni and the opera itself, with an outline of the story and a note of the principal singers in the cast: their names are sufficient of themselves to ensure the discerning listeners' interest in advance. It is the opera itself, however, and its appearance when the composer has reached the age of seventy-one, which have captured the world's interest even in advance of its production. On a bigger scale than previous works, and conceived in a more heroic spirit, it inevitably evokes comparison with Verdi's masterpieces, *Otello* and *Falstaff*, both produced after he might well have retired to an old age of honourable ease.

Mascagni's career, however, has been a more romantic, if less uniformly successful, one than Verdi's, although in his own country he has all along enjoyed more of the limelight of public affection and esteem than the rest of the world has shed on him. He has borne his full share of the hardship and struggle which lie in wait for genius.

But at the age of only twenty-five, fame and good fortune came to him as with the stroke of a fairy godmother's wand. His *Cavalleria Rusticana* won the first prize in a competition organised by one of the Italian publishers, and before long made its way all over the world with a swift and unvarying success for which musical history has few parallels.

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None of his later operas—and he has been an industrious composer—has won anything like the world-wide renown of that first achievement, and only few of them have made their way abroad. But in his own country he has always held the position which makes the Italian term "Maestro" one of much more than merely conventional respect: elsewhere, it may be, this new big work of his may seem to raise him, for a second time, from something like obscurity. His countrymen think of it rather as the crowning achievement, as yet, of a long and honourable career of service to Italian music.

Vià Ether

A Broadcasting Première

THE outstanding event in next week's broadcasting is without a doubt the relay by the Italian stations from La Scala, Milan, on SUNDAY and THURSDAY of Mascagni's latest opera, *Nero*. It was only on the sixteenth of this month that this opera had its first performance at La Scala, and the Italian broadcasting authorities are to be congratulated on having arranged these broadcasts so soon after the première. Moreover, a number of European and many American stations are participating in both relays, and one is prompted to ask oneself how long in pre-broadcasting days it would have been before the world at large would have had an opportunity of hearing this new work. Technically and acoustically, transmissions from La Scala are almost perfect, and in view of the glowing reports which have been received of the first performance, Sunday's and Thursday's relays should prove historic occasions in the world of music.

More Ice Hockey Broadcasts

Lovers of winter sport will be interested in the announcement made by the Swiss and Vienna stations that at 6.30 p.m. on SUNDAY they will relay the final scene from the International Ice Hockey Championship in Davos. I shall endeavour to listen to this transmission *vià* Vienna, in order to hear the recital which one of the finest baritones of the day, Emil Schipper, is giving there at 7 p.m. Sunday's German National transmission at 8.30 consists of works of modern composers, Paul Graener and Max Reger. Finally, at 9.35, the Maëstricht Municipal Orchestra is to be heard from Huizen. Frank Titterton is the soloist on this occasion. Earlier in the day, at 1.30, Paris PTT and Strasbourg are to relay Massenet's *Don Quixote* from the Opéra-Comique. Once again we are to have two broadcasts of one and the same symphony in the course of the week. Bruckner's Fifth is to be transmitted from Huizen and Berlin on TUESDAY and WEDNESDAY respectively, and Tchaikovsky's Third from Stockholm and Hilversum on WEDNESDAY and SATURDAY respectively. Several operatic broadcasts, apart from Mascagni's *Nero*, deserve special notice. On FRIDAY Prague is to relay Janáček's *Jenufa*. On SATURDAY the Deutschlandsender brings a relay of Adam's *Le Postillon de Longjumeau*, and from Rome we are to hear Mozart's *Don Giovanni*. The latter is a relay from the Royal Opera House. I have latterly listened to several transmissions from this theatre and much as I always admire the singing and orchestral playing there, I should like to make just one criticism. Evidently there is a microphone placed just above the prompter's box—and occasionally I have heard every word of his prompt.

ETHERVIATOR.

TEN YEARS OF JAPANESE BROADCASTING



A "koto" player at JOAK, taking part in a trio with other players in different studios

ONE after another, the great broadcasting companies and corporations of Europe are celebrating the tenth anniversary of their foundation, and every one of them is able to look back with pride and satisfaction on the first decade of its life. In Great Britain the anniversary occurred in 1932, and the present winter adds the Spanish and Swedish broadcasting services to the list of ten-year-olds. In other continents, however, the tenth anniversaries have still to be celebrated, and the chief networks of the United States will have to wait until 1936 and 1937 before completing a decade of activity. Japan is ahead of America in this respect, for the Japanese station JOAK broadcast for the first time on March 22, 1925, and the tenth anniversary of the birth of the Japanese broadcasting system will be celebrated shortly.

In commemoration of this event the Broadcasting Corporation of Japan has prepared a useful booklet, which describes the growth of the service and the programme policy of the Corporation.* The booklet contains many interesting details, and, although the conquest of the ether has not yet enabled European listeners to receive medium-wave Japanese stations, the development of Japanese broadcasting is worthy of close attention in Europe. It shows that the East can handle broadcasting with the same success as the West, and this is a further proof that broadcasting is the most universal of man's instruments for entertainment and instruction.

Growth of the Service

It was in 1925, then, that the temporary station JOAK began to broadcast at Shibaura, Tokyo. It was a 220-watt station, and after a few months it was replaced by a 1-kW station at Atagoyama, in the centre of Tokyo City. JOBK (Osaka) and JOCK (Nagoya) were opened in the same year, and, twelve months later, these three stations were amalgamated as the Broadcasting Corporation of Japan, a non-profit-making organisation conducted for the public benefit.

The days when 1 kW was regarded as the maximum power for a transmitter were soon over, and by 1928, seven 10-kW stations and one of 3 kW were in operation. Since then Japanese broadcasting has continued to expand, and there are now twenty-five stations in different parts of the country, not counting the second transmitters at Tokyo, Osaka, and Nagoya, which radiate alternative programmes.

It may surprise European listeners to know that 10 kW is the greatest power of any Japanese station, but the original policy of the Corporation was to build a chain of small, low-power stations throughout the country. There are seventeen of these stations, and as they are all linked with Toyko by a permanent relay line, the erection of a high-power transmitter on the

* *The Recent Development of Broadcasting in Japan.* Tokyo: The Broadcasting Corporation of Japan.

European model was not immediately necessary. High-power transmission is now on its way, and the Department of Communications has authorised the construction of two 150-kW transmitters for the Tokyo programmes. Other high-power stations will probably be built in Osaka and Kyushu, but the details have not been announced. On the completion of these transmitters some of the small local stations may be closed.

New studio accommodation is also being prepared. In a recent article in *The Japan Magazine* Mr. Shichiro Komori, the Director-General of the Broadcasting Corporation of Japan, said that Japanese broadcasting has now reached a stage in its development which necessitates the erection of two broadcasting houses—one in Osaka and the other in Tokyo. That at Osaka is in course of construction, and in Tokyo a site of about 3,950 sq. metres has been chosen for a six-storeyed building, with a total area of 16,000 sq. metres, which will house sixteen studios as well as offices. It is expected that the building will be ready for occupation in two years' time.

Nearly Two Million Listeners

The steady increase in the number of listeners is a satisfactory feature of Japanese broadcasting. At the end of 1925, when the three pioneer stations had been in operation for a few months, there were 194,572 listeners. Each year since then has provided a considerable increase, and the latest figures give a total of 1,840,000 at the end of September, 1934. As the yearly rate of increase is now about 300,000 it should not be long before the two-millionth listener pays his subscription.

According to the booklet, the latest figures show a proportion of 28.2 subscribing listeners for every 1,000 inhabitants. This proportion is a good deal lower than the corresponding figure for some of the chief broadcasting countries in Europe, where Great Britain has 133.4 licence-holders per 1,000 inhabitants and Denmark 150.1 per 1,000; but it is still a satisfactory and encouraging figure. It may be remembered that Mr. A. R. Burrows, Director of the International Broadcasting Office, Geneva, commented on the Japanese figures in an article in *WORLD-RADIO* on April 13, 1934, and observed that Japan "alone among the Asiatic countries, seems to have realised the importance and possibilities of the broadcasting medium."

As might have been expected, Tokyo provides a very large number of listeners. At the end of August, 1934, there were 516,213 listeners in Tokyo, and it was estimated that nearly half the families in the city possessed wireless sets.

Programme Policy

A glance at the make-up of the Japanese programmes is enough to show that Japan takes broadcasting very seriously, and the listener who feels that jazz and variety are all that he wants from his wireless set should avoid making his home in Japan. Here are the programme percentages for 1933, showing the comparative amount of time devoted to different parts of the programme:—

Social education, 35 per cent.

General information, 30 per cent.

Entertainment, 19 per cent.

Outside broadcasts, 9 per cent.

Children's hour, 7 per cent.

The large amount of time devoted to "social education" is a striking feature of this list. The alternative programme system, as employed by JOAK, JOBK, and JOCK, makes it possible to give many hours to educational broadcasts, for the big stations are able to send out educational material on one wavelength and a general programme on the other.

"Social education" includes physical exercises, which are very popular in Japan. Three sets of exercises are broadcast each morning—two for the home and one for the school, and "in summer all classes of people, young and old, gather in the playgrounds of primary schools or the precincts of the neighbouring shrine to practise the exercises." This new kind of "group listening" is much appreciated, and the booklet claims that as many as 60,000,000 persons take part in the daily exercises; but it is difficult to see on what basis of calculation such a remarkable figure is reached.

Language lessons are another important part of the educational programmes. They generally deal with English, French, and German, but sometimes there are short courses in Chinese, Manchu, and Brazilian.



A perspective view of the proposed new broadcasting headquarters at Tokyo

The constitution of the rest of the programmes can be judged from the table of percentages. News and general information are regarded as very important, and the "employment agency" news bulletins, which give details of possibilities of employment, are of great value to listeners who are out of work. The outside broadcasts include many eye-witness accounts of national ceremonies and sporting events, and relays from the summit of Mt. Fuji and from a submarine are examples of how Japan uses the travelling microphone. Unfortunately the booklet does not say much about general entertainment policy, but it is interesting to learn that all kinds of Japanese and European music are included in the programmes.

A special section of the booklet is devoted to international programme exchanges, a development by which Japan sets great store. Good progress has been made since the first programme of this nature was attempted in 1927, and in the last few months Japanese listeners have heard broadcasts from Great Britain, U.S.A., Germany, Holland, Switzerland, and Java. During the same period Japan has sent programmes to Europe and America, and has thus helped to bring the East nearer to the Western world.

Mascagni's New Opera



The final scene of "Nero" at La Scala, Milan, showing the hut where Nero takes refuge after his departure from Rome

[The Times.]

The Man and his Work

By GIULIO RAZZI

[The first performance of Mascagni's latest opera, *Nero*, an event that had been looked forward to in musical circles throughout the world, took place at La Scala, Milan, on Wednesday, January 16. Readers will have gathered from the daily Press that the new work was enthusiastically received by a distinguished audience, and it is a matter for congratulation that listeners will not have to wait long in order to hear broadcasts of the new opera. The performances which are to take place on Sunday and Thursday next, January 27 and 31, will be relayed by the Italian and a large number of European and American stations.]

THE special characteristic of Mascagni's music is his ability, developed to a high degree, to interpret musically, and with a sense of sounding their fullest depth, the words of his literary texts. From this deep awareness of the significance of the words there springs a new type of melody, the vigorous phrases of which reflect the Italian spirit, released from any false, baroque influence of affectation and dilettantism and free to achieve its true end—moving the hearer deeply by its noble strains.

Another of Mascagni's striking characteristics is his use of massed choruses: this enables him to lend an almost infinite variety to his melody, and, when he will, to carry it to a great climax. Essentially Italian in their purity and vitality, these are the elements which go to make him the outstanding figure he is, which give his genius that quality of brilliance that is easier to recognise than to explain.

The structure of his harmonies and melodies, at one time seductive, at another decisive and trenchant, seems to express the triumphs of a mysterious power, or the wild tumult of a forest swept by a whirlwind. Giovanni Orsini, in his book on Mascagni, says that he has much in common with Francesco Domenico Guerazzi, his famous fellow-citizen. He has the same perpetual restlessness, the same almost overwhelming forcefulness, the same supreme genius.

From this restlessness of Mascagni is born the immense orchestration of the tragedy of *Amica*, and from that of the giant Guerazzi the *Apologia*. The forcefulness, the supreme genius of both men is apparent, whether it be in the *Intermezzo* from *L'Amico Fritz* and the "Hymn to the Sun" from *Iris*, or in the plastic *Assedio di Firenze*, stimulating and setting the imagination on fire.

On January 16 Pietro Mascagni's *Nero* was performed for the first time at La Scala Theatre, Milan. The popular Italian musician was glad that his latest opera was to be given for the first time at La Scala, and that from La Scala it will be sent throughout the world.

He has told us how one day he was in the theatre, listening to Ermete Zacconi rehearsing Cossa's play, *Nero*, and how he suddenly had the idea of writing an opera with the notorious Roman emperor as "hero." In the death scene Zacconi was superb; one seemed to see blood pouring from his mouth after the final death-cry had been stifled in his throat. "Zacconi must train and direct the artist who plays my Nero," Mascagni said to himself.

The opening passages of this dramatic poem are grave, threatening, almost lugubrious; the first act, which takes place in the Suburra inn, lasts half an hour, and so does the second act. The third act lasts an hour, and the two scenes into which it is divided—one showing the banqueting hall, the other the death of Nero—are separated by a short interval. The opera is full of inspired melodies, revealing the state of mind and the reactions of the various characters. Passages of strength contrast with phrases of tender love.

The Emperor's Death

It is to Nero's death that Mascagni has devoted his utmost artistic powers and ability, and it is this part of the opera which he has felt most profoundly. "Here," reads his stage note, "it is necessary that the tenor should be a great actor as well as a singer."

In the small and rather wretched little house at Faute, five miles from Rome along the Consular Road, the Emperor shakes the cold hand of Atticus, whilst dawn breaks over the Roman countryside. The sound of galloping legions and the clatter of arms can be heard approaching along the Flaminian Way. Clouds, lightened by the first rays of the rising sun, are breaking from behind the distant pines; a pregnant, breath-taking pause, and then the emperor's last, terrible, hoarse cry. . . . Nero is dead. But with his death something is born. From the weaving of the short and simple harmonies there emerge those melodies which are bound, ere long, to be known all over the world.

Above all, the sweet song of Aegloge, the Grecian maiden, "Thy little swallow seeks a nest," will join that precious heritage of melodies which are loved and sung by everybody.

The Story of the Opera

(From our Turin Correspondent)

THE story of Nero has been treated by many different authors, from Racine to Alfieri, and from Alfieri to Boito. Mascagni and his librettist, Rossato, have written their opera round Pietro Cossa's drama, which was completed in the second half of the nineteenth century. They have kept strictly to Cossa's conception of the Emperor, and, consequently, they present Nero at the zenith of his power, approaching the abyss of his downfall and death.

In ACT I, after some introductory passages, we find Nero and his jester, Menecrates, both disguised as slaves, entering a low tavern after the pursuit of a young Greek slave, Aegloge. Nero is soon involved in a dispute and fight with a gladiator, during which he is thrown to the ground. His favourite, Acte, a freed slave, and his bodyguard come to the rescue. In a burst of generosity, and after having made himself known to the company, he drinks with his opponent, and the act closes in an orgy.

ACT II takes place on the terrace of the *Domus Aurea*. Nero sings. Menecrates enters and introduces an astrologer, who predicts to the Emperor that he will soon die in misery. Nero is enraged and he makes the astrologer a prisoner in the palace. The Emperor then sees the young slave, Aegloge. Struck by her beauty, he declares his love for her, but Acte, who is watching them, is stung by jealousy and tries to kill her new rival. She is saved only by Nero's intervention, and then follows a long love-scene between the Emperor and the young slave-girl.

The first scene of ACT III opens with a gorgeous scene in the Imperial palace, a scene which depicts in great detail the luxury and voluptuousness of the period. Nero, crowned with a wreath of roses, improvises a song. But tragedy is not long in arriving. The people are in revolt. Abandoned by all except the ever-faithful Acte and two other freed slaves, Nero flees from the palace, taking his lyre with him.

In the final scene we find them taking refuge in a small house between the Via Nomentana and the Via Salaria, where Acte and the two slaves, by their example, help Nero to conquer his great fear and meet his death.

The cast of the opera is a distinguished one. Aureliano Pertile was specially chosen by the composer for the part of Nero; Margherita Carosio takes the part of Aegloge; Lina Bruna Rasa that of Acte, and Signor Granforte the part of Menecrates.

The U.S.A.'s Holiday Listening

I. From Local Stations

(From our Chicago Correspondent)



Lionel Barrymore

DURING the Christmas season, U.S.A. listeners were offered an array of seasonable features that included broadcasts of characteristic holiday festivities from all parts of the world as well as programmes originating in U.S.A. studios. The Columbia Broadcasting System started its holiday schedule on December 16, with a broadcast of the pre-view of the latest toys from Nuremberg, Germany,

and three days later Kate Smith included on her Matinee Hour a Swiss Village Festival from Berne, Switzerland.

One of the most interesting international features brought to listeners the chants and pre-Christmas prayers of the Benedictine Monks of Montserrat. The broadcast originated in the isolated ancient monastery perched on the rocky ledge 3,600 feet above the River Lobregat. And early risers on Christmas morning were able to tune in the "hook-up" with the British Broadcasting Corporation and hear "Empire Exchange."

The National Broadcasting System networks afforded listeners an opportunity of hearing the concert by the Schwartzmeier Children's Choir in Berlin, as well as services in the ancient Einselden Monastery in Switzerland, the services from a little country church in Czechoslovakia, and a programme of music and prayer from the catacombs in Rome. From Washington came the voices of the children of foreign diplomats who appeared before the microphone to broadcast greetings in their native languages, and the voice of President Roosevelt was heard as he sent his Yule message to Admiral Byrd and his men in Little America.

In Manhattan, the celebrations of the "Little Nations," prepared by Italian, German, French, and Hungarian groups, were heard over the American Broadcasting System networks.

Not to be outdone, the comedy team of Burns and Allen, having received their Christmas gift of a renewed contract from their sponsor, carried the Yuletide spirit over to the day after Christmas, when they made their regular programme broadcast, and gave Gracie Allen an opportunity to bemoan the fact that "No one ever does anything for Santa Claus."

Consequently, their programme was a broadcast in honour of all the store and street Santa Clauses, estimated by George Burns to be approximately 100,000.

The entertainment provided by the Nash Christmas Party broadcast, which included a cast of 300 artists, and which was heard over the NBC networks on Christmas day, made it necessary to use five studios for the programme. Beatrice Lillie, Alexander Woolcott, Madame Schumann-Heink, the Apollo Club Chorus of 200 voices, and George Olsen and his orchestra, occupied three of the CBS Chicago studios. The Don Cossack Russian Male Chorus was heard from the CBS New

York studio, and Lionel Barrymore made his radio debut from KHJ, Los Angeles, in a dramatisation of Dickens's *Scrooge*. In contrast, the American Broadcasting System presented on December 31 a dramatisation entitled "Scrooge in 4/4 Time," which brought "A Christmas Carol" up to date. Instead of dealing with the early nineteenth century, the comments and prejudices of Scrooge concerned themselves with modern manners and morals.

II. "Empire Exchange"

(From our Washington Correspondent)

Millions of listeners in the United States heard the B.B.C.'s "Empire Exchange" programme on Christmas Day, through more than 150 network stations of the major broadcasting systems. This unique programme, with its impressive demonstration of short-wave technique, actually attracted more attention and comment than even the elaborate radio entertainment arranged locally.

Many American newspapers devoted more than a column in space to a detailed description of the British Empire programme and reprinted the King's speech in full text.

"The talk of the week in American radio circles," said *The New York Times*, "has been the remarkable British 'Empire Exchange' broadcast on Christmas morning, in which the microphone skipped around the world in breathtaking fashion. Plaudits were heard for the organisation behind the globe-girdling programme, for the miracle performed by science in linking so many far-flung cities together in split seconds as if it all were on some small island. There was plenty of applause for the human interest feature of the broadcast, and for staging such an interesting international performance stripped entirely of commercial sponsorship. Shepherds, fishermen, children, skaters, tunnel guards, and miners added realism and drama to a programme distinguished for naturalness and sincerity.

"It was a programme intended primarily for the Empire upon which the sun never sets, but the Hertzian waves were intercepted far and wide for rebroadcasting by friendly neighbours of the British.

"A vast audience in Uncle Sam's domain listened, entranced by the magic of short-waves and delighted with the voice of King George, whose words sped across the hemisphere with such sincerity that his friendly greeting was compared with President Roosevelt's 'fire-side chats.'"



[Photo: E.N.A.]

The Montserrat Monastery, from which chants and prayers were relayed to the U.S.A.

Without Distortion

Surely the Youngest

FOR some time past I have been trying to find the youngest broadcaster—that is to say, the youngest coherent broadcaster, for babies, whether single or quintuple, can hardly be counted as genuine microphone artists. There was a time when Lea Deutsch, the six-year-old singer of Zagreb, appeared to hold the record, but the redoubtable Claude, who enchanted listeners to Radio-Normandie by his rendering of *Les Gars de la Marine*, beat her by three years. Both Lea and Claude are now eclipsed by Frank Willy Andersson, aged two, who recently broadcast from Stockholm. He sang a little song and made a few remarks about Christmas presents, and I learn from *Rüster i Radio* that his performance was regarded as a great success. The sequel is rather charming. The broadcast was also recorded, and Frank Willy was invited to hear it played over. At first he stared at the loudspeaker uncomprehendingly, but when the record came to the chorus—"So I clap my hands, and I stamp my feet, so merrily, oh, so merrily"—he grinned all over his face and turned to his mother. "Mummy, Mummy," he cried, "that's Frank Willy!" He is now one of the most famous inhabitants of the town he lives in, but he regards his fame with the indifference of a great artist.

Luxury or Necessity?

The question of whether a wireless receiver is a luxury or a necessity has once more engaged the attention of legal authorities. This time an Austrian innkeeper is the principal figure in the case. A friend in Vienna tells me that the innkeeper, whose goods were being distrained on for debt, appealed to the Court for permission to keep his receiving set. He explained that his business required it, for the guests who came to his public rooms and his garden wanted to hear the music and the sporting results; if he could not provide them with such entertainment they would go elsewhere. The Court upheld his appeal, and when the matter was taken to a higher authority the innkeeper was again successful. As far as Austria is concerned, I feel that the judgment is undoubtedly right. In England we can take our meals and our drinks without music, but in Germany and Austria that is almost unthinkable; and if an innkeeper or a restaurant owner cannot afford the two or three musicians required for a *Künstlerkonzert*, a loudspeaker is obviously a necessity.

The Germans Like It

This "merry and bright in the early morning" business is going down very well in Germany. As I mentioned a few weeks ago, the Deutschlandsender has made the experiment of engaging well-known comedians as *compères* for early-morning gramophone concerts, and listeners seem to be highly delighted. Letters of appreciation are pouring in; electricity companies say that the consumption of current in the early morning is twice or three times as much as it used to be; and now the authorities have added a further three-quarters of an hour to the period of jollity. It thus extends from 6.35 to 8.45 a.m. (5.35 to 7.45 a.m., G.M.T.), and the extra period is meant to enable the housewife to have another good laugh after her husband has gone off to work. While I have not got over my first feelings of dismay at the prospect of such wild matutinal gaiety, I am bound to express my warm admiration for the comedians who take part. Men who can crack jokes at half-past five have a quality which I, for one, could never hope to emulate. Not, of course, that I want to emulate it.

RECTILINEAR.

WOMEN AT HOME AND ABROAD

Evening Entertainment

By MADELINE LINFORD

It was in Sussex, and it was, I suppose, a typical Guest House. The mats on the dining-room tables were hand-embroidered and slithered about under the rough Breton pottery and Czechoslovak coloured glass. "Quite a foreign atmosphere," we said, but that was before we had tasted the food. This was quite definitely bad. We could not grumble and we had to eat it, because, the place being a Guest House, the proprietors were "ladies" and sat with us. They also came into the sitting-room after dinner. To read, besides being difficult, was made to seem abominably rude. Fancy work was encouraged among the women boarders—or, rather, "guests"—and the men were urged to smoke their pipes, much with the same tolerant and self-interested benevolence that thrusts comforters into the mouths of restless babies. The chairs were cane, knobbed with lumpy embroidered cushions; the light was dim under hand-painted shades; our horrible dinners stirred uneasily within us.

Still, the surrounding district was lovely, and the Guest House was cheap. We had booked our rooms for a week, and the proprietors—"now do, please, think of us as your hostesses and this as a jolly family party in a dear old country house"—were expert, probably from long practice, at thrusting aside tentative hints of imminent deaths at which we might be called to attend. So we stayed and, by spending all day in the car and swallowing indigestion tablets after dinner, neither of us could own to any real physical or mental harm.

On the last evening came a small diversion. A man in a car had arrived at teatime and asked for a bed for one night. "We don't usually take casuals," said one of the hostesses when we met her on the stairs on our return from our customary flight. "It rather spoils the family atmosphere, don't you think? But he seems such a nice man, and I should hate to think of his being forced to go to the 'Jolly Farmer' and have a dull and uncongenial evening."

It seemed to me that the man had shown very poor judgment in driving past the robust heartiness of the "Jolly Farmer" and stopping at our thin, tepid soups and embroidered mats. By now he would be reading the mottoes on his bedroom walls and perhaps, unconsciously, agreeing with me. I had framed injunctions on mine, telling me to smile even when the world seemed gloomy, and to remember that a cheerful spirit would lighten the heaviest load. I tried to test them during dinner each evening and through that awful period of sociability after it, but they never worked.

At dinner we saw the new arrival. He sat at a little table by himself, his legs cramped under it, and with his mats all awry before he had finished the first course. He was ordinary—about forty, greyish, tweeded, and thin. He looked unhappy, but that was to be expected. No one, I thought, looked anything but increasingly unhappy as the meal progressed, though some, inspired no doubt by the mottoes, had a veneer of brave patience.

He came rather late to dinner, and so we were all assembled in the sitting-room when one of the hostesses ushered him into our midst. There we sat in our "semi-evening" silks—

eleven horrible women, unrelieved even by Mr. Robinson, who had escaped the day before. I was not surprised when the man, after a sweeping, tortured glance at us, at our fancy work, our jangling bead necklaces, the cane chairs, the Italian pottery vases, muttered something about his car and bolted from the room.

I thought that he had simply defaulted, and that he was lucky to have escaped with nothing worse than one meal and a possibly uneasy conscience. But the hostesses remained calm, and in a few minutes he came back, carrying an efficient-looking wireless set.



Instantly a soft babble of talk flowed round him.

"How nice . . . A little music is always a change . . . Not those modern composers, though . . . The dear King on Christmas Day . . . I'm not ashamed to say that I love the Children's Hour . . . My nephew is most clever with the wireless . . . I call it noise, not music . . . She said 'I will' so clearly, without a trace of foreign accent . . . It's extraordinary how many people simply disappear when their relatives are dying . . . He made a five-valve set and it cost almost nothing . . . You can't beat Beethoven and the old masters, say what you will."

The man took no notice. He had placed the set on a rickety table and was fiddling with its knobs. A burst of organ music poured out of it.

"Oslo," he said, in a kind of bark, and turned his back on us.

"Oslo! Isn't that marvellous? I've never been there, but I'm told that Norway is mostly waterfalls and very cold. I always think that when you live in a climate like this, you should go where there's sure to be sun. I mean, you need it. . . . They came over for the Royal Wedding, too. Such a tall King, or was that the Danish one? . . . My sister went on a cruise, but she said the Midnight Sun was disappointing. Just like it is here, though, of course, later. . . . I must say that for my part, when it's night, I like it to be night. . . . It's extraordinary how the seasons seem to be changing round. Roses out at Christmas and cold winds in July."

The organ snapped into silence and a tinkle of dance music came pattering on its heels.

"Milan," barked the voice behind the firmly turned tweed back.

"That's where 'The Last Supper' is. A pity it's faded. . . . Did I ever tell you about that time I went to Venice and the gondolier tried to overcharge me? I was quite firm. I said . . . I love Gilbert and Sullivan. Isn't it *The Gondoliers* that has the sparkling eyes tune? . . . Of course it's much cleaner since Mussolini took charge and the trains are at least reasonably punctual. . . . I think a king and queen on the throne are much better for everyone than all these dictators."

The dance music was torn away and a string quartet swept into the gap with strains of thin and disembodied sweetness.

"Vienna."

"Now that's a place I've always longed to visit. So gay. . . . Perhaps they'll play 'The Blue Danube.' How much pleasanter those old dances are than all this jazz! . . . Did you see *Autumn's Crocus*? . . . Such a tragic country. The poor Empress. . . . It's quite fashionable to go to the Tyrol for winter sports, but then you can never be sure about the Nazis. . . . What was his name? Doll something. A tiny little man."

And so it went on, until it seemed that every station in Europe was being dragged out of oblivion and paraded before us. We never heard more than a few snatches from each, and their intermediary kept his back rigidly towards the chattering room. Huizen brought an instant's silence, because no one was sure of its place on the map and therefore of its conversational associations, but Madrid led from bullfights to pet dogs at home. Berne's gramophone recital was very happy in its inspirations of hotel charges, Lucerne, the League of Nations, cherry jam, and Princess Elizabeth's progress with the French language.

It ended as suddenly as it had begun. A voice from Dresden said "Heil Hitler!" and while we still murmured of the ex-Kaiser, of brown as a colour for clothes, and of the Passion Play, the man picked up the now quiescent set, muttered a few words, and hurried out of the room.

We stared at one another with something of the dazed bewilderment of Stout Cortes and his followers. This bouncing, tuneful girdle round the Continent had left us with the jaded weariness of tourists dragged past an endless succession of "sights." Slowly we recovered our usual form. The world was a small place, after all, and wasn't it marvellous that all these sounds and queer languages were in the air and could be trapped in our Guest House? What a nice man, but he seemed quiet. Could anyone remember his face, really remember it? We agreed that if we met him in the road to-morrow, we shouldn't know him, though his back might seem familiar.

"I wonder," said someone, "if he did all that to amuse himself or to amuse us?"

"A little bit of both, perhaps," said a hostess, anxious that everything should be pleasant between guests. She added that a happiness given is a happiness shared, and I thought how thoroughly she had studied the mottoes.

The other hostess remarked that foreign travel was very broadening to the mind and that, when obliged to stay at home, the wireless played a part nearly as vital. We all agreed and, feeling cosmopolitan and so broadminded as to be almost dangerous, we clattered up the bare staircase to bed. As I shut my door, I heard one of the guests call out "Bonne nuit" and another reply "Auf wiedersehen."

The Interaction of Radio Waves

By Professor V. A. BAILEY, M.A., D.Phil., F.Inst.P.

IT is for me an interesting and valuable coincidence that my present brief visit to Britain should occur at a time when the attention of the World Radio Research League is so largely occupied with the "Luxembourg Effect."

While passing through Cairo in December last, my attention was drawn by Professor Ayres to Professor Appleton's article in the issue of *WORLD-RADIO* for December 7, which article is mainly devoted to a discussion of the theory* which Dr. D. F. Martyn and I have advanced to account for the phenomenon of wave-interaction.

The postal "interaction" between Professor Appleton and myself which then followed has resulted in my meeting the Honorary Secretary of the W.R.R.L. and learning at first hand something about the admirable work which has been done by the League. The Secretary has also suggested that before my return to Australia I might discuss briefly in this journal the bearing of the League's observations on our theory and make some suggestions for further work on the same subject.

The Evidence Obtained by the W.R.R.L.

The theory is essentially *deductive* in character—i.e., it proceeds from the established results of two independent fields of physical investigation and by means of deductive logic shows that certain effects are produced in the ionosphere by a powerful long-wave station which lead to observable effects in a radio receiver tuned to certain other stations.

The complete agreement between these deductions and the phenomena observed in connexion with Luxembourg, Droitwich, etc., constitutes the reason for regarding this theory as the explanation of these phenomena.

It may be mentioned here that the two different fields of investigation referred to above are as follows:—

- (1) The studies of the motions of electrons in gases by Townsend and his associates, and
- (2) the studies based on Lorentz's work of the propagation of radio waves through the ionosphere, by Appleton and others.

The observations by members of the W.R.R.L. which are set out in Professor Appleton's articles in *WORLD-RADIO* for November 30 and December 7 and in the Honorary Secretary's

* Bailey & Martyn, *Nature*, 133, p. 218 (Feb. 10, 1934), and *The Philosophical Magazine*, xviii, p. 369 (Aug. 1934).

report of December 14, may be summarised in regard to their bearing on the theory as follows:

(1) The midpoints between receiver and transmitter are grouped around the interfering respective stations, and the density of these points diminishes rapidly at distances exceeding about 250 kilometres from the interfering stations.

(2) Distortion favouring low notes has been observed by several members.

(3) The interference disappears with the disappearance of the wanted wave, whether by fading or otherwise.



The Droitwich transmitter

These results are very favourable to the theory, and I am aware of no observations which are antagonistic to it.

Thus the work of the W.R.R.L. makes an exceedingly valuable contribution to the elucidation of the phenomenon.

Suggestions for Further Work by the W.R.R.L.
In addition to the observational test mentioned by Professor Appleton on page 792 of the issue of *WORLD-RADIO* for December 7, the W.R.R.L. could also attempt to observe two other phenomena which are predicted by the theory—

Towards the end of last summer I heard this station, on 845 metres, close with the "International" on three successive evenings at 10 p.m. B.S.T. On one evening its strength was sufficient to jam Croydon completely. On that particular evening I listened for quite half an hour to a gramophone recital; one record, "Constantinople," struck me as being pretty ancient. I have on only one occasion received Budapest and Rostov-on-Don together. I have also noticed another Russian station on about 920 metres, when Rostov is a good signal, which is, I should say, not very often.

My receiver is a battery-operated screened-grid four.

Yours faithfully,

A. HEPPER.

Whittlesey, nr. Peterboro, January 19, 1935.

THE GENTLE ART OF TRANSLATION

The Tyranny of Asparagus

SIR,—Under the heading "The Gentle Art of Translation" one of your readers gives an amusing example of very free translation by a French speaker.

namely, the occurrence of the first harmonic of the interfering programme, and the occurrence of a type of atmospheric† which appears and disappears with the observed station.

The harmonic will be heard as a weaker accompaniment of the usual interference, and will, of course, be one octave higher.

The atmospheric is due to an electric storm acting on a radio wave in the same manner as a powerful station like Luxembourg. In general, it may be difficult to observe on account of the disturbance of the receiver by the more direct effect of the electric storm. There are various conceivable ways of overcoming this difficulty, but here I shall confine myself to the advice that the stations under observation should be as powerful and as distant as possible, and that the search should not be limited to any particular band of wavelengths.

The test should be made with a very sharply-tuned receiver, and in order to establish the nature of the observed atmospheric it is essential to observe what happens when the receiver is tuned to another station of slightly different wavelength, situated in a different direction but producing a field intensity at the receiver of the same order as does the first station. Instead of the second station a local screened weak oscillator could be used.

Besides these phenomena, the theory also predicts a particular distortion of the programme of a powerful station like Luxembourg or Droitwich when received on its own sky-wave. This is discussed more fully in a paper by Dr. Martyn and myself which will be published in *The Wireless Engineer*.

A Quantitative Test of the Theory

Recently Dr. B. van der Pol has announced the following results of a quantitative study. When the modulation frequency of Luxembourg changes from 100 cycles per second to 800, the modulation impressed on Beromünster's carrier wave changes from 7.5 per cent. to 1.25 per cent.

From these results our theory enables us to deduce that in the part of the ionosphere concerned an electron makes about 190,000 collisions per second with molecules. This deduction is in good agreement with previous estimates of the collision-frequency obtained by means of two other totally different methods.

Thus the theory satisfies another test and one, moreover, which is of a somewhat severe character.

In conclusion, it may be mentioned that the theory also accounts for the order of magnitude of the observed interference.

† Bailey, *Nature*, 133, p. 869 (June 9, 1934).

Letters to the Editor

DAYTIME RECEPTION OF CAIRO

SIR,—In your issue of January 4, a Bury St. Edmunds correspondent draws attention to reception from Cairo. This station is easily heard in this district between, say, 4 p.m. and 5 p.m., and in my own experience, is of a strength and quality quite equal to any of our home stations, excepting, of course, Droitwich. The call-sign is mostly in Arabic. My receiver: 8-valve (with push-pull) has a 75 ft. aerial.

Yours faithfully,

S. L. COCKS.

Redington Road, N.W.3, January 15, 1935.

ROSTOV-ON-DON

SIR,—Having read Mr. L. J. Le Breton's letter in your issue of December 28, and others more recently, regarding reception or doubted reception of Rostov-on-Don, I have been prompted to write to you. Like Mr. Le Breton, I discovered this station when I was interested in lighthouse call-signs, some twelve months ago—have heard it about a dozen times.

Another member of the *confreie* operating in a town of South Western France is a monomaniac in translating titles in French.

Some time ago, in the course of a concert of sacred music, he gave as translation for a disc bearing the title "Asperges Me, Domine" "Les asperges me dominant." I think that goes one better.

Yours faithfully,

A. L. CORNALI.

Bordeaux, January 14, 1935.

The Banjo and the Bath

SIR,—With reference to Mr. Page's letter, re "The Gentle Art of Translation," in *WORLD-RADIO* of January 11, it was amusing to hear the lady announcer of one of the Italian stations about five months ago requesting us to listen to a foxtrot entitled "Bagno-Bagno," then giving us a gramophone record of a foxtrot played on a banjo. She had pronounced the word "Banjo" in Italian, which means *bath* in English.

Yours faithfully,

J. ASHTON.

Sliema, Malta, January 15, 1935.

FOREIGN BROADCASTING NEWS

FROM OUR CORRESPONDENTS

FRENCH PROGRAMME PLANS

M. MANDEL, the French Minister of Posts, Telegraphs, and Telephones, in an interview granted to representatives of the wireless Press, has announced his intentions concerning broadcasting. One of the alterations that he is putting into force affects the news service. In the past this service has consisted of a mixture of news, short talks on topical events, criticisms, book reviews, etc. M. Mandel proposes to concentrate on a shorter news service, and to transfer the talks features to other parts of the daily programmes.

Eighty performances will be given during 1935 by the theatres subsidised by the State. These theatres are the Opéra, the Opéra-Comique, the Comédie-Française, and the Odéon. Attention will also be given to the improvement of the outside broadcasting services of the State stations.

Meanwhile, the Committee of Co-ordination has decided that as few alterations as possible shall be made in the published programmes, and whenever last-minute alterations are inevitable or necessitated by some unexpected important event, every endeavour will be made to advise listeners in the daily Press or by other means. Other matters discussed were the continuous exploitation of the State stations from morning to night by the extended use of relays, the more punctual observance of the times of beginning and ending the various sections of the programmes, and the extended use of wireless orchestras. The following performances were selected for transmission: January 29: *Pelléas and Mélisande* (from Radio-Paris); March 5: Beethoven evening (National transmission); March 12: Works of post-War musicians (National); March 26: Works of Spanish musicians (National).

Denmark's Listeners

At the end of 1934 the total number of listeners in Denmark was 568,175—16 per cent. of the population. On December 15 the State broadcasting service, as in 1933, reduced from 10 Kr. to 5 Kr. the licence fee to be paid for receiving sets registered after that date for the remainder of the financial year, which expires on March 31. Before the end of December, 6,607 listeners had availed themselves of this "Christmas present."

Broadcasts by the French Premier

In spite of the decision made many months ago that no political speeches should be broadcast in France, an exception appears to be made for Prime Ministers, owing, perhaps, to the fact that such speeches consist of a report of work done, or a résumé of plans for the immediate future. M. Gaston Doumergue made use of the microphone on many occasions with that object, and M. Flandin is following his example. Unfortunately, these transmissions are not arranged sufficiently ahead to enable them to appear in the weekly programmes. On the last occasion on which M. Flandin spoke, it was after a banquet the preliminary speeches at which continued for so long that listeners were kept waiting a considerable time for the Premier's Speech, and many complaints were afterwards made. On January 12 M. Flandin spoke from the banquet offered to him by the Democratic Alliance. His first words were an explanation that he was speaking at that moment in order to keep faith with listeners, and he expressed his thanks to another of the evening's orators for ceding his turn to him.



The Comédie-Française, Paris, from which broadcasts are to be made by the French State stations. (See report in adjoining column)

Listeners in France

Details recently issued of the number of registered listeners in France show that the total on November 30, 1934, was 1,730,248, 58,795 of whom possessed crystal sets, and 28,026 sets that were used in places considered as public.

Artist's Refusal to Broadcast

Considerable annoyance has been felt on account of the refusal of a well-known singer to allow his portion of the programme to be broadcast during the performance of a Padeloup Concert transmitted by the French State stations. The reason for the artist's attitude is not clear, but the authorities have apologised to listeners, at the same time stating that, at the personal request of the Minister of Posts, Telegraphs, and Telephones, the singer in question will perform for listeners at an early date, showing in this manner his willingness to co-operate with the State stations.

The Marseillaise from Berlin

On January 18 the Reichssender Berlin broadcast a programme devoted to the influence of Napoleon on the nineteenth century. The programme opened with the playing of the *Marseillaise*, which may have caused surprise to listeners casually tuning in to the transmitter at that time, and included part of Beethoven's Seventh Symphony and a talk on the subject. This transmission is one of a historical series entitled "*Vom Schicksal des deutschen Geistes.*"

Extension of German Programmes

Hitherto Stuttgart and Frankfurt have been the only German stations regularly to broadcast programmes until 2 a.m., local time. Listeners will have noticed that on certain special occasions, such as "The Day of the Saar," all German stations continue until that hour. It has now been made possible for the Deutschlandsender—which had always to close down at 12.55 a.m. local time—to continue its programme until 2 a.m. if necessary.

An Exhibition at Bucharest

The Bucharest Radio Exhibition—the opening of which, owing to the rigorous import restrictions and the consequent difficulty in obtaining exhibits of the latest type, had several times to be postponed—was opened last month in the presence of many representatives of public life, including M. Trancu Jasi, the late Minister of Public Works, and Baron von Hauenschild, the German Ambassador. The attendance at the exhibition surpassed expectations, and the business done by exhibitors was excellent. The wireless industry in Rumania as yet is undeveloped, and it was not represented at the exhibition; almost all the exhibits, therefore, were of foreign origin. Many of the receiving

sets shown were of the all-electric, superheterodyne type, designed, with few exceptions, for use on the long and medium wavebands. The Romanian listener has so far shown little interest in short-wave reception. At present the number of licence-holders in the country is comparatively small—out of a population of 18,000,000, only 120,000 are licensed listeners. It is anticipated, however, that the opening in the early spring of the new 150-kW transmitter at Bod will have a favourable effect on that figure.

E.I.A.R.'s Schools for Artists

About three years ago the Turin station organised a school for the formation of choruses, and excellent results have been obtained. The best singers of the school have already been incorporated in a wireless chorus, and at present 100 other voices are being appropriately trained, so that the E.I.A.R. will be able to broadcast important choral works next year with its own staff. As a consequence of the success obtained, the E.I.A.R. recently founded a similar school in Rome, which is being well attended. The two schools together have about 200 pupils. The E.I.A.R. also established about two years ago a school for the training of soloists. This school, which has about twenty pupils, gives tuition only to students of special talent.

Italian Performing Rights Agreement

The National Federations of Public Entertainment Workers and Employers have recently come to an agreement with the E.I.A.R. in regard to the broadcasting of mechanical reproductions. This concerns the compensation due to a performer for the mechanical reproduction of his performance. Under the agreement, the payment agreed upon in individual contracts entitles the E.I.A.R. to transmit from all its stations the work in which the executant takes part. The E.I.A.R. will incur no extra charge for occasions when it is unable to transmit a work simultaneously from all stations and has recourse to mechanical reproduction for eventual transmission through those stations which did not benefit by the original transmission. If, however, the E.I.A.R. desires again to broadcast the same work or to make other commercial use of it, it must pay a supplementary compensation to the artists taking part.

From the Pacific's "Only Dry Spot"

On December 29 the Columbia Broadcasting System broadcast a programme from "the only dry spot in the Pacific Ocean"—the cofferdam formed by the fender for the south pier of the Golden Gate Bridge which is now under construction. The broadcast, which was made 127 feet below sea level, came directly from the pier on the San Francisco side, and included comments by officials connected with the work.

Train Stopped for a Broadcast

An unscheduled twenty-minute stop was made by the crack "Broadway Limited" train of the Pennsylvania Railroad on December 18 in order that a standard feature of the CBS programme might reach listeners to the network. The driver of the express train was instructed to reach Lima, Ohio, five minutes earlier than the regular schedule so that a radio circuit could be hooked up to equipment already installed in the observation car of the train, and thus enabled the broadcast—a fifteen-minute programme of comment on world news—to be made aboard the train, which was travelling eastward from Chicago.

Australia Day

January 26, the 147th Anniversary

AUSTRALIANS throughout the world will recall on Saturday, January 26, a day in 1788 when an officer of the British Navy raised the Union Jack on an unknown coastline eight and a half months out from Portsmouth; and on this anniversary of the birth of their nation they will recall also that in the past year two men flew from England to their country in seventy-one hours. Perhaps from the point of view of Empire development the closer inbinding of this outpost of British culture, this contrast in speed of transport, provides the most significant note of the year. The triumph of Scott and Black in the Mac-Robertson air-race from Mildenhall to Melbourne was more than the just reward of two intrepid British sportsmen, for it was followed closely by the inauguration of a regular air-mail service from England to Australia, and the announcement that plans are in hand for the speeding up of that service to a schedule of seven days. Those who have already used the service realise just what difference it makes in their perspective of events at the other end of the air-line.

Greater knowledge brings greater understanding, and, on the analogy of wireless developments, the air-mail must have increasing effect in fostering that sense of unity on which successful Empire polity depends. This, apart from its immense commercial advantages.

But not solely in the air have Australia's communications with the Old World been improved during the past twelve months. Governor Arthur Phillip, who, on January 26, 1788, landed where the great city of Sydney now stands, had a fleet of eleven ships which, in all, totalled only 3,892 tons, or barely half the average tonnage of one of the ships which are now used in the Australian coastal trade. With more than 100,000 tons of new ships from British shipyards Australia was largely responsible for the improvement in shipbuilding in this country last year. These vessels, the last word in efficient propulsion, storage, and passenger comfort, will be employed to carry Australian foodstuffs and other raw materials to Britain in return for her manufactures.

One of the principal requirements which stimulated this activity in shipbuilding was the successful solution by scientists in Australia of the problem of transporting meat in chilled state to the British markets. Beginning just after her last birthday anniversary, Australia has concluded the year with highly successful shipments, of commercial dimensions, of beef which has been able to compete with the supply from experienced and well-organised foreign producers.

But the overcoming of the scientific difficulties in this trade has been accompanied by increasing problems of a politico-economic nature. The Australian Prime Minister, Mr. Lyons, while he is in England for the King's Jubilee, will endeavour to straighten out the misunderstandings which have arisen between Lancashire and the Commonwealth following the alteration of the method in which the Australian cotton duties are imposed.

The year just passed and the incoming year will mark the strengthening of the co-operation

of Australia with Britain in the defence of the Empire. A new cruiser, which costs the Australians nearly £1 per capita, was launched at Wallsend-on-Tyne in the autumn, and forty-two new planes were ordered for the Royal Australian Air Force. The discussions which Sir Maurice Hankey began when he visited the



Contrasts in transport: a sailing ship which has frequently made the journey to Australia, and the giant air-liner which inaugurated the air-mail service

Melbourne Centenary celebrations will be continued by the Commonwealth Ministers in London next summer, with the object of deciding the best way to spend the increased moneys that Australia is voting for defence.

Internally, Australia's record for the past year has been one of consistent consolidation of her recovered prosperity. Apart from the stimulus of the Melbourne Centenary and the Duke of Gloucester's tour, this was apparent in increased building (index and aid to nearly every industry) and the beginning of the restoration of the cuts (ranging from 10 per cent. upward) which were made in wages during the depression period.

But more spectacular evidence of her improved position was provided last week by the favourable reception of her London loan conversion. The operation affected loans aggregating £22,384,000 sterling, bringing the total conversions during the past twelve months to £58,622,356, and increasing the annual interest saving to £3,080,000 in Australia's currency. The conversion was the largest and the terms the most favourable in the Commonwealth's history.

Australia's birthday anniversary almost coincides with the resumption of Parliament, and that Parliament will be called upon to decide what part it will play in the reconstruction of the Commonwealth's system of government. The weaknesses of Federalism have caused considerable criticism and even talk of secession by the smaller States, whom the Commonwealth has answered with the alternative of a commission to investigate disabilities. But the people of Western Australia at their referendum voted two to one in favour of separating from the Commonwealth and becoming a self-governing colony under the Crown. Armed with convincing arguments their delegation arrived in London in November and awaits the decision of the Imperial Parliament on their petition that the measures which included it in the Federated Commonwealth should be repealed.

Whatever the outcome of this movement, Australia—in two parts or one—will remain loyal to the traditions of the Empire. She will continue to build well and strongly on that foundation which Phillip laid nearly 150 years ago.

K. F. B.

England's Oldest Regiment

[Colonel the Viscount Galway, D.S.O., O.B.E., Colonel-Commandant of the H.A.C., who is the Governor-Designate of New Zealand, will give an address following the demonstration of pike drill which forms part of the "Evening with the H.A.C." programme to the Empire (Transmission 4) on January 26.]

THE Honourable Artillery Company, from whose headquarters an Empire broadcast is taking place, has the distinction of being the oldest regiment of England. In 1537, King Henry VIII granted a charter to the "Fraternity of St. George," and it is from that date that the official history begins. About that time the new title of "Gentlemen of the Artillery Garden" was adopted.

There is a considerable interest in this programme for trans-Atlantic listeners, for "The Ancient and Honourable Artillery Company of Boston, Massachusetts," which is the oldest military body in the New World was founded 100 years later by Robert Keayne, who, before he settled in Boston, had been a "Gentleman of the Artillery Garden" (the H.A.C.) in London. Keayne raised a Company on first landing in 1620, for the protection of the settlers against Red Indians. His example was followed by others, and military companies were organised on the lines of the London Trained Bands in a number of towns in New England. In 1637 several of the early planters, who had been members of the Artillery Garden in London, led by Robert Keayne, petitioned the first Governor of Massachusetts, John Winthrop, for a Charter. This was refused, but they were allowed to bear arms. A year later the petition was granted to the "First Military Company of Boston, Mass." It was dated March 17, 1638. This document endowed the "Company" with 1,000 acres of land for training purposes. Thus they got their first official recognition. For many years the "Military Company" continued training the citizens of New England in the art of war, and supplying the Militia with officers. The name "Artillery Company" became adopted about 1657, and "Honourable" at the beginning of the eighteenth century; the prefix "Ancient" was added in 1737.

For 200 years no communication was established between the two ancient bodies. In 1857, however, a regular exchange of courtesies began, and copies of their respective records were exchanged. The Prince Consort was elected a member of the Boston Company; the same compliment being paid to King Edward VII on his accession.

From now on the visits paid became more frequent, and in 1896 170 "Ancient and Honourables" were invited to London as guests of the Regiment, and were inspected by Queen Victoria at Windsor. So warm was their reception that a return visit was arranged, but had to be postponed until 1903 owing to the Boer War. On September 23, 1903, however, the Earl of Denbigh, as Colonel-Commandant of the Regiment, sailed for Boston in a vessel specially named the *Mayflower* with a contingent of the H.A.C., and was received with overwhelming hospitality, five miles of streets being decorated in their honour.

The H.A.C. were also taken on a week's tour, visiting New York, Niagara Falls, West Point, Washington (where President Roosevelt signed the famous Vellum Book), Montreal, and Toronto.

In 1912 the "Ancients" came to England, and took part in a big review held in their honour at Windsor, his Majesty King George inspecting them. The King afterwards unveiled a memorial to Robert Keayne, the founder, which was placed on the front of his old house at Windsor.

J. D. E. E.

Empire Programme Letters

'A Birmingham Man "Down Under"

From Ohakune Junction, New Zealand:—

"I have been listening to your station for three weeks, and you will be surprised to hear of the wonderful reception we get in this far Dominion. As I write, it is 7.15 p.m., our time (7.15 a.m., London time). I heard the quarter chimes and your announcements previous to your first item, which was the 'Turkish Patrol.' We get our best reception at your opening session at 7.15 p.m., our time, on 31 metres, and the volume is about R7, speech 100 per cent. readable; in fact, the reception is equal to some of our YA stations in New Zealand. On 25.5 metres the reception is about half the strength it is on 31 metres. I am a Birmingham man, an old G.W.R. servant, so I get a great deal of pleasure when I hear the big clock strike. The reception in the evening, your time (morning, our time), is very fair and quite readable. The big French station comes in a poor second-best compared with GSD. Your volume keeps up for about four hours, fading towards midnight, our time. I like your programmes very much, and feel proud that your station makes such a good show. You have probably heard from many other listeners in New Zealand, who no doubt give you praise, which is well deserved. And here I add mine, too. Wishing you every success."

Knew he was in for a Treat

From Harvey, Western Australia:—

"When I saw that Cecil Madden was coming to light with 'Live Records' and 'Gossip Hour No. 4' in the Empire programme supplement in WORLD-RADIO, I knew I was in for a treat. I made no mistake. For both items were very good indeed.

"I was sorry that I missed the Water Rats Variety, but truth to tell I failed to wake in

time to hear it in Transmission 4 at 4.5 a.m.; but it was my intention to hear it, as anything pertaining to entertainment of that nature I do not miss, if I can help it. Mr. Tommy Scales in 'Living Dangerously' was very interesting; but Sir James Jeans is the best of them all, although I have no doubt there are many who do not think the same as I, and would not give that item first place in the 'talk' stakes."

"The Best Relay we Have Had"

From Hong Kong (via Cheshire):—

"We listened last night to a relay from Daventry of the wedding service of Prince George. We heard every word of the commentator giving a full account of the procession; also the loud cheers of the crowd. It was the best relay we have ever had, every word came through perfectly. It seemed very wonderful to think that the service we were listening to was actually taking place as far away as London. It was thrilling and interesting."

A Letter Apart

From Sea Point, Cape Province, South Africa:—

"Just a line to tell you how much I appreciate your programmes, which I consider suit everybody in this country. I have no complaints to make whatsoever (this is probably the only letter sent to you that has not!). To-night we are all grouped round the set enjoying a marvellous item from your remarkable repertoire—it is none other than *Our Miss Gibbs*. Your programme is coming over at R8; there is no fading, and I think reception is remarkable. I receive these programmes every night from GSB, also on GSD. To-night I heard the News from GSA at R5."

Apprehension!

From Pietermaritzburg, Natal, South Africa:—

"On November 3 'In Town To-night' was an excellent item. It contained variety, and every word was distinctly heard. On November 1 Mr. Howard Marshall was also very clear. He provided an excellent talk. But in regard to 'In Town To-night' the B.B.C. engineers give us nerves! In changing the aerial system at 7 p.m., G.M.T., there is a break of about a minute. This minute seems like an hour, and we imagine that something of 'In Town To-night' is going to be missed. This will indicate to you the popularity of this item."

Relays Not Well Received

From Durban, South Africa:—

"A few general remarks: relays do not as a rule come through well, as my log bears out. My own personal like and vote goes to Sir Walford Davies; twice I have enjoyed his talk on music, once disappointed through X's. Enjoy 'In Town To-night' immensely. The programme as a whole I think very fine, and a great credit to all concerned, and right now give thanks to its authors."

FROM the London office of the Melbourne *Argus* we have received a very useful booklet, pocket-size, containing particulars and dates of outward and homeward mails, by various routes, between London, Australia, and New Zealand, for 1935; tables of steamer sailings; postal rates; and a track chart denoting time differences, etc. Copies may be obtained free from the London office of the *Argus*, 80, Fleet Street, E.C.4, or by post in return for a penny stamp to cover postage.

IN next week's issue will be published a first hand account of the broadcast from the South African fruit farm which formed part of the Christmas Day "Empire Exchange" programme.

EMPIRE NEWS



Penang Radio Exhibition. B.B.C. publications were paid a striking tribute

Penang Wireless Exhibition

THE Wireless, Gramophone, and Allied Trades Exhibition organised by the Penang Wireless Society, which was held in the grounds of the Penang Turf Club from December 6 to 8, appears to have been an unqualified success. The Exhibition was opened by his Excellency the Governor, Sir Shenton Thomas, speaking from Singapore, and speeches were also made by the President and Vice-President of the Society. Simultaneously with the opening of this Exhibition began the official life of the Penang Wireless Society's new broadcasting station, to which has been given the call-sign of ZHJ and a wavelength of 49.4 metres. This new station is capable of giving a greatly improved transmission, and in the course of its tests it has been found that it could be satisfactorily

received over a wide area. It is one of the aims of the Society to rebroadcast the Empire Transmissions through this station ZHJ in such a manner that they can be received on a very inexpensive receiver.

"There is no doubt that we in Malaya now have every encouragement to be wireless-minded," said Sir Shenton Thomas in his opening speech. "The recent development of short-wave Empire broadcasting is in itself enough to justify possession of a receiver. The highly successful reception of such important items as the Christmas broadcast from his Majesty the King, the launching of the *Queen Mary*, the Armistice Day Service at the Cenotaph, and the recent Royal Wedding, to say nothing of boat-races, Grand Nationals, Derbys, and the like, makes us feel that England and the Empire are very close indeed."

A very large gathering, including all the officials of the Penang Wireless Society, re-assembled again after 9.30 p.m., to hear the special broadcast greetings from London, which were conveyed by the Chief Engineer and the Empire Programme Director of the B.B.C. A specially enlarged photograph of the Empire Transmitting Station and copies of B.B.C. publications were displayed on a stand kindly allocated for the purpose by the Penang Wireless Society.

Canadian Parliament Broadcast

It was arranged to broadcast the proceedings of the Canadian Parliament on Friday, January 18, as that was the opening of the last session on which the Earl of Bessborough, the Governor-General, could read the Speech from the Throne, as he concludes his term of office in the autumn.

New Station for India

The High Commissioner for India in London has placed a contract for the supply and erection of a 20-kW broadcasting station at Delhi. This is the first step towards the accomplishment of the Indian Government's policy of extending broadcasting in India, announced by the Viceroy in August last year. Work on the manufacture of the equipment for the Delhi station is to begin immediately at the Marconi Works, Chelmsford. The transmitter will be of advanced design, incorporating the most modern developments of broadcasting technique, and with its unmodulated aerial energy of 20 kW it will be several times more powerful than any broadcasting station previously erected in India.

Foreign Languages

FRENCH

Tuesdays, 6.5 -7.20 p.m. (National Programme).

A. Remarks on Pronunciation

French Vowel No. 9 is *u*. In the vast majority of cases this vowel is spelt with the letter *u*, *ü*. Ex.: *du, tu, plume, fût, pupitre, etc.*; but in a few French words we find the spelling *eu* or *eü* (Ex.: *j'ai eu, nous eûmes, vous eûtes, gageure, etc.*). As is usual in French, the vowel *u* is found short and long in the language, without any change in the acoustic quality of the sound.

Most English people find this a difficult sound to imitate correctly. Imitation is, of course, the natural and best method; unfortunately it often fails, especially in the case of grown-ups. Here are a few hints that will prove helpful, I hope.

B. How to acquire French Vowel *u*.

(1) Put your lips in the same position as for Vowel No. 8 *ou*; e.g., purse them up and hold them in a close rounded position. With your lips in that position, try as hard as you can to say your English Vowel *ee* (as in *see*). The result will be a very near approximation to French Vowel *u*. Use a small mirror to make sure that your lips are right.

(2) Start by saying your English Vowel *ee* (as in *see, tea, be, etc.*). Then, while holding on to the Vowel, purse up your lips to the close rounded position, *without moving your tongue* from the English *ee* position. The result should be a good French *u*. If you allow your tongue to move back ever so slightly, while moving your lips forward, the result will not be the French Vowel *u*.

(3) Finally, here is another method which gives good results. Place your tongue and purse up your lips so as to be able to *whistle a high-pitched note*. Then, without moving your tongue or lips, replace whistling by voice. This should give you a good French *u*. Loud laments from those who cannot whistle!

C. Key to Exercise B. P. 46, Nelson's First French Course.

(1) Ces enfants se lèvent à huit heures. (2) En hiver nous nous couchons à neuf heures. (3) Ma petite sœur se couche à sept heures et se lève à huit heures. (4) En été il fait jour à quatre heures. (5) Au printemps nous nous levons à sept heures. (6) En automne il fait nuit à six heures. (7) Je me lève à sept heures et je me couche à neuf heures. (8) Nous nous levons à sept heures et nous nous baignons à huit heures.

D. Key to Exercise C. P. 47, Course.

Specimen Answers to the questions.

(1) Je me lève à sept heures. (2) Oui, j'en ai un. Il se couche à huit heures. (3) Oui, j'en ai une. Elle se lève à neuf heures. (4) Oui, il fait jour à six heures en été. . . . Non, il ne fait pas jour à six heures en hiver. (5) En été, je me couche à dix heures. En automne, je me couche à neuf heures.

E. Key to Exercise B. P. 48, Course.

(1) Les moutons ne trouvent pas d'herbe sous ces grands arbres. (2) Cherchez votre montre dans votre chambre. (3) Nous nous levons tous les matins à sept heures et demie. (4) Le bateau arrive à six heures moins le quart. (5) Ils se promènent dans la forêt tous les soirs. (6) Il y a une petite pendule sur la cheminée. (7) Ces petits garçons apportent du bois sec de la forêt. (8) La mère couche son petit garçon à six heures.

E. Key to Exercise C. P. 48, Course.

Specimen Answers to the questions.

(1) A cinq heures du matin je suis au lit. A cinq heures du soir je suis à la maison. (2) Le bateau arrive (*il arrive*) à six heures et quart. (3) Votre montre est (*elle est*) dans votre poche.

(4) La bergère est (*elle est*) assise sous l'arbre. (5) Le chauffeur apporte le journal. Le paysan apporte le bois. (6) Il y a dix chaises (*il y en a dix*) dans cette salle. (7) Nous sommes dans la salle de classe. (8) Oui, monsieur, il y a une pendule (*il y en a une*) dans ma chambre. . . . Non, monsieur, il n'y a pas de pendule (*il n'y en a pas*) dans ma chambre.

F. Key to Exercise V (A). Pp. 126-127, Course.

(1) Le pêcheur se lève à trois heures du matin en été. (2) Les enfants se lavent tous les matins. (3) Quand il fait nuit nous nous couchons. (4) A quelle heure fait-il jour au printemps? (5) Pendant les vacances nous nous levons à sept heures et demie tous les matins. (6) Ce pêcheur attrape beaucoup de poissons pendant la nuit. (7) Quand il fait jour il se couche. (8) Je suis au lit quand le petit garçon apporte nos journaux.

G. Here is a short English passage with the French translation, for the benefit of more advanced students.

(a) She may have been blooming and plump when she was eighteen; but there was now no trace whatever, either of the whiteness of her skin, or of the pretty colouring she boasted of having had. The tones of her flesh had taken on a sallow tint. Of all her features, her Roman nose was the one which contributed most to express the despotism of her ideas, just as the flat shape of her forehead indicated her narrow-mindedness. A curious jerkiness in her movements, precluded all grace and you had but to see her take her handkerchief out of her bag to blow her nose noisily, to realise her character and habits.

(b) A dix-huit ans, elle avait pu être fraîche et grasse, mais il ne lui restait aucune trace ni de la blancheur de son teint, ni des jolies couleurs qu'elle se vantait d'avoir eues. Les tons de sa chair avaient contracté une teinte blafarde. Son nez aquilin était celui de tous les traits de sa figure qui contribuait le plus à exprimer le despotisme de ses idées, de même que la forme plate de son front trahissait l'étroitesse de son esprit. Ses mouvements avaient une soudaineté qui excluait toute grâce; et rien qu'à la voir tirant son mouchoir de son sac pour se moucher à grand bruit, vous eussiez deviné son caractère et ses mœurs.

E. M. STÉPHAN.

GERMAN

Thursdays, 6.50-7.20 p.m. (National Programme). Translation of the Reading Text, Lesson 24, Reader p. 117 (lines 20-33). Berlin has many beautiful things to show (to) the visitor, including (*lit. to this belongs also*) its surroundings. Large woods, broad rivers and lakes are near the town and can be reached in a short time by tram or bus. On one of these lakes, the Wannsee, there is an open-air swimming-bath to which, not thousands, but tens of thousands (of people) troop on fine Sundays. The beach is a thousand metres long; the restaurants, cloakrooms, etc., form a little village.

As Paris has its Versailles, so Berlin has its Potsdam. In Potsdam the Prussian princes and kings used to live. The castle and magnificent gardens (which are) laid out entirely in the French style, go back to Frederick the Great. The garrison church, which contains the tomb of the great Prussian king, is also famous.

In answer to a few letters I have received lately from listeners, who find some of the exercises too difficult, I wish to say that I do not expect every listener to the course to do all the exercises set. Those marked "for more advanced study" may be left out for the time being. They are chiefly intended for those listeners who ask me to set more work and wish to get on more quickly.

The German equivalents for the English expressions, based on Lesson 8, given in the last issue of WORLD-RADIO.

1. Wann (*or um wieviel Uhr*) stehen Sie morgens auf? 2. Heute morgen bin ich spät aufgestanden. 3. Sie geht jeden Morgen spazieren. *Or* Sie macht jeden Morgen einen Spaziergang. 4. Morgens arbeite ich am besten. *Or, normal order*, Ich arbeite morgens am besten. 5. Bitte, wecken (*lit. rufen*) Sie mich pünktlich um halb sieben (*or Punkt halb sieben*)! 6. Es war sehr spät, als wir aufwachten.* 7. Heute ist das Wetter gut. *Or, normal order*, Das Wetter ist heute gut. 8. Was für ein schöner Tag! 9. Atmen Sie tief ein! 10. Haben Sie das heiße Wasser im Badezimmer angestellt? 11. Ich will erst das kalte Wasser abstellen. 12. Jede moderne Wohnung hat eine Brause im Badezimmer. 13. Nachdem ich mich abgetrocknet hatte, zog ich mich schnell an. 14. Sie trocknete die Teller ab. 15. Wann baden Sie, morgens oder abends? 16. Ich habe diese Seife noch nicht gebraucht (*or benutzt*). 17. Man gebraucht eine Bürste zum Bürsten und einen Kamm zum Kämmen der Haare. 18. Sie hat sich schnell angezogen. 19. Hat sie den (*or ihren*) neuen Wintermantel angezogen? 20. Jeden Nachmittag sass er mehrere Stunden (*lang*) an seinem Schreibtisch. *But* 21. Er setzte sich an den Tisch. 22. Wir haben unsere Ferien in der Schweiz sehr genossen. 23. Um wieviel Uhr frühstücken Sie? 24. Ich trinke Tee zum Frühstück, aber die andern trinken Kaffee. 25. Manchmal essen wir Apfelsinenmarmelade und manchmal Erdbeermarmelade zum Tee.

*Note that in a subordinate clause the stressed separable prefix rejoins its verb: *Als wir aufwachten*; but, principal sentence: *Wir wachten auf*.

Key to Lesson 24, continued, pp. 119-120. C. For simplification the sentences have been re-numbered. 1. Köln ist die (*or diejenige*) Stadt, die ich am liebsten habe. Cologne ist the (*or that*) town which (*or that*) I like best. 2. Das (*or Dasjenige*), was ich besonders schön finde, ist der Dom. *Or, shorter*, Was ich besonders . . . What I like especially is the cathedral. 3. Alle die (*or diejenigen*), die ich einmal besucht haben, werden ihn auch ein zweites Mal besuchen. All those who have visited it once will visit it again. 4. Er hört nie auf das (*or dasjenige*), was man ihm sagt. He never listens to what (=that which) one says to him. 5. Er ist nicht zufrieden mit dem (*or demjenigen*), was er hat. He is not content with what (=that which) he has. 6. Kennst du die (*or jene*) dort (d.h. die Leute dort)? Do you know those people over there? 7. Ja, ich kenne den (*or diesen*) rechts [d.h. den (*or denjenigen*) Herrn, der rechts steht], aber den (*or diesen*) links habe ich noch nie gesehen. Yes, I know the one on the right (*i.e.*, the man who stands on the right), but I have never seen the one on the left before (*lit. yet, noch*). Nr. 6 can also read: Kennst du die(jenigen), die dort stehen?

Words above followed by a dagger are relative pronouns:—verb comes last.

It is not so important for students at this stage to recognise the determinative pronouns or adjectives which are merely a special kind of demonstrative pronoun or adjective, such as *dieser, jener*. The relative pronouns *der, die, das, or welcher, welche, welches*, however, are very important, as they throw the verb to the end of the clause. *Der, die, das* are preferred to *welcher, welche, welches* in ordinary speech or writing. *Was* is also used as a relative pronoun, but only after words such as *das(jenige), alles, nichts, etwas*. For examples with *das(jenige)* see sentences No. 2 and 4 above. Note that the determinative pronouns or adjectives *derjenige, diejenige, dasjenige* are often replaced by the shortened forms *der, die, das*. For examples with *alles, nichts, etwas* see last issue of WORLD-RADIO.

(To be continued.)

MAX KROEMER.



A Breton festival: a talk on "La Bretagne, inspiratrice de musique" will be given from Paris PTT on Friday, February 1, at 8 p.m.

SPANISH
Notas Lingüísticas

Tradúzcase al español de memoria, después de haber estudiado las explicaciones:—

MISS EARHART is the first woman to cross the Pacific by air. It is her third record, for she was also the first woman to fly the Atlantic alone and to span the United States from Los Angeles to Newark, N.J., in a non-stop solo flight.

Ten fliers have perished in making the Pacific attempt. The flight was made in face of strong opposition by the U.S. Navy, owing to the recent disaster to Mr. Ulm during a similar effort. . . . On arriving, Miss Earhart did not circle round the landing field, but shot down so rapidly that the watchers were uncertain of her identity, and rushed into the field. It looked for a few minutes as if her propeller was likely to cut into the running spectators. The landing, however, was completed in safety. Miss Earhart, who was fresh and smiling, was greeted with a mighty cheer from the crowd. Before leaving the plane she was seen to powder her nose. "I am so tired," were her first words on landing.

Miss Earhart es la primera mujer que ha atravesado a vuelo el Pacífico.

Tratándose de apellidos extranjeros se suele emplear el término de cortesía del mismo idioma (Miss, Mrs., Herr, Monsieur, etc.). Pero si se quiere traducir "Miss" en este pasaje, hay que emplear el artículo: *La señorita Earhart*, porque se habla de ella, no a ella. "by air" *por el aire*, pero creo que Vds también preferirán me traducción: *a vuelo*.

Es su tercer récord, pues también fue la primera mujer que atravesó el Atlántico sin acompañant aviadora, y que voló sola de un lado al otro de los Estados Unidos (EE.UU.) desde Los Angeles a Newark, N.J., de un tirón.

Ha pasado al español el término inglés "record." No se puede traducir palabra por palabra "to fly the Atlantic," y he tenido que traducir "to span" dando el significado con varias palabras. Los dos adjetivos "non-stop" y "solo" (flight) han necesitado alguna transformación. He traducido "solo" por *sola* (alone), introduciéndolo como adverbio modificando el verbo *voló*. En cuanto a "non-stop" mi traducción de *un tirón*, es una locución adverbial muy corriente que significa hacer una cosa de una vez (sin intervalos). Podría decirse: *sin hacer alto*, o: *sin detenerse*, pero de un tirón es más adecuado, porque es afirmativo. No creo necesite (subj) explicación el giro de la oración.

Ella emprendió su hazaña contra la fuerte oposición de la marina de los EE.UU., debida

esta al desastre reciente ocurrido a Mr. Ulm durante una tentativa parecida.

"The flight was made," se hizo el vuelo, pero en vez de esta construcción, tan impersonal, me parece mejor introducir *ella* como sujeto del verbo *emprendió* (undertook) y para evitar la repetición de *vuelo*, uso *hazaña* (exploit). Pueden Vds substituir de los EE.UU., por el adjetivo *estadounidense* (terminación invariable) que emplean algunos escritores. Ven Vds que inserto el pronombre *ésta*, (refiriéndose a la oposición) para aclarar más el significado. "effort" *esfuerzo*, pero *tentativa* es adjetivo más indicado aquí.

Al llegar no dió vueltas al campo de aterrizaje, pero aterrizó tan rápidamente que los espectadores no estaban seguros de su identidad, y se precipitaron sobre el campo (de aviación).

Sin duda se habrían Vds acordado de la regla gramatical acerca de *pero y sino*. (Folleto p. 14).

Por unos momentos parecía que la éllice (del avión) se iba a cortar camino (o abrir camino) entre la concurrencia.

En el diccionario hallarán: "running": *corriente*. Este adjetivo se usa al hablar por ejemplo del agua corriente (en el lavabo o en una fuente) pero *concurrencia corriente*, resultaría horrible, imposible. Podríamos obtener el sentido con una cláusula: *que avanzaba corriendo*, sin embargo me resulta innecesario, por haberse dicho antes que *se precipitaron* (los espectadores, etc.); y además esta cláusula estropea (spoils) el estilo de la oración. Pero empléenla si prefieren.

El aterrizaje, sin embargo, se llevó a cabo sin *perance*.

La traducción de: "to arrive safely, or in safety" (after an ordinary trip) es *llegar sin novedad*. Aquí se trata *empero* (synonym of *pero*) de un viaje arriesgadísimo, culminado en un aterrizaje llenó de peligros, tanto para la aviadora como para la muchedumbre, conque se debe usar *sin perance*.

Con vitores ensordecedores, acogió la muchedumbre a la fresca y sonriente Miss Earhart.

"A cheer" *un vítor* (pl. *vitores*); to cheer: *vitorear*; long live: *viva* (subj); mighty: *poderoso*; pero "mighty cheer": (que en español resulta mejor en el plural) *vitores ensordecedores* (deafening cheers).

Antes de salir ella del aeroplano (avión) la vieron ponerse polvos. "Estoy tan cansada" fueron sus primeras palabras al apearse. (o: *fue lo primero que dijo al apearse*).

Suele el alumno confundir *polvo*: dust, y *polvos*: powder. "To powder one's nose" *ponerse polvos*. Observarán Vds que he convertido en activa, la construcción pasiva: "she was seen to" . . . A algunos de Vds tal vez les extrañe (surprise) que no haya traducido "on landing" por las palabras *al aterrizar*, como en el caso anterior. Empleé *al apearse* porque *aterrizar* es lo que hace el avión, en cambio *apearse* (to alight) es lo que hace la persona, y si se tratase de un vapor, se traduciría "on landing" por: *al desembarcar*. Ya ven Vds que no hay que traducir la misma palabra siempre del mismo modo. Se debe desechar el cascarón (shell) o sea la apariencia, y analizar el significado, como acabó de hacer en estos ejemplos.

MARÍA F. DE LAGUNA.

Esperanto Transmissions

Sunday—Lille PTT Nord, 9.30 a.m., Course, Informoj. Lyons-la-Doua, 9.45 a.m., Course. Leningrad, 4 p.m., Parolado. Tuesday—Hüizen, 6.20 p.m., Course. Radio-Lyons, 6.45 p.m., Course. Tallinn, 7 p.m., Course. Minsk, 9.5 p.m., Course. Leningrad, 9.20 p.m., "Tra USSR dum dektago." Wednesday—Vienna and relays, 9.20 p.m. A Denks: "Innsbruck, dua Antaŭkongresurbo de Romo." Moravská-Ostrava, 9.30 p.m., Prof. L. Kraje: "Kiel servas Esperanto al la ĉeĥoslovaka respubliko." Thursday—Paris PTT, Limoges, Alpes-Grenobles, 5.30 p.m., Course, Parolado. Warsaw and Cracow, 9.45 p.m., Prof. Zerndt: "La lando de nigraj diamantoj—supra silezio." Friday—Nice-Juan-les-Pins, 7.30 p.m., Course. Lisbon (291 m.), 9 p.m., Course. Saturday—Lyons-la-Doua, 8.10 p.m., Informoj. Minsk, 9.5 p.m., Parolado. Leningrad, 9.20 p.m., Parolado pri USSR.

The Eloquence of Music

THERE seems to be an almost universal delusion that radio propaganda can be carried on only by means of talk. When, some months ago, Sir Norman Angell and Brigadier-General P. R. C. Groves discussed in this journal the question, "Can Broadcasting Stop War?", the arguments centred on the possibilities of broadcast speech. When Governments desire to use radio as a means of gaining support or allaying hostility, they usually treat words as the essential part of the plan.

Fortunately, the value of music as propaganda for peace is not diminished by the general failure to recognise it. Music that is broadcast only for its broad cultural value is not hampered in its peace work by the fact that it is not intended as propaganda.

It seems strange that the value of music in creating a tendency towards international friendliness has not been more generally recognised. For this tendency is merely a natural extension of a new feeling towards our more immediate neighbours which the broadcasting of music has given to most of us. The man who lives across the road was merely "the fellow who lives at Number 93" until rumour or the sounds of music from his house revealed that he was a man of intelligence—that is to say, that he shares your musical tastes. Your musical likings may be represented by Henry Hall, or by Sir Henry Wood; but you are almost bound to have an undercurrent of respect for the man who shares your taste, even if bills in his windows at election times indicate that his intelligence does not govern his political choice.

Likeable "Foreigners"

The wireless programmes which we enjoy from abroad are an indication that the listeners for whom they are chiefly intended—the people who live in the countries from which the programmes come—are not just "foreigners." Among them there must be some very likeable fellows, chaps with a sound taste in music! You may sometimes dislike the form of government under which they are living, but you are willing to overlook that just as willingly as you disregard the election bills in the window opposite.

It would be difficult nowadays to convince us that people who live abroad are to be condemned as barbarians simply because they are reputed to have queer habits. In pre-broadcasting days it was possible to encourage a warlike feeling by skilfully enlarging rumours; a skilfully-prepared report that "those foreigners" actually ate frogs could be made to breed bitter sentiments! Nowadays, however, our wireless sets give us first-hand evidence that people in other countries share our own musical tastes, and can therefore be regarded as eccentric rather than as wicked for having other tastes that differ from our own.

As peace propaganda, music has two particular advantages over speech. It gives its message to every listener, however limited his knowledge of foreign tongues may be; and it preaches peace whatever the intentions of the broadcasters may be. A Government that desired war could *speak* war to other nations just as effectively as it can speak peace. But musical broadcasts would remind us that, whatever the powers temporarily in charge of broadcasting might say, the people whom we were invited to hate were still people whom we could respect.

But it may reasonably be hoped that such a situation will never arise. For the increasing friendly tendency which broadcast music is breeding among the peoples of various nations will surely persuade those peoples never to allow themselves to be misrepresented by a Government that desires to speak war. R. A. S.

LAST WEEK'S LISTENING

AT HOME

ALTHOUGH the promise of frost and snowy weather was not fulfilled during the period under review, the unsettled conditions resulted in one or two rather poor nights for long-distance reception.

Broadly speaking, however, the week was a good one, and I was well pleased with the excellent daylight results. Brussels No. 1 and No. 2 were well received in the forenoon; Poste Parisien came through splendidly; Athlone was good; Hilversum, Heilsberg, Hamburg, and Göteborg were heard comfortably on the loudspeaker throughout the daytime. A good five-valve receiver, with an average aerial, was used.

The Long Waves Improve

Long-wave reception, without a doubt, was much better than it has been for some time. Huizen did not suffer from interference so badly, and Kalundborg gave a very good run of results throughout the week. Radio-Paris was excellent, and the Deutschlandsender, with the exception of the Thursday evening, came in well. The interference on Luxembourg was rarely strong enough to spoil reception, and Warsaw had several very good nights.

The newcomer to this waveband mentioned by readers was no doubt Budapest No. 2, which has been heard once or twice on 834.5 metres at moderate strength, but the station does not appear to be working regularly yet. Budapest No. 1 was quite up to its usual good form, and Wilno came in very well on several evenings. Beromünster, Athlone, Stuttgart, and Vienna were all well received, and Florence was most reliable apart from a weakness on the Thursday. Cologne was steady, and Prague gave good results. Lisbon and Trøndelag were excellent signals in turn on the Saturday. Sottens was better on the Tuesday, and first-rate on the Saturday. Lyons (La Doua) and Paris PTT were received well on almost every night, and Stockholm gave little cause for complaint.

Rome was not quite up to form on some nights; Genoa, Bari, and Turin had their good nights and bad ones. Milan was excellent from the Monday to the Wednesday, poor on Thursday, moderate on Friday, and excellent on Saturday.

Munich and Leipzig gave splendid results at all times, and Katowice was much more reliable than it was some weeks ago. Berlin, however, was first-rate throughout the week. Strasbourg was usually quite clear of interference, and Hamburg was one of the leading stations on every occasion. Graz varied somewhat almost nightly, but its performance on the Saturday was particularly fine. Radio-Toulouse came in very well on most nights, and Brno was well heard on the Friday and the Saturday.

Strength of Algiers

Göteborg's evening transmission suffered a great deal from interference by Algiers, the signals from which are quite strong at the moment. Breslau, Poste Parisien, and Brussels No. 2 were an excellent trio at all times, and Hilversum, on the whole, was good. Bratislava's best night was on the Wednesday, but the station was always to be heard on other days.

Heilsberg was heterodyned on each evening, but the interference was not too unpleasant. Rennes was moderately good; Bordeaux usually first-rate; and Bari came in especially well on the Tuesday.

Madona and Kosice have appeared very regularly in my Log recently, while Monte Ceneri, too, has given some very fine per-

formances. Hörby was good on occasion, and Copenhagen can be relied upon night after night for splendid results. Trieste gave good results on every night but the Thursday, and Madrid was quite good on several evenings.

San Sebastian's best night, strangely enough, was on the Thursday, when so many of the other stations were below their usual form, and although a heterodyne was present, reception was quite good. Gleiwitz and Nürnberg were both well heard in turn during the week.

"NORTHERNER."

INTERFERENCE

PROPAGATION conditions between January 13 and 19 have been erratic: a number of stations usually providing relatively steady signals were affected by rapid fading, accompanied by heavy distortion. The fading was particularly noticeable on stations using shared frequencies; during the deep fades of one station, the programme of the associated transmitter was quite audible and badly interfering with the other. Stations especially affected were Lyons, Radio-Strasbourg, and Radio-PTT Ouest (Rennes).

On January 13, the Scottish Regional transmitter (804 kc/s) was badly heterodyned by Barcelona EAJ1 (Union-Radio), once more off its allotted frequency of 795 kc/s, and working on 802 kc/s—only 2 kc/s from Scottish Regional. On the following day the interference on Scottish Regional was removed, but Barcelona worked on about 788 kc/s up to 9 p.m., and thus heterodyned Leipzig, using 785 kc/s.

Milan was badly heterodyned—also on January 13—as a result of the presence of Bucharest on 818 kc/s, instead of 823 kc/s. This provided only a 4-kilocycle separation between the two stations.

Kuldiga, the new Latvian station, of 10 kW power, has been seriously misadjusted on several occasions and was working on frequencies very close to that of Radio-Nice-Juan-les-Pins—1,248 kc/s. The French station, generally well-received, was badly heterodyned, as Kuldiga's signal is powerful. The Latvian station should work on 1,258 kc/s, together with Rome III and San Sebastian.

As Torun, the new 20-kW Polish transmitter, is operating regularly on 986 kc/s (together with Genoa), Cracow has worked since January 10 on the 1,022 kc/s frequency allotted to Spain and occupied by Barcelona EAJ15 (Radio-Asociacion). EAJ15, the signals from which are unsteady and over-modulated, is now badly heterodyned.

L. B.

STATION IDENTIFICATION PANEL RADIO-PTT OUEST

(RENNES, FRANCE)

FREQUENCY: 1,040 kc/s
WAVELENGTH: 288.5 m.
POWER (COPENHAGEN): 40 kW.
DISTANCE AND BEARING FROM LONDON: 248 miles; 197°.
CALL: "Allô! Allô! Radio-PTT Ouest à Rennes!"
Man announcer.
Closes down with the usual French formula, followed by a few bars of a Breton tune.
Independent programmes; also relays Paris (EPTT), and other PTT stations.

ERRATUM

The wavelengths of Budapest No. 2, which appeared under the heading of "Relay Stations" in the Identification Panel for Budapest published in our last issue, were wrongly given. The correct wavelengths are as follows: 834.5 metres, 359.5 kc/s, 20 kW; 227.1 metres, 1,321 kc/s, 0.8 kW.

Romanian Journey

BUCHAREST, capital of post-War Greater Romania, that rather unknown, vast country which stretches from the Ukraine steppes in the east to the Magyar hills in the west, may well claim a place among the most modern cities of Europe.

Romania is the only Balkan country with a well-organised broadcasting system, and, indeed, her radio activities compare favourably with many older European broadcasting services. As readers of WORLD-RADIO know, Romania has a national station at Bucharest and two regional transmitters, while a 150-kW station is now in course of erection.

Broadcasting Activities

Romanian broadcasting, I learned, began in 1928 with the formation of the Romanian Broadcasting Company, really a joint stock concern, in which the State possesses the controlling financial interest. There is a sliding scale of licence fees, varying with the type of receiver and the location of the listener, and 30 per cent. of the fees is retained by the Government.

The studios are in the heart of the city, and here the progressive note is shown by the recent addition of a symphony studio, about 70 ft. by 60 ft., well-equipped staff offices, and an artists' cafeteria. There is also a Post Office bureau for checking licences and tracking down "pirates," for Romania is stricter than other European countries in that respect.

The actual equipment at the Bucharest transmitter, which is situated in picturesque surroundings some miles out of the city, has no features of outstanding interest; but the building itself is of novel design, in contrast with the standard construction generally adopted throughout Europe. It is the only transmitter in Europe to be guarded by watch-dogs.

The general manager, Ing. G. Munteanu, who came to London last year for the Assembly of the International Broadcasting Union, is assisted by a competent executive staff, including musical, literary, and "radio journal" directors. The announcer who is best known to English listeners is Mlle. Cretzoi Magda, and there are also three men announcers.

The programmes, I found, do not vary greatly from other European transmissions, and most kinds of entertainment are given. Advertising is limited to about 1,000 words daily. Romanian broadcasting pays special attention to adult and juvenile education. The school sessions are arranged in co-operation with the Ministry of Education, and are designed to be a continuation of the school curriculum and a guide to teachers. The State hopes eventually to equip all schools with sets, though the Italian example of designing a special receiver has not yet been followed.

History and Folk-lore

Romania's rich history, folk-lore, music, and literature provide a mine of broadcasting material. Inspiration abounds in her customs, her "Robin Hood" ballads, her elegies, love poems, dance songs, and Romance music. All of them breathe of Carpathian spurs and valleys, of shepherds in richly-embroidered sheep-skin garments, tight woollen trousers, and leather sandals, and of peasant women in Thracian head-dress, glittering necklaces, and long dresses of colours that vie with the rainbow. The future 150-kW station should be able to provide some interesting programmes.

And after Bucharest a Romanian journey is rewarded by glimpses of the university cities of Cernauti, Jassy, and Cluj, where the Broadcasting Company intends to install regional stations at a later date.

C. W. L.

FROM MICROPHONE



TO LOUDSPEAKER

In this article, the fifth of the series, the function of the receiving aerial and the method of tuning it to a particular wave are described.

We have seen that wireless waves are electrical disturbances or vibrations in the ether set up by electric currents flowing in a wire or wires, called the aerial, at the transmitter. It seems natural to suppose, therefore, that these disturbances in the ether will produce corresponding electric currents in any wires which they encounter in their passage through space. Such is the case, and we are able to convert these ether vibrations back into their original form of electrical vibrations along wires by erecting an elevated wire or receiving aerial in which these are produced. They can then be led along further wires and dealt with as necessary to convert them into the corresponding sound waves of the same nature as those which produced the original electrical vibrations in the microphone circuit.

Tuning the Aerial

It is fairly obvious that if the dimensions of the receiving aerial are only small compared with the wavelength of the waves to be received, the currents induced in the aerial will not be so great as they would be if the dimensions of the aerial were comparable with the wavelength. We saw the necessity for using long aeri- als at the transmitter if waves of low frequency or long wavelength were to be radiated easily. The same reason applies in connexion with the receiving aerial.

Maximum current will be produced in the receiving aerial when the latter is *in tune* with the transmitting aerial, or, as we say, tuned to the frequency of the waves to be received. This is a similar case to the tuning of musical instruments. If a violin or piano string is set in vibration to produce sound waves, a similar string tuned to the same note will also be set in vibration if these waves reach it. The same effect can be obtained by using tuning forks.

A long string is necessary to respond to a note of low frequency and a short string to respond to a high note, if the strings are made of the same material and are of the same thickness. It is well known, however, that a thick string tunes to a lower note than a thinner one of the same material and length. Also, a short pendulum will swing faster than a longer one unless we add a heavier weight to it. These examples give us a clue to what is required at a receiving aerial. We can adjust the length of the wire to make it tune to the required frequency, or we can add something to it to alter its electrical characteristics for the same purpose.

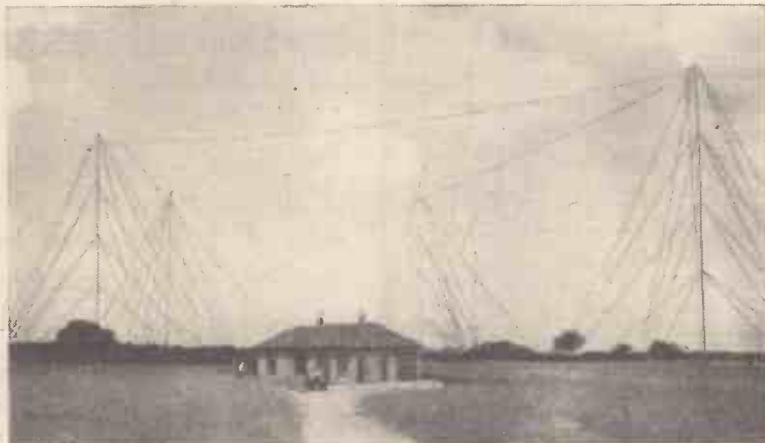
It is obviously impracticable to erect an aerial which will have a length anything like the wavelengths used for long-wave broadcasting. Such wavelengths are in the neighbourhood of 1,500 metres, or about 5,000 feet. On short waves, however, say of 30 metres wavelength (100 feet approximately) the problem is not so difficult, and it is possible to erect

aerials having dimensions comparable with these wavelengths.

The problem is further complicated by the fact that it is seldom that a receiving aerial will be used for the reception of waves of only one wavelength. We are therefore faced with the necessity for providing some means of adjusting the tuning of the aerial if we are to receive signals at will from different stations. And, further, we desire to receive one station only at a time, so we must take care that our tuning is sufficiently sharp to prevent interference from unwanted stations.

Tuning Circuits

It is not essential, however, that the aerial itself should respond only to one frequency at a time. Provided the strength of the currents of the particular frequency we want is sufficiently great compared with the strengths of currents produced by other stations of different frequencies, we can get rid of the unwanted currents by employing circuits in the receiving apparatus which permit the passage of currents of the desired frequency only. In other words, these circuits are tuned to the desired frequency. They are in effect aeri- als of the desired wavelength coiled up into a compact form so that they are not influenced by wireless waves, but permit the passage of electric currents of the particular frequency to which they are tuned when they are connected to the aerial or other circuit in which such currents are already flowing.



Receiving aeri- als at the B.B.C. checking station, Tatsfield

These tuned circuits can be composed simply of the necessary length of wire coiled up to form what is called an *inductance coil*, and all or part of such coils can be used by providing connexions at various points on the coil so that different lengths of wire can be used to tune to different wavelengths. The necessary sharp- ness of tuning cannot usually be obtained, however, by such an arrangement, and it is customary to employ in addition what is called a *condenser*.

Any two pieces of metal placed close to each other are capable of storing electricity, and their *capacity* for doing this depends on their dimensions and the distance they are apart. A length of wire possesses this property as it is composed of a whole series of pieces of metal between each of which this capacity exists. It

is evident, therefore, that if our receiving aerial or tuning inductance is not of the right dimensions to tune to the required wavelength, we can add the necessary amount of metal surface in the form of metal plates placed close to each other. By adjusting the distance between such plates we can vary the capacity between them and so alter the tuning of the circuit. It is customary, therefore, to employ a fixed length of wire in the form of an inductance coil for each wave-range covered by a receiver, and to adjust the wavelength throughout that range by means of a condenser in which the distance between its plates can be varied.

In order to tune the aerial, the additional inductance coil or condenser, or both, can be added at the middle of an elevated wire which forms the aerial, by running wires from them to a break in the middle of the aerial. This arrangement is often used on short waves. On longer waves, however, the surface of the earth is used as part of the aerial, and the tuning circuit is connected between the bottom end of the aerial wire and the ground. The surface of the earth is a partial conductor of electricity and therefore adds to the effective length of the aerial. It is, of course, important that there should be good electrical contact between the tuning circuit and the ground, or the flow of the electric currents will be impeded.

Similar arrangements are employed at the transmitter in order to tune the transmitting aerial to the frequency of the waves to be radiated, so that maximum current is produced in the aerial, and maximum disturbance created in the surrounding ether.

Reception of Sidebands

We have already seen that when the strength of the transmitted carrier wave is varied by the microphone currents when a programme is being radiated, additional waves are produced the frequencies of which extend over a band of perhaps 10,000 cycles per second each side of the carrier frequency. The receiving aerial and circuits must therefore respond to or be in tune with these frequencies as well as that of the carrier frequency. These circuits, therefore, must not be so sharply tuned (or *selective*) that they fail to respond to these frequencies,

or the programme will not be faithfully reproduced. On the other hand, they must be sufficiently sharply tuned to have negligible response to waves transmitted by other stations, or interference will occur.

The electric currents produced in the aerial and tuning circuits of a receiver are of the same nature as those present in the transmitting aerial—*i.e.*, they are of high frequency—and are not suitable for direct conversion into low-frequency sound waves corresponding to those in the studio. It is necessary for them to be converted first into currents of low frequency similar to those present in the microphone circuit, before they can be so employed. They can, however, be amplified if necessary before this operation takes place.

(To be concluded)

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How to Use Headphones with Present-Day Receivers

By M. G. SCROGGIE, B.Sc., A.M.I.E.E.

A few weeks ago a contributor put forward the advantages of headphones over loudspeakers. To some readers this may have seemed like advice to replace one's car by a coach and pair. There are others to whom the idea has appealed and who have been enquiring for further information. This information is contained in the present article.

TEN years ago every receiver had a pair of terminals marked "PHONES" or something equivalent. So the question of where to connect them did not arise. Now there are generally terminals or sockets for an external loudspeaker, and these may seem to provide an obvious point of connexion. The results of using them for this purpose may possibly be unpleasant, or even worse; so it is not altogether superfluous to consider the matter for a few moments.

The first fact is that, whereas a loudspeaker is usually provided with a maximum of at least 1,000 milliwatts of power to drive it, 1 milliwatt gives a good bold sound in headphones. The result of applying the full output of the set to a pair of 'phones *in situ* may, therefore, better be imagined than experienced.

Impedance of Headphones

The second fact is that both 'phones and loudspeakers differ considerably in impedance, and therefore in the results they provide when connected to a given outlet. One of the incidental differences is that high-impedance instruments

speakers. But low-impedance speakers, that is to say the speech coils of those of the moving-coil type, are much lower than 120 ohms; 1 ohm is nearer the average.

If a low-impedance coil is connected direct to an outlet intended for high impedance, not only is the volume considerably reduced but there is distortion and wrong operation altogether. But if the reverse is done, the proportion of power drawn is small, and it leaves all the remainder available for a properly-matched coil connected in parallel. The point of this is that if a high-resistance pair of 'phones is connected in parallel with a low-resistance loudspeaker coil, it does not interfere with the working of the speaker, but it draws a very small proportion of the whole power itself; which is just what we want.

One requirement is met by using high-resistance 'phones. In current receivers of many well-known makes the other requirement is met simply by connecting to the external loudspeaker terminals or sockets. In an article "Wireless in Every Room," which appeared in this journal (December 14, 1934) the various systems of connexions now in use were reviewed, and the diagram is repeated here (Fig. 1). Method (a) is the right one for headphones; and, before connecting up, steps should be taken to ascertain that the receiver actually is of this type—namely, with low-resistance output. If it happened to be type (d) instead, the full H.T. of perhaps 250 volts would be applied, with possibly disastrous results. Not only is the first system technically correct; it is also safe, because the terminals are isolated from any high voltages.

While on the subject of safety; it is generally considered preferable *not* to earth the 'phones. An accident has been known to occur owing to a person who wore earthed 'phones grasping an electric table lamp which had become "live." As a matter of fact, the possibility of receiving a dangerous shock is exceedingly remote, even when abnormal conditions of this sort arise; for the 'phones do not usually make good electrical contact with the head, and some are totally insulated.

Switching the Loudspeaker

Assuming that fortune is favourable, and that both 'phones and receiver terminals are of the right sort, we next consider how the loudspeaker can be disconnected in order to avoid disturbing other people, and also how the loudness of the

headphones may be controlled if it happens that the loudspeaker is in use elsewhere.

A few receivers are provided with a switch for disconnecting the internal speaker, in which case comment is needless. If not, one must get at the leads to the moving coil itself and insert a switch as shown in Fig. 2. It is not always an easy matter to do this; and, if in doubt, expert assistance should be obtained. But the important point, if the output valve is a pentode or Class B valve (as it nearly always is), lies in never disconnecting the internal speaker unless there is an equivalent external load. 'Phones are by no means equivalent, so they should be shunted by a low resistance. This can easily be made up of a few yards, or even less, of resistance wire or thin copper wire. Cut down the length of wire until the volume from the loudspeaker is just perceptibly reduced when the wire is touched across in the position R in Fig. 2. Either R or the loudspeaker, or both, must always be in circuit when the receiver is on.

Volume Control

It is an easy matter to control the loudness at the 'phones by means of an ordinary potentiometer, preferably having a lower resistance than the 'phones themselves. In fact, if the resistance is as low as R, the potentiometer serves the additional purpose of the safety shunt. Actually one is unlikely to hit on a potentiometer that is just right, and R is then a separate entity. As R is likely to be only a few ohms, and the 'phones are probably 2,000 ohms, it is seen that there is plenty of latitude as regards the potentiometer; almost anything between these figures, or even above them, can be used.

Extension wiring presents no special problems. It is just necessary to note that R is preferably at the receiver end; as otherwise the resistance of the wiring may upset calculations, and, furthermore, there is the risk that some unauthorised person may disconnect the extension without connecting the loudspeaker.

Receivers with High-Impedance Output

Now to consider the cases where a low-impedance output is not provided. It might be supposed that one could connect the 'phones to a high-impedance socket, and reduce the volume to the right amount for 'phones by means of the receiver volume control. The objection is that there is a very strong probability of accidental excesses of loudness, particularly at the moment of switching the set on or off; and these are good neither for the 'phones nor for the ear drums of their wearer. Moreover, the hum of mains-driven sets, though barely audible from the loudspeaker, is painfully conspicuous on 'phones. By using a low-impedance socket the hum voltage (and everything else) is stepped down to perhaps a fiftieth.

The proper method of converting Fig. 1 (b), (c), or (d), to the desired (a) is by means of a step-down transformer, unless the leads to the low-impedance speech coil are accessible. It seems a waste to buy an additional transformer in the majority of cases, where a suitable transformer is already in use. But the moving-coil leads may be very difficult to get at; and, moreover, some people have spare transformers waiting to be used. The step-down ratio may be anything not less than about 20 to 1.

It is possible to utilise a high impedance outlet without a transformer, though the method is not so strongly recommended. A series resistance of about 25,000 ohms is used, in conjunction with a 500 or 1,000 ohm

(Continued on page 19)

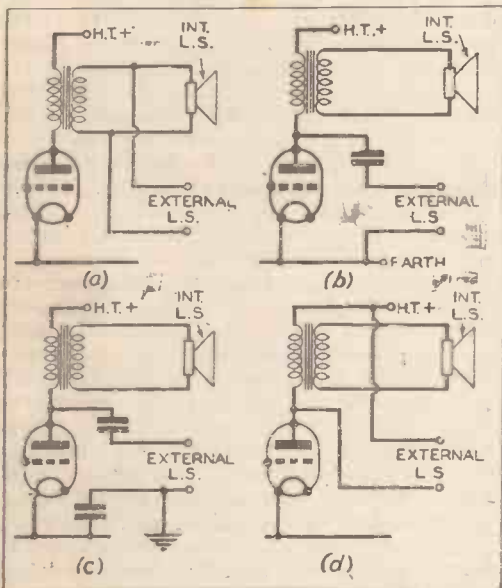


Fig. 1—Four methods of bringing out extension loudspeaker terminals from receivers. The most suitable for headphones is (a). The others require modification as described in the text

practically always have a relatively high resistance. The resistance is not the vital information at all, really; but in the earlier days impedance was not a commonly-understood term and the resistance was specified instead. So if any figures are engraved on the earpieces they are pretty certain to be the number of ohms resistance. Actually the impedance is several times as great.

Low-resistance 'phones were standard at 120 ohms. But high-resistance 'phones might be 2,000, 4,000, or even 8,000. The last were designed for extreme sensitivity in the pre-valve days, but were so fragile that it is unlikely that many pairs still survive. Broadcasting headphones were generally not more than 2,000, and the tendency has been to substitute 1,000. The impedance is comparable with, but on the whole rather greater than, that of high-impedance loud-

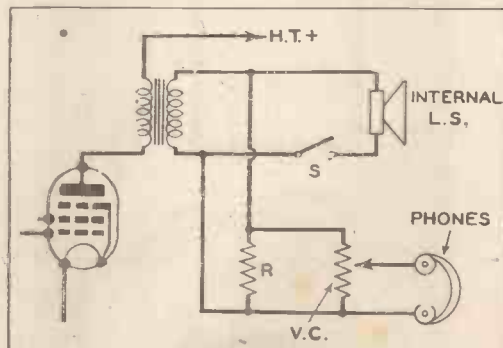


Fig. 2—Position of switch S for cutting out internal loudspeaker, and safety resistance R for use with pentodes. A volume control V.C. may be used in addition, or combined with it.

WIRELESS TOPICS by "ION"

SERVICE!

THE other day, during a talk with a representative of Marconiphone, he told me a few things about their after-sale service, which is one of the most efficient in this country. There is one case, however, which deserves to be passed on to my readers.

One afternoon, about five o'clock, the telephone bell in the service department rang and somebody at the other end, greatly excited and very impatient, demanded to speak to the Chief Service Engineer—nobody else would do! The latter was found and brought to the telephone. It appeared that the gentleman at the other end of the telephone was giving a party that night. The guests were due to arrive at seven. The *pièce de résistance* of the party was a new Marconiphone radiogram that had been delivered a few days before. It had just been tried, to make sure of its functioning properly during the evening, and it refused to produce a single sound! "Please send an engineer at once. . . . It must be put right before the guests arrive!"

The Service Engineer was sorry; all his men were out and were not expected back that night. . . . However, he would see what could be done. . . . "What is the address?" "Wimbledon Common. . . . Number so and so. . . . Very good!"

The impatient customer, having replaced the receiver, went once more to the unfortunate radiogram hoping against hope that it would change its mind and would start to function again. . . . "What is the time? Ten minutes past five. . . . Hopeless! They will never get an engineer here in time. . . . What a confounded nuisance!" Suddenly the front door bell rang. In a few moments the maid came in. "A man from Marconiphone, sir, to see to the set." Tableau! The customer could not believe his ears. "Show him in," he murmured doubtfully. The man came in briskly, black bag and all. "How did you manage to get here in ten minutes?" demanded the customer. The engineer, with a twinkle in his eye, nonchalantly replied: "Our usual service, sir; we never let a customer down." Two minutes later the engineer, having discovered the "fault" and remedied it by replacing the mains plug—which had either been removed or had fallen out of its socket—got the set going nicely, and went on his way, while the customer then and there sat down and wrote a glowing letter of thanks to the company. This letter is now adorning the wall in the service department in a nice gilt frame.

And now for the secret of such promptness. Two minutes after the customer had rung off, the telephone bell sounded again. "It's Bill, sir. I've finished my last job and I'm thinking of going home. Is there anything I can do for you, sir?" "Wait a minute, Bill, where are you now?" "Wimbledon Common, sir, speaking from a call box." The Service Engineer's eyes glittered. "Are you far from number so-and-so, Bill?" "Why, sir, it's just round the corner; two minutes' walk from here." "Excellent, Bill; just pop in there and see what is wrong with their darned set." Bill went. . . .

"BLACK MAGIC"

Burglar Bill flashed his lamp on the wall of a factory that he intended to visit that night. The light picked out a notice: "This establishment is protected by the 'Humaswitch'." Burglar Bill had never heard of the "Humaswitch," and his lips twisted themselves into their accustomed one-sided sneer. . . . "Protected by your grandmother. I will show you

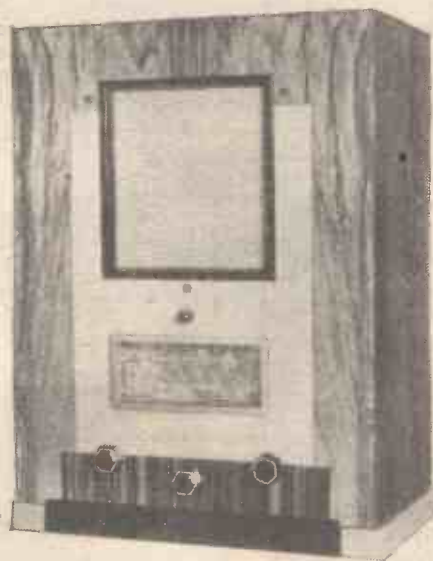
what I can do to a burglar alarm. . . ." he murmured to himself, and proceeded to scale the wall. His progress proved to be easy. . . . A window was forced and an entry effected. The office was empty and a large safe stood invitingly open at the opposite end of the room. Bill approached the safe. Suddenly pandemonium broke loose. Somewhere outside a large bell started ringing furiously. Bill looked round him in amazement. Not a sign of a wire anywhere, not a suspicion of a burglar alarm, and yet there it was waking the neighbourhood. . . . Bill paid for his ignorance with three years' hard, and is still wondering what a "Humaswitch" may be.

The instrument in question works on the principle of "body capacity," which is familiar to all short-wave experimenters. The wires from the instrument are buried within the brickwork of a wall, and as soon as anybody comes anywhere within six feet of those wires, the change in capacity operates the circuit and sets in action a relay which floods the place with light, and sounds a bell placed elsewhere. The visiting light-fingered gentry cannot possibly know where the wires are hidden, as nothing is visible.

The applications of this device are many and varied. A dark shop window can be lit by anyone approaching or passing it. An escalator can be brought into action as soon as somebody steps on it. Lights will be switched on automatically as soon as anybody enters a dark room; closed doors will open "by themselves" on approach; and many other peculiar things take place. Since the apparatus in question does not work with the help of a photo-cell, it does not consume or waste any appreciable current. The circuit is in action only while there is somebody near. As soon as the body capacity is removed the circuit is switched off. There are many firms who have already adopted this device, and insurance companies have shown an interest in its possibilities. The firm that markets the "Humaswitch" is Messrs. Human-Switch, Ltd., Eagle House, Jermyn Street, London, S.W.1, to whom all inquiries should be addressed.

A NEW FERRANTI RECEIVER

Messrs. Ferranti, Ltd., of Hollinwood, Lancs, have sent me details of their new Universal A.C./D.C. consolette, which is being released to the public this month. This is a superheterodyne receiver employing the following valves:



Ferranti Universal A.C./D.C. Consolette

oscillator and first detector, Ferranti type VHTS or Marconi-Osram Type X30; intermediate-frequency pentode and first L.F. amplifier, Ferranti VPTS; second detector and A.V.C., Ferranti type HSD; power valve, Ferranti type PTS; half-wave rectifier, Marconi-Osram Type U30. Barretter: Philips Type 1941. The output is 2 watts. A Ferranti moving-coil loudspeaker is incorporated in the set. Single tuning control. The tone control is continuously variable. "All-in" dial is illuminated and framed in chromium, both station names and wavelengths being indicated.

A conspicuous feature of the set is *electric tuning*, and visual indications of the waveband, degree of volume, and relative shade of tone. The controls are as follows: right-hand knob, combined on-off switch and volume control. Left-hand knob, wave-changing switch. Centre knob, tuning control (the receiver is tuned by rotating this knob until the tuning bar coincides with the dot indicating the position of the desired station). A scale giving the medium wavelengths is included at the top of the dial, and long wavelengths at the bottom of the dial. Small knob above dial, tone control. All fittings are chromium. The cabinet is of walnut with a front inlaid in quilted maple. The price is 13 guineas. Deferred terms are 33s. deposit and 12 monthly payments of 22s.

POCKET RADIO SET

I hear from Messrs. Dean Radio, 10-12, Handel Street, London, W.C.1 (sole distributors Messrs. Marluke, Ltd., of 2, Grays Inn Road, W.C.1, to whom all enquiries should be addressed), that they have produced a "Portabout" two-valve receiver which with the telephone compartment measures 6 in. by 4½ in. by 4¼ in., and weighs three pounds all complete. This is a development of the police pocket radio apparatus which has been officially adopted in this country, notably by the Brighton Constabulary.

The manufacturers state that their receiver is supplied complete with one pair of Ericsson telephones, an Exide 2-volt accumulator and a Drydex 45-volt H.T. battery. The current consumption is claimed to be negligible. The L.T. consumption of 0.1 amp. enables the accumulator to be used for two to three weeks without recharging, while the H.T. consumption of 1 milliampere is said to assure the battery a life of approximately twelve months. British midget valves are employed. No external aerial or earth connexions are necessary, and the set working on the medium waveband is said to have a range of 100 miles. The circuit is of the super-regenerative type. It is guaranteed for six months and the makers state: "if any fault, post the set back to us and we will replace by return." The price complete is 4 guineas.

It is suggested by the manufacturers that to the politician and the business man the "Portabout" is invaluable. Time, weather reports, market and general news are essential knowledge of everyday life. To the sportsman, too, a portable set, which is really portable, is a necessity. Commentaries on cricket, football, tennis, boxing, and other sporting events, as well as daily results, are obtainable just when desired and wherever the man chances to be. Being a telephone set it, of course, does not disturb other people.

FULLER BATTERIES

Messrs. Fuller Accumulator Co. (1926), Ltd., inform me that they are now manufacturing a new Fuller "Sunbeam" high-tension battery, supplies of which were available as from January 14. The prices are as follows: 60 volt, 3s. 6d., 100 volt, 5s. 6d., and 120 volt, 6s. 6d.

HOW TO USE HEADPHONES WITH PRESENT-DAY RECEIVERS

(Continued from page 17)

potentiometer (or fixed resistance, if no control is needed) as in Fig. 3. In this case the resistances serve the purpose of R. Unless a condenser is definitely known to be in circuit (Fig. 1 (b) or (c)) it is wise to include one, of from 0.1 microfarad upwards.

Use of Low-Resistance Headphones

A somewhat similar device may be adopted when 120-ohm 'phones happen to be the only ones available. They tend to take too great a share of volume from any except the very lowest impedance output, and even with a series resistance it is not recommended that they should be used in a high-impedance circuit.

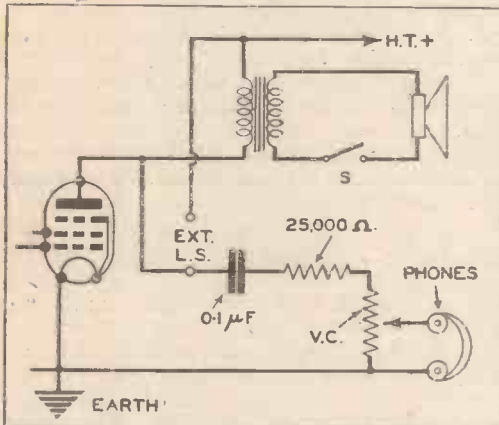


Fig. 3—A step-down transformer is recommended when high impedance loudspeaker sockets are fitted; but here is an alternative

With the ordinary (a) type connexion, one may try a potentiometer or shunt resistance of only a

few ohms—say 10—and a series resistance of 100 or so.

If it is a case of using up odd components, it is practicable to make the shunt a fixed resistance and use a variable of a few thousand ohms in series. It is then not possible to fade the headphone reception right out, however.

For connecting several pairs of 'phones of the same resistance no essential modification of the foregoing systems is involved. They are simply connected in parallel and treated as a single pair having the resistance of one pair divided by the number of pairs.

Battery-Operated Receivers

So far the receiver has been assumed to be of the typical modern mains-driven type. When used for 'phones only, about 99.9 per cent. of the output power is wasted. But mains power is cheap. It is different with a battery-driven set; and it is generally possible, by reducing the H.T. voltage to the last valve, or removing it altogether and connecting the 'phones direct in the detector circuit, to save the major part of the running costs. The precise method of doing so depends on so many circumstances that it must be left to the individual.

Book Notice

The 1935 edition of the *Broadcaster Radio and Gramophone Trade Annual* contains a considerable amount of information of interest to those engaged in the radio and gramophone industries. It includes details of the electricity supplies of nearly 5,000 districts in the United Kingdom, a trade directory of nearly eighty pages, and a "Who's Who" of prominent people in the radio industry. Copies can be obtained from *The Broadcaster and Wireless Retailer*, 29, Bedford Street, Strand, London, W.C.2, price 5s. post free.

Readers' Queries Answered

Under this heading we publish questions and answers of general interest arising out of our technical correspondence. We are always willing to assist readers who require information on technical points, but all such requests requiring a postal reply must be accompanied by a stamped addressed envelope.

W.R. 1110. I find it necessary to detune my set when receiving a strong station, otherwise a loud howl from the loudspeaker develops. Can you tell me how to cure this trouble?

The trouble is most probably caused by one of the valves—usually the detector valve—being "microphonic." The sound waves from the loudspeaker cause the electrodes of the valve to vibrate and produce corresponding electrical oscillations. These are amplified in the low-frequency stages of the receiver and reproduced as sound waves of increased strength by the loudspeaker. These sound waves are once more fed back to the microphonic valve and amplified again, and so on, with the result that the sound builds up to a loud howl. A cure can be effected by changing the position of the loudspeaker—if the latter is not enclosed in the receiver cabinet—so that the sound waves reaching the microphonic valve are only weak. Alternatively the valve can be wrapped in sound-absorbing material such as cotton-wool, or replaced by a valve which is non-microphonic. Improved decoupling arrangements in the H.T. supply circuits may also help to overcome the trouble.

Wireless Section I.E.E.

An informal meeting of the Wireless Section of the Institution of Electrical Engineers will be held at 6 p.m. on Tuesday, January 29. The subject to be discussed will be "The Cause and Prevention of Valve Failures in Broadcast Receivers." The meeting is open to non-members and tickets of admission are not required.

★ The finest Headphones in the world



TYPE "F"
A highly efficient general purpose 'feather weight' headphone (only 6 oz.). This type is used in most of the principal Hospitals, Nursing Homes, Municipal Institutes, etc., throughout the country, and by the L.C.C. Also used in Cinemas, Churches, etc., in conjunction with Deaf Aid Installations. Price 20/- per pair. Single "F" Phone 12/6.

TYPE "A"
(Adjustable Reed)
This type is recognised as one of the finest obtainable. Signals and speech are perfectly clear. Constructed to give the very highest degree of sensitivity. The double headband is adjustable and extremely comfortable to the head. Used by H.M. Navy, the Dutch, Swiss and French Telegraph Services, British and Foreign Air Services, The B.B.C., etc. Price 50/- per pair.

S. G. Brown

Headphones were the best 10 YEARS AGO. They are THE BEST TO-DAY. Quality and service counts. Don't be led astray by the price bogey—it pays to buy the best. The standard resistance of all models is 2,000 ohms per ear-piece, 4,000 ohms totalled, but NO EXTRA CHARGE is made for supplying in any resistance desired. Same price HIGH or LOW impedance.

TYPE "D"

Flat Diaphragm type, with unbreakable covers, and with double headband of slightly heavier gauge than type "A." Used exclusively by the Royal Corps of Signals, Wireless Telegraphy Training Schools, Imperial and International Communications, Ltd. This model is eminently suitable for use where clear reception is essential.

The price is 35/- per pair



The "NATRASCO" 150-MILE Crystal Set 35/- complete

Crystal sets are not obsolete, far from it. Specially designed with anti-break-through choke for selective reception of modern broadcasting. Slow-motion tuning. Permanent crystal detector. Long and medium waves. Excellent range. Radio-Paris has been clearly received in Walsall. With a pair of S. G. Brown Headphones, you cannot but be delighted with results.

Sole Manufacturers under exclusive licence of S. G. Brown, F.R.S.,

THE NATIONAL RADIO SERVICE

(N.R.S., Ltd.) COMPANY
15-16, Alfred Place, Tottenham Court Road, London, W.C.1
Tel.: MUSEUM 7651 (5 lines)

WORLD RADIO RESEARCH LEAGUE: SECRETARY'S REPORT

Interaction of Radio Waves: the Luxembourg Effect

PROFESSOR V. A. BAILEY's comments on our work (see page 8) and his kind reference to the value of the observations performed by the members of the W.R.R.L. in connexion with the interaction of radio waves, are not only of great interest to us all, but are also highly encouraging. I am sure that we are all very grateful to Professor Bailey for having found time, in spite of the very busy time he is having at Oxford during his short stay in this country, to put these comments on paper.

Our thanks are also due to Professor E. V. Appleton for explaining this fascinating problem to us, for guiding us in the right direction and for being good enough to examine from time to time the accumulated evidence and to comment upon it on several occasions.

My thanks are due to every member of the League who has sent in regular reports in connexion with this problem and who has spent much valuable time in order to aid science. But it should be realised, gratifying as the results already obtained are, that our work is just beginning and that there is still a tremendous amount of work to be done before we are on sure ground. Professor Bailey suggests two additional observations. These are highly interesting and I shall deal with them in my next report.

In the meantime, we shall have to study the Luxembourg and Droitwich effects a little more systematically than we have done up to the present. What I want to find out now is in how many places the effects are manifesting themselves at a given time and date. For this reason I suggest that our members should listen regularly every night between 9 and 10 p.m. during the remaining few days of January and the whole of February. In March we shall change the listening time. Please write your report for each date on a separate sheet of paper and arrange the headings of your columns as follows, at the top of the page: *Name. Qualifications. Address (briefly). Type of receiver. Type of aerial (outdoor, indoor or frame). Date. Time (G.M.T.). Name of wanted station. Its wavelength, frequency, and power. Strength of signal of wanted station. Name of unwanted station. Its wavelength, frequency, and power. Strength of background interference. Strength of signals of the unwanted station direct.* Remarks: cut-off of high notes, nature of fading of the two stations, and anything else that seems to be of importance. A special note may be taken of the behaviour of atmospherics during reception. Please adhere strictly to this programme of reporting and you will facilitate my work to a very great extent, especially that now in addition to the interaction of radio waves I shall have to deal every week with the reports on echoes of long delay, as well as our other problems.

And now the most important point—a point that is not generally realised by our members: *We want negative reports just as much as positive ones.* We want to know the places where the Luxembourg effect does not manifest itself as well as the places where it is heard often. How can we arrive at any geographical conclusions unless you do that? This applies to all our problems and is a point that has been greatly overlooked in the past. Again, if our work is to show quick results there must be a large number of reports from all over the world. We do not want members in name only. We want active members who are prepared to get on with the work. Foreign Hon. Secretaries should point this out in their reports. I do not mind receiving reports in foreign languages, we are in a position to deal with them.

And this reminds me of another point. It is necessary to mention that these W.R.R.L. reports are strictly copyright throughout the world. Foreign official organs of the League have been given permission to use the material *ad lib*, but this does not extend to all journals, unless the material in question is supplied by one of our representatives and appears over his name. Foreign secretaries of the W.R.R.L. may use my reports just as they like, but no one else. The reason I am publishing this warning is that I have noticed in several foreign papers articles quoting our results without even reference to the W.R.R.L.

I congratulate Herr Fuchs, of Vienna, on his article on our work in the paper *Radio*, in which he fully acknowledged the source and has been good enough to reproduce my map. This is very useful as a means of interesting the Austrian radio-fans and getting them to send us reports.

I expect to be able to publish next week a further map showing the distribution of the mid-points in the ionosphere of both the Luxembourg and Droitwich effects. This map is being studied at the moment by Professor Appleton, and I shall go ahead as soon as I get the O.K. from him.

And now let us proceed with the final analysis of the Luxembourg effect.

Frequency of Occurrence of the Luxembourg Effect

The greatest argument in favour of the Luxembourg and the Droitwich effects being an ionosphere phenomenon, is that the effect is not heard every night in any given locality on any given wanted station. If these effects were due to some freak of reception in either a superhet. or a straight circuit, there is no reason why a tuning system of any receiver should behave differently, under given conditions, on Mondays as compared with Wednesdays or Fridays.

From the reports received up to date it is quite obvious that a man may hear the Luxembourg effect on several stations at the beginning of the month, and then search vainly for it for some three weeks, only to rediscover the interference for the next few days. There are members who, in spite of searching for the occurrence of the effect night after night, up to the present have failed completely to discover any traces of it. Thus, for instance, Mr. J. G. Maltby, B.Sc., of Epsom, Surrey, reports that with his o-v-2, although he heard the Luxembourg effect on Stuttgart, he has never succeeded in discovering it on any other stations. And yet members with a similar equipment have heard this effect on other stations, in other localities. Mr. A. J. Douch, of Eden Bridge, Kent, has never heard yet the Luxembourg effect on his superhet.

Miss Mary C. Fair, of Holmrook, Cumberland, one of our most reliable and most consistent reporters tells me that on October 16 she heard Luxembourg on Vienna, but not on any other station. On November 17 and 24 no interference of Luxembourg on Vienna took place. And yet other members have reported this interference manifesting itself in other localities. Mr. W. H. Johnson, of Battersea, London (Sg.-vSg-2 Pen), reports that he could not detect the Luxembourg effect on Cologne on October 14, 15, 18, and 20. Similarly, Mr. Peter C. Laws, of W. Ealing (o-v-1), failed to detect the Luxembourg effect on Cologne on October 17, 20, and 24 when others heard it.

Thus, it is obvious that if we are to clear up

conclusively this point we must study the effects in question every day in as many places as possible simultaneously.

High Note Cut-off

Whilst many members have paid no attention to this point, the following remarks are interesting:—

Mr. E. Burton, Birmingham.—"Luxembourg effect on Munich with high notes cut off on Luxembourg."

Mr. R. Gilbert, Thorpe Bay, Essex.—"Ghost signals caused by the long-wave stations are always deep in tone and entirely lacking in high notes."

H. F. Luscombe, Lowestoft.—"Dull background of Luxembourg on Munich, Stuttgart, Strasbourg, and Beromünster. High notes cut off."

B. J. Slade, Nunhead.—"High notes cut down as compared with bass."

C. Smith, Oldham.—"I heard about quarter strength Luxembourg on Rome devoid of high notes."

Please keep an eye, or rather your ears, on the high notes in the background. This point needs elucidating.

Fading during the Interaction of Radio Waves

This is another interesting point which we must study seriously.

W. J. Hogg, Dublin, tells us that unwanted background is not affected by the fading of the wanted signal. With a set fitted with automatic volume control he found that when the wanted signal fades the unwanted signal increases in strength, sometimes even becoming stronger than the wanted signal.

E. Howard, Cardiff, gives two reports: "Generally wanted and unwanted reception fade out together proportionally as far as I have previously noticed," and later: "Background seems to fade independently of the wanted programme."

J. T. Cory, Duncaster, Yorks—"When Stuttgart faded Luxembourg came in louder."

B. J. Slade, Nunhead.—"Munich remained at the same level while Luxembourg faded." And on another occasion: "When Munich faded Luxembourg also faded proportionally."

C. F. Wickberg, Birkenhead.—"When Munich faded Luxembourg strength kept steady."

E. A. Hayward, Cardiff.—"Munich fades more rapidly than Luxembourg."

G. H. T. Ely, Birmingham.—"Fading of Luxembourg seems to be independent of signal strength of the station interfered with."

H. K. Holmes, Dudley, Worc.—"Munich subject to occasional fades, background also fading but clear and undistorted."

J. Mills, London, S.E.13.—"Luxembourg interference not affected by fading of Vienna signals."

J. N. Owen, Birmingham.—"Six fades on Munich and corresponding six fades on Luxembourg. Luxembourg disappeared when Munich closed down."

As you see, results of observations differ considerably. These sharply divided opinions may be due to the fact that when the wanted station with the superimposed background fades, the background fades automatically. When only the interfering station fades before ionospheric cross-modulation, it appears to fade independently. However, I have not sufficient data in hand on this point to draw any definite conclusion. Please keep this in mind.

RALPH STRANGER.

Member R.S.G.B. Hon. Member Ligue Universelle de Recherches Radio-Electriques (Belgium). Hon. Member International D'X'ers Alliance (U.S.A.).

Space and Matter

By "NEUTRON"

Heat Energy from the Sun

We have had several days recently which have been as dark as night, with the thermometer in the region of zero (Centigrade, not Fahrenheit!). Heat energy from the sun has therefore been conspicuous by its absence. It was on one of these days that I read an account of recent developments in apparatus for the direct utilisation of heat from the sun for power purposes. Needless to say, the apparatus described has not been used in this country, but in the sunnier clime of California. It develops temperatures above 400 degs. F. in twenty minutes, and has been in use at Mount Wilson Observatory, California, for generating steam for power purposes. The heat is collected by means of a system of mirrors and heats up black oil contained in tubes which are protected from loss of heat by double vacuum jackets. The heat is then transferred to a tubular boiler for generating steam, or to a reservoir of oil into which ovens for cooking purposes can be inserted. I understand that it is hoped to develop the apparatus for the economical driving of large steam engines.

Cosmic Rays

At the recent meeting of the American Association for the Advancement of Science at Pittsburg, at which the apparatus referred to in the previous paragraph was described, Dr. R. A. Millikan gave an address in which he stated that he expected that the real nature of cosmic rays would be discovered during the next twelve months. He said that our present knowledge was insufficient to enable us to determine the nature of these rays with any certainty, but that it was safe to say that the rays originated beyond the Milky Way.

Elimination of Electrical Interference

Most of the principal broadcasting countries are now taking active measures to reduce the amount of electrical interference which occurs in radio reception. A big campaign has recently been launched in America by the Radio Manufacturers Association, to convince makers and users of interfering equipment that it is in their own interests, as well as in those of radio listeners, to take steps to ensure that such equipment is made non-interfering. Attention is also called to the fact that whereas efficient aerials are not so necessary with modern sensitive receivers as they were in the early days of broadcasting—from the point of view of signal strength—efficient aerials, arranged to pick up as little electrical "noise" as possible compared with the strength of the required signal, have once more become essential if satisfactory interference-free radio reception is to be achieved.

High Fidelity

Another subject which is very much in the limelight at the present time in America is that of "high fidelity" or purity of reproduction of broadcast programmes. It appears, however, that some difficulty is being experienced in determining the standards to be adopted for high-fidelity receivers. There is also a feeling that, no matter what standards are decided on, some manufacturers would label inferior apparatus as "high fidelity," and the public would be misled. To avoid this difficulty it has been suggested that a new term for receivers which comply with the high-fidelity standards should be invented and protected by copyright. There seems to be a real indication that high fidelity is regarded in many quarters as a desirable development apart from its possibilities as a mere sales "stunt."

A WIRELESS ALPHABET

By "DECIBEL"

Cross Modulation.—Interaction between two electromagnetic waves, or two oscillatory currents, whereby the changes in strength or modulation of one wave, or current, are transferred to the other. For example, if the signals from two transmitters overload the first valve in a wireless receiver, signals sent out by both the transmitters may be reproduced, even if the succeeding circuits are tuned to one transmitter only.

Cross Talk.—When two circuits such as two telephone lines are not completely isolated from each other, and there is coupling between them, speech or music currents carried by either circuit will be transferred to the other circuit, and cross talk will result.

Crystal.—Crystals of certain chemical compounds possess the property of being able to pass an electric current in one direction only, and can therefore be used as rectifiers or detectors of wireless signals. This property is possessed by certain dissimilar crystals in contact with each other, and by certain crystals in contact with a metal. Some crystals, such as quartz, possess the property of being set into mechanical vibration when an alternating voltage of appropriate frequency is applied between two opposite faces of the crystal. The particular frequency at which this effect occurs is determined by the physical dimensions of the crystal. Crystals of this kind are employed to control the frequency of wireless transmitters with great accuracy. This form of frequency control is known as crystal control. Rochelle salt crystals possess similar properties which are utilised in crystal microphones, loudspeakers, and gramophone pick-ups.

Cumulative Grid Rectification.—A method of rectifying or detecting wireless signals in which the rectifying properties of the grid-filament path of a thermionic valve are employed. This method is now usually employed in preference to the anode-bend method of rectification. The low-frequency signal voltages produced by rectification are developed across the gridleak connected between grid and filament (either direct to filament or *via* the high-frequency input circuit) and are amplified by the valve, and reproduced in amplified form in the anode circuit of the valve. A grid condenser is employed to provide a path for the high-frequency signals without by-passing the low-frequency currents produced which are required to flow through the gridleak.

Current.—A flow of electricity along a wire or other conductor. Before the electron or particle of negative electricity was discovered, it was presumed that the direction of flow of current was from a point at a high or positive potential to one of lower or negative potential. According to the electron theory, however, a flow of current is composed of the passage of negative electrons from atom to atom of the conductor, from a point at a negative potential to one at a positive potential. The direction of flow of electrons is, therefore, opposite to that assumed in the original idea of a current flowing from positive to negative. In order to avoid

confusion, the passage of electricity through a thermionic valve is often described as an "electron flow" from cathode to anode, or as a "conventional current" flowing from anode to cathode—that is, from positive to negative. The practical unit of current is the ampere. Current density is the amount of current flowing per square centimetre or square inch of the cross-sectional area of the conductor.

Current Transformer.—A transformer in which a small current in a high voltage circuit is transformed into a larger current at a lower voltage, or *vice versa*. It is often employed for measuring large alternating currents for which suitable meters are not available.

Cut-off.—The limits of frequency above or below which an electrical circuit, or device, ceases to function. A receiver which does not reproduce the higher audio-frequency signals is said to cut off the high notes.

C.W.—Continuous waves.

Cycle.—See Alternating Current. The term is also applied to the period of other motions of an alternating nature, such as sound waves.

D

Damped Oscillations or Waves.—Oscillations or waves in which the amplitude of successive oscillations or waves gradually decreases. (See also Continuous Waves.)

Damping.—When resistance is added to a circuit the amplitude of any oscillations produced in the circuit is decreased and the circuit is said to be "damped."

D.C.—Abbreviation for Direct Current.

D.C.C.—Double Cotton Covered—refers to insulation of wire.

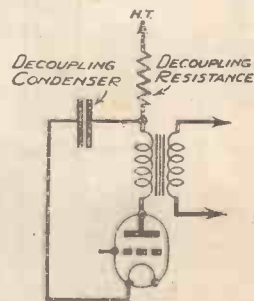
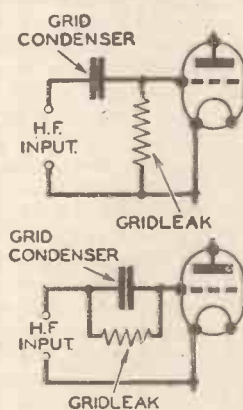
Dead Beat.—A meter is said to be "dead beat" when the pointer is damped by a suitable spring or other means so that it comes to rest quickly when there is any change in the current passing through the meter.

Dead Spot.—It is sometimes found that a receiver is very insensitive at certain parts of the wave-range covered by the receiver. These points are known as "dead spots" and are usually due to the natural tuning of the aerial as distinct from the tuning of the circuits of the receiver.

Deci.—One tenth, as in "decibel." (See Bel.)

DB.—Abbreviation for "decibel."

Decoupling.—A combination of a resistance or choke and a condenser, in which alternating currents are prevented from flowing through a particular circuit by connecting the choke or resistance in the circuit to oppose the flow of such currents which are provided with an alternative path through the condenser. This arrangement is used in modern receivers to prevent alternating currents flowing through circuits such as the H.T. supply, which are common to several stages of the receiver. If adequate decoupling arrangements are not provided, the currents from the later stages of the receiver are fed back to the earlier stages and re-amplified, thus causing instability and self-oscillation of the receiver. (See Motor-Boating.)



Loudspeakers for Churches and Public Rooms

This article deals with the difficulties encountered in obtaining satisfactory reproduction from loudspeakers in large buildings such as churches. Various British manufacturers have developed special loudspeakers for the purpose and a description is given in this article of a combined electrolier and loudspeaker recently developed in Germany as a solution to the problem.

THE propagation of sound waves in the open is fundamentally different from that in a room. In the open, they disperse, whereas indoors they are repeatedly reflected from the walls of the room and produce reverberation for a certain time. Consequently, one hears not only the sounds being radiated from a loudspeaker but also their echo. If the walls of an empty room were to reflect 100 per cent. and not absorb any of the energy radiated to them, the period of reverberation would be infinitely long. Naturally this is impossible, for every time the sound waves are reflected, a certain percentage of the sound—according to the characteristics of the walls—is absorbed, or to be more concise, is converted into heat; hence after a certain number of reflections the sound is completely absorbed and reverberation or echoing is terminated. The larger the room the greater will be the interval between two successive sound reflections. In large rooms, therefore, the period of reverberation until the sound is completely absorbed is longer than in a small room.

Effect of Sound-Absorbing Material

This is especially true of churches—echoing periods lasting ten or more seconds are not unusual. This may be ascribed not only to the size of such buildings but also to the constitution of the "walls" which in every room may be said to embrace the floor and the surfaces of all the objects the room contains, as these also reflect and absorb sound waves. In contrast to inhabited rooms, for instance, the interiors of churches are very sparsely furnished. Apart from this fact, they lack those materials which have very strong sound-absorbing characteristics, such as carpets and curtains. Now the need for very clear speech is particularly pronounced in churches so that the congregation can distinctly hear the words of the preacher transmitted to them through the loudspeaker.

This can only be realised if the reverberation period is short, as otherwise the words being spoken and the echo of previous words will be superimposed on each other and become unintelligible.

In sound-film cinemas and similar buildings the actual reverberation period—provided it does not exceed that which is desirable by too great an extent—can be curtailed. Thus, the room can be furnished with a sufficient quantity of materials which absorb the sound to a large degree. There is no need to resort to carpets and curtains to produce this effect. In fact, slabs made from natural fibres which possess pronounced sound-absorbing properties, can be fitted on the walls, thereby reducing the reverberation period very considerably. However, to reduce to a reasonable value the long reverberation periods which usually prevail in churches, vast surfaces would have to be lined with such material; this would not only involve tremendous expense, but would also not be at all compatible with the architectural aspects.

Recently, a much simpler and equally effective solution has been found for this problem. If the sound radiated from a loudspeaker first strikes a surface possessing pronounced sound-absorbing properties, and is thereupon reflected to other surfaces having much smaller absorbing powers, the sound will already be so greatly weakened that its echo will be audible for only a negligibly short time. In the first place, therefore, provision must be made for the sound waves to be directed towards a surface with strong sound-absorbing properties. Such a surface exists in every church during the services, namely, the surface "covered" by the seated or standing congregation. The clothing of everyone in the congregation is composed of effective sound-absorbing material. An average man, for instance, wears about three and a half square yards of suiting. The "occupied surface" of the floor absorbs the sound even better than the very best wall lining, for only one square yard or, when using pleated curtain, perhaps two square yards of material can be placed on one square yard of wall, whereas one square yard of floor can be occupied by at least four persons who together represent approximately fourteen square yards of good sound-absorbing material.

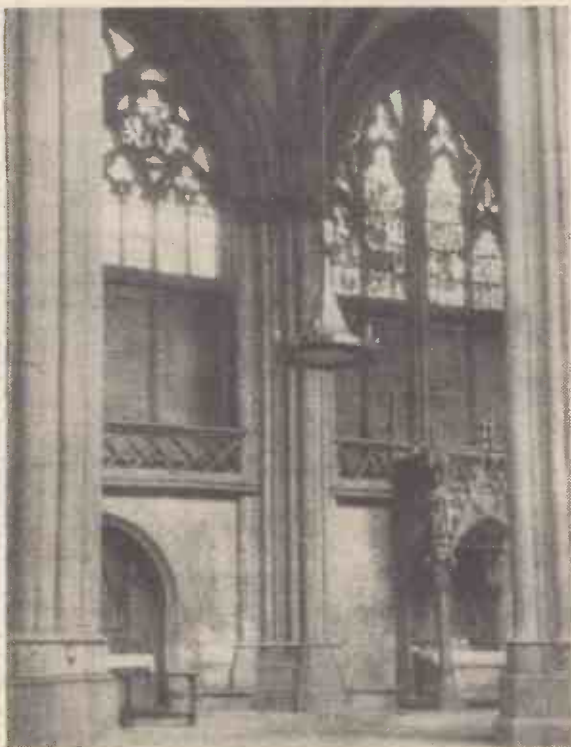
The realisation of this fact prompted the idea of constructing a loudspeaker which is placed above the congregation and radiates the sound downwards. The angle of dispersion or "cut-off" must not exceed a certain amount so that the sound can on no account strike the sides of the room, thereby producing undesirable reverberation. At the same time, however, this angle must not be too confined, in order to cover a sufficiently large area of the congregation. Finally, the volume of the sound within the angle of spread should be as uniform as possible, viz: the people directly under the loudspeaker

should not be harassed by an excessive volume of sound. The formulation of these conditions reveals that, in view of the varying architectural design of churches, it is impossible to use only one type of loudspeaker, but that it is essential to construct several types possessing different angles of spread and to adjust the loudspeaker to the characteristics of the particular church or room by suspending it slightly higher or lower, as the case may be.

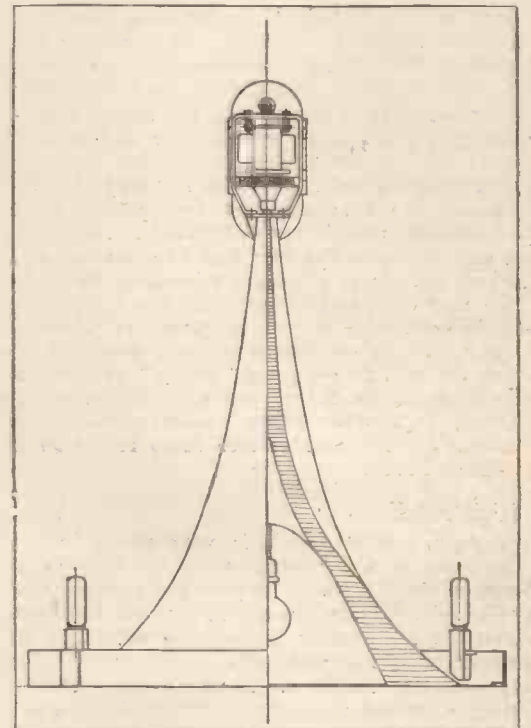
Recently, the Telefunken Company of Berlin satisfied these conditions by evolving the electrolier type of loudspeaker which can be suspended in the desired positions and possesses the shape of a horn directed towards the floor of the church. To ensure that people directly under the horn are not deafened by an excessively large volume of sound, the horn contains a device which prevents radiation along the centre axis of the unit and only allows the sound to be emitted at the edge of the horn. Consequently, inside the horn there is a free space which can be used for lighting purposes by incorporating high candlepower lamps. A harsh light can be prevented by covering the aperture of the horn by a piece of material; and by adopting a plain but artistic design, this combination of electrolier and loudspeaker will fit in admirably with the style of any church. It has thus been possible to render



A lantern type of loudspeaker made by Tannoy Products



Electrolier loudspeaker in the Cathedral at Regensburg



Arrangement of the Telefunken loudspeaker and electrolier

the acoustics of churches which had hitherto been deemed to be particularly poor in this respect, really effective without having to undertake expensive alterations or without disturbing the architectural effects.

R. W. P. L.

THE SHORT WAVES

Smooth Reaction in Short-Wave Receivers

SHORT-WAVE receivers of the "straight" type depend for their sensitivity, and to a certain extent for their selectivity, on reaction control. For ease of operation and maximum sensitivity, the reaction should be perfectly smooth so that the receiver slides easily into and out of a state of oscillation.

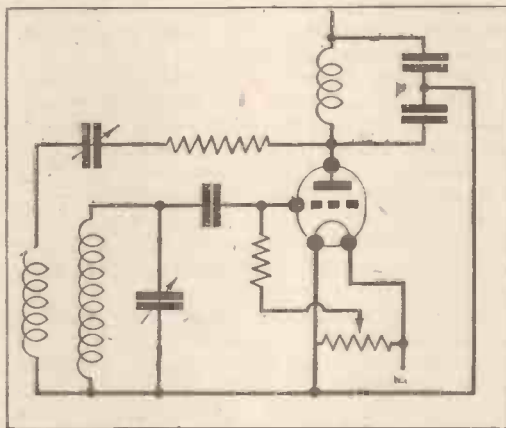
As the reaction is advanced a slight hiss should be heard before the set slides into oscillation, while in the case of a gridleak detector a meter connected in the anode supply circuit should show a gradual decrease in current. No "plop" or sudden howl should occur if the reaction knob is rotated slowly, and oscillation should cease at the same point at which it began; that is to say, without what is known as "overlap." If oscillation begins with a "plop" and the condenser has to be reduced two or three degrees before it stops again, it makes it impossible to work the set at its most sensitive point when distant and weak transmissions are to be received. Since much short-wave searching is carried out with the set on the verge of oscillation, it will be seen that the simple straight type of receiver is only as good as its reaction control.

There are many possible cures for these unwanted reaction effects, but one should be sure before trying them that the H.F. choke is a good one and is not responsible for the trouble, or part of it. An anode by-pass condenser should be connected between the anode of the detector valve and earth, and it is often an advantage to connect an additional by-pass condenser between the output of the H.F. choke and earth. A suitable value for both these condensers is 0.0002 μ F; too large a capacity would interfere with the high-note response of the receiver.

Parasitic oscillation in the detector, which is a cause of unstable reaction, may be reduced or cured by the addition of a resistance in series with the reaction condenser. Different values should be tried for this resistance until one is

found which is effective over the range of wavelengths it is desired to receive. The value will probably lie between 250 and 600 ohms, depending on the type of receiver and the values of by-pass and reaction condensers.

Reduction of the H.T. voltage on the detector valve may help to smooth the reaction, and a higher value of de-coupling resistance may be tried. Different values of gridleak and grid-condenser should also be tried, and the substitution of a condenser of 0.00015 μ F or 0.0002 μ F for a condenser of lower capacity may effect an immediate cure. The connexion of the gridleak return to the negative instead of the positive end of the filament frequently effects a cure, but results in loss of volume. A much better idea



Illustrating the additions referred to in the article

is to connect the gridleak to the slider of a potentiometer connected across the filament supply. By variation of the slider a position may be found which is a compromise between perfectly smooth working and maximum volume. A suitable value for this potentiometer would be 200 ohms.

A. W. B.

American Listeners' Favourite Stations

ACCORDING to a recent short-wave survey conducted by the Philadelphia *Inquirer*, Daventry is the favourite spot on the short-wave dial for listeners in the American Middle-Atlantic States. The survey also showed that "fans" of the Philadelphia area and the densely populated suburbs were greatly pleased with reception from overseas short-wave stations generally.

Eighty per cent. of Philadelphians cast their vote as being highly pleased with the quality and volume of trans-Atlantic short-wave reception; 11.7 per cent. stated that they were indifferent about short-wave reception, listening on these bands at times but not making any regular practice of it. The remaining 8.3 per cent. of those who co-operated in the survey were discouraged or disappointed with their foreign "dial trotting."

In answer to the question, "What overseas station do you listen to most?" the following were the final tabulations: The Daventry Empire transmitters, carrying B.B.C. programmes, proved to be the favourite with all-wave set owners. Forty-four per cent. of the entire audience stated that they always first set their dial to one or other of the British stations. The short-wave stations of Germany ran a fairly close second, gaining thirty-five per cent. of the ballot. EAQ, Madrid, Spain, was third choice, with eleven per cent.

Strangely enough, the Philadelphia listeners are more interested in the short-wave stations of

far-away Australia than those of France, Italy, Portugal or South America. The "VK's" polled four per cent. of the votes, as the world's favourites, closely followed by stations of the other countries mentioned above.

In fairness to Italy, however, which has just inaugurated a new system of short-wave transmissions, it should be mentioned that, at the time of the survey Rome was not on the air at all and thus had little chance to figure in voting. Holland, too, with its 19-metre PCJ now being much enjoyed in America, was not heard then.

England's popularity lies in the fact that the programmes broadcast are so varied and compare more closely to the type of broadcasting familiar to Americans than those of any other trans-oceanic stations. The news bulletins and short talks were commented upon favourably by listeners, as were the "special event" transmissions. There was little criticism of Daventry's musical fare. Many listeners indicated that when weather conditions are favourable, they often forsake local programmes to tune in London's dance tunes or the smooth symphony type of presentations.

Daventry and Zeesen are running a close contest for offering the clearest and most consistent signals. It appears that the lovers of classical music, as a whole, prefer the German transmissions.

G. M. L.

Lyndhurst, VK3LR

THE transmitting station at Lyndhurst, Australia, is on the site of one of the outdoor laboratories of the Research Department of the Australian Post Office, about twenty-five miles south-east of Melbourne. Using the call-sign VK3LR, the station at present broadcasts regularly on 31.32 metres, although able to work on other wavelengths if desired. The 31.32 m. wave has, however, been found to be the most satisfactory. When the station is carrying out experimental work, it uses the call-sign VK3XX.

The equipment used for broadcasting consists of an electron-coupled oscillator, the output of which, suitably amplified by a screened-grid transmitting valve, is modulated, and followed by two further stages of radio-frequency amplification. The last stage is connected in push-pull, and permits of an unmodulated carrier power of 600 watts being delivered to the aerial.

Several radiating systems are employed at the station for experimental purposes, being fed by radio-frequency transmission lines from the output of the transmitter. The aerial now in use consists of a horizontal half-wave doublet, the true bearing of which is N.5° 30' E.

This station usually takes its programmes either from 3AR or 3LO at Melbourne. Reception reports should be sent to the Chief Engineer's Office, Postmaster-General's Department, Treasury Gardens, Melbourne, C.2.

R. L.

SOUND AMPLIFICATION

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DRY H.T.

Standard Wet Batteries end on an 1 for all the bother and expense of constant H.T. renewals and falling reception. 100% pure current. Cheap replenishment at intervals of a year or more. No extra accumulators. "12 months service when an ordinary dry battery lasted 7 weeks and it is streets ahead of Dry H.T. for television."

Any Voltage supplied. says R.S. 120v, 12,500 m.a. £2 carr. paid. H.P. terms arranged. Watco L.T. Battery, £1 carr. paid. Lists free from WET. H.T. BATTERY CO. (W.R.), 95 Dean St., Oxford St., W.I. Gerrard 6121.

Short-Wave News Reel

The White Paper

As a result of the notice in WORLD-RADIO concerning a special relay from VUB, Bombay, I tuned in to that transmitter on Friday, January 18, at 4.30 p.m. The speaker—His Excellency, Lord Brabourne, Governor of Bombay—in his address on the "White Paper," spoke chiefly of the Federal Government of India, and was loudly applauded for many of his remarks. After concluding his speech a vote of thanks was proposed to him, following which a few humorous stories were told in typically English political style.

Then followed the station call and a programme of dance music, one of the tunes of which was "Let's Fall In Love"—a fitting number for the occasion. My receiver is a three-valve broadcast set and the "WORLD-RADIO Battery Heptode S.W. Converter." Reception was R8 on the loudspeaker.

Newcastle-on-Tyne. N. G. H.

ON hearing the words: "It gives me the greatest pleasure to call upon his Excellency" at 5.35 p.m., on January 18, on the 31-metre band, I realised that it was the beginning of the special broadcast as announced in WORLD-RADIO. Lord Brabourne, Governor of Bombay, in addressing "Mr. Chairman, and members of the Bombay Rotary Club," conveyed hearty greetings from that city to Rotarians in all parts of India.

Speaking on "The White Paper," his Excellency mentioned the probable division of opinion throughout India. He said: "Tonight we are merely abstracting from the Report of the Joint Committee." On the supposition that it would be adopted in principle, he hinted at the future political solidarity of India, depending "on a very much larger franchise than it does to-day." He spoke of the Constitution of the home country as having been moulded over centuries, yet "we are endeavouring to do so in a few weeks." In the new scheme he foresaw "ministers only too ready to do their utmost for the people," with Governors working in close co-operation. In concluding, his Excellency referred to accusations directed at the British Government, and begged them, before choosing, to ask the question: "Is British endeavour in the past justifying those accusations."

In the vote of thanks which followed, his Excellency's speech was referred to as a "vocational speech," and a lighter vein prevailed, the speaker "bringing the house down" with two humorous stories. The relay concluded at 5.15 p.m.

Barnsley Yorks. R. H.

An Hour with VK2ME

THIS afternoon (January 13) at 3 p.m. I thought I would see what the 31-metre band had to offer, and immediately ran into a very loud signal which I presumed to be DJA. My surprise and elation were great when I heard the call "VK2ME, Sydney, Australia—The Voice of Australia," followed by the laugh of the kookaburra. The programme of records included some very old favourites. After the records the announcer told us interesting facts about Queensland and New South Wales; their agriculture, mining, and fruit-growing industries.

While the weather news was being read, I envied the Australians who were in a temperature of seventy degrees of sultry weather! More records followed and we heard the B.B.C. Wireless Military Band, Jack Hylton, and Quentin Maclean.

The time was announced as "two minutes to two, Monday morning," and the voice of

tomorrow closed down with the laugh of the kookaburra, the National Anthem, and the announcer's "Good-morning, Good-afternoon and Good-evening, everybody!"

VK2ME's signal never fell below R7, which was, I thought, pretty good for a two-valve set working on an indoor aerial! Who wouldn't boast a little after this?

Hull.

J. A. H.

Economic Progress in Brazil

For those short-wave listeners who interest themselves in economic problems of the day, an opportunity exists on many nights of learning something of developments in Brazil, by tuning in to PRF5, Rio de Janeiro. Talks are given on relevant subjects not only in the national language, Portuguese, but also in English, French, German, and Spanish.

The talk on January 14 covered a wide field of economic activity. It was interesting to learn that various types of cereal have been developed, particularly suited to Brazilian conditions. It had been possible, the announcer informed his audience, not only to grow such European fruits as apples and pears, but also oranges and certain types of plum. Dried fruits were being exported, comparable with those produced elsewhere.

Industrial production, too, was growing apace, particularly of textiles. The vast and highly suitable grazing space available lent itself to the rearing of cattle, and those states concerned had concluded special arrangements with the Federal Government for adequate hygienic supervision of cattle and of the production of tinned and frozen meat and other meat products. From time to time the "pill" of economics was "sugared" with an interlude of recorded tangos and other characteristic music of the country.

Hove, Sussex.

M. S.

Pennsylvania's New Governor

Noticing that W8XK (19.72 m.) was not transmitting its advertised programme on the afternoon of Tuesday, January 15, at 4.45 p.m., I listened for a time and discovered that the installation of the new Governor of Pennsylvania was about to be relayed. A commentator was describing the scene prior to the arrival of the new governor, and he had apparently reached the end of his remarks. A burst of cheering signified the appearance of the governor-elect, and the microphone was immediately turned over to Senator Roberts, the official government representative, who was to take charge of the ceremony.

The Rector of the Church of the Redeemer offered a few appropriate prayers, followed by the Chief Clerk of the Pennsylvania Senate, who read the certificate of election, stating that "At the general election held on November 6, 1934, the Hon. George H. Earle had been elected Governor of the Commonwealth of Pennsylvania." The Chief Justice of the Supreme Court, Robert Fraser, administered the oath of office, which the governor repeated in a clear voice, perfectly audible throughout. Lieutenant-Governor Kennedy read the proclamation, which led up to the climax of the ceremony, the pronouncement by Senator Roberts, "Citizens of Pennsylvania, your new Governor," which was received with tremendous cheers. Governor Earle then made his maiden speech in his official capacity, during which he pledged himself to serve the interests of the state and people to the best of his ability. At approximately 5.30 p.m. this simple but impressive ceremony terminated.

Builth Wells, Wales.

R. M. J.

A Short-Wave Log

RECEPTION was poor throughout Sunday, high noise level prevailing on the 31 and 49-metre band. VK2ME was a poor signal at 2 p.m., but reached R5 later. Nothing whatever was to be heard of W3XAL on 16.87 metres, while W8XK (19.72 metres) was only R2. Both DJA and DJN were R9 and, together, occupied 4 degrees on my receiver dial!

Monday brought much better results. W3XAL reached R6 at 2.50 p.m., DJB was at quite good strength at mid-morning, and FYA was heard at R4 in the evening, while PRF5 was R4 at 10.30 p.m.

Tuesday. W8XK was a bare R3 at midday, shortly afterwards falling well below R2. W3XAL provided an excellent signal at R7-8 during their one-hour transmission from 2 to 3 p.m. W8XK was "moderate" at 5.45 p.m., and HJV (50.26 m.) came in at good strength at 7 p.m.; but extremely high noise level spoilt reception. RW59, the Moscow station, was a good R8 signal from 7 to 9 p.m. but, as usual, we had "49-metre-band conditions."

Wednesday brought excellent trans-Atlantic results. W3XAL was received splendidly (R8) from 2 p.m. until closing down. W8XK came in rather poorly and at 4 p.m. had only reached R5. It is curious that this station has been rather weak of late. RNE, on 25 metres, was excellent at 10.30 a.m., and HJV (19.84 m.) was R9 for their short morning transmission. Static on 49-metre band was so bad on this day that there is nothing to report.

Thursday yielded scarcely any different results from the previous day. W3XAL was again good, but, strangely enough, Vatican City (19.84 m.) was about R1, an extraordinary change from the previous day. PRF5 (Rio), was a pleasant finish to the day's reception.

Friday. Very little to report, both W3XAL and W8XK being fairly intelligible for most of the day.

Saturday was a day of extremely good short-wave reception until 4 p.m., when VUB (Bombay) began at R3, accompanied by a heterodyne from W1XAZ, the latter becoming R5 at 5.30 p.m. An hour later W2XAF was received, announcing *Tannhäuser*, which was about to be relayed from the Metropolitan Opera House in Broadway. EAQ (30.43 m.) was heard at about R6 during the evening.

Graveley, Huntingdon.

P. S.

The items in the above log were received on the loudspeaker with a 4-valve battery-operated receiver—SG-v-2 (pentode output)—by one of our readers, aged fifteen years.—ED.

Special Broadcasts

HP5B, Panama

A special broadcast, dedicated to the International Dx'ers Alliance, will take place on January 27 from 2.30 to 3.30 a.m. (G.M.T.). It will be from the new Panama station HP5B, which uses a power of 150 watts on 6,030 kc/s (49.75 m.). Reports should be sent either to Mr. W. Warner, 56, East Grove Road, St. Leonards, Exeter, Devon, or to Station HP5B, Apartado 910, Panama City, Panama.

Basle Radio Club

On February 13, from 10 to 11 p.m. G.M.T., the Radio Club of Basle will broadcast a special programme dedicated to the International Short Wave Club. The frequency will be 7,118 kc/s (42.14 m.), 50 watts, and the call-sign HB9B. Reports are requested to Radio Club of Basle, Post Box No. 1, Basle, Switzerland.

TO OUR READERS—Kindly mention "World-Radio" when replying to advertisements

Below 100 Metres

By "MICROM"

(January 14-20)

CONDITIONS during the past week or so have been considerably improved by the appearance of another sunspot, or rather group of spots, on January 10-11.

One of the best DX signals on Monday evening, January 14, was PRF5 (31.58 m.), and it was of interest to note that WAFF, a New York commercial, and WCN, the New York 'phone channel, were both good signals on approximately 58 metres. W8XK on 48.86 metres was, as usual, badly interfered with by RKK, but Rome (1RA or 2RO?) was exceptionally strong at R10, although accompanied by the usual carrier hum.

At 8 p.m. on Tuesday, Rome on 30.67 metres was excellent at R10, with deep, occasional fading and good quality; at this time, too, the performance of WIW on 29 metres was indicative of the relatively high ionisation levels obtaining. Later, CTIGO and W8XK (48.86 m.) were heard well at the bottom end of the 49-metre band; W8XK was good, 100 per cent. intelligible at 9.30 p.m., but spoilt as usual by RKK.

On Wednesday evening I listened to the aerial tests on GSB at Daventry, aerial "N" for Nigeria being stronger and slightly steadier than "O" for Ottawa, although both were strong, steady signals. Similarly on GSA later, after 11 p.m., aerial "Q" for Quebec was found to be steadier and stronger than aerial "R" for Rhodesia. Rome was again a very strong signal at 8 p.m., but was subject to strong morse interference from EAM, Madrid.

No watch was kept on Thursday, but on Friday conditions still appeared to be good. Both DJA and DJN were very good signals in the 31 m. band at 2 p.m. on Saturday afternoon and good signals were received from commercials as low (sic) as OPL, Leopoldville on 14.28 metres.

Sunday, January 20, saw quite a lot of short-wave activity; VK2ME, Sydney, for example, peaked to an excellent signal between 2 and 3 p.m. VK2ME's modulation level, and also quality, seemed to have improved tremendously recently, besides the increase in signal strength between 2 and 3 p.m. W8XK on 13.93 metres was a fair signal at times between 2 and 3 p.m. and W3XAL on 16.87 metres was also heard.

A new Venezuelan station, possibly YV5RMO, has been heard fairly well recently between DJC and GSA on 6,030 kc/s, 49.75 metres, and on Sunday night at 12.30 a.m. (Monday) W1XAL, a good signal on 49.67 metres, was heard carrying out tests. Late on Sunday evening HAT, Budapest, was a good, steady, strong signal on 55 metres.

The group of sunspots which appeared on January 10-11 should have crossed the solar meridian on January 18 to disappear "over the edge" about seven days later (January 25). Actually the spots "faded away" on Jan. 22, before reaching the edge of the disc. A falling-off in conditions should therefore be noted from about that date—failing the appearance of further spots.

Readers are reminded, whilst on this subject, that February in each year is always marked by a large increase in solar activity—so polish up the 10-metre tuning coils!

Finally—a word about VUB, Bombay, on 31.36 metres. This station has been coming through fairly well in the late afternoons recently, but is rather spoilt by a 5 kc/s heterodyne from DJA. A selective superhet is able to separate these two stations, however, sufficiently well to enable one to hear the Bombay programme quite well, in spite of the rather persistent whistle from Berlin.

A New Weekly Feature

WE give below the first of a series of Short-Wave Station Identification Panels, which forms a new WORLD-RADIO feature for short-wave listeners.

Daventry (ENGLAND)

CALL-SIGN	WAVELENGTH	FREQUENCY
GSA	49.59 m.	6,050 kc/s
GSB	31.55 m.	9,510 kc/s
GSC	31.32 m.	9,580 kc/s
GSD	25.53 m.	11,750 kc/s
GSE	25.29 m.	11,860 kc/s
GSF	19.82 m.	15,140 kc/s
GSG	16.86 m.	17,790 kc/s
GSH	13.97 m.	21,470 kc/s
GSI	19.66 m.	15,260 kc/s
GSJ	13.93 m.	21,530 kc/s
GSL	49.1 m.	6,110 kc/s

Power: 10 to 15 kW
 Opening Call: "This is the British Empire Broadcasting Station at Daventry"
 Interval Signal: Bow Bells
 Closing Item: National Anthem
 Announcer: Man
 Language used for announcements: English
 Postal Address: British Broadcasting Corporation, Broadcasting House, Portland Place, London, W.1.

(Reception reports are invited)

Correspondence

"The Voice of Australia"

To the Editor of WORLD-RADIO

SIR,—I wish to report excellent reception of VK2ME, Sydney, Australia, to-day, January 20. I picked up this station at 2.30 p.m. G.M.T. and enjoyed the excellent selection of records and two short talks on surf-bathing and surf life-saving. I regard this as my greatest thrill in short-wave listening, particularly when, at 3 p.m. G.M.T., the announcer told listeners it was 1 a.m. Monday morning in Australia.

The volume was amazing, and fading and atmospheric negligible. The concluding musical item was a record of the Massed Military Bands, followed by the laughing Kookaburra and National Anthem.

Yours faithfully,

Manchester. J. E. W.

To the Editor of WORLD-RADIO

SIR,—The "Voice of Australia," Sydney, VK2ME, on 31.28 metres, was clearly heard in Wallasey, Cheshire, from 2.45 p.m. to 4 p.m. on Sunday, January 13. Reception improved from R3/F/X to R5-6/F/N. The programme consisted mainly of gramophone records interpolated with interesting facts about Tasmania, New South Wales, and Queensland. "I might mention that it is raining very heavily outside at the moment," the announcer kindly informed us at one point in the programme. VK2ME closed down at 4 p.m. G.M.T. (or as the announcer stated "It is now 2 a.m. Monday morning, January 14, 1935"), with the call of the kookaburra, followed by the National Anthem and "Good morning, Good afternoon, and Good-night" from the announcer. 'Tis true that distance lends enchantment, and there is no denying the thrill of listening to a voice over 10,000 miles away.

Yours faithfully,

Wallasey, Cheshire. T. V. W.

Short-Wave Reports

To the Editor of WORLD-RADIO

SIR,—I enclose my short-wave report for January 12 and 13, hoping that it will prove of interest to other readers. My set is an SG-v—pen. with loudspeaker and outdoor aerial.

- Jan. 12—3.30 p.m. W8XK (19.72 m.) R8/FS/N. Man Talking.
- " 12—3.45 p.m. FYA (19.68 m.) R5/FR/N. Music.
- " 13—3.40 p.m. DJN (31.45 m.) R9/N/N. Orchestra.
- " 13—3.46 p.m. VK2ME (31.28 m.) R9/FR/N. Records, Call, Close.
- " 13—4.07 p.m. GSB (31.55 m.) R7/FR/X. Lady Singing.
- " 13—4.15 p.m. W8XK (19.72) R6/FS/N. Service.
- " 13—4.17 p.m. CTIGO (24.2 m.) R9/FFS/N. Music, Anthem and Close.
- " 13—4.36 p.m. OXY (49.5 m.) R9/FFS/X. Address.
- " 13—4.39 p.m. CTIGO (48.4 m.) R9/N/X. Singing and Orchestra.
- " 13—4.44 p.m. LKJ1 (48.94 m.) R8/N/X. Orchestra.
- " 13—4.52 p.m. RW72 (45.38 m.) R8/FFR/X. Man Talking.
- " 13—4.57 p.m. DJC (49.83 m.) R9/FS/X. Interval Signal, and Call.
- " 13—5.07 p.m. W1XAZ (31.35 m.) R5/FR/X. Variety.
- " 13—5.25-6.30 p.m. W2XAF (31.48 m.) R8/FFR/X. Judge Rutherford from Los Angeles.
- " 13—10 p.m. W8XK (48.86 m.) R6/FR/XX. Man Talking.
- " 13—11 p.m. GSC (31.3 m.) R8/FR/X. Big Ben and Call.
- " 13—11.27 p.m. DJA (31.38 m.) R5/FRR/X. Vernou Bartlett.

Yours faithfully,

Ryde, I.W. A. W. S. F.

To the Editor of WORLD-RADIO.

SIR,—The following report may be of interest to other readers in my district:—

- Jan 12—12.45 p.m. LKJ1 (31.45 m.) R8F/XX. Talking.
- " 12—2.25 p.m. W3XAL (16.87 m.) R8/FFR/N. Dance music.
- " 12—10.40 p.m. PRF5 (31.58 m.) R7/N/X. News.
- " 12—10.42 p.m. GSB (31.55 m.) R6/N/X. Dance music.
- " 12—10.45 p.m. W8XK (48.86 m.) R6/N/X. Call.
- " 12—10.55 p.m. RW59 (50 m.) R8/N/X. Call and anthem, close.
- " 12—11.14 p.m. COC (49.92 m.) R6/N/X. Call in English.
- " 12—11.22 p.m. DJC (49.83 m.) R8/N/X. Orchestra.
- " 13—2.21 p.m. VK2ME (31.28 m.) R8F/X. Call and organ.
- " 13—2.32 p.m. DJA (31.38 m.) R8F/X. Election report in German.
- " 13—4.50 p.m. LKJ1 (48.94 m.) R8N/X. Orchestra.
- " 13—5.2 p.m. OXY (49.5 m.) R7N/XX. Church Service.
- " 13—7.15 p.m. W1XAZ (31.35 m.) R5FS/N. Call and talk.

My receiver is an SH6. Reception on loudspeaker.

Yours faithfully,

Newport, Mon. W. W. D. M.

To the Editor of WORLD-RADIO

SIR,—The following report of stations logged during the past few days may be of interest to other readers in this district. Receiver is o-v-2 with 'phones and outdoor aerial.

- Jan. 12—4.35 p.m. VUB (31.36 m.) R5/F/N. Call.
- " 13—1.55 p.m. HAS3 (19.52 m.) R6/F/N. Call in English.
- " 13—3.59 p.m. VK2ME (31.28 m.) R7/F/N. "God Save the King."
- " 14—12.5 p.m. DJN (31.45 m.) R9/N/N. News in English.
- " 14—12.10 p.m. W1XAZ (31.35 m.) RL/F/N. Call.
- " 14—12.15 p.m. GSE (25.29 m.) R5/F/N. Organ.
- " 14—1.50 p.m. W8XK (13.93 m.) R5/F/N. Landt Trio.
- " 14—2.0 p.m. W3XAL (16.87 m.) R7/F/N. Breakfast club.
- " 14—2.15 p.m. FYA (19.68 m.) R5/F/N. Talk.
- " 14—2.20 p.m. PHI (25.57 m.) R8/N/N. Records.
- " 14—4.10 p.m. W1XAL (19.67 m.) R6/FF/N. Talk.
- " 14—5.15 p.m. DJC (49.83 m.) R9/N/X. Programme summary.
- " 14—5.18 p.m. VQ7LO (49.5 m.) R7/F/X. Talk.
- " 14—10.55 p.m. W3XAL (49.18 m.) R6/F/X. Orphan Annie.
- " 14—11 p.m. 2RO (49.3 m.) R9/N/N. American hour.
- " 14—11.5 p.m. LKJ1 (48.94 m.) R7/F/X. Records.
- " 16—9.50 a.m. RW59 (25 m.) R8/N/N. English Talk.

Yours faithfully,

Prestatyn, N. Wales. G. J.

To the Editor of WORLD-RADIO

SIR,—The following report may be of interest to other readers:—

- Jan. 16—11.1 p.m. 2RO (49.3 m.) R9/N/N. Wavelength given as 49.2 metres.
- " 16—11.33 p.m. COC (49.92 m.) R8/FR/X. Call in English.
- " 17—11.10 p.m. PRF5 (31.58 m.) R7/FRR/N. Call.
- " 17—11.24 p.m. EAO (30.43 m.) R9/F/N. Call.
- " 18—12.4 a.m. CT1AA (31.25 m.) R8/FR/N. Call in English and close.
- " 19—8.50 a.m. VK3LR (31.32 m.) R4/FR/N. Market prices.
- " 19—2.25 p.m. W8XK (13.93 m.) R6/FFFR/N. Singing.
- " 19—2.50 p.m. W3XAL (16.87 m.) R9/FFR/N. "Singing in the rain."
- " 19—4.45 p.m. VUB (31.36 m.) R6/FFR/N. Native singing.
- " 19—5.26 p.m. GSA (49.59 m.) R9/N/N. Ambrose and his Orchestra.
- " 19—5.41 p.m. VQ7LO (49.5 m.) R4-5/FR/N. Recording of the London Palladium Orchestra.
- " 19—10.45 p.m. W3XAL (49.18 m.) R9/FR/X. Call and Ranch Boys.
- " 19—10.55 p.m. W8XK (48.86 m.) R8/FR/X. Ranch Boys.
- " 19—11 p.m. VE9GW (49.22 m.) R4/F/X. Call.
- " 20—1.20 p.m. HAS3 (19.52 m.) R9/FFS/N. Asking for reports.
- " 20—1.32 p.m. VK2ME (31.28 m.) R3/FFF/N. Orchestra.
- " 20—6.10 p.m. W8XK (19.72 m.) R6/FFR/N. Tenor.

Receiver is o-v-2 with 'phones and outdoor aerial.

Yours faithfully,

Hayward's Heath, Sussex. D. R. W.

SHORT-WAVE BROADCASTING STATIONS

This list includes stations which broadcast regularly on wavelengths below 100 metres. Where ascertainable the times of operation are given in G.M.T.

m.	kc/s	kW	Station	Dial Readings	m.	kc/s	kW	Station	Dial Readings
84.67	3543	0.15	Mozambique (East Africa) CR7AA. MON., THURS., SAT., 6.30-8.30 p.m.	.....	46.3	6480	0.1	Cali (Colombia) HJ5ABD.	.....
		0.18	Kuala Lumpur (F.M.S.) ZGE. SUN., TUES., and FRI., 11.40 a.m.-1.40 p.m.	.....	45.38	6610	10	Moscow RW72 (Russia).	.....
75	4000	0.05	Ponta Delgada (Azores) CT2AJ. WED., SAT., 10 p.m.-12 m'nt.	.....	45.31	6620	..	Riobamba (Ecuador) PRADO. FRI., 2-4 a.m.	.....
73	4110	0.5	Quito (Ecuador) HCJB. 12 m'nt-3 a.m.	.....	45	6667	0.2	Guayaquil (Ecuador) HC2RL. SUN., 10.45 p.m.-12.45 a.m.; TUES., 2.15-4.15 a.m.	.....
70.2	4273	20	Kharbarovsk RV15. 6 a.m.-2 p.m.	.....	43	6976	..	Madrid EA4Q. TUES., SAT., 10 p.m.	.....
58.31	5145	..	Prague OK1MPT. Experimental.	.....	41.9	7150	0.3	Manizales (Colombia) HJ4ABB.	.....
55.56	5400	20	Budapest (Hungary) HAT. MON. 1-2 a.m.	.....	41.8	7177	0.5	Lobito (Angola) CR6AA. WED., SAT., 7.30-9.30 p.m.	.....
52.7	5692	0.5	Tananarive (Madagascar) FIQA. D'ly (ex. SUN.), 8-8.45 a.m.; 3-4 p.m.; SAT., 5.30-7 p.m.; SUN., 7.30-8 a.m.	.....	41.6	7211	0.2	Tenerife Radio Club EA8AB.	.....
51.28	5850	..	Maracaibo (Venezuela) YV5RMO. 5-6 p.m. 10.30 p.m.-3 a.m.	.....	38.48	7797	20	Radio Nations (Switzerland) HBP. SAT., 10.30-11.15 p.m.	.....
50.85	5900	0.05	Medellin (Colombia) HJ4ABE, 12 m'nt-4 a.m.	.....	37.33	8035	10	Rabat (Radio Maroc) CNR. SUN., 8-10.30 p.m.	.....
50.27	5968	10	Vatican City (Italy) HVJ. Daily, 7-7.15 p.m.	.....	31.58	9500	15	Rio de Janeiro PRF5. 10.30-11.15 p.m.	.....
50.16	5980	0.2	Santo Domingo (D.R.) HIX. D'ly at 12 n'n; WED., SAT., 1.10 a.m.; SUN., 12.38 p.m.	.....	31.55	9510	3	*Daventry GSB.	.....
50.08	5990	..	Caracas (Venezuela) YV4RC.	.....	31.48	9530	40	Melbourne (Australia) VK3ME. WED., 10-11.30 a.m.; SAT., 10 a.m.-12 noon.	.....
50	6000	0.3	Barcelona Radio Club (Spain) EAJ25. SAT., 8.30-9.30 p.m.	.....	31.45	9540	1	Schenectady (N.Y.) W2XAF. 11.30 p.m.-4 a.m. SAT., 7-10 p.m.	.....
49.96	6005	4	Moscow RW59. 8-11 p.m.	.....	31.38	9560	5	Jeløy (Norway) LKJ1. 10 a.m.-1 p.m.	.....
49.92	6010	0.25	Montreal VE9DN. 4.30-5 a.m.	.....	31.36	9565	5	Zeesen (Germany) DJN. 8.45 a.m.-12.15 p.m.; 1-4.30 p.m.; 10.15 p.m.-3.30 a.m.	.....
49.85	6018	0.09	Havana (Cuba) COC. 2.30-4.30 p.m. 9-11 p.m. Sun., 4.30-5.30 a.m. also.	.....	31.35	9570	10	Zeesen (Germany) DJA. 1-4.30 p.m.; 10.15 p.m.-2.15 a.m.	.....
49.83	6020	5	Bogotá (Colombia) HJ3ABH.	.....	31.32	9580	0.6	Bombay (Ind.) VUB. SUN. 3.30-4.30 p.m. WED. SAT., 4.30-5.30 p.m. (Irreg. MON. THURS.)	.....
49.67	6040	1	Singapore (S.S.) ZHI. MON., WED., THURS., 11 p.m.-1.30 a.m.; SUN., 3.40-5.10 a.m.	.....	31.27	9595	20	Springfield (Mass.) W1XAZ. 12 n'n-6 a.m. *Daventry GSC.	.....
49.59	6050	15	Zeesen (Germany) DJC. 10.30 p.m.-3.30 a.m.; 5-9.30 p.m.	.....	31.25	9600	2	Lyndhurst (Victoria, Australia) VK3LR. Daily (ex. SUN.), 8.15 a.m.-12.30 p.m.	.....
49.5	6060	1	Boston (Mass.) W1XAL. SUN., 10 p.m.-12 m'nt; WED., FRI., 12.30-2 a.m.	.....	31.25	9600	2	Philadelphia (Pa.) W3XAU. 5 p.m.-12 m'nt	.....
49.43	6069	0.007	Sourabaya (Java) YDB. 3.30-6.30 a.m. *Daventry GSA.	.....	31.25	9600	2	Sydney (Australia) VK2ME. SUN., 6-8 a.m.; 10 a.m.-4 p.m.	.....
49.4	6072	0.25	Cincinnati W8XAL. 12 n'n-1 a.m.; 4-6 a.m.	.....	31	9677	0.5	Radio Nations (Switzerland) HBL. SAT., 10.30-11.15 p.m.	.....
49.34	6080	0.5	Nairobi (Kenya) VQ7LO. Daily, 4-7 p.m. (SAT. to 8 p.m.); MON., WED., FRI., 10.45-11.15 a.m.; TUES. 8-9 a.m.; THURS. 1-2 p.m.	.....	30.67	9780	20	Lisbon (Portugal) CT1AA. TUES., THURS., SAT., 9.30 p.m.-12 m'nt.	.....
49.3	6085	20	Philadelphia (Pa.) W3XAU. 12 m'nt-4 a.m.	.....	30.43	9860	20	Lisbon (Portugal) CT1CT. THURS., 9-11 p.m.; SUN., 12 noon-2 p.m.	.....
49.26	6090	0.1	Skamlebaek (Denmark), OXY. 6p.m.-12m'nt. SUN., 4 p.m.	.....	29.04	10,330	..	Rome (Italy) 2RO SUN., 4-6.30 p.m. THURS., and SAT. 12.45-2.15 a.m.	.....
49.22	6095	0.5	Vancouver (B.C.) VE9CS. SAT., 4.30-5.45 a.m.; SUN., 4 p.m.-4 a.m.	.....	28.98	10,350	..	Madrid (Spain) EAQ. 10.15 p.m.-12.30 a.m.; SAT., 6-8 p.m.	.....
49.2	6097	5	Vienna Experimental OER2. D'ly, 2-10 p.m.	.....	25.65	11,695	0.2	Ruyselede (Belgium) ORK. 6.30-8 p.m.	.....
49.18	6100	15	Chicago (Ill.) W9XAA. 8 p.m.-6 a.m.	.....	25.6	11,720	2	Buenos Aires LSX. Daily, 8-9 p.m.	.....
49.1	6110	0.5	La Paz (Bolivia) CP5. 12.45-2.15 a.m.	.....	25.57	11,730	23	Caracas (Venezuela) YV3RC.	.....
49.08	6112	0.25	Rome (Italy) 2RO. MON., WED., FRI., 11 p.m. St. John (New Brunswick) VE9BJ. Daily, 12 m'nt-1.30 a.m.	.....	25.53	11,750	15	Winnipeg (Canada) CJRX. Daily, 12 m'nt-5 a.m.; SAT., 9 p.m.-6 a.m.; SUN., 10 p.m.-3.30 a.m.	.....
48.94	6128	1	Bowmanville (Canada). VE9GW. MON., TUES., WED., 8 p.m.-5 a.m.; THURS., FRI., SAT., 12 noon-5 a.m.; SUN., 6 p.m.-2 a.m.	.....	25.49	11,770	5	Radio Colonial (Paris) FYA. 12 m'nt-3 a.m.; 4-6 a.m.	.....
48.86	6140	40	Johannesburg (S.A.) ZTJ. D'ly (ex. SUN.), 4.30-5.30 a.m.; 8.30-12 noon; 2-8 p.m. (9.45 p.m. SAT.); SUN., 1-3.15 p.m.; 5.30-8 p.m.	.....	25.45	11,790	5	Huizen (Holland) PHI. (ex. Tues., Wed.) 1-3 p.m.; SAT. to 3.30 p.m.; SUN. to 4 p.m. *Daventry GSD.	.....
48.78	6150	2	Bound Brook (N.J.) W3XAL. MON., WED., and SAT., 10-11 p.m. SAT. 5-6 a.m.	.....	25.4	11,810	9	Zeesen (Germany) DJD. 5-9.30 p.m.	.....
48.4	6198	0.35	Chicago (Ill.) W9XF. ex. MON., WED., SUN., 9 p.m.-7 a.m. *Daventry GSL.	.....	25.36	11,830	1	Boston (Mass.) W1XAL. 11 p.m.-12.30 a.m.	.....
47.5	6316	..	Calcutta (India) VUC. D'ly 7.6-8.6 a.m.; Irreg. 1.6-4.36 p.m. (SAT. from 12.36 p.m.) SUN. 4.36-7.36 a.m.; Irreg. 12.36-3.36 p.m.	.....	25.29	11,860	15	Rome (Italy) 2RO.	.....
46.69	6425	18	Halifax (N.S.) VE9HX. 2-4.30 p.m.; 9 p.m.-4 a.m.	.....	25.27	11,870	40	Wayne (N.J.) W2XE. 8-10 p.m.	.....
46.53	6447	0.3	Caracas (Venezuela) YV2RC. Daily (ex. SUN.), 4-6.15 p.m.; 10 p.m.-2.30 a.m. SUN., 6.30 p.m.-3.30 a.m.	.....	25.23	11,880	10	*Daventry GSE.	.....
		1	Wayne (N.J.) W2XE. 11 p.m.-4 a.m.	.....	25	12,000	20	Pittsburgh W8XK. 9.30 p.m.-3 a.m.	.....
		1.5	Bandoeng (Java) YDA. 3.30-6.30 a.m.	.....	24.83	12,082	0.5	Radio Colonial (Paris) FYA. 4.15-7.15 p.m.; 8-11 p.m.	.....
		1	Jeløy (Norway) LKJ1. 3-11 p.m.	.....	24.2	12,396	0.3	Moscow (Russia) RW59. SUN., 3-4 a.m.; 11 a.m.-12 noon; 3-4 p.m.	.....
		40	Pittsburgh W8XK. 9.30 p.m.-6 a.m.	.....	23.39	12,830	10	Lisbon (Portugal) CT1CT. SUN., 2-4 p.m.; THURS., 8-9 p.m.	.....
		2	Winnipeg (Canada) CJRO. D'ly, 12 m'nt-5 a.m.; SAT., 9 p.m.-6 a.m.; SUN., 10 p.m.-3.30 a.m.	.....	19.84	15,123	10	Parede (Portuguese Radio Club) CT1GO. SUN. 3-4.30 p.m.; TUES., THURS., FRI. 6-7.15 p.m.	.....
		..	Caracas (Venez.) YV3RC. 8.30 p.m.-1.30 a.m.	.....	19.82	15,140	10	Rabat (Radio Maroc) CNR. SUN., 12.30-2 p.m.	.....
		0.35	Parede (Portuguese Radio Club) CT1GO. SUN. 4.30-6 p.m., Daily (ex. TUES.), 12.20-1.30 a.m.	.....	19.74	15,200	5	Vatican City (Italy) HVJ. 10-10.15 a.m. *Daventry GSF.	.....
		..	Santo Domingo (D.R.) HIZ.	.....	19.72	15,210	40	Zeesen (Germany) DJB. 5.30-7.30 a.m.; 8.45 a.m.-12.15 p.m.	.....
		18	Bound Brook (N.J.) W3XL. Experimental.	.....	19.71	15,220	18	Pittsburgh W8XK. 1-9.15 p.m.	.....
		0.3	Barranquilla (Colombia) HJ1ABB. Daily, 4.15-6 p.m.; 11 p.m.-3 a.m.	.....	19.68	15,243	10	Huizen (Holland) PCJ. Experimental.	.....
		..		.....	19.67	15,250	5	Radio Colonial (Paris) FYA. 12 n'n-4 p.m.	.....
		..		.....	19.66	15,260	10	Boston (Mass.) W1XAL. 3.50-6.30 p.m. *Daventry GSI.	.....
		..		.....	19.64	15,270	1	Wayne (N.J.) W2XE. 4-6 p.m.	.....
		..		.....	19.56	15,330	20	Schenectady W2XAD. Daily 7.30-8.30 p.m.	.....
		..		.....	19.52	15,370	20	Budapest (Hungary) HAS3 SUN. 1-2 p.m.	.....
		..		.....	17.33	17,310	20	Bound Brook (N.J.) W3XL. 4-10 p.m.	.....
		..		.....	16.89	17,760	5	Zeesen (Germany) DJE. 1-4.30 p.m.	.....
		..		.....	16.87	17,780	15	Bound Brook (N.J.) W3XAL. D'ly (ex. SUN.) 2-3 p.m. TUES., THUR., FRI 8-9 p.m. *Daventry GSG.	.....
		..		.....	16.86	17,790	10	*Daventry GSH.	.....
		..		.....	13.97	21,470	10	*Daventry GSH.	.....
		..		.....	13.93	21,530	10	*Daventry GSI.	.....
		..		.....	13.93	21,540	40	Pittsburgh W8XK. 12 noon-7 p.m.	.....

* For transmission times see Short-Wave Programmes.

For Long and Medium-Wave stations see page 62.

Sylvia. 11.15—Nancy Martin. 11.30—News. 11.45—Lowell Thomas. 12.0—Amos 'n' Andy. 12.15 a.m.—Plantation Echoes. 12.30—Red Davis. 12.45—Dangerous Paradise. 1.0—Jewels of Enchantment. 1.15—Dick Liebert. 1.30—Al Goodman, Jane Froman. 2.0—Beatrice Lillie. 2.30—Armour Programme. 3.0—Frontenac Frolic. 3.15—Hank Keene. 3.30—Orchestra. 4.0—Squire Hawkins. 4.15—Orchestra. 4.45—Orchestra. 5.15—Orchestra. 5.30—DX Club. 6.0—Good-night.

PORTUGUESE RADIO CLUB (CTIGO), 6.0-7.15 p.m.—Light Music. 12.20-1.30 a.m.—Portuguese Music.

ROME (49.30 m.), 11.0 p.m.—Announcements. Talk. Relay from the Royal Opera, Rome: "Othello" (Verdi). News, etc. Close.

RUYSSELEDE, 6.30 p.m.—Records. 7.30—News in French. 7.45—News in Flemish. 8.0—Close.

SCHENECTADY, 7.30 p.m.—Kitchen Party. 8.0—"Vic and Sade"—Comedy Sketch. 8.15—"Ma Perkins"—Sketch. 11.30—News. 11.35—Jack and Loretta Clemens (Songs). 11.45—"Billy Batchelor in Wheatville"—Sketch. 12.0—To be announced. 12.15 a.m.—"Secret Ink"—Sketch. 12.45—"Uncle Ezra's Radio Station E-Z-R-A"—Variety. 1.0—Cities Service Concert. 2.0—Waltz Time—Abe Lyman's Orchestra. Frank Munn (Tenor) and Vivienne Segal (Soprano). 2.30—Pick and Pat. 3.0—"The First Night"—Sketch. 3.30—Vocal and Instrumental Ensemble. 4.0—Résumé.

SKAMLEBAEK (OXY), 6.0 p.m.—Close: Kalundborg Programme.

VATICAN CITY, 10.0-10.15 a.m.—Religious Information in German. 7.0-7.15 p.m.—Religious Information in Italian.

ZEESEN (DJB, DJN), 8.45 a.m.—Announcements (German, English). 9.0—"The Legend of Beautiful Young Liloefe." 9.30—News in English. 9.45—Selections from "Orpheus" (Gluck). 10.45—News in German. 11.0—Light Music. 12.0—News in English. 12.15 p.m.—Close.

ZEESEN (DJA, DJN), 1.0 p.m.—Announcements (German, English). 1.15—"The Legend of Beautiful

Young Liloefe." 1.45—News in English (DJA), in Dutch (DJN). 2.0—Selections from "Orpheus" (Gluck). 3.0—Talk. 3.15—News in German. 3.30—Folk Music. 4.15—See 1.45. 4.30—Close.

ZEESEN (DJD, DJC), 5.0 p.m.—Announcements (German, English). 5.15—News in German. 5.30—Programme for Women. 6.0—Selections from "Orpheus" (Gluck). 7.0—News in English. 7.15—"The Legend of Beautiful Young Liloefe." 7.45—Folk Music. 8.30—Song Recital. 9.0—News (German, English). 9.30—Close.

ZEESEN (DJA), 10.15 p.m.—Announcements. (German, Spanish). 10.20—Music; Topical Events. 10.45—News in German. 11.0—Evening Concert. Gisela Meyer (Soprano). Frida Sigrid Hutschenreuther (Contralto). Rio Kube (Tenor). Wilhelm Strienz (Bass). Bernhard Lessmann (Violin). 12.15 a.m.—News in Spanish. 12.30—"The Island of Great Adventures." 1.15—Songs. 1.30—Light Music. 2.0—Close.

ZEESEN (DJC), 10.30 p.m.—Announcements (German, English). 10.45—News in German. 11.0—See DJA. 12.15 a.m.—Folk Songs. 12.30—See DJA. 1.15—News in English. 1.30—Light Music. 2.0—News in German. 2.15—Light Music. 3.30—Close.

SATURDAY, Feb. 2

EMPIRE

Transmission 1 (8.0-9.0 GSD, GSB; 9.0-10.0 GSD, GSF), 8.0 a.m.—Big Ben. Hubert Carter (Tenor); Berkeley Mason (Organ). 8.45—Topical Talk. * 9.0—B.B.C. Dance Orchestra 9.45—Empire News. 10.0—Close.

Transmission 2 (GSE, GSF), 11.0 a.m.—Big Ben. Scottish Studio Orchestra. 11.45—Cinema Organ. 12.15 p.m.—"Concert in Camera," by David Kean. * 12.45—Records. 1.0—Commodore Grand Orchestra. 1.45—Empire News. 2.0—Close.

Transmission 3 (2.15-3.45 GSE, GSB; 3.45-5.0 GSB, GSA; 5.0-5.45 GSA, GSD), 2.15 p.m.—Big Ben. Belfast Wireless Orchestra. 2.50—Wales v. Scotland (Rugby). 4.30—Empire News. 4.45—Sydney Baynes and his Band. 5.15—Dance Music. 5.45—Close.

Transmission 4 (6.0-9.30 GSD, GSB; 9.30-10.40 GSB, GSA), 6.0 p.m.—Big Ben. Empire News. 6.20—Scottish Music. * 6.30—Sports Talk. 6.45—Cedric Sharpe Sextet. 7.0—"In Town To-night." 7.30—City of Birmingham Orchestra. Victor Hely-Hutchinson (Pianoforte). 7.55—Act I "Tosca" (Puccini). 8.45—Music-Hall. 9.30—Wales v. Scotland. * 10.0—Empire News. 10.20—B.B.C. Dance Orchestra. 10.40—Close.

Transmission 5 (GSC, GSA), 11.0 p.m.—Big Ben. Henry Hall's Guest Night. 12.0—Wales v. Scotland. * 12.45 a.m.—Empire News. 1.0—Close.

CARACAS, 4.0-6.30 p.m.—Records. 9.45 p.m.—Sports News. 10.0—Light Music. 10.30—Children's Hour. 10.45—Dance Music. 11.15—News. 11.45—Variety. 12.0—Viennese Music. 12.15 a.m.—Variety. 12.30—Orchestra. 12.45—Detective Serial. 1.0—Talk. 1.30—Light Music. 2.0—Dance Music. 2.30—Race Track Comments. 3.0—Close.

HUIZEN (PHD), 1.0 p.m.—Announcements. 1.10—Orchestra. 1.30—Talk. 1.50—Orchestra. 2.10—Records. 2.30—Radio play. 2.50—Records. 3.5—Orchestra. 3.25—Close.

MADRID (EAQ), 6.0 p.m.—Spanish Music. 7.45—Light Music. 10.15—News. 10.30—Spanish Music. 10.45—News. 11.0—Talk. 11.15—Orchestra and Songs. 11.45—Light Music. 12.0—Orchestra. 12.30 a.m.—Close.

MOSCOW (50 m.), 8.0 p.m.—German Talk. 9.5—French Talk. 10.5—Swedish Talk.

PARIS (Radio-Colonial), 12 noon—News; Exchange. 12.30 p.m.—Concert. 1.30—English News. 1.40—Shipping. 1.50—Talk. 2.0—Talk. 2.15—Talk. 2.30—Pianoforte, Violin and Song Recital. Mmes. Gisele Couteau (Pianoforte), Stappen (Songs). M.M. Worms (Violin), Benvenuti (Pianoforte). Pianoforte solos: Toccata (Bach-Busoni); Diver tissement (Nin-Culmet); Oiseaux tristes, Jeux d'eau, Toccata (Ravel). Songs: The peacock and the cricket (Ravel); Air from Mefistofele (Boito); At the mill (Peyssys);

Nocturne (Nat); Chance (Dussaut); Pamin's aria from "The Magic Flute" (Mozart). Violin solos: Sonata (Sammartini-Salmon); The mansions of Eternity (A. Bloch); Piece in the form of a habanera (Ravel); Intermezzo (Lalo); Spanish Dances and Spanish folk-song suite (Falla-Marechal). 4.15—News; Exchange. 5.0—Concert. 6.30—Shipping. 6.45—Talk. 7.0—Talk. 8.0—News; Exchange. 8.30—To be announced. 10.30—Shipping. 10.45—Talk. 12.0—News; Exchange. 12.45 a.m.—Shipping. 1.0—English News. 1.15—Talk. 1.30—Talk. 1.45—Talk. 2.0—Records. 4.0—News; Exchange. 4.30—Shipping. 4.45—Talk. 5.0—Talk. 5.15—Records. 5.45—News.

PITTSBURGH, 12 noon—Musical Clock. 1.0 p.m.—Devotions. 1.15—Organ. 1.45—Trio. 2.0—Breakfast Club. 2.30—Style and Shopping. 2.45—Plough Boys. 3.0—Morin Sisters. 3.15—Edward MacHugh. 3.30—Home Forum. 3.45—News. 4.0—Honeymooners. 4.15—Kiddies' Klub. 5.0—Hank Keene. 5.15—Genie Fonariva. 5.30—Farm and Home Hour. 6.30—Farm Forum. 6.45—Words and Music. 7.0—Opera. 10.0—Stanleigh Malotte. 10.15—Jackie Heller. 10.30—Bill and Alex. 10.45—Ranch Boys. 11.0—Buddy Biller. 11.15—Orchestra. 11.30—News. 11.45—The Master Builder. 12.0—John Herrick (Baritone). 12.15 a.m.—Hank Keene. 12.30—Orchestra. 1.0—Art in America. 1.20—Grace Hayes. 1.30—Orchestra. 2.0—Variety. 2.30—National Barn Dance. 3.30—Behind the Law. 3.45—Orchestra. 4.0—Sports. 4.15—Orchestra. 4.30—Orchestra. 5.0—Messages to the Far North. 5.30—Orchestra. 6.0—Goodnight.

PORTUGUESE RADIO CLUB (CTIGO), 12.20-1.30 a.m.—Spanish and Portuguese Music.

ROME (30.67 m.), 12.45-2.15 a.m.—Announcements. Relay from the Royal Opera, Rome: "Othello" (Verdi). News, etc. Close.

RUYSSELEDE, 6.30 p.m.—Brussels No. 2 Programme. 6.45—Records. 7.30—News in French. 7.45—News in Flemish. 8.0—Close.

SCHENECTADY, 7.0 p.m.—Opera. 11.30—News. 11.35—Peg La Centra (Songs). 11.45—Sports Parade. 12.0—Talk; Religion in the News. 12.30—Variety. 1.0—Concert. Conductor-Composer: Romberg. 2.0—Songs you love to hear. 2.30—"The Gibson Family"—Musical Comedy. 3.30—Dance Music. 4.0—Résumé.

SKAMLEBAEK (OXY), 6.0 p.m.—Close: Kalundborg Programme.

VATICAN CITY, 10.0-10.15 a.m.—Religious Information in Various Languages. 7.0-7.15 p.m.—Religious Information in Italian.

ZEESEN (DJB, DJN), 8.45 a.m.—Announcements (German, English). 9.0—Music; Topical Events. 9.30—News in English. 9.45—Folk Songs. 10.0—"The Island of Great Adventures." 10.45—News in German. 11.0—Light Music. 12.0—News in English. 12.15 p.m.—Close.

ZEESEN (DJA, DJN), 1.0 p.m.—Announcements (German, English). 1.15—Music; Topical Events. 1.45—News in German. 2.0—Concert (See Friday, DJA, 11.0 p.m.). 3.15—News in English (DJA), in Dutch (DJN). 3.30—"The Island of Great Adventures." 4.15—See 3.15. 4.30—Close.

ZEESEN (DJD, DJC), 5.0 p.m.—Announcements (German, English). 5.15—News and Review (German). 5.30—Music; Topical Events. 6.0—"The Island of Great Adventures." 6.45—Folk Songs. 7.0—News and Review (English). 7.15—Variety. 8.0—Dance Music. 9.0—News and Review (German, English). 9.30—Close.

ZEESEN (DJA), 10.15 p.m.—Announcements (German, Spanish). 10.20—German Songs. 10.45—News in German. 11.0—Variety. 12.15 a.m.—News in Spanish. 12.30—"The Magic of Alpine Meadow and Homeland Forest." 1.15—Talk. 1.30—Dance Music. 2.0—Close.


ZEESEN (DJC), 10.30 p.m.—Announcements (German, English). 10.45—News and Review (German). 11.0—Variety. 12.15 a.m.—Talk. 12.30—See DJA. 1.15—News and Review (English). 1.30—Dance Music. 2.0—News and Review (German). 2.15—Dance Music. 3.30—Close.

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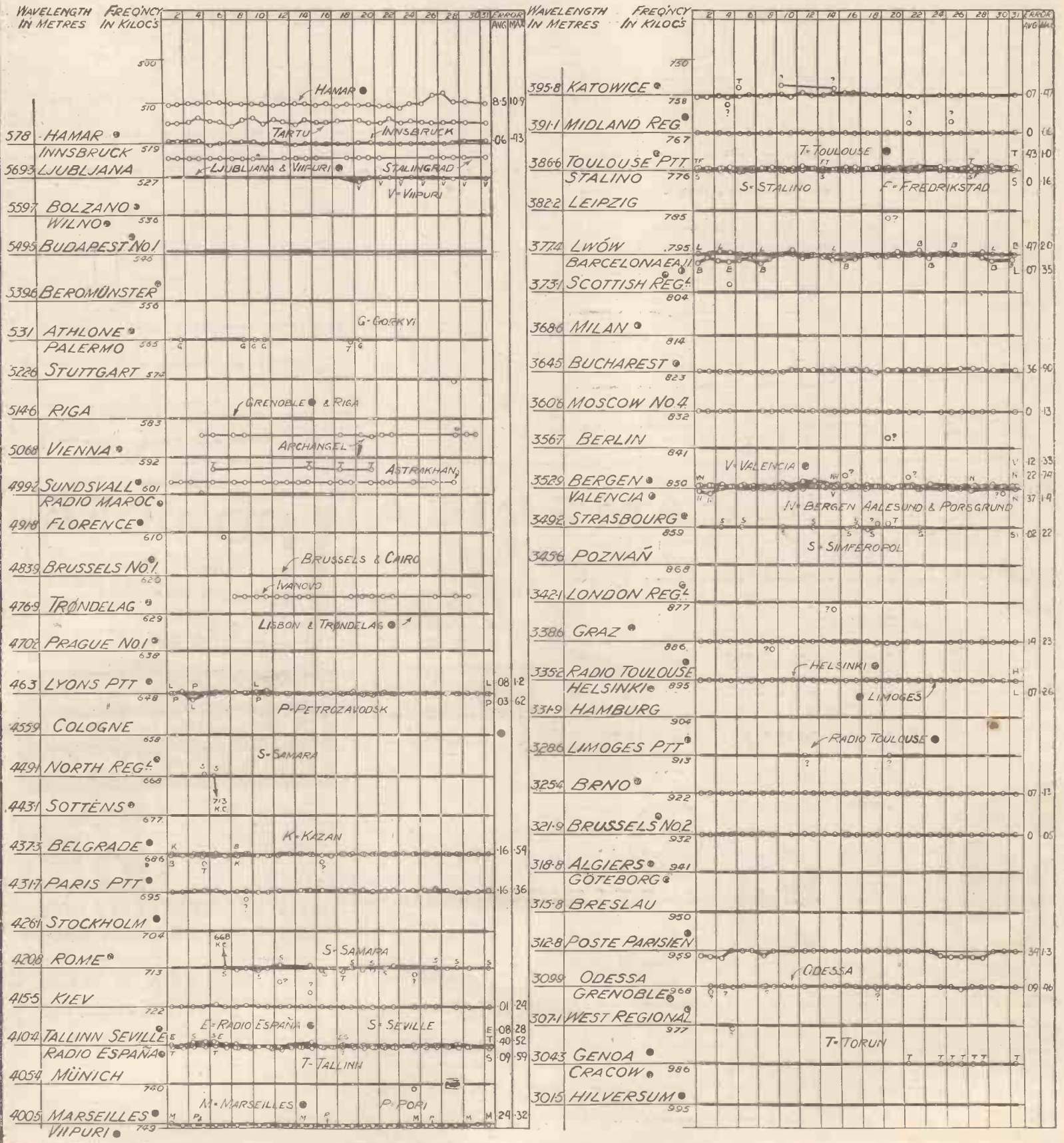
IMPORTANT NOTICE.—Owing to continued pressure on our space, we are contemplating the cessa-
by readers for their retention,

December, 1934

Frequencies of European

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Technical Committee of the Union

The letter T indicates wireless telegraphy transmission




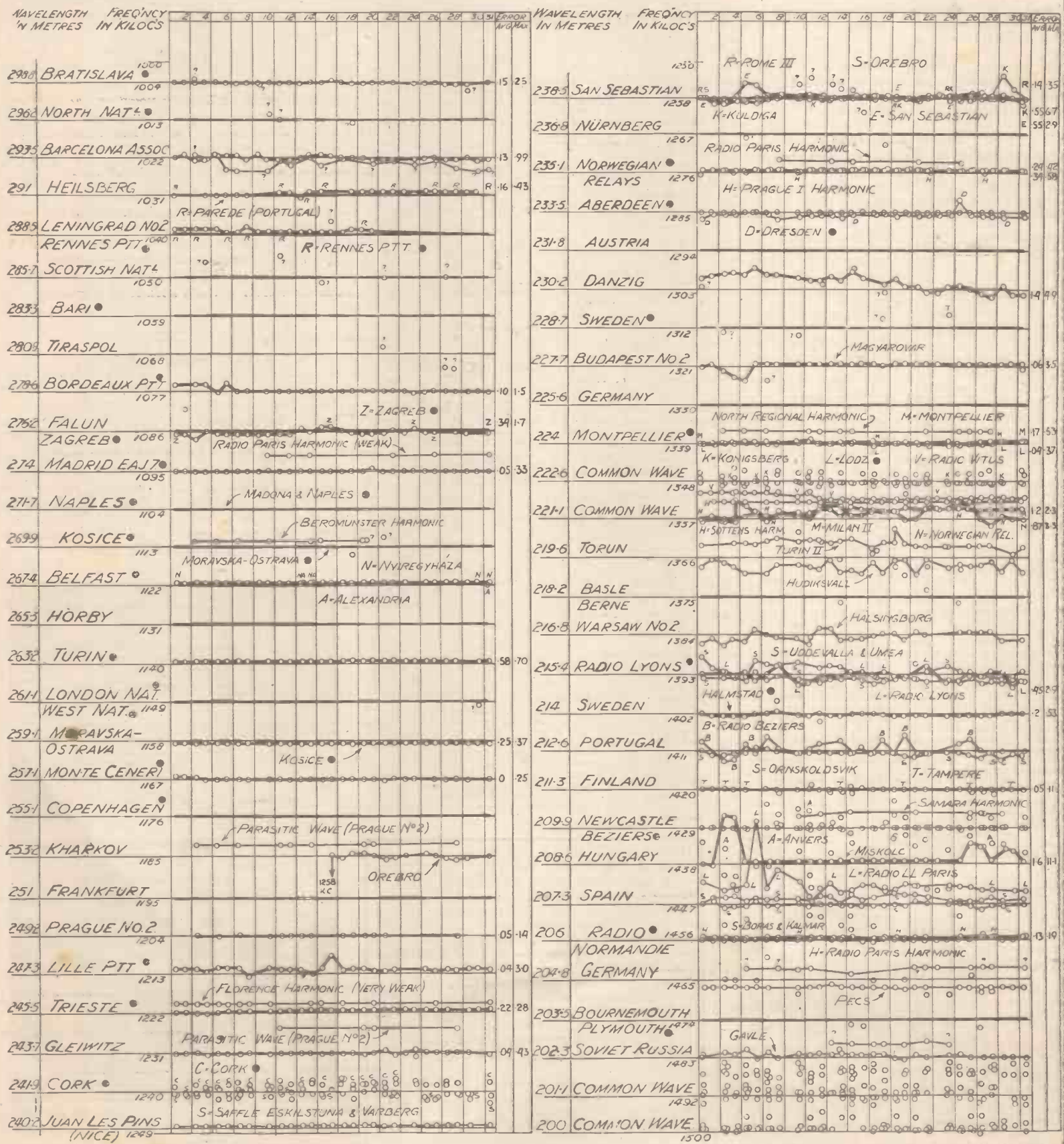
tion of the appearance of these monthly charts. If, however, a sufficiently strong desire is shown the question will be reconsidered

Broadcasting Stations

December, 1934

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Stations marked  are provided with U.I.R. wavemeter



LISTENERS' QUERY SERVICE

Listeners' Verdicts

The Saar Plebiscite

Which station was that?

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Each query should be numbered and the questions on the coupon carefully answered. Letters must be addressed to the Editor, WORLD-RADIO, Broadcasting House, London, W.I.

The Alternative Postal Service

In addition to the free service of "Which Station Was That?" printed in these columns, replies to station identification queries can be obtained within forty-eight hours of receipt of details on payment of 6d. per query, in stamps or P.O., accompanied by stamped addressed envelope (marked in left-hand top corner "Postal Query Service"), and coupon as per conditions for "Free Queries."

Times of Reception

The identification of stations will be greatly facilitated if readers, in answering the first question in the Identification Coupon, will always add a.m. or p.m. to the hour of reception—e.g., 12.5 a.m. to indicate five minutes after the start of a new day.

DINBAD (Glasgow): (a) W3XAL, Boundbrook (N.J.), on 49.18 m.; (b) this was HVJ, Vatican (Rome), on 50.26 m.; transmission in Spanish on Wednesdays. ZERO (Birkenhead): Details would point to YV2RC, Caracas (Ven.), 49.08 m. (6,012 kc/s); cannot trace call IUP; surely JVP, Tokyo, 39.95 m. H. BENSON (Prestwich): Addresses required are as follows: KPO, 111, Sutter Street, San Francisco (Cal.); KSL, Vermont Building, Salt Lake City (Utah); WQAM, Miami Broadcasting Company, Inc., 327 N.E. 1st Avenue, Miami (Florida); WAAB, 21, Brookline Avenue, Boston (Mass.); WABC, Columbia Broadcasting Company, 485, Madison Avenue, New York City; WHN, 1,540, Broadway, New York City; WOR, 147, Market Street, Newark (New Jersey); WDR, WDR Inc., Corning Building, 11, Asylum Street, Hartford (Conn.); WJZ, National Broadcasting Company, 30, Rockefeller Plaza, New York City. SILVER X (Bronley): (1) G6WV, British amateur at Beckenham, Kent; (2) also amateur transmitter, but cannot trace call-sign. DUSAY (Golders Green): (1) GBC, Rugby, 60.3 m. (4,975 kc/s), with shipping; (2) probably GBS, Rugby, 24.69 m. (12,150 kc/s), telephony with New York. GLAMIS (Durham): Surely WQT, Rocky Point (N.Y.), 21.6 m. (13,885 kc/s), 40 kW, which works with U.S.S.R. GYWD (Shipley): (a) would appear to be an amateur transmitter in your immediate neighbourhood; (b) LR4, Radio-Splendid (Buenos Aires). LONG JOHN (Tottenham): Estimate of wavelength is too vague for short-wave transmission; cannot trace item in any programme. OVI TOUR (Colwyn Bay): (2) GTW: police transmission, but cannot give situation; Seaford Radio, GLV, on 177.5 m. PAT A. W. (Gibraltar): (1) HBQ, Prangins (Switzerland), on 44.94 m., 20 kW; HBP, Prangins, 38.48 m.; WEM, Rocky Point (N.Y.), 40.54 m.; (2) believe CTIGO, Parede-Lisbon, testing on about 48.86 m.; (3) apparently CPS, La Paz (Bolivia), on 6,080 kc/s; (4) would tally with TIXG3P, San Jose, Costa Rica, on 5,825 kc/s. BERT (Woodford): Radio-Agen. DIAL TWISTER (Brierley Hill): Bari. PUZZLED (Cardiff): Can trace the following call-signs: F4AP, Tunis (N. Africa); F8YH, Chartres (France); F8ZY, Chalon S/Saone (France); F4MC, Tunis; F8HH, Villeneuve St. Georges (Seine et Oise, France); G2TH, St. Albans (Herts); G6XG, Colwyn Bay (Denbigh); ON4AP, Perennes-lez-Binche (Belgium); not PAUV, but probably PAOUY, Flushing (Holland); SHEIKHALI (Llandaff): Addresses required are as follows: WABC, 485, Madison Avenue New York; WSB, Atlanta Journal, 7, N. Forsyth Street, Atlanta (Ga.); XEPN, Piedras Negras Broadcasting Co., Madero 53, Piedras Negras, Coahuila, Mexico; XEW, P.O. Box 2516, Mexico City; LR4, Radio-Splendid, 1,526, Callao, Buenos Aires, Argentine; LR6, La Nacion, Hurlingham, Buenos Aires; Estacion Radiodifusora HIIK, Santo Domingo, Dominican Republic (West Indies); Estacao Radio Emissora PRAX, Rio de Janeiro, Brazil. TEAMWORK (Prestwich): Can trace the following calls only: (1) WMJ, Police Dept., Buffalo (New Jersey); (2) WCDP, s.s. "Lackawanna"; (3) WPFE, Reading (Pa.); (4) WPDB, Police Dept., Chicago; (12) GTW, possibly local police. NOT SO BAD (Merioneth): (1) XOD, Shanghai, 50.42 m.; (2) YTE, Yugoslav call, but cannot trace; (3) PLS, Bandoeng (Java), 28.94 m.; PMI, also Bandoeng, 51.01 m.; (4) commercial abbreviation, but cannot identify. ROCKY-KNOWE (Saltoons): Can trace the following: G5KG, Mansfield (Notts); G5OJ, Hayes (Kent); G5YV, Crackenedge, Dewsbury (Yorks); G5BL, Hall Green, Birmingham; G5BK, Cheltenham (Glos.); G2PL, Cambridge; G2OC, Beeston (Notts); G2RP, Derby; G6JV, Norwich; G5US, Cheadle (Cheshire); G2XS, King's Lynn (Norfolk); ON4RGX, write: Réseau Belge, 33, Rue Alphonse Renard, Brussels XI, Belgium; WIAJX, Holyoke (Mass.); WIKJ, Lynn (Mass.); W2VA, Flushing, Long Island (N.Y.); W3BSH, Camden (New Jersey); W4KR, La Grange (Ga.); W8GLY, Pittsburgh (Pa.); W9ARK, Indianapolis (Ind.); W9PBA, Cedar Rapids (Iowa); W9BKU, Ashland (Ky.); D4BDV, Kiel (Germany). ANYTIME ANNIE (Bromley): (1) apparently the Swedish relays on common wave of 214 m. (relay of revue from Stockholm); (2) yes, this was Oslo (Children's Hour). S. R. E. A. (Old Tupton): DAN, Norddeich (Germany), weather reports on 1,571 m. NIGHT BIRD (S. Tottenham): WTIC, Hartford (Conn.) programme, on 288.3 m., apparently received through WTAM, Cleveland (Ohio), on 280.2 m.; both stations belong to the NBC "Red" Network. SHORTWAVE EXPLORER (Chatham): (1) G6LF, Sheffield (Yorks); (2) COC, Cuban Telephone and Telegraph Co., P.O. Box 98, Havana, Cuba; (3) CT1GO, Radio Club da Costa do Sol, Videnda Zinda, Parede, Portugal; (4) I2RO, Associazione Radiotecnica Italiana, Viale Bianca Maria 24, Milan, Italy. TRIGAMMA (Esher): (1) if French, probably Seraing (Liege, Belgium); (2) regret, cannot trace. SORIMA (Sandiacre): Can trace the following only: FZI, Brazzaville (French Congo), 25.07 m.; ZCG, Cape D'Aguilar (Hong Kong), 31.78 m.; KBK, Manila (P.I.), 44.66 m.; KIWA, Des Moines (Washington),

21.49, 28.38, and 57.42 m.; UFN, Novorossiisk Radio (U.S.S.R.), on many channels from 46.62 to 94.79 m.; KJG, Palo Alto (Cal.), 22.23 m.; GBV, Rugby, 3,846 m.; RAO, Rostov-on-Don (U.S.S.R.), 2,100 m.; RDD, Orel (U.S.S.R.); G2VA, Mapperley (Notts); VEZAX, Westmount (P.Q.). WOITWOZZIT (Birmingham): Harmonic of Bordeaux P.T.T. OLD SCHOOL TIE (Lowestoft): Regret, cannot trace. KNOB TWIDDLER (Dolton): Rennes P.T.T. BEAUFORT (Bath): Heston Airport, 1,202 m. FRIER (N.19): WPG, Atlantic City (N.J.). PILLS (Manchester): (1) MBG, Butt of Lewis Lighthouse, 988 m.; (2) MS, Maas Light Vessel (Holland), 941.9 m. SILVER X (Kent): DJA, Zeesen (Germany), 31.38 m., programme for Far East. PHOEBUS (Brixton): (1) this was TIEP, San José (Costa Rica), 44.71 m.; (2) addresses required are as follows: El Prado, Apartado 98, Riobamba, Ecuador; HUIABB, Box 715, Barranquilla (Col.); Short Wave Station PRF5, Caixa Postal 709, Rio de Janeiro, Brazil; VUB, Indian State Broadcasting Service, Irwin House, Ballard Estate, Bombay, India. SHILDONEAN (Durham): Write Radio Society of Great Britain, 53, Victoria Street, S.W.1. CURIOUS (Dalston): Ship-shore telephony. MINCE PIE (Southall): Berlin (356.7 m.), relayed the dance music from London Regional, which would explain your hearing the programme on that wavelength. PIPPY (Wells): (50) British ships: GJNQ, "British Commodore"; GLVN, "Kaiser-I-Hind"; GLYC, "Ormonde"; GJMS, "British Commerce"; GMLS, "Neuralia"; German ship: DJNB, "Deutschland"; American ship: KDSF, "Manukai"; (51) EPF, Persian call, possibly Teheran; (52) KIWA, Des Moines (Washington), 21.49, 28.38, and 57.42 m.; (53) DKJ, Königs Wusterhausen (Germany); YTG, possibly Belgrade. SOPHOCLES (Birmingham): (1) FYR, Lyons (France), 25.75 m. (11,650 kc/s); WIV and WJX, Sayville (N.Y.), on 28.6 m. (10,490 kc/s) and 20.44 m. (14,680 kc/s), respectively; (2) LSX, Monte Grande (Buenos Aires), 28.99 m. (10,350 kc/s); (4) DHD, Nauen (Germany), 20.46 m. (14,665 kc/s). NEW CLIFFE (Higher Blackley): JVP, Tokyo, 39.95 m. (7,510 kc/s); address: Ministry of Communications, Tokyo, Japan; JVB is on 16.49 m.; can trace the following call-signs: G2RF, Liverpool; G5DL, Barking (Essex); G5PB, New Milton (Hants); G15SJ, Belfast; G6YU, Coventry; G6SR, Edinburgh; F8CA, Laval (France); F8VF, Pont du Chateau (Puy de Dome, France); F8WY, Ostrohoze, Boulogne-Sur-Mer (France); SP1L, believe Wilno (Poland); PAOSLB, Eindhoven (Holland); PAODM, Rotterdam; PAOSA, Doesburg (Holland); PAOPN, Middelburg (Holland); PAOPA, Neuzen (Holland); PAOBN, Oosterbeek (Holland); PAOCF, The Hague; ON4PA, La Pinte-lez-Gand (Belgium); VEIEI, Fairville Plateau, New Brunswick (Canada); WIARC, West Harwich (Mass.); WIDVL, Belfast (Ireland); WIDIC, Worcester (Mass.); WIRD, Saugus (Mass.); WIAXA, Lynn (Mass.); W2GAQ, Watervliet (N.Y.); W2GEW, New York City; W2EDW, Far Rockaway, Long Island (N.Y.); W2DG, New Dorp (N.Y.); W2GVU, Brooklyn (N.Y.); W2BCR, Newburgh (N.Y.); W2F0Z, West Orange (N.J.); W2HDY, Schenectady (N.Y.); W3BPT, Moorestown (N.J.); W3ABM, Big Stone Gap (Va.); W3DPR, Luke (Md.); W3BQ, Oxford (Pa.); W3AQ, Morrisville (Pa.); W3BSH, Camden (N.J.); W3EW, Crozet (Va.); W3AUC, Baltimore (Md.); W3DYS, Philadelphia (Pa.); W3KI, Philadelphia (Pa.); W4BAC, Waycross (Ga.); W5ASH, Tulsa (Okla.); W6GAW, San Francisco (Cal.); W8CPN, Dushore (Pa.); W9BTK, Owensboro (Ky.); W9BHD, Minneapolis (Minn.); STATIC (Catford): Regret we are unable to trace. ETHER (Craveley): Yes, Bandoeng (Java); either PMA, 15.5 m., or PLE, 15.93 m. SINBAD (Glasgow): (a) apparently WIXAZ, Millis (Mass.), 31.35 m.; (b) suggest that you heard VK3LR, Lindhurst (Victoria), 31.32 m., and DJA, Zeesen, 31.38 m., which is often S.B. with DJN. S.M.S. AMATEUR (Tonbridge): Sundsvall, relaying Stockholm. SCRAPERSKY (Sidcup): Regret, cannot trace. HET-RAUNTY (Belvedere): Can trace the following (wavelengths are given where possible): EPF, Persian call, possibly Teheran; FTY, St. Assise (France); HJP, Bogota (Col.), 37.27 m.; HJY, believe new call of San Maria, Bogota (Col.), which works on several wavelengths between 20.75 and 44.12 m.; SPL, Warsaw, wavelength given as 18,270 m.; SPR, Radom (Poland), wavelength given as 4,800 m.; RTD, possibly Moscow; XGL, Shanghai; LSH and LSZ, Monte Grande (Buenos Aires), on 28.25 m. and 27.17 m. respectively. BRADLEY (Newport): Several of your call-signs appear to be mutilated: EA4AQ, Madrid (Spain); there is no prefix "PH4," but the call you give as PA4BR was possibly PAOBR, Eindhoven (Holland); cannot trace other calls: A. W. M. (Derby); PAOFB, The Hague; PAOWJ, Rijk Haarlemmermeer (Holland); G2DD, Coventry; G5NW, Dundee; G6MX, Manchester. CURIOUS (Plaistow): Call-sign mutilated; cannot trace. QUERIST (Ilford): Majority of call-signs given are amateurs; write Radio Society of Great Britain, 53, Victoria Street, S.W.1.; remaining call-signs ship stations.

In the blackness before the dawn of Tuesday, January 15, I listened to COLOGNE broadcasting the Saar Plebiscite results—the authentic version of a unique event. Massed choirs sang patriotic songs till 7.15, when the announcer "called" all Germany (already assembled to listen in office, factory and school), while Holland, Denmark, Sweden, Japan, Brazil, Venezuela, and the United States were listening too. District by district came the overwhelming figures in favour of Germany, and the choirs sang "Deutsch ist die Saar" with a new thrill of meaning. There was a fanfare of trumpets, and Herr Buerckel, Governor-elect of the Saar, formally reported the result to the Führer. Herr Hitler himself replied, his voice hoarse, strained and insistent, with words of peace and hope. The massed choirs were heard once more, and a hymn was followed by a second stirring rendering of "Deutsch ist die Saar." Church bells rang out, and then Dr. Goebbels, voicing emotions that his tones concealed, thanked God for His blessing on their efforts. Again the peals of victory. Again the choirs; the strains of "Deutschland über Alles"; another of the Third Reich's songs; and then—silence. Radio had done its part: the Saar was coming "home," and all Germany must hold high holiday.

I. G. G. S.

Next Week's Station

The station to which we invite readers to listen during the week January 27 to February 2 is ROME. A description of the programme item broadcast by this station which the individual listener considers to be the most interesting should reach us not later than the first post on Monday, morning, February 4. The best of the descriptions received (which should be limited to 250 words each) will be published, and £1 1s. will be paid for each such contribution. All entries must be written on one side of the paper only.



RADIO-VATICAN—The aerial masts of the short-wave station in Vatican City

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This coupon is valid for ONE QUESTION only, and should be cut out and attached to a separate sheet, upon which the following questions should be answered in the order shown. A copy of the answers should be enclosed with FREE queries. No coupon more than one month old is valid. A coupon is not required from readers living in countries outside Europe who desire identification of transmissions.

- 1. Time and date of reception.
2. Approximate frequency in kilocycles per sec. (or wavelength in metres).
3. Nearest known stations, above and below.
4. Call or interval signal, if heard.
5. Language.
6. Type of receiver in use and strength of signals.
7. Details of programme or signal received.
8. Name and address.
9. Nom de plume. (Proprietary names must not be used).

IN NEXT WEEK'S PROGRAMMES

LONG AND MEDIUM WAVES

SUNDAY

Reger and Beethoven

2.10—3.40 p.m. HILVERSUM (1,875 m.). The Concertgebouw Concert, relayed from Amsterdam.

Unfamiliar Strauss

6.20—8.30 p.m. LEIPZIG (382.2 m.), relayed by Dresden. Johann Strauss' operetta "Jabuka."

Mascagni's "Nero"

8.0 p.m. TURIN (263.2 m.), relayed by Milan, Genoa, Florence, Trieste, and by Rome and other European stations. The first broadcast of Mascagni's new opera.

"La belle Hélène"

8.0—10.30 p.m. RADIO-PARIS (1,648 m.). Offenbach's operetta-burlesque of the story of Helen of Troy.

MONDAY

The Budapest Philharmonic

7.10—9.10 p.m. BUDAPEST (549.5 m.). Conducted by Charles Münch.

A Tchaikovsky Evening

7.15—9.0 p.m. DEUTSCHLANDSENDER (1,571 m.). The first pianoforte Concerto and sixth (Pathétique) symphony.

TUESDAY

A Franz Schmidt Opera

6.35—9.25 p.m. VIENNA (506.8 m.), relayed

by Graz, Innsbruck, Linz, Salzburg, etc. A repeat performance of "Fredigundis."

Handel's "Julius Cæsar"

8.30 p.m. French PTT Stations except Radio Paris. Relayed from Strasbourg Municipal Theatre.

Bruckner's Fifth Symphony

8.45 p.m. HUIZEN (301.5), along with Saint-Saëns little 'Cello Concerto (Garbousova).

WEDNESDAY

Talich at Stockholm

7.0—9.0 p.m. STOCKHOLM (426.1 m.), relayed by Motala (1,389 m.), Göteborg, Hörby. Ravel and Tchaikovsky make up the programme.

Ansermet, Gieseking

7.35—9.25 p.m. SOTTENS (443.1 m.), relayed by Geneva. Mozart and Beethoven ("Emperor") pianoforte Concerto.

"The Queen of Cornwall"

8.0—9.30 p.m. NATIONAL (1,500 m.). Rutland Boughton's opera. Repeated in the Regional programme on Friday at 8.30 p.m.

THURSDAY

A Prague première

7.5—7.50 p.m. PRAGUE (470.2 m.). The first performance of Hába's "The Curse of Life"

A Wagner Programme

7.10—9.15 p.m. COPENHAGEN (255.1 m.),

relayed by Kalundborg (1,261 m.). Conducted by Fritz Busch.

"Nero" repeated

8.0 p.m. TURIN (263.2 m.), Rome (420.8 m.), with their usual relays, and several other European stations. Mascagni's new opera.

FRIDAY

The Warsaw Philharmonic

7.15—9.30 p.m. WARSAW (1,339 m.), relayed by Lwów, Poznań, Wilno, etc. Symphony Concert.

Bach as he Lived

8.0—9.0 p.m. BERLIN (356.7 m.). A radio picture of the Bach Home Circle.

SATURDAY

Bartók at Rotterdam

3.10—5.10 p.m. HILVERSUM (1,875 m.). The Philharmonic with Bartók playing his own music.

Adam's "Postilion"

6.30—9.30 p.m. DEUTSCHLANDSENDER (1,571 m.). One of the best of French comic operas.

Johann Strauss' Melodies

7.10—9.0 p.m. FRANKFURT (251 m.), relayed by Cassel, Trier, etc. In a new operetta form as "Frühlingsluft."

"Victoria and her Hussar"

8.0—10.30 p.m. RADIO-PARIS (1,648 m.).

Two Distinguished Singers

IN the Frankfurt programme on Sunday evening, January 27, at 7.15, listeners are to have a chance of hearing a singer who has just returned home after a successful concert tour in this country. Ria Ginster, one of the foremost concert artists of Germany, is to be heard in Bach's solo cantata for soprano, "Rejoice in the Lord all ye lands." At 8.30 the same evening all German stations are to give as the eleventh concert in the series of "master-works" two rhapsodies for alto voice and orchestra. The first, *Sehnsucht an das Meer*, by Paul Graener, has recently been revised and reorchestrated, and this is its first performance in its new form. One of the leaders of contemporary music in Germany, Graener has enriched his country's opera, orchestral, and chamber music in no half-hearted way, and much of his work is on a high level of distinction. For some years he was in London, as conductor of the Haymarket Theatre Orchestra, teaching, at the same time, at the Royal Academy of Music. The second is Max Reger's *Hymnus der Liebe*, a dramatic monologue designed originally for baritone voice, which lends itself well to transposition for contralto. The solo artist in these two is Luise Willer, one whose strength of character has enabled her to surmount many obstacles and to make her way from the ranks of the chorus to a foremost position in the operatic world. For many years one of the leading artists in the State Opera at Munich, she was summoned six months ago to the Charlottenberg Opera House in Berlin.

Handel's *Julius Cæsar*

THE texts of Handel's operas are often no more than convenient pegs on which he might hang the kind of music which his age expected from him. *Julius Cæsar*, however, which forms the

French Federal Programme on Tuesday evening, with John Brownlee in the principal part and E. G. Münch conducting, did give him more scope than some others for dramatic music, and several of its scenes are true opera in the sense that the action and the music go hand in hand, each helping the other. The libretto is by Nicolo Haym, a composer who had some success himself on the London stage until Handel drove all rivals from it. He has laid the scene in Egypt, immediately after Cæsar's conquest of Pompey, and the action begins with Cæsar promising Cornelia that her husband and son will be pardoned. He is interrupted by the arrival of Achilles, who brings with him Pompey's head, a gift from Ptolemy, who had captured Pompey on his retreat. Handel takes full advantage of that scene to give us eloquent music. Another impressive scene is one between Cæsar and Cleopatra, with Sextus, Pompey's son, close at hand, bent on revenging his father's death. Again, in a scene on the seashore, where Cæsar saves the dying Achilles from Sextus' vengeance, the music has a big share in enhancing the dramatic force of the situation. Stilted and artificial though the music as a whole must sound to modern opera-goers, it was, none the less, a big advance on the still more artificial conventions which had prevailed till then, and at many points, besides those outlined above, it betrays the hand of a great master who knew something of stage-craft.

A British-Belgian Alliance

ON Wednesday evening at 6.15 p.m., at Brussels No. 1 station, the English pianist Laffitte joins the Belgian 'cellist Soiron in a programme of Bach's and Brahms' music for their instruments. One of the stalwarts of the B.B.C. programmes from their early days, Laffitte has played in most European cities, and with most of the great orchestras, taking a big part in furthering

the interests of his own countrymen's music abroad. An artist who is very much in earnest, he is not content to rest on the laurels he has won, but seizes every chance of studying the works of living composers with them. Rodolphe Soiron, a distinguished former student of the Conservatoire in Ghent, has also played in most parts of Europe, as well as in the United States, and since 1922 has been professor of the 'cello at the Royal Conservatoire of Liège. He and Laffitte have made music together on many occasions, and for this concert have been rehearsing together for the past fortnight.

Hilversum's Musical Forces

THE musical entertainment side of the V.A.R.A. (Society of Workers Radio Amateurs), which broadcasts from Hilversum, has recently undergone considerable modification and extension. Beginning, as it did, with a single variety orchestra and a not too large symphony orchestra, it has now no fewer than nine different musical ensembles, besides outside bodies and choruses which are frequently engaged. These include a large symphony orchestra under the direction of Hugo de Groot, a small orchestra under Eddy Walis, a string orchestra and a wind band. On the lighter side are the "Flierefluiter," a combination in the style of Marek Weber, "Dubbel X" devoted entirely to Jazz, the "Notenkrakers" (Nut Crackers) and the "Zonnekloppers" (early risers), both of which consist of strings, pianoforte and accordion, and "Orvitropia" made up of solo violin, strings, organ and percussion effects. There was formerly a V.A.R.A. Mandoline Orchestra, but it has fallen out, with the changing taste of the Dutch public, though the popularity of the instrument still persists to some extent and one can hear numbers of it in one or other combination (chiefly amateurs) from time to time.

PROGRAMME STATIONS IN ALPHABETICAL ORDER

The Frequencies and Wavelengths shown are those on which the stations are at present working

	kc/s	m.	kW		kc/s	m.	kW
Aberdeen	1285	233.5	1	Lahti (Finland) .. Relayed by Helsinki	166	1807	40
Algiers (North Africa)	941	318.8	12	Leipzig (Germany) .. Relayed by Dresden	785	382.2	120
Athlone (Ireland) .. Relayed by Dublin and Cork	565	531	60	Linz (Austria) .. Relays Vienna	1294	231.8	0.5
Augsburg (Germany) .. Relays Munich	1267	236.8	0.25	London Regional (Gt. Britain)	877	342.1	50
Barcelona (Spain) EAJ1	795	377.4	5	London National (Gt. Britain)	1149	261.1	50
Bari (Italy) .. Relays Rome	1059	283.3	20	Lwów (Poland) .. Relays Warsaw	795	377.4	16
Basle (Switzerland) .. Relayed by Beromünster ..	1375	218.2	0.5	Lyons (La Doua) (France)	648	463	15
Belfast (N. Ireland)	1122	267.4	1	Madrid (Spain) EAJ7	1095	274	7
Belgrade (Yugoslavia)	686	437.3	2.5	Magdeburg (Germany) .. Relays Hamburg	1330	225.6	1.5
Berlin (Germany)	841	356.7	100	Midland Regional (Gt. Britain)	767	391.1	25
Berne (Switzerland) .. Relayed by Beromünster ..	1375	218.2	0.5	Milan (No. 1) (Italy) .. Relays Turin	814	368.6	50
Beromünster (Switzerland) .. Relays Basle and				Milan (No. 2) (Italy) .. Relays Rome	1355	221.4	4
Berne	556	539.6	100	Monte Ceneri (Switzerland)	1167	257.1	15
Bordeaux Lafayette (France)	1077	278.6	12	Moravská-Ostrava (Czechoslovakia)	1113	269.5	11.2
Bournemouth	1474	203.5	1	Moscow (No. 1) (Russia)	174	1724	500
Bratislava (Czechoslovakia)	1004	298.8	13.5	Motala (Sweden) .. Relays Stockholm	216	1389	30
Bremen (Germany) .. Relays Hamburg	1330	225.6	1.5	Münich (Germany) .. Relayed by Augsburg,			
Breslau (Germany) .. Relayed by Gleiwitz	950	315.8	100	Kaiserslautern, and Nürnberg	740	405.4	100
Brno (Czechoslovakia)	922	325.4	32	Naples (Italy) .. Relays Rome	1104	271.7	1.5
Brussels (No. 1) (Belgium)	620	483.9	15	North National (Gt. Britain)	1013	296.2	50
Brussels (No. 2) (Belgium)	932	321.9	15	North Regional (Gt. Britain)	668	449.1	50
Bucharest (Romania)	823	364.5	12	Notodden (Norway) .. Relays Oslo	1357	221.1	0.15
Budapest (No. 1) (Hungary)	546	549.5	120	Nürnberg (Germany) .. Relays Munich	1267	236.8	2
Cassel (Germany) .. Relays Frankfurt	1195	251	1.5	Oslo (Norway) .. Relayed by Fredrikstad, Hamar,			
Cologne (Germany)	658	455.9	100	Notodden, Porsgrund, Rjukan, Stavanger,			
Copenhagen (Denmark) .. Relayed by Kalundborg	1176	255.1	10	Trøndelag	260	1154	60
Cork (I.F.S.) .. Relays Athlone	1240	241.9	5	Paris (Poste Parisien) (France)	959	312.8	100
Danzig (Free City) .. Relays Königsberg	1303	230.2	0.5	Paris (PTT) (France)	695	431.7	7
Deutschlandsender (Germany)	191	1571	60	Paris (Radio-Paris) (France)	182	1648	80
Dornbirn (Austria) .. Relays Vienna	1294	231.8	0.5	Porsgrund (Norway) .. Relays Oslo	850	352.9	0.7
Dresden (Germany) .. Relays Leipzig	1285	233.5	1.5	Poznań (Poland) .. Relays Warsaw	868	345.6	16
Droitwich (Gt. Britain)	200	1500	150	Prague (Czechoslovakia)	638	470.2	120
Dublin (Ireland) .. Relays Athlone	1348	222.6	0.2	Radio-Normandie (Fécamp) (France)	1456	206	10
Flensburg (Germany) .. Relays Hamburg	1330	225.6	1.5	Reykjavik (Iceland)	208	1442	16
Florence (Italy) .. Relays Turin	610	491.8	20	Riga (Latvia)	583	514.6	15
Frankfurt-am-Main (Germany) .. Relayed by				Rjukan (Norway) .. Relays Oslo	1348	222.6	0.15
Trier, Kaiserslautern, Cassel and Freiburg	1195	251	17	Rome (Italy) .. Relayed by Naples, Milan			
Fredrikstad (Norway) .. Relays Oslo	776	386.6	0.7	(No. 2), Turin (No. 2), and Bari	713	420.8	50
Freiburg (Germany) .. Relays Frankfurt and				Salzburg (Austria) .. Relays Vienna	1348	222.6	0.5
Stuttgart	1195	251	5	Scottish National (Gt. Britain)	1050	285.7	50
Geneva (Switzerland) .. Relayed by Sottens	401	748	1.3	Scottish Regional (Gt. Britain)	804	373.1	50
Genoa (Italy) .. Relays Turin	986	304.3	10	Sottens (Switzerland) .. Relays Geneva	677	443.1	25
Gleiwitz (Germany) .. Relays Breslau	1231	243.7	5	Stavanger (Norway) .. Relays Oslo	1276	235.1	0.5
Göteborg (Sweden) .. Relays Stockholm	941	318.8	10	Stettin (Germany) .. Relays Hamburg	1330	225.6	1.5
Graz (Austria) .. Relays Vienna	886	338.6	7	Stockholm (Sweden) .. Relayed by Motala, Göte-			
Hamar (Norway) .. Relays Oslo	510.8	587.3	0.7	borg, and Hörby	704	426.1	55
Hamburg (Germany) .. Relayed by Bremen,				Strasbourg (France)	859	349.2	15
Flensburg, Hanover, Magdeburg, and Stettin	904	331.9	100	Stuttgart (Germany) .. Relayed by Freiburg	574	522.6	100
Hanover (Germany) .. Relays Hamburg	1330	225.6	1.5	Toulouse (Radio-Toulouse) (France)	913	328.6	60
Heilsberg (Königsberg) (Germany) .. Relayed by				Trier (Germany) .. Relays Frankfurt	1195	251	2
Danzig	1031	291	60	Trieste (Italy) .. Relays Turin	1222	245.5	10
Helsinki (Finland) .. Relays Lahti	895	335.2	10	Trøndelag (Norway) .. Relays Oslo	629	476.9	20
Hilversum (Holland) <i>Hilversum Pgrm. and Annmts.</i>	995	301.5	20	Turin (No. 1) (Italy) .. Relayed by Milan, Genoa,			
Hörby (Sweden) .. Relays Stockholm	1131	265.3	10	Florence, and Trieste	1140	263.2	7
Huizen (Holland) <i>Hilversum Pgrm. and Annmts.</i>	160	1875	7	Turin (No. 2) (Italy) .. Relays Rome	1363	220	0.2
Innsbruck (Austria) .. Relays Vienna	519	578	0.5	Vienna (Bisamberg) (Austria) .. Relayed by Graz,			
Juan-les-Pins (Radio Côte d'Azur) (France)	1249	240.2	2	Innsbruck, Klagenfurt, Linz, Salzburg,			
Kaiserslautern (Germany) .. Relays Munich and				and Dornbirn	592	506.8	120
Frankfurt	1195	251	1.5	Warsaw (No. 1) (Poland) .. Relayed by Katowice,			
Kalundborg (Denmark) .. Relays Copenhagen ..	238	1261	60	Lwów, Poznań, and Wilno	224	1339	120
Katowice (Poland) .. Relays Warsaw	758	395.8	12	West National (Gt. Britain)	1149	261.1	50
Kaunas (Lithuania)	155	1935	7	West Regional (Gt. Britain)	977	307.1	50
Klagenfurt (Austria) .. Relays Vienna	1294	231.8	4.2	Wilno (Poland) .. Relays Warsaw	536	559.7	16
Königsberg (Heilsberg) (Germany) .. Relayed by							
Danzig	1031	291	60				

For List of Stations in order of Frequencies and Wavelengths see page 62

9 p.m. (contd.)

BRUSSELS (No. 2), 9.0—Tchaikovsky Concert, 1812, Overture, The Nutcracker Suite, Selection, "The Sleeping Beauty." Marche slave.
BUDAPEST, 9.0—Rezzo Horvath Cigany Band.
COLOGNE, 9.0—See 8.30 Hamburg.
COLOGNE, 9.0—See 8.30 Hamburg. 9.20—See Munich. 9.35—See Deutschlandsender. 9.45—Light Music. Leo Eysoldt's Orchestra. Station Schrammel Quartet. The Rhine Song-Trio. Willy Schneider (Bass-Baritone).
DEUTSCHLANDSENDER, 9.0—See 8.30 Hamburg. 9.5—News; Sports Report. 9.20—See Munich. 9.35—See Deutschlandsender. 9.45 (approx.)—Dance Music. Franz Hauck Band.
HAMBURG, 9.0—Orchestra (contd. from 8.30). 9.5—News. 9.20—See Munich. 9.35—See Deutschlandsender. 9.40—Station Dance Band. Conductor: Bolt. Sietin Concert Orchestra. Conductor: Plato.
HILVERSUM, 9.0—Organ and Songs (contd. from 8.55). 9.25—Records. 9.40—Act III, "Nero"—Opera (Mascagni), from the Scala, Milan.
HUIZEN, 9.0—Orchestra and Frank Titterton (contd. from 8.55). In the Interval at 9.30: Records. 9.50—Records.
JUAN-LES-PINS (Radio Côte d'Azur), 9.0—News. 9.15—Orchestra. Minuet (Boccherini). Suite, Les millions d'Arlequin (Drigo). Pastourelle (Popy). Turkish Patrol (Michaelis). 9.30—Request Programme.
KALUNDBORG, 9.0—News. 9.10—"Folk Music of Many Lands"—Radio Orchestra. Conductor: Gröndahl. Molly on the Shore (Grainger). Upper Bavarian Folk Dance (Lanner). Serbian Folk Music (arr. Ludolf Nielsen). Fantasia on Russian Folk Melodies, Kamarinskaya (Glinka). Estonian Folk Melodies (arr. Gröndahl). Polka (Mrazek).

KÖNIGSBERG, 9.0—See 8.30 Hamburg. 9.5—News; Sports Report. 9.20—See Munich. 9.40—See Hamburg.
LEIPZIG, 9.0—News; Sports Notes. 9.20—See Munich. 9.35—See Deutschlandsender. 9.45—See 9.35 Breslau.
MADRID (EAJ7), 9.0—Larraña (Violin). Fugue (Tartini-Kreisler). Sonata, Il Trillo del Diavolo (Tartini-Kreisler). Adagio from the Violin Concerto in D (Brahms). Concerto (Glazunov).
MONTE CENERI, 9.0—Sports.
MOSCOW (No. 1), 9.5—English Programme: (a) Talk: Criminals in the Soviet States, (b) Weekly Review; (c) Letter-Box.
MUNICH, 9.0—See 8.30 Hamburg. 9.5—Time; News; Sports Notes. 9.20—Report of the German Ski Championships. 9.45—See Cologne.
OSLO, 9.0—Topical Talk. 9.15—Sports. 9.30—Dance Records.
PARIS (Poste Parisien), 9.0—Music-hall Programme.
PARIS (PTT), 9.0—Dramatic Programme (contd. from 8.30).
PARIS (Radio-Paris), 9.0—"La belle Hélène" (Offenbach) (contd. from 8.0). In the Interval at 9.15: News; Sports.
PRAGUE, 9.0—Time; News. 9.20—Record. 9.25—News in German. 9.30—See Brno.
RADIO-NORMANDIE, 9.0—Opera and Operetta Music (contd. from 8.30). 9.30—Dance Music. 9.45—Light Music.
REYKJAVIK, 9.0—Time; News. 9.30—Reading.
ROME, 9.0—See 8.0 Turin.
SOTTENS, 9.0—Orchestra (contd. from 8.25). 9.10—Sports Notes. 9.30—9.50—Report from Davos: The Finals of the International Ice-Hockey Championships.
STOCKHOLM, 9.0—Budapest Quartet. String Quartet in A minor (Schubert). String Quartet in D (Haydn).
STRASBOURG, 9.0—See 8.30 Paris (PTT).
STUTTART, 9.0—Time; News; Sports Report. 9.20—See Munich. 9.35—See Breslau.

TOULOUSE (Radio-Toulouse), 9.0—Concert Version, "Lakmé"—Opera (Delibes).
TURIN, 9.0—"Nero"—Opera (Mascagni) (contd. from 8.0).
VIENNA, 9.0—Moisassurs Zauberfluch (Ferdinand Raimund) (contd. from 7.35). 9.20—Report of the Dachsenstein Cup Ski-Jumping Competition.
WARSAW, 9.0—See 8.0 Turin.

10 p.m.
ATHLONE, 10.0—Sports Talk by S. O'Ceallachain. 10.15—Play—presented by D. P. Mitchell and Company.
BARCELONA, 10.0—Vicente Diez de Tejada reads Records. 10.45—Chess.
BERLIN, 10.0—See Frankfurt.
BORDEAUX-LAFAYETTE, 10.0—Amusement Guide.
BRESLAW, 10.0—Station Dance Band.
BRUSSELS (No. 1), 10.0—News. 10.10—Walloon Songs and Dances. 10.40—Leslie Bennet Dance Band from the Magic Palace, Antwerp.
BRUSSELS (No. 2), 10.0—News. 10.10—Leslie Bennet Dance Band from the Magic Palace, Antwerp.
BUDAPEST, 10.0—Bachmann Quintet from the Keszey Restaurant. Waltz Potpourri (Robrecht). Pieces (Grieg): (a) Ich liebe Dich, (b) Erotica. Träumerei (Erkek). Song (Kapeller). Mona Lisa (Schebek). Selection: "Knight John" (Kacsóh).
COLOGNE, 10.0—Light Music (contd. from 9.45).
DEUTSCHLANDSENDER, 10.0—See Hamburg.
FRANKFURT, 10.0—Dance Music. Franz Hanck Band.
HAMBURG, 10.0—Dance Band and Orchestra (contd. from 9.40).
HILVERSUM, 10.0—Act III, "Nero"—Opera (Mascagni) (contd. from 9.40). 10.55—News.
HUIZEN, 10.0—Records. 10.10—News. 10.15—Records. 10.20—Epilogue by the Small Choir. Conductor: Plickers.
JUAN-LES-PINS (Radio Côte d'Azur), 10.0—Request Programme. 10.30—Variety.
KALUNDBORG, 10.0—Dance Music.
KÖNIGSBERG, 10.0—See 9.40 Hamburg.
LEIPZIG, 10.0—See Breslau.
MADRID (EAJ7), 10.0—Flamenco Songs. Interlude by Ramón Gómez de la Serna.
MOSCOW (No. 1), 10.5—German Talk: Communist Youth in the Factory.
MUNICH, 10.0—See 9.45 Cologne.
OSLO, 10.0-10.30—Dance Records.
PARIS (Poste Parisien), 10.0—Music Hall Programme (contd. from 9.0). 10.30—Records; Light Music.
PARIS (PTT), 10.0—Dramatic Programme (contd. from 8.30). 10.30—News; Adison Dance Band.
PARIS (Radio-Paris), 10.0—"La belle Hélène" (Offenbach) (contd. from 8.0). 10.30—Dance Music. Bailly Band.
RADIO-NORMANDIE, 10.0—Dance Music. 10.30—Light Music.
REYKJAVIK, 10.0—Bach Records: (a) Brandenburg Concerto in F, (b) Passacaglia in C minor. Dance Music.
ROME, 10.0—See 8.0 Turin.
STRASBOURG, 10.0—See 8.30 Paris (PTT). 10.30—Sports Notes; News. 10.40—Dance Music.
STUTTART, 10.0—See Frankfurt.
TOULOUSE (Radio-Toulouse), 10.0—"Au caveau de dix heures"—Fantasy. 10.15—North African News. 10.30—Waltzes and Tangos.
TURIN, 10.0—"Nero"—Opera (Mascagni) (contd. from 8.0).
VIENNA, 10.0—"Der Geburtstag der Infantin" (Schrecker) on Records. 10.20—Dance Music.
WARSAW, 10.0—See 8.0 Turin.

SUNDAY Jan. 27

HILVERSUM, 11.0—Dance Music by the Kovacs Lajos Orchestra.
JUAN-LES-PINS (Radio Côte d'Azur), 11.0—Variety.
KALUNDBORG, 11.0—Chimes. 11.2—Dance Music.
LEIPZIG, 11.0—See Breslau.
MADRID (EAJ7), 11.0—Dance Music.
PARIS (Poste Parisien), 11.0—Records; Light Music.
PARIS (PTT), 11.0—Adison Dance Band.
PARIS (Radio-Paris), 11.0—Dance Music.
RADIO-NORMANDIE, 11.0—Records. 11.30—Dance Music.
REYKJAVIK, 11.0—Dance Music.
STRASBOURG, 11.0—Dance Music.
STUTTART, 11.0—See Frankfurt.
TOULOUSE (Radio-Toulouse), 11.5—Orchestra. 11.15—Sound-Film Music. 11.30—Viennese Orchestra. Hungarian Potpourri. Tell me Tonight (Spoliansky). September (Gungl). Les premières hirondelles (Gungl). 11.50—Songs.
VIENNA, 11.0—Dance Music.

12 midnight

FRANKFURT, 12.0—Mozart Concert (contd. from 11.0).
MADRID (EAJ7), 12.0—Chimes.
RADIO-NORMANDIE, 12.0—Dance Music. 12.15—Sound-Film Music. 12.45—Dance Music.
REYKJAVIK, 12.0—Dance Music.
STUTTART, 12.0—See Frankfurt.
TOULOUSE (Radio-Toulouse), 12.0—News. 12.5—Opera Music. Arias, "Griselidis" (Massenet) and "Lohengrin" (Wagner). Trio, "Faust" (Gounod). Aria, "The Damnation of Faust" (Berlioz). 12.15-12.30—Symphony Orchestra. Ballet from Petite Suite (Debussy). Marche militaire from Suite algérienne (Saint-Saëns). Selection, "Das Nachtlager in Granada" (Kreutzer).

1 a.m. (Monday)

RADIO-NORMANDIE, 1.0—News. 1.10—Dance Music.

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9 p.m. (contd.)

Mandits Dance Band from the Patria Café. COLOGNE, 9.0—News. 9.20—Variety. Station Orchestra and Soloists. Conductor: Eysoldt. DEUTSCHLANDSENDER, 9.0—News. FRANKFURT, 9.0—News. 9.15—Talk: Radio Interference. 9.30—Georg Schumann plays his own Pianoforte Music, Musette in E minor. Gavotte, Pieces from the Suite, Dur und Moll. Ballad in G minor. HAMBURG, 9.0—News. 9.25—Green Week—Report (on Records). HILVERSUM, 9.0—Orchestra (contd. from 8.10). 9.40—Old Records. HUIZEN, 9.0—The N.C.R.V. Orchestra (contd. from 7.45). In the Interval at 9.40: Press Review. JUAN-LES-PINS (Radio Côte d'Azur), 9.0—News. 9.10—Play (contd. from 8.30). KALUNDBORG, 9.0—Chamber Music. Budapest String Quartet. Quartet in E flat (Mendelssohn). Quartet in B flat (Beethoven). KÖNIGSBERG, 9.0—News. 9.20—Talk: Eicke von Reppow. 9.45—Station Orchestra. Conductor: Wilcken. Selection, "Der Waffenschmied" (Lortzing). Argentine Serenade (Köpping). Cigány Lullaby (Köpping). Overture, "Der Erlenhügel" (Kuhlau). Waltz (Gröschel). Nocturne (Liszt). Polonaise in A (Chopin). Selection, "La Traviata" (Verdi). March (Blankenburb). LEIPZIG, 9.0—News. 9.20—Leipzig Symphony Orchestra. Conductor: Weber. Herbert Heyde (Bassoon). Heroic Legend after Körner's "Zriny" (Friedrich Grimm). Bassoon Concerto (Grossmann). Symphonic Suite (Trapp). Variations on the Thuringian Folk Song. "Ach, wie ist's möglich dann (Raff). Variations on an Egebirge Folk Song (Büttner).

LYONS (La Doua). 9.0—Concert; News. MADRID (EAJ7), 9.0—Sextet. 9.30—Reading. MOSCOW (No. 1), 9.5—English Programme: (a) Talk: Education on a Collective Farm, (b) Letter-Box. MUNICH, 9.0—News; Exchange. 9.20—To be announced. OSLO, 9.0—Topical Talk. 9.15—Schjelderup Songs by Mme. Ingeborg Sandvik Kristensen, with Introductory Talk. PARIS (Poste Parisien), 9.5—Concert by Frelhel, Charles and Johnny. 9.35—Interlude. 9.50—Pianoforte Quintet in F minor (Brahms). PARIS (PTT), 9.0—"Jean de Nivelle"—Opera (Delibes) (contd. from 8.30). PARIS (Radio-Paris), 9.0—Thrillers (contd. from 8.0). In the Interval at 9.15: News; Sports; Review. PRAGUE, 9.0—News. 9.15—Records. 9.30-9.50—German News and Talk: Democracy. RADIO-NORMANDIE, 9.0—Four One-Act Plays: (a) "Allo, Danton, Police" (Picard), (b) "La Légende de Tombelaine" (Hédouin), (c) "La peur des coups" (Courteline), (d) "Lidoire" (Courteline). REYKJAVIK, 9.0—Time; News. 9.30—Reading. ROME, 9.0—Variety. SOTTENS, 9.0-9.20—The Dutch Quartet (contd. from 8.25). STOCKHOLM, 9.0—Orchestra. STRASBOURG, 9.0—"Surcouf"—Operetta (contd. from 8.30). In the Interval: News. STUTTGART, 9.0—News. 9.20—Winter Sports Report from Garmisch-Partenkirchen (on Records). 9.40—Dance Music. TOULOUSE (Radio-Toulouse), 9.0—Concert Version, "Mirella"—Opera (Gounod). TURIN, 9.0—Pianoforte and Violin. VIENNA, 9.0—Trio (Schubert) (contd. from 8.40). 9.25—News. 9.45—Light Orchestral Concert. Conductor: Ganglberger. March, Austria (Schieder). Overture, "Fesche Geister" (Ziehrer). Vien-

nese Waltz (Ganglberger). Selection "Frederika" (Lehár). Military March (Korolanyi). Suite, Rosenstraum in Sanssouci (Bernards). Tango, "Die verliebte Königin" (Brodzsky). Waltz (Schmid). Intermezzo (Lincke). March (Wadek). Potpourri (Spielaufl). March (Pauspertl). WARSAW, 9.0—Announcements. 9.15—Dance Music.

10 p.m.

ATHLONE, 10.0—Variety. 10.30—News; Weather. 10.40—J. Hoey (Traditional Fiddle). 10.50—Records. BARCELONA, 10.0—News. 10.30—Rafael Colomina (Tenor). Arias from "Tosca" (Puccini), "La Favorita" (Donizetti), "The Pearl Fishers" (Bizet) and "La Bohème" (Puccini). BERLIN, 10.0-10.30—Violin, Pianoforte and Baritone (contd. from 9.20). BRESLAU, 10.0—See Stuttgart. BRUSSELS (No. 1), 10.0—Bach Anniversary Concert (contd. from 8.30). 10.20—News. 10.30—Dance Records. BRUSSELS (No. 2), 10.0—News. 10.10—Dance Records. BUDAPEST, 10.0—Mandits Dance Band. 10.15—Simi Kurina Cigány Band. COLOGNE, 10.0—Variety (cont. from 9.20). DEUTSCHLANDSENDER, 10.0—Dance Music. FRANKFURT, 10.0—See Hamburg. HAMBURG, 10.0—Station Orchestra. Conductor: Secker. Overture, "The Italian Girl in Algiers" (Rossini). Romantic Suite (Bulterian). Russian Rhapsody (Mauß). Extracts, "Sigurd Jorsalfar" (Grieg). Waltz, España (Waldteufel). Norwegian Rhapsody (Svendsen). HILVERSUM, 10.0—Old Records. 10.40—News. 10.50—Ormenda Orchestra from the Café Caland, Rotterdam. Conductor: Doëc. HUIZEN, 10.0—The N.C.R.V. Orchestra (contd. from 7.45). 10.10—Dance Records.

KALUNDBORG, 10.0—Johansen Dance Band. KÖNIGSBERG, 10.0—Orchestra (contd. from 9.45). LEIPZIG, 10.0-10.45—Leipzig Symphony Orchestra (contd. from 9.20). MADRID (EAJ7), 10.0—Chimes. 10.5—News. 10.15—"La serva padrona"—One-Act Opera (Pergolesi). MOSCOW (No. 1), 10.5—Hungarian Talk: The Soviet Congress. MUNICH, 10.0—Station Orchestra. Conductor: Kloss. PARIS (Poste Parisien), 10.0—Pianoforte Quintet (contd. from 9.50). 10.30—Records; Exchange. PARIS (PTT), 10.0—"Jean de Nivelle"—Opera (Delibes) (contd. from 8.30). PARIS (Radio-Paris), 10.0—Thrillers (contd. from 8.0). 10.30—Atkins Dance Band. RADIO-NORMANDIE, 10.0—Plays (contd. from 9.0). REYKJAVIK, 10.0—Popular Music: Station Orchestra; Songs; Violin Sonata in C minor (Grieg) on Records. ROME, 10.0—News. STRASBOURG, 10.0—"Surcouf"—Operetta (contd. from 8.30). STUTTGART, 10.0—Dance Music. TOULOUSE (Radio-Toulouse), 10.0—Orchestra. 10.15—North African News. 10.30—Operetta Airs. 10.50—Orchestra. TURIN, 10.0—News. 10.10—News in Spanish. VIENNA, 10.0—Orchestra (contd. from 9.45). WARSAW, 10.0—Announcements. 10.5—Dance Music.

11 p.m.

BARCELONA, 11.0—Catalan Programme. 11.30—Alfonso Parreño (Tenor). BUDAPEST, 11.5—News. FRANKFURT, 11.0—See Stuttgart. HILVERSUM, 11.0-11.40—Orchestra (contd. from 10.50).

MONDAY Jan. 28

HUIZEN, 11.0-11.10—Dance Records. KALUNDBORG, 11.0-11.30—Chimes; Johansen Dance Band. MADRID (EAJ7), 11.0—"La serva padrona" (Pergolesi) (contd. from 10.15); Dance Music. 11.45—News. PARIS (PTT), 11.0—News. PARIS (Radio-Paris), 11.0—Dance Music. RADIO-NORMANDIE, 11.0—Records; Exchange. STUTTGART, 11.0—Light Music. In the Interval: Ludwig (Pianoforte). TOULOUSE (Radio-Toulouse), 11.0—Chansonnettes. 11.15—Operetta Music. 11.30—Italian Songs. 11.50—Light Music. VIENNA, 11.0—Orchestra (contd. from 9.45). 11.15—Wolfert Jazz Quartet.

12 midnight

BARCELONA, 12.0—News. FRANKFURT, 12.0—See 11.0 Stuttgart. RADIO-NORMANDIE, 12.0—Orchestra. 12.30—Records. 12.45—Dance Music. STUTTGART, 12.0—Light Music (contd. from 11.0). TOULOUSE (Radio-Toulouse), 12.0—News. 12.5—Opera Music. The Death of Boris, "Boris Godunov" (Mussorgsky). Drinking Scene, "Werther" (Massenet). Arias, "Le pré aux clercs" (Hérold). 12.15-12.30—Symphony Orchestra.

1 a.m. (Tuesday)

RADIO-NORMANDIE, 1.0—News. 1.10—Dance Music.

NATIONAL

For Time Signals, see Monday 10.15 a.m. (Droitwich)—Service. 10.30 (Droitwich)—Weather Forecast. 10.45—"Shopping and Cooking." Monica Dixon. 11.0—Cinema Organ (Sydney Torch). 11.30—Geography for Schools. 11.50—Records. 12.15 p.m.—The Leon Wayne Sextet. 1.0—Joseph Muscant and the Troxy Grand Orchestra. Arab March (Ganne). Dance of the Tea Dolls (Hagen). Gems of South America (Schmidt). An Old-fashioned Love Song (Noble). Tales of Hoffmann (Offenbach). A Grieg Potpourri (arr. Muscant). Love's last word is spoken (Bixio). Selection, New Moon (Romberg). 2.0-4.0 (Scottish)—See Regional. 2.5-4.0 (except Scottish)—For Schools: Nature Study. 2.30—Music. 3.5—French. 3.35—Talk for Sixth Forms by John Gielgud. 4.0—To the Unemployed: "This and That." John Hilton. 4.20—The Hirsch String Quartet. Summer Austin (Baritone). 5.15—The B.B.C. Dance Orchestra. 6.0—"The First News." 6.25—Interlude. 6.30—"The Foundations of Music." 6.50—French Dialogue. E. M. Stéphan and Camille Viète. 7.20—Records. 7.30—"Freedom and Authority in the Modern World"—Part II. C. R. M. F. Cruttwell. 8.0—Famous Trials—5: "The Trial of Lady Alice Lisle" before Lord Chief Justice Jeffreys of the "Bloody Assizes" at Winchester on August 27 1685, on a charge of high treason. Reconstructed from the Records by C. Whitaker-Wilson. 9.0—Winifred Small and Jean Pougnet (Violins). 9.30—"The Second News." 10.0—"India." The Rt. Hon. Winston S. Churchill, C.H., M.P. 10.20—The London Symphony Orchestra, conducted by Frank Bridge. Overture, May Night (Rimsky-Korsakov). Pavane for a dead Infanta (Ravel). Scènes Pittoresques (Massenet). Capriccio Italien (Tchaikovsky). 11.15-12.0 (Droitwich)—Dance Music: Lew Stone and his Band.

REGIONAL

For Time Signals, see Monday 10.15-10.45 a.m. (except Midland)—Droitwich. 10.45—B.B.C. Northern Orchestra. 11.45—Cinema Orchestra. 12.45 p.m.—Records: Romberg. 1.15—Organ Recital. 2.0 (except Scottish)—Orchestra. 2.0 (Scottish)—Records. 2.35 (Scottish)—For the Schools: Reception Test. 2.40—French. 3.10—English. 3.35—Talk. 3.0 (Northern till 4.0; Scottish from 4.0)—The Torquay Municipal Orchestra. Winifred Fisher (Soprano). 4.0 (Northern)—Evensong. 4.30 (Northern from 4.45)—Records. 5.15—The Children's Hour. 6.0—"The First News." 6.30 (Regional, Western, N. Ireland)—Wireless Military Band. Gladys Parr (Contralto). 6.30 (Midland)—"Something to Talk About"—Play by Eden Phillpotts. 6.30 (Northern)—"Racing Pigeons." 6.30 (Scottish)—Gaelic Lesson. 6.50 (Northern)—Stavley Band. 6.50 (Scottish)—Newmilns Band. 7.0 (Midland)—Cinema Organ. 7.15 (except Midland and Scottish)—Mr. Flotsam and Mr. Jetsam. 7.30 (Regional)—Glees and Part Songs. The Wireless Singers. 7.30 (Midland)—Peterborough Orchestral Society. George Parker (Baritone). Kathleen Watkins (Pianoforte). 7.30 (Northern)—See 6.50. 7.30 (Scottish)—Organ Recital. 7.30 (Western)—Classical Passages. 7.30 (N. Ireland)—Madrigal Singers. Tina Bonifacio (Harp). 8.0 (Regional)—Orchestra (D). 8.0 (Northern)—Northern Orchestra. Dorothy Pearce (Soprano). 8.0 (Scottish)—Studio Orchestra. Kirsty MacLennan (Contralto). 8.0-9.50 (Western)—Acts I and II of Bizet's "Carmen." 8.15 (N. Ireland)—"As You Were." 8.30 (Midland)—Michael Mullinar (Pianoforte). 8.30 (N. Ireland)—Song and Pftc. Recital by Albert Taylor. 8.45 (Scottish)—Poetry. 9.0 (except Western)—"Love needs a Waltz"—a modern fairy-tale. 9.50 (Western)—Records. 10.0—News Summary. 10.10—Dance Records. 10.30-12.0 (Midland till 11.15)—Lew Stone and his Band.

TUESDAY January 29

PRINCIPAL EVENTS

SYMPHONY CONCERTS

P.M. 5.0 Brussels No. 1: Beethoven. 8.0 Frankfurt: Symphony No. 7. (Bruckner). 8.0 Königsberg: Pianoforte Concertos (Liszt, Chopin). 8.55 Huizen: 5th Symphony (Bruckner). 10.20 National: L.S.O., conductor, Bridge.

LIGHT CONCERTS

P.M. 2.0 Kalundborg: Orchestra, Norse music. 2.45 Warsaw: Light orchestral. 3.0 Hamburg, etc.: Variety concert. 5.20 Leipzig: Folk Song. 6.10 Prague: Military Band. 6.30 Regional: Wireless Military Band. 6.30 Strasbourg: Popular orchestral. 7.0 Warsaw: Orchestra, songs. 7.45 Huizen: Orchestra, tenor arias. 8.0 Kalundborg: String orchestra. 8.0 Breslau: Male Voice Choir. 8.0 Brussels No. 1: Operetta music. 8.0 Brussels No. 2: Radio Orchestra. 8.0 Hamburg: Operetta music. 8.0 Warsaw: Variety concert. 9.0 Stockholm: Military Band. 9.15 Brussels No. 1: Flemish programme. 9.15 Kalundborg: French music. 9.30 Budapest: Cigány Band Magyar. 9.55 Hamburg: Liszt, Reger, Thomas, etc. 11.0 Frankfurt, Stuttgart: Gramophone Concert.

OPERAS

P.M. 6.30 Budapest: Relay from Opera House. 6.35 Vienna: "Fredegundis" (Schmidt). 8.0 Turin: "Dibuk" (Rocca). 8.30 French PTT stations ex. Radio-Paris: "Julius Cæsar" (Handel) (with John Brownlee).

OPERETTA

P.M. 9.0 Poste Parisien: "Le bal de Béatrice d'Este" (Hahn).

CHAMBER MUSIC

P.M. 4.0 Leipzig: Leipzig composers. 6.55 Beromünster: The Klingler Quartet. 8.0 Beflin: Trios and songs. 8.45 Radio-Paris: Quartet (Grieg), Quintet (Dvořák), songs, poetry.

RECITALS

P.M. 4.0 Warsaw: Pianoforte Sonata (Beethoven). 6.0 Warsaw: Violin. 6.30 Brussels No. 1: Organ; 7.0 Song. 7.20 Stockholm: Organ, song, violin. 7.45 Rome: Serato (violin). 9.35 Königsberg: Song, violin, pianoforte. 10.0 Poste Parisien: "Chansons de Miamka" (Georges).

PLAYS

P.M. 5.50 Breslau: "Sturm überm Acker." 7.30 Brno, Prague: "The Orphan" (Kvapil). 8.0 National: Famous Trials, 5. 9.0 Brussels No. 2: Excerpts, "Peer Gynt" (Ibsen), with Grieg's music. 9.40 Hilversum: "The Three Musketeers" (after Dumas).

TALKS

P.M. 5.0 Paris (PTT): Sorbonne lecture. 8.20 Kalundborg: "Sir Walter Scott." 9.15 Sottens: Talk on The League of Nations. 10.0 National: Mr. Churchill: "India."

DANCE MUSIC

P.M. 8.0 Cologne; 9.35, Leipzig, etc.; 9.45, Breslau; 10.5, Warsaw; 10.30, Radio-Paris; 11.15 National.

WEDNESDAY Jan. 30

12 noon (contd.)

STOCKHOLM, 12.0 - Redland (Xylophone) and Jakobsson (Saxophone). 12.20 - Reading. 12.45 - Light Music. STRASBOURG, 12.0 - Records. 12.30 - News. 12.45 - Records. STUTTGART, 12.0 - News. 12.15 - Military Band. Conductor: Hanker. TURIN, 12.0 - Announcements. 12.5 - Consiglo Orchestra. In the interval at 12.35-12.45 - Records; Exchange. VIENNA, 12.0 - News. 12.10 - Records. WARSAW, 12.0 - News. 12.5 - Dance Records.

1 p.m.

ATHLONE, 1.30 - Weather; Exchange; Records. BERLIN, 1.0 - News. 1.15-1.30 - Schubert Paraphrases (Liszt), on Records. BRESLAU, 1.5 - Exchange. 1.10 - Announcements; Records. 1.40 - Markets. BRUSSELS (No. 1), 1.0 - News. 1.10 - Dance Music. BRUSSELS (No. 2), 1.0 - News. 1.10 - Orchestra. Conductor: Douliez. Military March (Schubert). Potpourri (Zimmer). Extract, En Bretagne (Rhené Baton). Insects make Music (Zimmer). 1.30 - New Records. BUDAPEST, 1.0 - Quintet (contd. from 12.30). 1.40 - Household Hints. COLOGNE, 1.0-1.15 - Announcements. 1.45 - Talk. DEUTSCHLANDSENDER, 1.0 - Variety. 1.55 - Announcements. FRANKFURT, 1.0 - See 12.15 Stuttgart. 1.15 - News. 1.30 - Industrial Review. 1.45 - Exchange. 1.55 - Weather. HAMBURG, 1.0 - Light Music. 1.15 - News. 1.30 - Records; German Folk Music. HILVERSUM, 1.0-1.25 - Orchestra (contd. from 12.40). 1.40 - For Women. 1.55 - Dressmaking. HUIZEN, 1.0 - Quintet (contd. from 12.10). 1.40 - Records. KÖNIGSBERG, 1.0 - News. 1.5 - Orchestra (contd. from 12.5). 1.30 - Announcements; Records. LEIPZIG, 1.0 - News; Exchange. 1.15 - Old Peasant Songs. MUNICH, 1.0 - News; Exchange. 1.20 - Maja Trampler and Hanny Claessens (Pianoforte Duets) and Gerda Jörn (Soprano). 1.50 - Talk: A Seventeenth Century Pioneer of the Motor-car. PARIS (Poste Parisien), 1.0 - Records. 1.15 - Exchange. PARIS (PTT), 1.0 - News. 1.15 - Orchestra (contd. from 12.15). 1.30 - Exchange. 1.33 - "The Song in all its Forms" - Programme for the Blind. PARIS (Radio-Paris), 1.0 - Light Music (contd. from 12.15). In the interval at 1.20: Exchange. PRAGUE, 1.0-1.5 - Exchange and Weather in German. ROME, 1.0-1.15 - Light Music. STOCKHOLM, 1.0 - Light Music. 1.45 - For Children. STUTTGART, 1.0 - Military Band (contd. from 12.15). TURIN, 1.0 - Consiglo Orchestra. 1.15-1.25 - Exchange. VIENNA, 1.0 - Song Records. 1.20 - Announcements.

2 p.m.

ATHLONE, 2.0-2.30 - Records. BERLIN, 2.0 - Exchange. 2.25 - "German Cities" - Sequence with Music (Lotte Meusel). BEROMÜNSTER, 2.30 - Talk for Women. BRESLAU, 2.0 - Markets. 2.10 - Book Review. 2.30 - For Children: Exploration in Africa. COLOGNE, 2.0 - Sports Programme. 2.30 - Exchange. 2.50 - Topical Talk. DEUTSCHLANDSENDER, 2.0 - Exchange. 2.15 - Songs by Children. 2.40 - Classical Records. FRANKFURT, 2.15 - Romantic Music. Part I - Theodor Thraemer Songs, by Emil Braun (Baritone). Part II - Septet in E flat (Kreutzer) by Members of the Freiburg Orchestra. HAMBURG, 2.0 - Exchange. 2.40 - Shipping. 2.50 - Ice Report. HILVERSUM, 2.0 - Dressmaking. 2.40 - For Children. HUIZEN, 2.0 - Records. 2.10 - For

Young Stamp Collectors. 2.40 - Records. KALUNDBORG, 2.0 - Records. 2.30 - Rydahl Instrumental Ensemble. Per aspera ad astra (Urbach). Hungarian Comedy Overture (Kéler-Béla). Flower Waltz (Waldeufel). Extracts, "The Magic Flute" (Mozart). Après l'été (Schmitt). Extracts, "I Zingari" (Leoncavallo). Serenade (Drdla). Twelve Epigrams (Rosenburg). Ene med Toner (Carlander). The Call of Spring (William). When Evening Spreads o'er Land and Sea (Würtl). Intermezzo (de Micheli). Rapsodietta (Gade). KÖNIGSBERG, 2.0 - Markets; Exchange. 2.10 - Household Hints. 2.20 - Book Review. 2.35 - Girls' Choir. LEIPZIG, 2.0 - See Deutschlandsender. 2.15-2.30 - Art Review. 2.40 - Exchange. MOSCOW (No. 1), 2.15 - For Children. MUNICH, 2.10 - Pianoforte Lesson: Modulation. 2.30 - A Girls' Choir. 2.50 - Announcements. PARIS (PTT), 2.0 - "The Song in all its Forms" (contd. from 1.33). PARIS (Poste Parisien), 2.0 - Exchange. PRAGUE, 2.45 - Exchange and Weather. 2.55 - Station Orchestra. Conductor: Parik. STUTTGART, 2.30 - For Children. VIENNA, 2.0 - Announcements. 2.20 - Gym. 2.40 - Talk: The History of Photography. WARSAW, 2.30 - News. 2.35 - Exchange. 2.45 - Dramatic Programme.

3 p.m.

BERLIN, 3.0 - Station Orchestra and Soloists. Conductor: Steiner. Prelude, "The Merry Wives of Windsor" (Nicolai). Tenor Solo: Carnival (Valente). Bolero, "Don Quixote" (Kienzl). Waltz, "La Bohème" (Puccini). Mazurka brillante (Liszt). Harlequin (Popper). Cobold Dance (Dvořák). Furiant (Dvořák). I give my Heart, "The Dubarry" (Millöcker-Mackeben). Lanner Waltz Potpourri (Schüt). Suite, "The Bartered Bride" (Smetana). Tenor Songs: Paraphrase on the Folk Songs: (a) "Morgen muss ich fort von hier" (Enders). (b) "Du, Du liegst mir im Herzen" (Enders). Tenor: Wandern von Land zu Land (Redl). Spanish Serenade (de Micheli). Two Pieces from "Ihr grösster Erfolg" (Grothe). Dance Piece (Helmesberger). Old Sea Shanties: (a) Rio Grande, (b) Holoheh! Jetzt geht es in See. Egyptian March (Strauss). BEROMÜNSTER, 3.0 - Smetana Music. 3.20 - Serenade (Markévics). Obreschkoff (Violin); Tautenhahn (Clarinete); Neumann (Bassoon). 3.35 - Radio Orchestra. 3.50 - Early Works of Famous Composers - Hegi (Baritone); Tüller (Tenor); Sibiglia (Violin); Girsberger (Pianoforte). BRESLAU, 3.0 - Talk in Dialect. 3.20 - An Appeal for Winter Relief. 3.30 - Light Music. Conductor: Gielnik. Tone Poem, Unter sizilianischer Sonne (Dreyer). Waltz, Jubel und Trubel (Lauteenschläger). Das alte Segelschiff (Kirchstein). Feuerwehr-Galopp (Härtel). Selection, "A Tango at Midnight" (Komjati). Intermezzo (Krüger). Serenade, Liebeslied (Rust). Hahnen-Tanz (Kienzl). Krinoline (Ortleb). Intermezzo, Froh gelaunt (Kellner). Fasching-Ouverture (Leuschner). BUDAPEST, 3.10 - For Children. 3.45 - Weather. COLOGNE, 3.0 - Station Orchestra. Conductor: Eysoldt. Wjelsch and Kowalski (Pianofortes); Engels (Tenor). Prelude, "Paragaph 3" (Suppé). Transcription, La Paloma (Yradier - Weninger). Songs (Eysoldt): (a) Mein Rosenstock, (b) Wenn nicht Frühling wär'. Bolero, Pictures from the South (Nicođs). Two Pianofortes: (a) Polonaise (Arensky), (b) Waltz (Kowalsky). Spitzweg (Niemann-Spies). Songs: (a) Im Herzen hab ich dich getragen (Abt), (b) Herzensfrühling (Wickede). Festival Prelude (Lassen). DEUTSCHLANDSENDER, 3.0 - "For Green Week" - the Steinbock Orchestra from the Kaiserdamm Exhibition Hall. FRANKFURT, 3.0 - Station Orchestra. Conductor: Hess and the Franz Hauck Band. HAMBURG, 3.0 - Orchestra from Flensburg. Conductor: Röder. Hedda Klimek (Pianoforte). Overture, "L'isola disabitata" (Haydn).

4 p.m.

BERLIN, 4.0 - Orchestra and Soloists (contd. from 3.0). 4.40 - Report from the German School of Gymnastics. BEROMÜNSTER, 4.0 - Early Works of Famous Composers (contd. from 3.50). 4.20 - Records: Light Music. 4.45 - Berne Boys' Choir. Conductor: Keller. BRESLAU, 4.0 - Light Music (contd. from 3.0). In the interval at 4.30, For Farmers. BRUSSELS (No. 1), 4.55 - News. BUDAPEST, 4.0 - Talk. 4.30 - Ilona Ladányi (Songs). COLOGNE, 4.0 - Orchestra (contd. from 3.0). 4.30 - Book Review. 4.45 - Pianoforte Recital by Tilly Eikenhans. Theme with Variations (Mozart). Arabesque (Schumann). DEUTSCHLANDSENDER, 4.0 - Orchestra (contd. from 3.0). 4.50 - Topical Reports. FRANKFURT, 4.0 - Orchestra (contd. from 3.0). HAMBURG, 4.0 - Orchestra (contd. from 3.0). 4.30 - Reading (Lersch). 4.50 - "Wenn Snee liegt" - Sequence in Dialect (Budich) with Music. HILVERSUM, 4.0 - For Children. HUIZEN, 4.0 - Trio (contd. from 3.5). 4.40 - For Children. KALUNDBORG, 4.0 - Ensemble (contd. from 2.30). 4.30 - Exchange. 4.45 - Talk: Big Game Hunting in India. KÖNIGSBERG, 4.0 - Orchestra (contd. from 3.0). 4.50 - Talk: Educational Films. LEIPZIG, 4.0 - Petronella Hofmann (Contralto) and Elfriede Clemen (Pianoforte). Waltzes (Brahms). Songs (Brahms): (a) Wie Melodien zieht es mir, (b) Des Liebsten Schwur. Impromptu in E flat (Schubert). Songs (Schubert): (a) Abendstern, (b) Beim Winde. Polonaise in C sharp minor (Chopin). Waltz in A flat (Chopin). 4.30 - Talk: Friedlieb Runge, the Chemist. 4.50 - Announcements.

MONTE CENERI, 4.0-5.0 - See Beromünster. MOSCOW (No. 1), 4.30 - Classic and Contemporary Russian Chamber Music. MUNICH, 4.0 - Orchestra (contd. from 3.0). 4.30 - For Children. 4.50 - Pianoforte Concerto (Fallá) by Anna Barbara Speckner and a Chamber Orchestra. Conductor: Orff. OSLO, 4.0 - Orchestra. The Entry of the Mahdi (Svendson). Künstlerleben (Strauss). Overture, "Semiramis" (Rossini). Selection, "I Pagliacci" (Leoncavallo). Minuet (Toft). Nigger's Dream (Myddleton). Smoke gets in your eyes (Kern). PARIS (Poste Parisien), 4.50 - Exchange. PARIS (Radio-Paris), 4.0 - Exchange. PRAGUE, 4.0 - For Young People. 4.30 - Records. 4.40 - Industrial Review. 4.50 - Record. 4.55 - Talk. RADIO-NORMANDIE, 4.0 - Dance Music. 4.30 - For Children. 4.45 - Dance Music. ROME, 4.0 - News; Exchange. 4.10 - Light Music. SOTTENS, 4.0-5.0 - See Beromünster. STOCKHOLM, 4.5 - Accordions. 4.25 - Talk. 4.45 - Records. STRASBOURG, 4.45 - Talk in German: Electricity. STUTTGART, 4.0 - See 3.0 Cologne. 4.30 - Elisabeth Jentsch (Soprano); Jautz (Tenor); Jentsch (Baritone). TURIN, 4.0 - For Children. 4.10 - Political Talk by Giuseppe Bottai. VIENNA, 4.5 - Richard Maux Recital by Josef Knapp (Baritone), the Composer accompanying and Maria Mayen (Recitations). 4.50 - Talk: Rheumatism. WARSAW, 4.0 - Schubert Lieder. Die Krähe. Der Atlas. Song. Gretchen am Spinnrad. Aufenthalt. Die junge Nonne. 4.25 - Talk. 4.35 - Albert Sandler and his Orchestra (on Records). 4.50 - Sports Notes.

5 p.m.

BERLIN, 5.0 - Announcements. 5.5 - "Die Landschen kommen" - Play for Women (Graefe). 5.30 - Concert. Part I - Chamber Music by Irmgard Veit (Viola), Toni Jäckel (Lute), and Prudentia Olbrich and Alexander Ecklebe (Pianoforte). Part II - Community Singing. BEROMÜNSTER, 5.0 - "Die Bremer Stadtmusikanten" - Play for Children (Preiss). 5.30 - Talk: Belgium. BRESLAU, 5.0 - Talk: National Socialism. 5.30 - Did you know? BRUSSELS (No. 1), 5.0 - Orchestra. Conductor: Douliez. Désiré Derissen (Cello) and Edward Ferari (Songs). March (Löhr). On the Volga (Dyck). "Cello Solo: Spanish Dance, Vito (Popper). French Military March (Saint-Saëns). Flute, Clarinet and Strings: Serenade (Godard). Czech Dances from "The Bartered Bride" (Smetana). Song, Torna a Surriento (de Curtis). Suite, Joyous Youth (Eric Coates). BRUSSELS (No. 2), 5.0 - Dance Music from the Atlanta Hotel. Richard's Melodians. Vera's Tango Orchestra. Ciro's Orchestra. BUDAPEST, 5.0 - Ilona Ladányi (Songs). 5.10 - Italian Lesson. 5.40 - Imre Dobos (Trombone). COLOGNE, 5.0 - Pianoforte (contd. from 4.45). 5.5 - Review: Foreign Affairs. 5.30 - Discussion on "Dreiszig Jahre Geschichte einer Bewegung" (Vesper). 5.45 - Time; Announcements. DEUTSCHLANDSENDER, 5.0 - Songs from a School Camp. 5.30 - Talk: Profits from Potato Growing. 5.40 - Military Band. FRANKFURT, 5.0 - Topical Items: (a) Report from the Smelting Works in Wolfersheim, (b) Talk: Quarrying in Unterwiddersheim, (c) Report from a Paper Factory in Unterschmittlen. 5.45 - Announcements. 5.50 - Cassel Orchestra. Conductor: Maurick. Overture, "Hunyadi László" (Ertel). Hungarian Rhapsody (Liszt). Carnival in Naples (de Gioso). Ein Tag im Wiener Wald (Kreuzberger). Ewig blauer Himmel (Kutsch). Florentine Serenade (Culotta). Wiener Heurigen-Marsch (Römisch). HAMBURG, 5.0 - Musical Dialect Sequence (contd. from 4.50). 5.30 - Sonata in G (Haydn) by Edmund Schmid (Pianoforte). 5.45 - Talk from Stettin: The Provisioning of Germany. HILVERSUM, 5.0 - For Children. 5.10 - Orchestra. Conductor: Steyn. HUIZEN, 5.0 - For Children. 5.40 - For Farmers. KALUNDBORG, 5.0 - Talk (contd. from 4.45). 5.15 - French. 5.45 - Announcements.

6 p.m.

ATHLONE, 6.0 - For Children. 6.45 - News. BARCELONA, 6.0 - Request Records. BARI, 6.15 - Weather; News in Foreign Languages; Records. BERLIN, 6.0 - Concert (contd. from 5.30). 6.20 - Introductory Talk to the 9.35 Transmission. 6.30 - Talk: German Labour Problems. 6.40 - Evening Echoes. BEROMÜNSTER, 6.0 - Weather; Markets. 6.10 - Old Popular Songs. 6.15 - "Rütlifahrt" - Song Sequence with Commentary. The Mannedorf Secondary School Choir. Conductor: Stocker. BRESLAU, 6.0 - From Vienna to Berlin" - Dance Music by the Station Band. Conductor: Ilgner. Mima Thoma (Song Refrains). 6.40 - Weekly Review. BRNO, 6.50 - Literary Review. BRUSSELS (No. 1), 6.0 - Talk: The History of Religions. 6.15 - Sonata Recital by Lafitte (Pianoforte) and Soiron (Cello). Sonata in G minor (Bach). Sonata in E minor (Brahms) BRUSSELS (No. 2), 6.0 - Orchestra. Conductor: Douliez. Marche roumaine (Ganne). Valse des fleurs (Delibes). Gavotte and Minuet, "Manon" (Massenet). Marelis nuptiale d'une poupée (Lecoq). Balabile (Ganne). Selection, "Carmen" (Bizet). In the interval at 6.15: Talk. BUDAPEST, 6.0 - Imre Dobos (Trombone). 6.15 - Talk. COLOGNE, 6.0 - Military Band from Düsseldorf. 6.50 - Snapshots. DEUTSCHLANDSENDER, 6.0 - Military Band. 6.30 - Italian. FRANKFURT, 6.0 - Orchestra (contd. from 5.50). 6.45 - Topical Talk. HAMBURG, 6.0 - Talk: Radio Interference. 6.15 - Station Symphony Orchestra. Conductors: The Composers. Hamburg Tafelmusik after Keiser (Maasz). Concertino barocco (Ludwig Lürman). HILVERSUM, 6.0 - Orchestra (contd. from 5.10). 6.10 - Talk. 6.40 - Sports Notes. HUIZEN, 6.0 - For Farmers. 6.10 - To be announced. 6.40 - Police Messages; Religious News. 6.55 - Records. KALUNDBORG, 6.0 - News. 6.30 - Talk: Forestry and the Law.

12 noon (contd.)

(b) La petite église (Delmet), (c) Colibri (Chausson), (d) La Légende du petit navire (Massec). Histoires (Ibert). Suite (Guillot). Oboe and Orchestra: Ronde villageoise (Lénon). Ballet, "Parysatis" (Saint-Saëns). Overture, "Les cloches de Corneville" (Planquette). PARIS (Radio-Paris), 12.0—Jewish Talk. 12.30—Light Music. Goldy Band. Jean Sorbier (Song Refrains). PRAGUE, 12.0—Orchestra. 12.35—Labour Exchange. 12.45—Records. 12.55—Exchange. RADIO-NORMANDIE, 12.0—Records. 12.30—News; Announcements. 12.45—Light Music. ROME, 12.0—Announcements. 12.5—Light Music. In the Interval at 12.35: News; Exchange. SOTTENS, 12.0—Orchestra (contd. from 11.40). In the Interval at 12.10: Tourist Report. STOCKHOLM, 12.0—Finnish Music Dagmar Hullström (Songs). Törnqvist (Violin) and Märta af Klintberg (Pianoforte). 12.30—Reading. STRASBOURG, 12.0—Orchestra. 12.30—News. 12.45—Records. STUTTGART, 12.0—Local Review. 12.5—News. 12.15—Records: Light Music. TURIN, 12.0—Announcements. 12.5—Ambrosiana Orchestra. Conductor: Culotta. In the Interval at 12.35: Records; Exchange. VIENNA, 12.0—Time; News. 12.10—Vienna Symphony Orchestra. Conductor: Schönherr. Potpourri, So singt man nur in Wien (Hruby). Waldesrauschen an der Donau (Pfleger). Air, "Das Fürstkind" (Lehár). Russian Dances (Lehár). Selection, "Waltzes from Vienna" (Strauss-Korngold-Bittner). Marche de Frondières (Recktenwald). WARSAW, 12.0—News. 12.5—Light Music and Dance Music.

1 p.m.

ATHLONE, 1.30—Time; Weather; Exchange; Records. BERLIN, 1.0—News; Water Level. 1.15-1.30—Records. BRESLAU, 1.5—Exchange. 1.10—Post Office Propaganda; Records. 1.35—Greetings. 1.40—Markets. BRUSSELS (No. 1), 1.0—News. 1.15—French Opera and Operetta Music (contd. from 12.30). 1.30—Interlude by Olga Ugane. 1.40—Records; Organ Music. BRUSSELS (No. 2), 1.0—News. 1.10—Radio Orchestra. Conductor: André Barnes (Bass). 1.30—Records. BUDAPEST, 1.0—Jozsef Dene's Cigány Band. 1.40—Household Hints. COLOGNE, 1.0—Announcements. 1.15-1.45—Variety. Kär Hoffmann and Heinz Herkath. DEUTSCHLANDSENDER, 1.0—Variety. 1.55—Announcements. FRANKFURT, 1.0—See Stuttgart. 1.15—Time; News. 1.30—Industrial Review. 1.45—Time; Exchange. 1.55—Weather. HAMBURG, 1.0—Light Music. 1.15—News. 1.30—Pianoforte Concerto in A minor (Grieg), by Backhaus and the New Symphony Orchestra (on Records). Conductor: Barbïroli. HILVERSUM, 1.0—Kovacs Lajos' Orchestra. HUIZEN, 1.0—Van der Horst Ensemble (contd. from 12.10). KALUNDBORG, 1.40—Danish Songs by Anna Hagen. KÖNIGSBERG, 1.0—News; Records. 1.30—Post Office Propaganda; Records. LEIPZIG, 1.0—News; Exchange. 1.15—"Mother and Child."—Concert on Records. 1.40—Talk: Mediaeval Women's Occupations. MUNICH, 1.0—News; Programme Announcements; Exchange. 1.20—Readings (Hans Grimn). 1.50—"Three Girls visit Transylvania"—Sketch (Mana Copony). OSLO, 1.0—Exchange. PARIS (Poste Parisien), 1.5—Interlude. 1.15—Exchange. 1.19—Records. PARIS (PTT), 1.0—News. 1.15—Orchestra (contd. from 12.15). 1.30—Exchange. PARIS (Radio-Paris), 1.0—Light Music (contd. from 12.30). In the interval, at 1.20—Exchange. PRAGUE, 1.0-1.5—Exchange in German. RADIO-NORMANDIE, 1.0-1.45—Light Music. ROME, 1.0-1.15—Light Music. STOCKHOLM, 1.0—Light Music. STRASBOURG, 1.0—Exchange. 1.5—Records. STUTTGART, 1.0-1.15—Records: Light Music.

TURIN, 1.0—Ambrosiana Orchestra. 1.15—Exchange. VIENNA, 1.0—Announcements. 1.40—Report of the Austrian Ski Championship from Reutte.

2 p.m.

ATHLONE, 2.0-2.30—Records. BARCELONA, 2.0—News; Topical Sketches with Music. 2.30—Catalan Notes and Tourist Report. 2.40—Topical Sketches with Music. 2.55—Exchange. BERLIN, 2.0—Exchange. 2.25—Coloratura Music by Ellen Brendel, Ingrid Lüdning and Käthe Ruhs. BEROMÜNSTER, 2.30—Records. 2.59—Time. BRATISLAVA, 2.55—Station Orchestra. Conductor: Schimpl. Overture, "William Tell" (Rossini). Ballet, "The Arabian Nights" (Bortkiewicz). Tales from the Vienna Woods (Strauss). March (Tichy). BRESLAU, 2.10—Charlotte Scherbening (Contralto). Songs (Brahms) (a) Die Perlenschür. (b) Murrays Ermordung, (c) Salomé. Songs

"Damnation of Faust" (Berlioz). Serenade (Pierné). Serenade, "I Pagliacci" (Leoncavallo). PRAGUE, 2.45—Exchange. 2.55—Orchestra. STUTTGART, 2.30—Children's Orchestra. Conductor: Holle. VIENNA, 2.0—Time; Weather; Exchange. 2.20—Talk and Reading: Elisabeth Heyking. 2.40—Beethoven Records with Commentary for Young People. WARSAW, 2.30—Announcements. 2.35—Exchange. 2.45—Light Music by the Serebinski Orchestra and a Vocal Ensemble.

3 p.m.

BARCELONA, 3.0—News. 3.5—For Hospitals. BERLIN, 3.0—See Frankfurt. BEROMÜNSTER, 3.0—Station Orchestra. Conductor: Hoffmann. Rosario Tusa (Pianoforte). Symphony in D (Haydn). Rhapsody in Blue (Gershwin). BRATISLAVA, 3.0—Station Orchestra (contd. from 2.55). 3.45—Talk. BRESLAU, 3.0—Cello; Pianoforte (contd. from 2.40). 3.10—Talk:



"Meissen Porcelain" is the theme of Frankfurt's programme at 7.10 p.m.

(Trunk): (a) Meine Mutter hat's gewollt, (b) Schmerz, (c) Unter Blüten. Venetian Lullaby (Marx). Japanese Rain Song (Marx). Songs (Grieg): (a) Ich liebe Dich, (b) Im Kahn, (c) Eros. 2.40—Binnowsky ("Cello"); Haltwig (Pianoforte). "Cello Concerto in D (Haydn). Capriccio (Haydn). Tambourin (Leclair). BRUSSELS (No. 1), 2.0—Educational Programme. BRUSSELS (No. 2), 2.0-2.45—For Schools. COLOGNE, 2.0—Handwork for Girls. 2.30—Exchange. 2.45—A Visit to a Potter's Workshop. DEUTSCHLANDSENDER, 2.0—Exchange. 2.15—"The Man in the Moon"—Songs and Stories by Paula Walendy and Children. 2.40—Songs for Girls. FRANKFURT, 2.0—News. 2.15—For Women. HAMBURG, 2.0—Exchange. 2.40—Shipping. 2.50—Ice Report. HILVERSUM, 2.0—Kovacs Lajos' Orchestra. 2.10—Recitations; Records. HUIZEN, 2.0—Van der Horst Ensemble (contd. from 12.10). 2.10—Bible Reading. 2.40—de Groot Jr. (Pianoforte). Three Pieces (Chopin): (a) Ballad in A minor, (b) Berceuse in D flat, (c) Waltz in E minor. Records. La soirée dans Grenade (Debussy). Valses nobles et sentimentales (Ravel). KALUNDBORG, 2.0—Petersen Orchestra from the Wivex. KÖNIGSBERG, 2.0—Exchange. 2.15—Handwork for Children. 2.40—Talk for Women. LEIPZIG, 2.35—Exchange. MONTE CENERI, 2.59—Time. MUNICH, 2.0—Sketch (contd. from 1.50). 2.30—Talk: Old Munich Carnival Invitations. 2.50—For Farmers. PARIS (Poste Parisien), 2.0—Exchange. PARIS (PTT), 2.0—Records: Folk Songs. 2.20—Serenades: Serenade, "Don Giovanni" (Mozart). Serenade (Goeyens). Serenade, "The

Richard Wagner and Animals. 3.30—See 3.0—Frankfurt. BUDAPEST, 3.10—For Boys. 3.45—Time. COLOGNE, 3.0—Witten Municipal Orchestra. Conductor: Fliegner. Carl de Vogt (Songs to the Lute). DEUTSCHLANDSENDER, 3.0—Light Music for "Green Week." From the Kaiserdamm Exhibition Hall. Carl Wotischach Orchestra. Bruno Fritz (Speaker). FRANKFURT, 3.0—Concert by the Station Orchestra and the Franz Hauck Band. Conductor: Hess. Lena Martin-Bössniaker (Soprano). In the Interval: Art Notes. HAMBURG, 3.0—See Munich. HILVERSUM, 3.0—Records. 3.10—Dance Records. 3.45—Dress-making. HUIZEN, 3.0—Pianoforte (contd. from 2.40). 3.40—Records. KALUNDBORG, 3.0—Petersen Orchestra from the Wivex. KÖNIGSBERG, 3.0—Records: Light Music and Dance Music. LEIPZIG, 3.0—See Munich. MONTE CENERI, 3.0—See Beromünster. MUNICH, 3.0—Station Orchestra. Conductor: List. Maria Agathe Machler (Soprano); Melanie Michaelis (Violin). Scherzo (Pfitzner). Ballet Music (Noetzel). Aria, "Madame Butterfly" (Puccini). Extract, "Hänsel und Gretel" (Humperdinck). Ballad, "Der Freischütz" (Weber). Violin and Orchestra: Konzertstück in F minor (von Gluck). Finale from the Symphony in C (Beethoven). PARIS (Poste Parisien), 3.25—Exchange. 3.45—Exchange. PARIS (PTT), 3.0—Serenades (contd. from 2.20). PRAGUE, 3.0—Orchestra. 3.45—Czech for Germans. ROME, 3.30—Children's Radio Review. 3.55—News. SOTTENS, 3.0—See Beromünster. STUTTGART, 3.0—See Frankfurt. TURIN, 3.35—News. 3.45—For Children.

VIENNA, 3.0—Beethoven Records (contd. from 2.40). 3.5—News. 3.10—"Musical Pictures"—Concert on Records. 3.35—Talk: Winter Sports. 3.45—For Children. WARSAW, 3.45—For Invalids.

4 p.m.

BARCELONA, 4.0—News. BERLIN, 4.0—See 3.0 Frankfurt. BEROMÜNSTER, 4.0—Station Orchestra (contd. from 3.0). 4.10—Light Music. Station Orchestra. Conductor: Neppach. BRESLAU, 4.0—See 3.0 Frankfurt. BRUSSELS (No. 1), 4.55—Announcements. BUDAPEST, 4.0—Talk. 4.35—István Bertha Chamber Orchestra. Overture, "The Gipsy Baron" (Strauss). Hochzeitsmusik (Jensen). Variations on Folk Songs (Stefaniai). Extracts, "No, No, Nanette" (Youmans). Hungarian Song (Losonczy). Faschings Miniaturen (Kaskerl). Piece (Pécsi). COLOGNE, 4.0—Orchestra (contd. from 3.0). 4.30—Talk: A Visit to a Silver-Fox Farm. 4.45—Schubert Recital by Toni Fassbender (Violin),

FRIDAY Feb. 1

E flat (Beethoven). Bagatelle in G (Beethoven). Sonata in E flat (Mozart). OSLO, 4.0—Dance Music. PARIS (Poste Parisien), 4.50—Exchange. PARIS (Radio-Paris), 4.0—Exchange. 4.30—English. PRAGUE, 4.0—Ondricek Quartet and Moravec (Viola). String Quintet in C (Mozart). String Quintet in B flat (Mendelssohn). ROME, 4.0—Exchange. 4.10—Light Music. 4.55—Weather. SOTTENS, 4.0-5.0—See Beromünster. STOCKHOLM, 4.0—Weather. 4.5—Hawaiian Music. 4.25—Songs to the Lute by Carl Möller. 4.45—Talk. STRASBOURG, 4.45—Talk for Mothers. STUTTGART, 4.0—See 3.0 Frankfurt. TURIN, 4.0—For Children. 4.10—Concert. 4.55—Weather. VIENNA, 4.0—For Children. 4.10—Sonata in A for Violin and Piano-forte (Franck), by Grete Löw-Smetana and Alexander Klähr. 4.40—Weekly Sports Report. 4.50—Traffic Report. WARSAW, 4.0—For Invalids. 4.15—String Quartet in D minor—"Death and the Maiden" (Schubert), by the Polish Quartet. 4.50—Book Review.

5 p.m.

BERLIN, 5.0—Announcements. 5.5—Book Review. 5.30—Songs to the Lute (Knab), by Oskar Besemfelder. BEROMÜNSTER, 5.0—For Children. 5.30—Talk: Life Insurance. BORDEAUX-LAFAYETTE, 5.0—Literary Programme. BRATISLAVA, 5.0—Hungarian Transmission: Topical Talk; Slovak. 5.45—Sports. BRESLAU, 5.0—Topical Report. 5.25—Talk for Girls. 5.50—Announcements. BRNO, 5.0—Talk: Creative Art. 5.10 Theatre Review. 5.20—German Transmission: Astronomy Talk for Young People. BRUSSELS (No. 1), 5.0—Talk by Gever: A Visit to the Oldest Inhabitant of Brussels. 5.30—"Die Winterreise"—Song Cycle (Schubert) by Anita Touret. BRUSSELS (No. 2), 5.0—Dance Music by Joe Andy and his Entertainers from the Shanghai. BUDAPEST, 5.0—Orchestra (contd. from 4.35). 5.55—Talk. COLOGNE, 5.0—Schubert Recital (contd. from 4.45). 5.15—For Farmers. 5.30—English. 5.45—Weather; Exchange; Sports Report. DEUTSCHLANDSENDER, 5.0—Pianoforte Quintet (Berger) (contd. from 4.30). 5.15—"The Fabulous Zoo"—A Fantastic Dream (Eich). 5.40—Talk: Radio Interference. 5.55—Poem; Weather. FRANKFURT, 5.0—For Young People. 5.15—Topical Talk. 5.30—Talk: Astronomy. 5.45—Weather; Exchange; Programme Announcements; Time. 5.50—Trier Municipal Orchestra. Conductor: Creutzburg. Overture, "A Masked Ball" (Auber). Slav Dances (Karel). March (Lachner). Overture, "Marsinarella" (Fučík). Selection, "Polenblut" (Nedbal). March, Hand in Hand (von Blon). HAMBURG, 5.5—"The Spirit of Music"—Sequence. 5.45—Exchange. HILVERSUM, 5.0—For Children. 5.10—Orchestra. Conductor: Wins. 5.55—"The Walis Orchestra. Overture, "Zampa" (Hérold). Love Songs (Huppertz). Mon idéal (Alschausky). Selection, "Die toten Augen" (d'Albert). HUIZEN, 5.0—To be announced. 5.25—Excelsior Mouth Organ Band. Conductor: Sühren. De Rijn (Glas). Lullaby Land (Privat). Records. Dutch Song Potpourri. Heinzelmännchens Wachparade (Noack). Records. Sarie Marijs. KALUNDBORG, 5.0—Talk (contd. from 4.45). 5.15—German. 5.45—Announcements. KÖNIGSBERG, 5.0—Talk (contd. from 4.50). 5.15—Markets. 5.30—Physical Culture and Games for Young People. 5.55—Announcements. LEIPZIG, 5.0—Talk for Young People. 5.20—Operetta Music. Station Orchestra. Conductor: Schröder. Overture, "Grigri" (Lincke). Waltz, "Der Fremdenführer" (Ziehrer). Selection, "Polenblut" (Nedbal). Extracts, "The Cousin from Nowhere" (Künneke).

8 p.m. (contd.)

Relay from the Society of Authors' Congress at the Konzerthausaal. WARSAW, 8.0—Symphony Concert (contd. from 7.15). In the Interval: Talk.

9 p.m.

ATHLONE, 9.0—Talk (contd. from 8.45). 9.15—Old Irish Music by the Station Orchestra. 9.20—"Brigidin"—presented by Peadar O Dubhdha. BARCELONA, 9.0—Chimes; Weather. 9.5—Announcements; For Seamen. 9.8—Variety. BERLIN, 9.0—News. Sports Notes. 9.30—"The Mask"—Programme about the Pleasures of Fancy Dress (Achim von Akerman). BEROMÜNSTER, 9.0—Folk Songs (contd. from 8.45). BORDEAUX-LAFAYETTE, 9.0—"Barberine"—Comedy (de Musset) (contd. from 8.30). BRATISLAVA, 9.25—News in Hungarian. BRESLAU, 9.0—News. Sports Notes. 9.25—Station Dance Band. Conductor: Ilgner. BRUSSELS (No. 1), 9.0—Talk: The French Crisis. 9.15—Radio Orchestra. Conductor: André Chamart-Houssa (Songs). Selection, "Zanetta" (Auber). Songs: (a) Poem (Ropartz), (b) Aria, "Prince Igor" (Borodin), (c) Song from Die schöne Müllerin (Schubert). Nicolette (Van Phillips). Rendezvous (Lautenschlager). Serenade, Ausencia (Arbos-Chapelier). "Cello: Chant sans paroles (Thirion). Potpourri (Dostal). BRUSSELS (No. 2), 9.0—"Jonathan Swift"—Play (Matthias); Translation by Mon de Goeyse. BUDAPEST, 9.0—News. 9.20—Ede Heinemann Jazz Band from the Hotel Britannia. COLOGNE, 9.0—News. 9.20—Theatre Review. DEUTSCHLANDSENDER, 9.0—News. Sports Notes. 9.45—Weather. FRANKFURT, 9.0—Time; News. 9.10—Local News; Sports Report. 9.15—Folk Music by the Freiburg Mandoline and Guitar Society. Conductor: Köhler. 9.45—Sports Review.

HAMBURG, 9.0—News. 9.25—Talk: January Sports. 9.40—Musical Programme. HILVERSUM, 9.0—Religious Address. 9.10—Trio (contd. from 8.10). 9.40—Church Notes; News. 9.55—Talk: Modern Interior Decoration. HUIZEN, 9.0—Haarlem Orchestra (contd. from 7.55). JUAN-LES-PINS (Radio Côte d'Azur), 9.0—News. 9.15—Concert. KALUNDBORG, 9.0—Sonata in E flat for Clarinet and Pianoforte (Brahms) by Oxenvad and Jensen. 9.25—Danish Translations of English Essays: (a) On Peace (Macaulay) (b) Parliament (Carlyle). 9.50—Juhl-Thomsen Dance Band. KÖNIGSBERG, 9.0—News; Sports Report. 9.20—Dialogues on Death and Immortality from Plato's "Phaedo." 9.45—See 9.30 Stuttgart. LEIPZIG, 9.0—"Hi Guelph, Hi Ghibeline I"—Play (contd. from 8.0). 9.15—News; Sports Notes. 9.35—Chamber Music from Dresden. Bärtich Quartet with Dengler (Guitar). Quintet in C for Guitar, Two Violins, Viola and Cello (Schnabel). Five Folk Songs for String Quartet (arr. Käsmeyer). LYONS (La Doua), 9.0—Literary Programme; News. MADRID (EAJ7), 9.0—Station Sextet. In the Intervals: Literary Extracts. MUNICH, 9.0—News; Exchange; Sports Report. 9.20—To be announced. OSLO, 9.0—Topical Talk. 9.15—Chamber Music. Sonata for Flute, Oboe and Pianoforte (Loeillet). Zweigespräch for Oboe and Clarinet (Hamm). Dreigespräch for Flute, Oboe and Clarinet (Hamm). PARIS (Poste Parisien), 9.0—"Pêcheur d'ombres"—Play (contd. from 8.15). PARIS (PTT), 9.0—Operetta Music (contd. from 8.30). PARIS (Radio-Paris), 9.0—"Miche"—Play (Rey) (contd. from 8.0). In the interval at 9.15: News; Sports; Diagnostics. PRAGUE, 9.0—News; Sports Notes. 9.15—Records. 9.20—Snow Report. 9.25—Records. 9.30-9.45—Russian News. RADIO-NORMANDIE, 9.0—Concert.

REYKJAVIK, 9.0—Time; News. 9.30—Variety. ROME, 9.0—Folk Music (contd. from 8.45). SOTTENS, 9.0-9.15—"The Professor" (Duvernois) (contd. from 8.25). STOCKHOLM, 9.0—Light Music. STRASBOURG, 9.0—Roussel Festival Programme (contd. from 8.30). In the Interval: Press Review. STUTTGART, 9.0—News; Sports Report. 9.30—"Musical Crackers." Wende Dance Band. TOULOUSE (Radio-Toulouse), 9.0—"L'appel de la route"—Fantasy. 9.30—Orchestra. Maurice St. Paul. (Conductor and Accordion). TURIN, 9.0—Symphony Concert (contd. from 8.0). VIENNA, 9.0—Society of Authors Congress (contd. from 8.15). 9.45—News. WARSAW, 9.0—Symphony Concert (contd. from 7.15). 9.30—Recitations. 9.40—Announcements.

Overture (Reznicek). Dances in Old Style (Kool). Oboe and Pianoforte: Bagatelles (Haas). Polkina (Reesen). Swedish Rhapsody (Lindberg). Violin and Pianoforte: Capriccio (Lessle). Delirien-Walzer (Strauss). HILVERSUM, 10.0—Talk (contd. from 9.55). 10.40—Report on the Brussels Six Days' Cycle Race. HUIZEN, 10.0—Haarlem Orchestra (contd. from 7.55). 10.5—News. 10.10—Records. KALUNDBORG, 10.0—Juhl Thomsen Dance Band. KÖNIGSBERG, 10.0—See Stuttgart. LEIPZIG, 10.0—Chamber Music (contd. from 9.35). 10.15—See 10.0 Hamburg. MADRID (EAJ7), 10.0—Chimes. 10.5—News. 10.15—Relay from a Theatre. MUNICH, 10.0—Serenade. Schwarz Orchestra. PARIS (Poste Parisien), 10.0—"Pêcheur d'ombres"—Play (contd. from 8.15). 10.30—Records: Light Music. PARIS (PTT), 10.0—Operetta Music (contd. from 8.30). PARIS (Radio-Paris), 10.0—"Miche"—Play (Rey) (contd. from 8.0). 10.30—Dance Music. RADIO-NORMANDIE, 10.0—Concert: Dance Music. REYKJAVIK, 10.0—Variety. ROME, 10.0—News. STRASBOURG, 10.0—Roussel Festival Programme (contd. from 8.30). STUTTGART, 10.0—"Musical Crackers." Wende Dance Band. TOULOUSE (Radio-Toulouse), 10.0—"Au caveau de dix heures"—Fantasy. 10.10—Selection. "White Horse Inn" (Stolz-Benzky). 10.15—News. 10.30—Operetta Songs. Songs, "Veronique" (Messager). "Le postillon de Longjumeau" (Adam). "Les saltimbanques" (Ganne). "The Drum-major's Daughter" (Offenbach) and "Deshabillez-vous" (Mercier). TURIN, 10.0—News. 10.10—Announcements in Spanish. VIENNA, 10.0—News. 10.5—Vienna Symphony Orchestra. Conductor: Holzner. March (Buganyi). Overture, Das erste Rendez-vous (Schulz). Potpourri, Perlen vom Donaustand (Uhl). Folk Song (Domanič-Roll). Waltz, "Die Faschingsfee" (Kal-

FRIDAY Feb. 1

man). Sie und Er (Streicher). Song: Komm' sehen' mir dein Vertrauen (Danberg). Marching Song: In Meidling steht ein Kastanienbaum (Flemming). Selection. "White Horse Inn" (Stolz-Benzky). WARSAW, 10.5—Dance Records.

11 p.m.

BARCELONA, 11.0—Orchestra. BRUSSELS (No. 1), 11.0—La Brabançonne. BUDAPEST, 11.0—Cigány Band (contd. from 10.10). 11.5—News. FRANKFURT, 11.0—Serenade on Records. HUIZEN, 11.0-11.10—Records. KALUNDBORG, 11.0-11.30 Chimes; Juhl Thomsen Dance Band. MADRID (EAJ7), 11.0—Theatre Relay (contd. from 10.15). In the Interval at 11.45: News. PARIS (PTT), 11.0—News; Dance Music. PARIS (Radio-Paris), 11.0—Dance Music. RADIO-NORMANDIE, 11.0—Dance Music. STUTTGART, 11.0—See Frankfurt. TOULOUSE (Radio-Toulouse), 11.0—Military Band. Roses from the South (Strauss). Old Comrades (Teike). Danse des plébiciens (Masuet). York March (Beethoven). 11.15—Folk Music. 11.30—Operetta Music. Overture, "The Daughter of the Regiment" (Donizetti). Selection, "La fauvette du temple" (Messager). Aria, "The Rose of France" (Romberg). Aria, "Madame Pompadour" (Fall). 11.50—Light Music. VIENNA, 11.0—Records: Austrian Dance Music. WARSAW, 11.0—Dance Music.

12 midnight

BARCELONA, 12.0—News. FRANKFURT, 12.0—Serenade on Records. MADRID (EAJ7), 12.0—Theatre Relay (contd. from 10.15). STUTTGART, 12.0—See Frankfurt. TOULOUSE (Radio-Toulouse), 12.0—News. 12.5-12.30—Songs.

NATIONAL

For Time Signals, see Monday 10.15 a.m. (Droitwich) — Service. 10.30 (Droitwich) — Weather Forecast. 10.45 — "The Week in Westminster. Captain H. Balfour, M.C., M.P. 11.0—Miscellaneous Records. 11.45—B.B.C. Northern Orchestra. Mary Kay (Contralto). 1.0 p.m. (Droitwich)—The Commodore Grand Orchestra. March, Matador (Marchisio). Little Cupid's Dances (Gung'l). Shanghai Gesture (Savino). Three Celebrated Hungarian Dances (Brahms). My heart was sleeping (Kollo). Selection, Musical-Play Overture (Lincke). Fairies in the Moon (Ewing). Potpourri of Viennese Songs (Dostal). Pussy Cat's Wedding Day (Schoppe). Chal Romano (Ketelbey). 2.0 (Droitwich) — Belfast Orchestra. 2.50—Wales v. Scotland (Rugby). 4.30 (Droitwich) — Sydney Baynes and his Band. 4.30-5.15 (London) — Television. 5.15—Ambrose and his Orchestra. 6.0 — "The First News." 6.30 — Sports Talk. Tom Whittaker: "What the Dressing-room means to Football." 6.45 (Droitwich) — Welsh Interlude: R. Alun Roberts, B.Sc., Ph.D.: "Farming in Wales." 6.45 (ex. Droitwich) — Olive Kavann (Contralto). 7.0 — "In Town To-night." 7.30 — "The Road to St. David's." A Journey in Time and Space through South-West Wales by Filson Young. 8.30 — Music-Hall. Evelyn Laye and Parry Jones. The Cole Brothers. Ann Penn. Walter Williams and Percy Hayden. Ronald Frankau. 9.30 — "The Second News." 10.0 — B.B.C. Theatre Orchestra. Wilfrid Thomas (Baritone). Arab March (Ganne). Overture, The Pretty Perfume-seller (Offenbach). Dusty Shoes (Moonlight and Pretzles) (Gorney). Medley, Charm of the Waltz, Gigolette, (The Three Graces) (Lehár). Valse Lointane, Ronde Joyeuse (Simonetti). Short'nin' Bread (Wolfe). The Ghost (Sharpe). Four Russian Dances (Bright). The Song of the Drum (Ellis). Potpourri, Hippodrome Memories. 11.0-12.0 (Droitwich)—Henry Hall's Guest Night.

REGIONAL

For Time Signals, see Monday 10.15-10.45 a.m. (except Midland)—Droitwich. 10.45—The Scottish Studio Orchestra. 11.45—Cinema Organ (Sydney Gustard). 12.15 p.m.—Dance Records. 1.0-2.0 (ex. Midland)—Droitwich. 2.0—Belfast Wireless Orchestra. Eileen Ervine (Contralto). 3.0—Cinema Organ (Donald Thorne). 3.30—The Charles Ernesto Quintet. 4.30 (ex. Midland)—Droitwich. 4.30-5.15 (Midland)—Television. 5.15—The Children's Hour. 6.0—"The First News." 6.30 (Regional, Midland) — The Cedric Sharpe Sextet. 6.30 (Northern)—Programme Diary. 6.30 (Scottish) — Records. 6.30 (Western) — Records. 6.30 (N. Ireland) — Echoes of Ulster. 6.45 (Northern) — "The Marleys of Tyneside." 6.45 (Scottish) — Account of Motherwell v. St. Johnstone. 6.45 (Western) — See Droitwich. 6.50 (N. Ireland) — Irish Songs. 6.55 (Scottish) — Studio Orchestra. 7.0 (Northern) — "Mother Goose." 7.0 (Western) — Studio Orchestra. 7.5 (N. Ireland) — Wireless Orchestra. Cecil Kidd, E. C. Pickering (Trumpets). Frank Martin (Euphonium). Pat Molloy (Xylophone). 7.15 (Regional, Scottish) — Organ. 7.15 (Midland) — Account of Warwickshire v. Lancashire (Rugby). 7.30 (Midland)—Humorous Music. 7.30 (Western)—Bristol Police Band. Elsie Griffin (Soprano). 7.40 (N. Ireland)—Sea Log.—3. 7.55 (Regional, Scottish, N. Ireland) —Act I of Puccini's "Tosca." 8.25 (Midland)—"At the Langleys." 8.30 (Western)—Talk. 8.45 (Regional, West, N. Ireland)—Conversations in the Train.—5. 8.45 (Scottish)—Week in Scotland. 9.0 (Northern)—The William Rees Orchestra. Frank Titterton (Tenor). 9.0 (Scottish) — "Jethart's Here I" 9.5 (Regional, Midland, N. Ireland)—Orchestra (Section C). 9.5 (Western)—Dance Records. 9.20 (Western)—Song Memories. 9.40 (Scottish) — Records. 10.0 — News Summary. 10.10 — B.B.C. Dance Orchestra. 10.40 — Dance Records. 11.0-12.0 (except Midland)—Henry Hall's Guest Night.

SATURDAY February 2

PRINCIPAL EVENTS

SYMPHONY CONCERTS

P.M. 3.10 Hilversum: The Rotterdam Philharmonic, Bartók (pianoforte). 5.0 Paris (PTT), Strasbourg: Padeloup concert. 11.0 Stuttgart, Frankfurt: Baden Baden Orchestra. LIGHT CONCERTS A.M. 11.15 Warsaw: In honour of the President. P.M. 2.0 Kalundborg: Preil's Ensemble. 3.0 Hamburg: Orchestra, songs. 5.15 Leipzig: Wind band. 6.0 Hamburg: From opera and operetta. 6.30 Stockholm: Dances. 7.0 Warsaw: Folk-songs and dances. Hilversum: Variety concert. 8.0 Brussels No. 1: Belgian music. 8.0 Warsaw: Opera music. 8.10 Beromünster: Male Voice Choir. 8.20 Sottens: Operetta programme. 8.30 Paris (PTT): Orchestra, pianoforte, song. 8.40 Kalundborg: Leo Fall music. 9.30 Brussels No. 1: Radio orchestra. 9.30 Brussels No. 2: Sousa, Lehár, etc. 10.25 Budapest: Cigány Band Parádi. OPERAS 6.30 Deutschlandsender: "Le Postillon de Lonjumeau" (Adam). 7.55 Regional: "Tosca," Act I (Sadler's Wells). 8.0 Rome: "Don Giovanni" (Mozart), (Teatro Reale). OPERETTAS 6.40 Budapest: "Les Cloches de Corneville" (Planquette). 7.10 Frankfurt: "Frühlingsluft" (Reiterer). 7.45 Turin: "Farewell, Youth" (Pietri).

8.0 Radio-Paris: "Victoria and her Hussar" (Abraham). CHAMBER MUSIC P.M. 6.0 Berlin: Clarinet Quintet (Brahms). 6.0 Cologne, Frankfurt: Quartet (Haydn), songs, etc. 6.10 Königsberg: String Sextet (Dvořák). RECITALS 4.20 Leipzig: Violin, pianoforte, harmonium. 5.15 Warsaw: Pianoforte; 6.0, Viola. 5.30 Königsberg: Organ. 6.30 Brussels No. 1: Pianoforte (Jongen). 6.40 Vienna: Liszt pianoforte sonata. 7.45 Rome: Organ. PLAY P.M. 8.15 Poste Parisien: "Petite Poupée" (Follereau). TALK 7.45 Sottens: Talk on Greek Art. DANCE MUSIC P.M. 4.0 Warsaw; 5.0, Brussels No. 1; 5.30, Budapest; 9.0, Poste Parisien, Stockholm; 9.15, Beromünster, Warsaw; 9.20, Leipzig; 9.25, Sottens; 9.35, Breslau, Berlin, etc.; 9.50, Vienna; 10.0, Kalundborg; 10.10, Brussels Nos. 1, 2, Regional; 10.30 (app.), Paris PTT, Radio-Paris, Strasbourg; 11.0, Königsberg, National. MISCELLANEOUS 7.10 Leipzig, etc.: Variety. 7.45 Prague: Revue. 8.0 Brussels No. 2: Cabaret. 8.30 National: Music Hall. 8.30 Strasbourg: Alsatian evening. 9.0 Brussels No. 1, 2, Hilversum (10.55): The Six Days' Race.

STATIONS IN ORDER OF FREQUENCIES AND WAVELENGTHS

Corrected in accordance with the latest official information available at the time of going to press

kc/s	m.	kW	Station	Dial Readings	kc/s	m.	kW	Station	Dial Readings
<i>Band No. 1: 150-300 kc/s</i>									
155	1935	7	Kaunas (Lithuania)		804	373.1	50	Scottish Regional (Gt. Britain)	
		7	Huizen (Holland) (Hilversum Prgm. and Announcements)		814	368.6	50	Milan I (Italy)	
160	1875	50	Kootwijk (Holland) (Transmits Hilversum prgm. after 3.40 p.m.)		823	364.5	12	Bucharest (Romania)	
		20	Brasov (Romania)		832	360.6	100	Moscow IV (U.S.S.R.)	
166	1807	40	Lahti (Finland)		841	356.7	100	Berlin (Germany)	
174	1724	500	Moscow I (U.S.S.R.)				1	Bergen (Norway)	
182	1648	80	Radio-Paris (France)		850	352.9	0.35	Aalesund (Norway)	
187.5	1600	5	Istanbul (Turkey)				0.5	Bodö (Norway)	
191	1571	60	Deutschlandsender (Germany)				0.7	Porsgrund (Norway)	
200	1500	150	Droitwich (Gt. Britain)		859	349.2	1	Sofia (Bulgaria)	
		35	Irkoutsk (U.S.S.R.)				1.5	Valencia (Spain)	
208	1442	35	Minsk (U.S.S.R.)		868	345.6	10	Simferopol (U.S.S.R.)	
		16	Reykjavik (Iceland)		877	342.1	25	Strasbourg (France)	
215	1395	13	Eiffel Tower (Paris) (France)		886	338.6	16	Poznań (Poland)	
216	1389	30	Motala (Sweden)		895	335.2	50	London Regional (Gt. Britain)	
217.5	1379	100	Novosibirsk (U.S.S.R.)		904	331.9	7	Graz (Austria)	
224	1339	120	Warsaw (Poland)				10	Helsinki (Finland)	
		150	Luxembourg				100	Hamburg (Germany)	
230	1304	7	Ankara (Turkey)		913	328.6	10	Dniepropetrovsk (U.S.S.R.)	
232	1293	20	Kharkov (U.S.S.R.)				0.5	Limoges (PTT) (France)	
238	1261	60	Kalundborg (Denmark)				60	Toulouse (Radio - Toulouse) (France)	
240	1250	0.5	Vienna Experimental (Austria)		922	325.4	32	Brno (Czechoslovakia)	
245	1224	100	Leningrad (U.S.S.R.)		932	321.9	15	Brussels II (Belgium)	
256.4	1170	25	Tashkent (U.S.S.R.)		941	318.8	12	Algiers (North Africa)	
260	1154	60	Oslo (Norway)		950	315.8	10	Göteborg (Sweden)	
271	1107	100	Moscow II (U.S.S.R.)		959	312.8	100	Breslau (Germany)	
280	1071.4	35	Tiflis (U.S.S.R.)				100	Poste Parisien (France)	
<i>Band No. 2: 300-500 kc/s</i>									
355	845	10	Finnmark (Norway)		968	309.9	10	Agen (France)	
		20	Rostov-on-Don (U.S.S.R.)		977	307.1	10	Odessa (U.S.S.R.)	
359.5	834.5	20	Budapest II (Hungary) (Testing)				2	Ukhta (U.S.S.R.)	
375	800	50	Sverdlovsk (U.S.S.R.)		986	304.3	50	W. Regional (Gt. Britain)	
392	765	0.6	Boden (Sweden)				10	Genoa (Italy)	
401	748	1.3	Geneva (Switzerland)		995	301.5	2	Cracow (Poland)	
		100	Moscow III (U.S.S.R.)				16	Torun (Poland) (Testing)	
413.5	726	0.6	Östersund (Sweden)		1004	298.8	20	Hilversum (Holland) (Hilversum Prgm. and Announcements)	
431	696	10	Voroneje (U.S.S.R.)		1013	296.2	13.5	Bratislava (Czechoslovakia)	
436	688	1.2	Oulu (Uleaborg) (Finland)				50	North National (Gt. Britain)	
		10	Ufa (U.S.S.R.)		1022	293.5	5	Tchernigov (U.S.S.R.)	
<i>Band No. 3: 500-1,500 kc/s</i>									
517	580	..	Tartu (Estonia)		1031	291	3	Barcelona EAJ15 (Spain)	
		0.7	Hamar (Norway)				0.7	Oviedo (Spain)	
519	578	0.5	Innsbruck (Austria)		1040	288.5	60	Heilsberg (Königsberg, Germany)	
		5	Ljubljana (Yugoslavia)				5	Paredo (Portugal)	
527	569.3	10	Viipuri (Finland)		1050	285.7	10	Leningrad II (U.S.S.R.)	
		1	Bolzano (Italy)		1059	283.3	40	Rennes (Radio PTT Ouest) (Fr.)	
536	559.7	16	Wilno (Poland)		1068	280.9	50	Scottish National (Gt. Britain)	
546	549.5	120	Budapest (Hungary)		1077	278.6	20	Bari (Italy)	
556	539.6	100	Beromünster (Switzerland)		1086	276.2	4	Tiraspol (U.S.S.R.)	
		60	Athlone (Irish Free State)				12	Bordeaux Lafayette (France)	
565	531	4	Palermo (Italy)		1095	274	2	Falun (Sweden)	
574	522.6	100	Stuttgart (Germany)				0.7	Zagreb (Yugoslavia)	
		15	Riga (Latvia)		1104	271.7	7	Madrid EAJ7 (Spain)	
583	514.6	15	Grenoble (France)				10	Vinnitsa (U.S.S.R.)	
592	506.8	100	Vienna (Austria)		1113	269.5	1.5	Naples (Italy)	
601	499.2	25	Rabat (Morocco)				50	Madona (Latvia)	
610	491.8	10	Sundsvall (Sweden)		1122	267.4	11.2	Moravská-Ostrava (Czechoslovakia)	
		20	Florence (Italy)				1	Belfast (N. Ireland)	
620	483.9	15	Brussels I (Belgium)		1131	265.3	6.2	Nyiregyháza (Hungary)	
		20	Cairo (Egypt)				0.25	Alexandria (Egypt)	
629	476.9	20	Trøndelag (Norway)		1140	263.2	10	Hörby (Sweden)	
		15	Lisbon (Barcarena) (Portugal)		1149	261.1	7	Turin (Italy)	
638	470.2	120	Prague I (Czechoslovakia)				50	London National (Gt. Britain)	
648	463	15	Lyons (La Doua) (France)		1158	259.1	50	West National (Gt. Britain)	
		10	Petrozavodsk (U.S.S.R.)		1167	257.1	2.6	Kosice (Czechoslovakia)	
658	455.9	100	Cologne (Germany)		1176	255.1	15	Monte Ceneri (Switzerland)	
668	449.1	50	North Regional (Gt. Britain)		1185	253.2	10	Copenhagen (Denmark)	
677	443.1	25	Sottens (Switzerland)				10	Kharkov II (U.S.S.R.)	
686	437.3	2.5	Belgrade (Yugoslavia)				1.5	Cassel (Germany)	
695	431.7	7	Paris (PTT) (France)		1204	249.2	17	Frankfurt (Germany)	
704	426.1	55	Stockholm (Sweden)				5	Freiburg-im-Breisgau (Germany)	
713	420.8	50	Rome (Italy)		1213	247.3	1.5	Kaiserslautern (Germany)	
722	415.5	36	Kiev (U.S.S.R.)				2	Trier (Germany)	
		3	Madrid (Radio-España) (Spain)		1222	245.5	5	Prague II (Czechoslovakia)	
731	410.4	1.5	Seville (Spain)		1231	243.7	0.1	Tromsø (Norway)	
		20	Tallinn (Estonia)				5	Lille (Radio PTT Nord) (France)	
740	405.4	100	Munich (Germany)		1240	241.9	10	Trieste (Italy)	
		5	Marseilles (PTT) (France)				5	Gleiwitz (Germany)	
749	400.5	1	Pori (Finland)		1249	240.2	1	Cork (I.F.S.)	
		0.2	Sortavala (Finland)				2	Swedish Relay Stations	
758	395.8	12	Katowice (Poland)		1258	238.5	2	Juan-les-Pins (Radio Côte d'Azur) (France)	
767	391.1	25	Midland Regional (Gt. Britain)				10	Kuldiga (Latvia)	
		10	Stalino (U.S.S.R.)				1	Rome III (Italy)	
776	386.6	2	Toulouse (PTT) (France)		1267	236.8	3	San Sebastian (Spain)	
		0.7	Fredrikstad (Norway)				0.25	Augsburg (Germany)	
785	382.2	120	Leipzig (Germany)		1276	235.1	2	Nürnberg (Germany)	
		5	Barcelona EAJ1 (Spain)				0.5	Christiansand (Norway)	
795	377.4	16	Lwów (Poland)		1285	233.5	0.5	Stavanger (Norway)	
							1	Aberdeen (Gt. Britain)	
							1.5	Dresden (Germany)	

STATIONS IN ORDER OF FREQUENCIES AND WAVELENGTHS (Continued)

Table with columns: kc/s, m., kW, Station, Dial Readings, kc/s, m., kW, Station, Dial Readings. Lists various international radio stations and their technical specifications.

DEVIATIONS

The following are actual deviations from the official frequencies as measured at the Tatsfield Checking Station during the past week.

Table with columns: Frequency (kc/s), Station Name, Deviation. Lists stations like Tifis, Finnermark, Hamar, Tartu, Barcelona, Bucharest, Limoges, Cracow, etc.

For List of Short-Wave Stations see page 26.

MEDIUM-WAVE STATIONS IN AMERICA

U.S.A., Canadian, Central and South American transmitters (5kW or more) in order of frequency and wavelength

Large table with columns: METRES, Kc/s, POWER (kW), CALL-SIGN AND SITUATION. Divided into U.S.A., CANADA, and SOUTH AMERICA sections. Lists stations like KFI, WBT, WTAM, etc.

ABBREVIATIONS: C.P.—construction permit granted; S.A.—special authorisation granted; Add.: additional; Exn.: experimental. * S.A. exp. only; see 282.8 metres. † S.A. exp. only; see 288.4 metres. ** S.A. exp. only; see 352.7 metres. †† S.A. additional 15 kW, exp., until local sunset. ‡ S.A. exp. to operate on 333.1 metres.

(Our Listeners' Query Service feature "Which Station Was That?" appears this week on page 32)

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