POLO IN FRANCE—The Exhibition Cup match, won by Les Leopard team, in progress at Bagatelle, Paris. A commentary on an international polo match (Holland v. France) will be broadcast from Hilversum 2 at 4.10 p.m. on Sunday.

Pioneers of Broadcasting: How Marconi Achieved Success

List of Short-Wave Stations

Ultra-Short Waves: Measuring their Field Strength
Hard to believe it may challenge belief, but you cannot appreciate what world-wide reception means until you’ve heard the NEW IMPERIAL All-Wave Receiver. Leading critics have been astounded. You, too, will be astounded. You, too, will

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Large illustrated RADIO EXHIBITION price list particulars of wide range of Aerial Kits.

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Range 15 to 2,100 Metres

No All-Wave Radio Set can be expected to give enjoyable, noise-free reception unless a proper scientifically designed All-Wave Aerial such as the "Golstone" "OVERSEAS" be employed.

From 15 to 2,100 Metres.

Provided with refinements usually unobtainable in other kits.

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Refuse substitutes—if any difficulties arise direct. For full particulars see 60-page Radio Catalogue.

Our Technical Department can solve your interference problems. Send P.C. for Interference Elimination form and descriptive folders.

The precision and accuracy of the AvoMinor speedily and efficiently track down faults in valves, resistances, batteries and power units, etc. Enables you to keep your set always in perfect working condition.

Each model covers a wide field of measurement and provides testing facilities unrivalled by any other meters in their price class.

The **AvoMinor**

The D.C. AvoMinor

price

measures:

Voltage
0-6 volts 0-12 volts 0-24 volts
0-120 volts 0-240 volts
0-600 volts 0-1,200 volts

Resistance
0-500 ohms 0-10,000 ohms
0-100,000 ohms 0-1,000,000 ohms
0-1,200,000 ohms

Current
0-50 microamps
0-1 microamp

Wound with leads, testing probes, crocodile clips, a genuine encouragement for all branches and guarantee appointments.

The WIRELESS HANDBOOK, 1938

CONTENTS INCLUDE INFORMATION ON —

What is the BBC? How does the blueprint of measurement and provides testing facilities unrivalled by any other meters in their price class.
THE PICK of the PROGRAMMES

A charming personality and a keen sense of humour. On one occasion, when touring with his orchestra, the programme contained Schubert's Forellen-Quintett. Much to his surprise and embarrassment, the next day there arrived at his hotel a consignment of live trout. It had been sent by an enthusiastic lady admirer of his art. Nikisch was highly amused. He promptly sat down and wrote the following acknowledgment: "Dear Madam—Please accept my heartiest thanks for the handsome gift of live trout. May I inform you that at my next concert, in a fortnight's time, Haydn's Ochsen-Mennett will be included in the programme?" History does not record whether the beef duly arrived.

Schubert's "Trout" Quintet

The broadcast on Monday of Schubert's Trout Quintet (from Hilversum 1 at 10 a.m. and from Paris PTT at 9 p.m.) reminds me of a story told of that great orchestral conductor, Arthur Nikisch. A fine artist, he had also

THE Scheveningen Season

Once again the season of broadcasts from Continental seaside resorts has commenced, and the first of the concerts from the Kurhaus, Scheveningen, will be transmitted from Hilversum 1 at 2.40 p.m. on Sunday. In past years listeners have derived great pleasure from Hilversum 2 at 2.40 p.m. on Sunday, and the first of the concerts from the Kurhaus, Scheveningen, will be broadcast.

The National programme includes Wagner's Meister-Singer overture, a Haydn Pianoforte Concerto, and Sibelius's symphonic poem, Finlandia.

A French-German "Axis"

The event broadcasts between France and Germany will take yet another step forward on Monday next. At 8.30 p.m., Radio-Paris is to transmit a concert, the first part of which, consisting of French music, will be shared by most German stations. The National Orchestra, directed by its permanent conductor, D. E. Inghelbrecht, will begin the programme, followed by the Loretta Church.

Baroque Music from Prague

Prague, the Czechoslovak capital, is known as one of Europe's most beautiful cities. The Baroque churches and palaces, gardens and terraces which are to be found in large numbers within its walls add, in no small degree, to its beauty. One of the most attractive of these buildings is the Wallenstein Palace, where an exhibition of Baroque art is now being held. A series of concerts of Baroque music is to be given in the grounds. Two of these will be broadcast during next week, at 9.15 p.m. on Wednesday and Saturday. At the same time on Thursday a programme of sacred Baroque music will be broadcast from the Loretto Church. This building is the finest example of Baroque period churches that can be seen in a city where beautiful architecture abounds. Yet another transmission of music of that period will be heard at 5.15 p.m. on Friday. This will come from the largest of Prague's Baroque palaces, the Czernin Palace, now housing the Foreign Office.

Polish Music Festival

Two concerts of the Polish Music Festival, now being held at the Wawel Castle, at Cracow, will be broadcast from Warsaw at 8 p.m. on Tuesday and Wednesday. And, while the first is devoted entirely to Szymanowski, a symphony by Paderevski constitutes the earlier part of the second. One of the outstanding personalities of our age, Paderevski has a place of honour in history not only as a great musician, but as a statesman of broad-minded enlightenment and courageous, self-sacrificing patriotism. His career as a concert pianist is too well known to need recalling to British music-lovers, but in this country his own original music has not had anything like the success which it has earned abroad. Listeners will, therefore, welcome the opportunity on Wednesday next of renewing acquaintance with one of his symphonies.

JUNE 10, 1938
the short time available. Say, only fragments of these plays are given in Sacrenzent, by Prosper Merimee). Misanthrope, by Moliere), Edwige Feuillere, in There is always a theme for one or more of the programmes are chosen with great care. Taking part are among the best in France, and with two, and sometimes three, stations taking variety entertainment, from 8.30 to 10.30 p.m., worth collaborating, every Saturday night, are well wave stations' programmes and has considered able fan-mail from all over the world. For many years Rio Kube has regularly appeared in a large number of short-wave stations' programmes and has consider-able fan-mail from all over the world. THE "SOIREES TOURNANTES" This "Soirees Tournantes" given by Radio-Paris, Paris PTT, and the Eiffel Tower, in collaboration, every Saturday night, are well worth listening to. Each station gives a dramatic selection, a musical concert, and a variety entertainment, from 8.30 to 10.30 p.m., with two, and sometimes three, stations taking part. They do not clash with each other, and a listener can devote his evening to the type of entertainment he prefers by a turn of the switch at the appropriate moment. The artists taking part are among the best in France, and the programmes are chosen with great care. There is always a theme for one or more of the section, and the Three Coquettes pro-gramme of June 18 is particularly attractive, with Marie Bell in Célimène (based on Le Missentrophe, by Molère), Edwige Feuillère, in La Locandiera (Goldoni), and Spinelli in La Périchole (based on Le Carrosse du Saint-Sacrement, by Prosper Mérimé). Needless to say, only fragments of these plays are given in the short time available. THE WORLD'S DANCE MUSIC On June 15 Leipzig will broadcast an entertaining programme of "Dance Music over the World," at 7.10 p.m. For two hours listeners will be given the more outstanding types of dance tunes from everywhere. From ta-go to English waltz, from polonaise to waltz; the tarentella from Spain, the czardas from Hungary, a jig from Ireland: all will be represented. Rio Kube, the opera tenor, is the male soloist. He started life as a lyrical tenor, and now boasts of being able to sing anything from Bach to Meisel (a modern German dance composer). He has had per-manent engagements at nearly every German opera-house. For many years Rio Kube has regularly appeared in a large number of short-wave stations' programmes and has consider-able fan-mail from all over the world. SWEDEN—FINLAND—U.S.A. During the forthcoming visit to the United States of Crown Prince Gustav Adolf of Sweden (referred to in these columns last week), he will speak over the NBC Blue Net-work, on Monday, June 27, as will also Mr. Rudolf Holsti, Finland's Minister for Foreign Affairs, as well as President Roosevelt, Mr. Cordell Hull, and other representatives of the United States, in two programmes com-menmorating the 30th anniversary of the land-ing of the first Swedish and Finnish colonists in America. Both programmes will be relayed on short waves by W3XL, W3XAD, and W4XX. During the first broadcast—from 3.30 to 4.0 p.m. B.S.T.—the President will accept monu-ments from Sweden and Finland for the States of Delaware and Pennsylvania, which origin-ally were settled by natives of those countries. He will then present them to Governor McNutten of Delaware and Governor Earle of Pennsylvania. The broadcast will originate from the site in Wilmington where the colonists landed in 1638. The Crown Prince and the Finnish Minister will be heard again over the NBC Blue Network and affiliated short-wave stations later the same day, from ceremonies in which Mr. Cordell Hull will participate. The broadcast will be from 8-8.45 p.m. B.S.T. THE SCHOOL FOR BRIDES, recently opened in Germany, evidently includes listening in its curriculum. This should be of special interest to potential bridesrooms.
JAZZ "Banned" from Vienna

RADIO ON ROYAL TRAIN

The Royal train, in which the King and Queen will travel during their visit to France this month, is being equipped with a complete wireless installation. There will be amplifiers and loudspeakers, working from an up-to-date receiver, in all the compartments. Special care is being taken to obviate electrical interference.

CHANGES IN VIENNA

Vienna, which, on six nights a week, relays the programmes of other German stations, will broadcast no more jazz music, according to an article in the Vienna edition of the Volkische Beobachter. Programmes begin now at 6 a.m., and there is a 21 hours' uninterrupted service. There is to be much more music in the evenings than formerly, and "unknown" people who can "interest only a small number of hearers" will never be allowed again.

No Jews will be allowed to take part in the programmes at all, and it is pointed out that the principal men in the scientific department, programmes of other German stations, will broadcast no more jazz music, according to an article in the Vienna edition of the Volkische Beobachter. Programmes begin now at 6 a.m., and there is a 21 hours' uninterrupted service. There is to be much more music in the evenings than formerly, and "unknown" people who can "interest only a small number of hearers" will never be allowed again.

No Jews will be allowed to take part in the programmes at all, and it is pointed out that the principal men in the scientific department, who were responsible for science features in the Kavag programmes—Dr. Henz, Dr. Guggenberger, and Dr. Ubelhor—were not Jews, but Aryans. The news services have been extended, and a great amount of time is allotted to propaganda and political speeches.

PULITZER PRIZE DRAMAS

A SERIES of plays which have been awarded the Pulitzer Prize—the most coveted award in American drama—are scheduled by the NBC for weekly presentation during their summer season, which has just opened, in adapted form to fit into a one-hour transmission each Thursday.

The three-months' series includes three of Eugene O'Neill's—Beyond the Horizon, Anna Christie, and Strange Interlude. The last-named play is twice the length of usual Broadway productions and will be performed in two separate broadcasts.

WOMAN DIPLOMAT'S TALKS

MRS. RUTH BRYAN ROHDE, former United States Minister to Denmark and daughter of the late Mr. William Jennings Bryan, began, last Wednesday, the first of the regular series of broadcasts entitled "It's News to Me." Mrs. Rohde's talks will be heard weekly, from 12.30 to 12.45 a.m. (Tuesday), over the NBC Red Network and will take the form of "human" commentaries on national and international affairs as viewed by a person with her cultural background, world knowledge, and diplomatic experience.

Mrs. Rohde began her speaking career by making broadcast appeals for her father when he was fighting for the Presidency of the United States. Since then her career has been peppered with "firsts." Her appointment as Minister Plenipotentiary and Envoy Extraordinary to Denmark in April, 1933, gave her the further distinction of being America's first woman diplomat.

"CRADLE SONG" FOR ROYAL BABY

Tim dedication of a new "Cradle Song" composed, on the occasion of the birth of Princess Beatrix, by Herbert Antcliffe, the English musician-journalist now resident at The Hague, has been "gratefully accepted" by their Royal Highnesses Princess Juliana and Prince Bernhard of the Netherlands. The song is a setting for mezzo-soprano of words by Clemens Brentano, many of whose poems were used by Brahms, Mahler, and other nineteenth-century composers. The Cradle Song, however, does not appear to have been set to music before now. Mr. Antcliffe's "O Salutaris" has recently been sung by the KRO "Small Choir."

"EMIGRATING" TO BERLIN

Few people know that near Berlin there is a whole series of villages with curious names: Ceylon, Jamaica, Hampshire, Malta, Corsica, etc. These owe their origin to Frederick the Great. He became aware that many of his subjects were filled with a desire to emigrate. This would not quite do—but why not give them at least some of the sensation of moving to a new country? A piece of land in fresh surroundings—call it Ceylon (where "only the King's ville"), and, though the "new" land was within the environs of Berlin, both parties should be satisfied.

Berlin will broadcast an interesting description of these foreign name villages on June 16 from 5.30 to 6 p.m.

A SURREALIST BROADCAST

Surrealism, a modern, highly experimental play, which NBC are presenting tomorrow, Saturday, June 11, is in essence a criticism of the machine age. A mechanical larynx that reproduces speech and life respectively, and "challenged" by a young playwright. This happens at the precise moment that the young author takes a girl to call upon a young man with whom she is in love, but who has found it imperative to live in Greenwich Village (New York's Bloomsbury) and try his hand at surrealist painting. The broadcast will be directed by James Church.

BRUNO WALTER AND AUSTRALIA

According to the Radio Call, of Adelaide, it is reported that the Australian Broadcasting Commission has made an offer to the celebrated conductor, Dr. Bruno Walter, to come to Australia. "Now that Bruno Walter has been forced to leave Vienna, it is possible that he will be able to accept this offer. Because of its commanding position and its resources, the ABC has taken control of almost the whole of the organised orchestral music of Australia.

"If Bruno Walter can be persuaded to come here, knowing that his appointment in Vienna has been terminated, this young country will be able to claim the distinction of having a national orchestral conductor who is regarded as possibly the second greatest in the world."

DO YOU KNOW THE ANSWERS?

The following questions are all based on subjects which should be familiar to readers of WORLD-RADIO. They are intended not only to be a test of observation, but to provide some diversion for the family circle. The answers will be found on page 7.

1. What is the European standard of the speed of light? Is this speed universally accepted?
2. Are the standard times of the following countries in advance of, similar to, or behind G.M.T.?—(a) Philippine Islands; (b) Sandwich Islands; (c) Portugal; (d) Fiji Islands.
3. With what do you connect: (a) Paul Wing; (b) Edward Stratz; (c) Father Lhmade; (d) John Barbrolli?
4. Name five Russian broadcasting stations whose consecutive initials form the name of a sixth.
5. After which town is the present European wavelength Plan called?
6. Who wrote the following: (a) La Gioconda; (b) Nero; (c) Boris Godunov?
7. W. R. ROBERT MILES, 63, Kingscourt Road, Streatham Hill, S.W.16.

MARGARET TESCHEMACHER, of the Stuttgart Opera House, who will sing the principal part in Johann Strauss's "The Gipsy Baron." The opera will be broadcast from Stuttgart at 8 p.m. on Sunday.
Guglielmo Marconi would have been the last to claim for himself the title of "the inventor of wireless." Nevertheless, by his devotion to the science he had made his own and by his vision he made his name and Radio almost synonymous terms.

Successful Experiments

There is a story that Marconi, in testing the range of his apparatus, fitted up a receiver on the side of a hill about a mile from the house. His brother Alfonso took charge of the receiver, and it was arranged that he should wave a flag if the signals arrived. In due course Marconi pressed the key and, to his relief, his brother immediately gave the answering signal. The next step was to ascertain whether the signals would pass through or over the hill, so Alfonso was told to move the receiver round to the other side of the hill. This time he was given a gun and asked to fire a shot in the air if the receiver worked. Again Marconi pressed the key, and a few seconds later there came the answering report of his brother's gun.

It seemed to Marconi that the time had come to launch wireless commercially, and so he offered his work to the Italian Government, who promptly declined it. They probably thought that a boy of only twenty-one could have no scheme worthy of their consideration! Marconi, however, considered that wireless signalling was likely to be of most value to ships at sea, and as England was the greatest seafaring country he decided to come to England. Accompanied by his mother, he arrived in London early in 1896 and secured a personal introduction to Sir William Preece, who was then the Chief Engineer of the Post Office. To Preece and other officials of the Post Office Marconi gave a demonstration of
WORLD-RADIO

READERS' FORUM

W2XE and W3XAU: Time Lag

Sin.—Between 2 and 2.30 a.m. on Sunday morning, May 29, I was listening simultaneously to W2XE (New York), on 25.36 m., on one radio receiver and to W3XAU (Philadelphia), on 31.28 m., on another receiver.

Both stations are owned and operated by the Columbia Broadcasting System, and both were relaying the same programme ("Professor Quiz's" General Knowledge Bee) from the main medium-wave station, WABC, but reception from W2XE was definitely ahead of that from W3XAU—only a fraction of a second, but long enough to be clearly noticeable.

Can any reader give the reason for this phenomenon? The only explanation I can think of is that, owing to the difference in wave-lengths, the waves from the two stations took different paths, those from W3XAU travelling much farther than those from W2XE. Nevertheless, I find it hard to convince myself that this could account for a time lag long enough to be noticeable.

W2XE was transmitting on an aerial beamed to South America; W3XAU, on I believe, a non-directional aerial.


EDGAR JACKSON.

THE FRENCH STATIONS

In my list of stations I recently observed that several French transmitters had increased their power. Among these were Agen, Bordeaux-Sud-Ouest, Bordeaux-Lafayette, and Montpellier.

Earlier I had observed this change to the two Bordeaux stations, since Bordeaux-Sud-Ouest—which, ordinarily, I found very difficult to receive—has, on one or two nights recently, swamped Poste Parisien! And Bordeaux-Lafayette also, which was very well received in the evening when using 13 kW, has seemed less powerful since using 60 kW. Montpellier has lately been giving better reception; but Agen, I fear, is often drowned by Stavanger.

What is the explanation of this?

I may add that Radio 37 (0.4 kW) is receivable at fair strength all day, and yet I cannot receive either of the Toulouse stations or Lyons PTT in daylight. A further curious point is that French stations on higher wave-lengths, with the exception of one or two, Radio-Cite, Eiffel Tower does not put in an appearance until dusk!

ROBERT H. MILLER.


STATIONS' DECLINE IN POWER

Mr. P. G. A. H. Voigt's letter, regarding the decline in volume of new stations, in your June 3 issue is particularly interesting to me, as I chanced to be discussing this very matter with a friend a year or two ago. I remember he suggested that the cause of the phenomenon was that the earth system of the station—alternatively, simply the ground around the transmission curve—had become cumulative the radiations from the transmitting aerial, or at least to have a partial "cancelling" effect after a few miles of operation.

Personally, I prefer this explanation to Mr. Voigt's until more evidence can be adduced in his favour. In his statement, he states that this falling off in signal strength never, apparently, occurs in connexion with commercial stations, it seems to be peculiar to the short-wave broadcast stations. VK2ME, Sydney, is the outstanding case in this regard, and I recollect reading in your columns a short time ago that, when first built, it used to put an amazing signal into Great Britain, while now, inexplicably enough, all the signals have been said to cause it to be heard above R4, except on rare occasions. Since the phenomenon has been observed, in this instance, to last for a number of years, I can hardly imagine that changing atmospheric conditions for the 31-m. band are alone responsible all this time. Besides, newer 31-m. Australian transmitters have not followed suit.

Surely, Mr. Voigt would not suggest that there are a huge number of aerials in the Sydney district (or anywhere else) that remain tuned to 31.28 m.

On the medium waves, I have noticed the effect especially on Leipzig, Hamburg, Prague 1, Beromünster, and Stuttgart, but the change to 300-metre wave-lengths may have had something to do with the decline of the last two. On the long waveband, Luxembourg, Hilversum 1, and (most of all) Montreux have disappeared.

WILLIAM A. H. WELSMAN.


HARMONICS

When Radio-Normandie was on 269.5 m., I was always able to receive the 6th harmonic at approximately the same strength and programme as the original, though I never noticed any other Radio-Normandie harmonics.

Since the change-over to 212.6 m., I have not been able to notice harmonics on this frequency. It is true that I have noted something on the 7th harmonic, however, in connexion with the short waveband of the R.A.F. transmissions to Berlin, and I have been unable to decide whether or not this is a harmonic.

Those tackling the problem of the Newcastle reader who has Tokio interference on 212.6 m. may I point out that, although the Tokio short-wave station is supposed to have just the two wave-lengths, 25.42 m. and 31.46 m., I have received it very strongly on about 19.76 m.? Wigan, May 21.

J. SIMMONDS HAWKES.

Heytesbury Rd., Heytesbury, Salisbury.

Letters should be addressed to the Editor, "WORLD-RADIO," Broadcasting House, London, W.2. Contributions for publication should be as brief as possible, and should always be accompanied by the full name and address of the writer, not necessarily for publication.

SUBSCRIPTION RATES

12 months (Domestic), 17s.; 12 months (Foreign), 15s.


"DO YOU KNOW...?"—12

Answers to Questions on page 5

1. Europe: 300,000,000 metres per second. America: 299,320,000 metres per second.

2. (a) plus 8 hours; (b) minus 10 hours; (c) similar to G.M.T.: (d) plus 12 hours.

3. (a) Spelling Bews; (b) Chief Announcer, P.C.J.; (c) Radio sermons from Radio-Paris; (d) New York Philharmonic Orchestra.

4. (a) Hershey; (b) Finland; (c) Bulgaria; (d) Norway.

5. Lucerne.

6. (a) Pontecorvo; (b) Mascagni; (c) Mussorgsky.

7. Moscow; (c) Irkoukt; (d) Novosibirk; Saratow; Kiev—M 1 18 S.

MARCHese MARCONI

(continued from page 6)

signalling by wireless from a room in the General Post Office to a receiver placed on a roof over one hundred yards away.

Preece was greatly impressed by the demonstration, and proceeded to give Marconi his full support, even to the extent of providing him with an assistant, Mr. G. S. Kemp, one of the most experienced of the telegraph engineers of the Post Office. Later in 1896, Marconi, assisted by Kemp, gave a demonstration on Salisbury Plain to representatives of the Army and the Navy at which signals were easily transmitted over a range of two miles. These tests were followed by others in the Bristol Channel in 1897 with a range of nine miles, and so by stages the range was increased, until, in 1901, the first wireless signals reached across the Atlantic.

Business Ability

The details of Marconi's work and progress since 1897 have been told so many times before that there is little need to repeat them here. Let it suffice to remark that Marconi owed his triumphal progress partly to his enthusiasm and clever showmanship, partly to the immense backing and encouragement he received from Sir William Preece, and partly to his ability in business affairs and in his choice of advisers and assistants. While Marconi could not be described as a great scientist or inspired inventor—indeed, there was no fundamental invention in any of his early work—he certainly made many valuable improvements in the details of the apparatus, which led to greater range and reliability.

Why, then, of all the pioneers was Marconi selected as the one to be immortalised? Because, I think, that of all those who had blazed the trail he alone had vision for the practical application. Where others had seen only a new and interesting scientific phenomenon, Marconi saw its practical utility. He had the ability and the enthusiasm to develop his ideas, he had an amazing gift for getting a job done and making it work, and, above all, he had what so many inventors lacked: money and a sound business sense.

Although Marconi has thus but a slender claim to be the 'inventor of wireless,' he was unquestionably the one above all others who made it work. His task was the hardest and by far the longest, and to him above all others is undoubtedly due the major credit for success.
in two cabaret shows which Harry Pringle will present on June 16 and 18, in the afternoon and evening, and the pace is maintained by the compere, who fills inevitable intervals of scene-shifting with a space of nicely-timed chatter. George Robey again faces the camera in "Picture Page," a programme in the Strand. Though I found tedious, except for the hat-eating epilogue. It seems a pity that somebody should not stand up to the televisor and do a lot of talking without actually entertaining the eye of the audience as well as the ear.

London, of course, is cracking the nuts of television-programme problems for the rest of the world. They will all benefit by our experience. One cannot help but be too hard on a television organisation which has succeeded in bringing outdoor events to the fireside with perfect quality.

Paris has just started up a new transmitter which supplies 455-line pictures of an astounding clarity and crispness. I witnessed reception of programmes both in the Mairie, about a mile and a half from the aerial, and at a distance of about 20 miles from Paris. In each case, I was surprised at the wonderful quality of the image. Lightening in the Paris studios and the make-up seem better, or rather more suited to television, than in London. I am not an expert, but have wide photographic and television experience, and it seems to me that the heavier make-up for eye and mouth used in Paris makes these features more visible when the receivers are in "white." The faces—common fault. Instead of spot-lighting as in London, Paris uses more general light, thus giving, to my mind, better, or rather more suited to television. The audience is aware of the world.

London-Paris-Berlin

AFTER years of semi-public tests on 30 and more lines, Europe will have three high-definition television services running by the end of 1938. London is ahead of Paris and Berlin. We have had a 405-line service since the autumn of 1936. Paris has just inaugurated its new station, which operates on 455 lines, and Germany will not, I doubt, follow shortly. To the keen observer it is interesting to note that, although Germany started with a semi-high-definition service as early as March, 1935, on 180 lines, with flicker-pictures (25 frames), it delayed in introducing high definition.

A brief tour of the three capitals gave me an opportunity to judge television reception under various conditions within a short period of time.

When in England, I saw the Cup Final on a television set in Dorking. I could follow the ball at every moment and really enjoyed football, to which I am not particularly attached. In Oxford Street I watched a fashion display which Paris seem better, or rather more suited to television. The audience is aware of the world. In the Strand, to which I am not particularly attached. In Oxford Street I watched a fashion display which Paris have had their legs shortened. From photographic experience I know that this is due to the height of the camera, to which must be added the distortion produced by the curvature of the receiver screen. Late one evening I viewed a "Picture Page" programme in the Strand. Thus, I found tedious, except for the hat-eating epilogue. It seems a pity that somebody should not stand up to the televisor and do a lot of talking without actually entertaining the eye of the audience as well as the ear.

London, of course, is cracking the nuts of television-programme problems for the rest of the world. They will all benefit by our experience. One cannot help but be too hard on a television organisation which has succeeded in bringing outdoor events to the fireside with perfect quality. Paris has just started up a new transmitter which supplies 455-line pictures of an astounding clarity and crispness. I witnessed reception of programmes both in the Mairie, about a mile and a half from the aerial, and at a distance of about 20 miles from Paris. In each case, I was surprised at the wonderful quality of the image. Lightening in the Paris studios and the make-up seem better, or rather more suited to television, than in London. I am not an expert, but have wide photographic and television experience, and it seems to me that the heavier make-up for eye and mouth used in Paris makes these features more visible when the receivers tend to "white." The faces—a common fault. Instead of spot-lighting as in London, Paris uses more general light, thus giving, to my mind, more detail. I see possibilities of being able to receive both Paris and London television stations in parts of the intervening country, as ordinary 405-line receivers also take the 455-line picture.

To summarise my experience: pleasurable reception in London on ordinary sets; very high-quality pictures on the screen in Paris and surroundings; in Berlin, marking time.
A NEW S.W. STATION

At any time now the new 5-kW short-wave transmitter may be in operation at Delhi. As you will remember, when I was speaking of a new medium-wave station working on 340 m., and a 10-kW short-wave station which uses 313 m. (9.99 Mc/s) and 60 m. (4.99 Mc/s). The purpose of the first is to provide reception in the immediate neighbourhood of the city, and that of the second to serve an area lying between 30 and 500 miles from the transmitter. The new station, VUD3, is to work on 19.79 m. (13.16 Mc/s), and is intended to provide reception for listeners who live at distances of 500 miles or more from the capital. VUD3 is expected to use the 13.16 Mc/s frequency for all transmissions. In addition, Calcutta is to have a new short-wave station (VCU2), which, it is expected, will be opened on July 1. Since that station is to have a power of 10 kW it should be easily receivable in this country. The Calcutta medium-wave station might be considered being capable of using a wavelength of 235 m. instead of 370 m. Certainly, the ambitious programme which All India radio has kept before them is being rapidly fulfilled.

STATIONS THAT FALL AWAY

Mr. P. G. A. H. Voigt, in his letter in the last issue, is giving a very interesting explanation of the decline in signal strength that has been observed to affect so many medium-wave broadcasting stations within a year or two of their opening. If you remember, his theory is that the falling off is due to absorption by the increasing number of buildings and near locality of the transmitter. I think that there is a good deal in that; but I am not satisfied that it completely accounts for the doings of some of the stations that have behaved in this way. It isn't easy, for example, to believe that Molatola's once enormous strength in this country has been cut down by absorption by receiving aerials, for Sweden's population is a small one, and not part of the country is very densely inhabited. Whether or not it is a fact that the same kind of thing has never been found to happen with commercial transmitters I don't know; I understand, though, that ships' transmitters never seem to suffer from a shortening of their range as time goes on, and I have always thought that that rather tended to confirm the theory that a physical change in the soil round the earth's connections of land stations might be responsible.

ANOTHER BLOW

My recent suggestion that strong reception of Radio-Normandie's seventh harmonic appears to be confined to a wedge-shaped area in this country, with its apex at the transmitter and its sides running to points a little to the east of the Rhone and the west of Galloway, obviously seems to be knocked on the head by a letter in the same issue from Mr. C. C. Richards, who has good strength of the seventh harmonic signal at Penzance. Perhaps, though, there is a wedge-shaped area whose western boundary makes a considerably wider angle with the east than I had suspected. It remains to be

seen whether reports of R6-R9 reception of this seventh harmonic will be sent in by readers from districts such as Essex, Norfolk, or the East Riding of Yorkshire.

IS A.V.C. EFFECTIVE?

The other day a friend said to me that he didn't think so. But A.V.C. was very effective, he said, "there's any fading going on, signals go up and down despite A.V.C." For answer I went over to my set, switched to the short-wave range, tried one or two stations, and then gave him a transmission—WXAD, I think it was—which came through strongly and with perfect steadiness. "What about that?" I asked. "Nothing to do with A.V.C.," he said; "that transmission isn't fading, it's a set arranged that it is easy to slip a milliammeter into the plate circuit of the I.F. valve. I did this and asked him to watch the needle.

WATCHING IT WORK

The needle of the instrument was never still for a moment. Now it was swinging slowly upwards; now it came slowly down. There was a very considerable maximum and minimum readings of these rhythmical swings, showing that slow and quite deep fading was occurring. After some time it reduces the grid bias of the valves to which it is applied, and the plate current rises. Just the opposite action was observable, and a rise in strength after reaching its minimum. The milliammeter shows you just what A.V.C. is doing. And if you ever try the experiment you'll be surprised to find how busy it is on most days. The only fading you notice is that which is important for A.V.C. to be able to deal with properly.

Which station was that?

This feature is intended for the use of readers who desire the identification of broadcasting stations only, whether on long, medium, or short waves. For particulars of amateur transmissions, readers are referred to the relevant paragraph below.

Free Queries

Each query should be numbered and the questions on the coupon carefully answered. Letters must be addressed to the Editor, World-Radio, Broadcasting House, W.1.

The Alternative Postal Service

In addition to the free service of "Which Station Was That?" printed in these columns, replies to special inquiries on indexes of amateurs' stations are given. The 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."

SHORT WAVE (Hull): YV3RD, Caracas-Cota (Venezuela), on 6.158 Mc/s. DX ER10 MA (Woodford Wells): (1) Radio Emisoras YNPE, Salina A. Majewsky 14, R. Senglemann, Managua, Nicaragua; (2) YDB, Sourabaya (Java), on 30.02 m.; (3) 214, Maracaibo, Venezuela, on 51.28 m. INTERESTED FREQUENCY (Wareham): YVIRB, Apartado de Correos 487, Quito, Ecuador; (4.22 m.); YNGU, Alma Tica, San Jose (Costa Rica), on 31.13 m.; YUG, Fermanagh: (1) X0X, Fort-de-France, Martinique, on 31.02 m.; (2) SOVIET (Perth): TIGPH, Alma Tica, San Jose (Costa Rica), on 31.02 m.; (3) X0X, Fort-de-France, Martinique, on 31.02 m. 

IDENTIFICATION QUESTION (Coupon No. 487)

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. No coupon more than one month old is valid. A coupon is not required from readers living in countries outside the United States. A coupon is not required from readers living in countries outside the United States. A coupon is not required from readers living in countries outside the United States. A coupon is not required from readers living in countries outside the United States.
INTEREST has been centred, in recent years, on the development of broadcasting and television services in the ultra-short waveband—i.e. using frequencies greater than 30 megacycles per second.

In order to determine the suitability of these wavelengths for such purposes, investigations of propagation had to be made, and to carry out such experiments with precision field-strength measuring apparatus was required.

Suitable apparatus has been developed concurrently by the British Broadcasting Corporation's Research Department, Marconi's Wireless Telegraph Co. Ltd., the Electrical Research Association, and the National Physical Laboratory. Comparison tests have been made between all available types of ultra-short-wave field-strength measures, and a satisfactory degree of consistency has been found.

The apparatus developed by the British Broadcasting Corporation has been designed with due regard to the type of measurement which is required in determining the service area of a broadcasting station. The equipment is mobile—being mounted in a motor vehicle—and is adapted to permit of a continuous field-strength record being obtained while on the move.

The aerial system consists of a dipole mounted on the roof of the van and connected to the receiver by a flexible balanced cable. The dipole can be turned, from inside the van, to a vertical or a horizontal position and can also, when horizontal, be rotated. By this means the state of the polarisation of the received signal can be examined. A spare dipole and a long flexible cable are also provided in order that the field-strength can be determined in places not easily accessible to the van. Measurements have been made by this means at the top of a mast at Daventry of the field-strength obtained from the London Television Station at Alexandra Palace. Experiments have also been made with the dipole attached to a kite and connected by a feeder to the receiver situated in the van.

The equipment carried by the van consists of a receiver, a signal generator for calibrating purposes, a peak-voltage indicator for interference intensity measurements, and a recording milliammeter, together with L.T. and H.T. supplies. The circuit of the receiver is shown in Fig. 1 (a). The input circuit consists of three resistances arranged in delta formation to give a terminating resistance of 110 ohms to the transmission line connecting to the dipole. Across this resistive termination are connected two "acorn" triodes acting as push-pull frequency-changers. A third "acorn" triode is used as a beating oscillator. The remainder of the circuit consists of a conventional intermediate-frequency amplifier operating on about 500 kc/s, terminating in an anode-bend detector. The output circuit contains a milliammeter and provision for connecting a pair of telephones, a recorder, and a peak-voltage indicator. The beating oscillator circuit includes a switch, in one position of which the circuit can be tuned over the range of from 30 to 50 Mc/s for measuring purposes. In the other switch position, the circuit oscillates at the fixed frequency of 1,050 kc/s for calibrating against the local medium-wave generator. A variable condenser is provided to give control of the amplitude of the beating oscillator signal injected into the frequency-changer circuit. A meter in the common anode circuit of the frequency-changer valves enables this amplitude to be measured.

The signal generator, shown in Fig. 1 (b), contains a valve oscillating at a frequency variable about a mean value of 1,550 kc/s. This is followed by an attenuator adjustable over 70 db, in steps of 10 db, which is terminated in a screened transformer to enable the output of the unbalanced attenuator to be connected satisfactorily to the balanced input circuit of the receiver. The input signal level to the attenuator is measured by a grid-leak detector, and a fine control of input level is obtained by means of a microammeter. The complete apparatus, together with all batteries, is housed in a well-screened brass box.

**OPERATION**

The principles on which the field-strength measuring apparatus operates necessitates a knowledge of the "pick-up factor" of the aerial system. Since the dimensions of the dipole are known, and since the aerial feeder is terminated in a known resistance, it is practicable to calculate the voltage delivered to the grids of the frequency-changers when the aerial is placed in a field of known intensity and frequency. The

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![Fig. 1—Complete circuit diagram of Field-Strength Measuring Set (a), Injector Oscillator (b), and Tungograph Unit (c).](image-url)
assumption is also made that a frequency-changer circuit can be so designed that the conversion efficiency depends only on the amplitudes of the received signal and the beating oscillator, and is substantially independent of the input frequency when this is high compared with the intermediate frequency.

To measure the strength of a received signal it is first tuned in and the gain control of the receiver is adjusted until a suitable deflection is obtained on the second detector anode-current meter. The reading of the frequency-changer anode current meter is also noted. The aerial feeder is then removed and the connection to the signal generator substituted. The beating oscillator is switched to 1,050 kc/s and the coupling condenser is adjusted to give the previously-noted reading on the frequency-changer anode-current meter. The signal generator is then tuned to give maximum deflection as the second detector anode-current meter, and the attenuator controls are adjusted to equate this deflection to that produced by the received signal. The input levels to the receiver of the received signal and the signal generator output are then presumed to be equal.

The signal level is determined from the adjustability of a milliammeter. The beating frequency -tuned input receiver is adjusted until a suitable deflection is given with the intermediate frequency.

In order to extend the range, a tuned input field-strength measurer is arranged horizontally above the head of the receiver. The variation of signal strength with distance shows the manner in which the received signal varies with the height of the receiving aerial and with distance. The beating frequency -tuned input receiver is adjusted until a suitable deflection is given with the intermediate frequency.

The preparation of a field-strength contour diagram of an ultra-short-wave transmitter is a much more laborious matter than a similar task in the medium waveband. Some of the difficulties can be visualised from a consideration of Figs. 2 and 3. Fig. 2 shows the variation in signal strength obtained with a receiver connected to the field-strength measurer on a stationary bus.

In order to obtain sufficient information to plot field-strength contours it has been found necessary to take continuous field-strength record. Streets carrying much traffic must be avoided and measurements made in quiet by-roads. The normal procedure is to take a continuous record of the field-strength variations throughout a district and then to determine the average value from the record. A sufficient number of such records having been obtained, a contour map can be prepared.

By this method the field-strength contour diagram of the Alexandra Palace sound transmitter was obtained, and has since been published in the BBC Annual for 1937.

Other measurements which have been made on the television sound-transmitter project show that a variation of signal strength with the height of the receiving aerial and with distance. Fig. 4 shows the manner in which the received signal strength varies with the height of the receiving aerial and compares the results obtained with the predictions of C. R. Burrows and T. L. Eckersley.

The variation of signal strength with distance has been examined on an attenuation run from Alexandra Palace to John O'Groats. At distances up to 120 kilometres, field-strength and distance are found to be related by the law:

\[ E = E_0 \cdot 3 \times 10^{-6} \cdot d^2 \]

where \( E \) is in volts per metre, and \( d \) is in metres. Beyond 120 kilometres the attenuation appears to increase, but fading becomes noticeable, and at distances of from 400 to 700 kilometres a variable signal is obtained with all the characteristics of a sky-wave and a maximum intensity of about five micro-volts per metre. The results obtained are consistent with theoretical predictions of attenuation over a short distance. They do not, however, confirm the theoretical law of exponential attenuation at a distance comparable with the optical range.

\[ \text{Fig. 4} \quad \text{Variation of strength of received signal with height of receiving aerial.} \]

\[ \text{Fig. 3} \quad \text{Illustrating the stationary interference pattern recorded in a relatively unscreened area.} \]

\[ \text{Fig. 2} \quad \text{Recorded effect upon field-strength of passing traffic on a busy road.} \]
INDIANAPOLIS CAR RACE

The roar of racing-cars greeted me as I tuned in to W2XE (19.6 m.) at about 21.10 B.S.T. on May 30, and I found that I was just in time to hear a commentary on the final laps of the Indianapolis 500-mile race. At that time Floyd Roberts, aviation engineer and former preacher, was leading, having done 194 of the 200 laps. Wilbur Shaw, last year's winner, was second, two laps behind.

A white flag was waved, which showed Roberts that he had only one more lap to go, and he slowed down, as he had a race “in his pocket.” A chequered flag was dropped, and Roberts—in a beautiful red car, No. 23—had won this race, perhaps the most famous car-race in America. To quote our commentator—

“He’s happy, Oh! boy, is he happy!

And then, Roberts went off the track to “Victory Lane.” When switched over there we were able to hear him say “I feel fine and send a message to “My little wife—and my school children had been among the

Pennsylvania, which includes the whole of the

Thousands of hymns were played by the U.S. Marine Band.

D. Walsh, Senator for Massachusetts, addressed

the audience, who were eager to hear his speech. He began by saying that this event was a memorial to all those who had fallen in the American Civil War.

The Twenty-sixth Annual 500-miles Speed-

race in America.

Skamlebæk, OFZ

FROM Sunday morning, May 29, the Danish short-wave transmitter OFZ at Skamlebæk (31.51 m.), altered its transmissions for experimental broadcasts on a wavelength of 19.78 m. (15.16 Mc/s), call: OZ/3, every Sunday and holiday, 14.00-19.30 B.S.T.

Bound Brook, W3XAL

Two new 25 kW transmitters, enabling the National Broadcasting Company to reproduce every country of Europe and all parts of South and Central America, have been installed and will go into operation in the near future. The National Broadcasting Company's international short-

wave station, W3XAL, Bound Brook, New Jersey.

Designed and built by NBC engineers, the new transmitters will operate through four directive beam systems and two non-directive aerials.

The Danish State Broadcasting Service is at present making experimental broadcasts on a wavelength of 19.78 m. (15.16 Mc/s), call: OZ/3, every Sunday and holiday, 14.00-19.30 B.S.T.

Reception in this country is particularly good on Saturdays. Good results were also obtained on W3XAL (19.57 m.) and W2XAD (19.65 m.), and W8XK (25.26 m.) was audible. W8XK was a good signal only poorly heard here.

The various European and South American stations available in the 31-m. band were well heard during the whole of the afternoon. Reception on the higher frequencies was quite good during the afternoon.

There were many DX results, the many North and South American stations available in the 31-m. range were heard during the evening. W3XAL was a good signal throughout the afternoon and during the evening this station peaked to R8, with only an occasional trough of deep fading. The various European stations were heard at good intelligibility and all parts of South and Central America, have been installed and will go into operation in the near future. The National Broadcasting Company's international short-

wave station, W3XAL, Bound Brook, New Jersey.

Designed and built by NBC engineers, the new transmitters will operate through four directive beam systems and two non-directive aerials.
<table>
<thead>
<tr>
<th>Time</th>
<th>Call</th>
<th>Station</th>
<th>City</th>
<th>Wavebands</th>
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</thead>
<tbody>
<tr>
<td>21.54</td>
<td>W3JK</td>
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<td></td>
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<tr>
<td>17.79</td>
<td>W2XE</td>
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<tr>
<td>16.87</td>
<td>W1XAL</td>
<td></td>
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<tr>
<td>15.31</td>
<td>W2XAD</td>
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<td>14.06</td>
<td>W2XEB</td>
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<tr>
<td>12.51</td>
<td>W2XEF</td>
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<tr>
<td>11.78</td>
<td>W2XH</td>
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<td>10.35</td>
<td>W2XJ</td>
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<tr>
<td>9.63</td>
<td>W2XK</td>
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<td>8.46</td>
<td>W2XR</td>
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<tr>
<td>7.38</td>
<td>W2XQ</td>
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<td>6.03</td>
<td>W2XU</td>
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<td>6.01</td>
<td>W2XV</td>
<td></td>
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<td>6.00</td>
<td>W2XW</td>
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<td>5.37</td>
<td>W2XY</td>
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<tr>
<td>0.01</td>
<td>W2X0</td>
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</tbody>
</table>
JUNE 10, 1938

00.45 - Pathways to Peace.
00.00 - Dinner Hour Music.
02.00 - 02.30 - Big Ben.
16.15 - Vic and Sade.
19.00 - Betty and Bob.
19.30 - Bill Krenz's Orchestra.
20.00 - Church Notes (Polyglot).
20.15 - Topical (Vatican City).
20.30 - Radio Guild.
21.00 - Your Music.
21.15 - The Trout Fisherman.
21.30 - Lee Melody Serenade.
22.00 - Church Notes (Polyglot).
22.15 - Church Notes (Polyglot).
22.30 - Radio Guild.
23.00 - Radio Guild.
23.15 - Church Notes (Polyglot).
23.30 - Radio Guild.
23.45 - Yes Sir, I'm A Rocker.
23.50 - The Trout Fisherman.
21.50 - Dixieland.
22.00 - Church Notes (Polyglot).
22.15 - Church Notes (Polyglot).
22.30 - Radio Guild.
23.00 - Radio Guild.
23.15 - Church Notes (Polyglot).
23.30 - Radio Guild.
23.45 - Yes Sir, I'm A Rocker.
23.50 - The Trout Fisherman.
21.50 - Dixieland.
22.00 - Church Notes (Polyglot).
22.15 - Church Notes (Polyglot).
22.30 - Radio Guild.
23.00 - Radio Guild.
23.15 - Church Notes (Polyglot).
23.30 - Radio Guild.
23.45 - Yes Sir, I'm A Rocker.
23.50 - The Trout Fisherman.
<table>
<thead>
<tr>
<th>Day</th>
<th>Sunday, June 12</th>
<th>Monday, June 13</th>
<th>Tuesday, June 14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Syphony Concerts</strong></td>
<td><strong>Operas</strong></td>
<td><strong>Chamber Music</strong></td>
<td><strong>Recitals</strong></td>
</tr>
<tr>
<td>2.40</td>
<td>Hilversum 2: From Schenkenberg</td>
<td>7.28 Vienna: &quot; Tosca &quot; (from State Opera)</td>
<td>8.0 Beromünster: &quot; Fidelio. &quot;</td>
</tr>
<tr>
<td>7.10</td>
<td>Cologne: &quot; Der Rosenkavalier. &quot;</td>
<td>8.0 Munich: &quot; La scra padrona &quot; (record).</td>
<td>8.0 Warsaw: Oslo; Polish music.</td>
</tr>
<tr>
<td>8.15</td>
<td>Bucharest: &quot; Der Frischarte. &quot;</td>
<td>8.0 Hamburg: Schumann, Erlen.</td>
<td>8.30 Eiffel Tower: French music, etc.</td>
</tr>
<tr>
<td>9.10</td>
<td>Brno: Prague: Symphony (Dvořák).</td>
<td>8.0 National: Sir Adrian Boult.</td>
<td>8.30 Paris (PTT), etc.: &quot; La Traviata. &quot;</td>
</tr>
<tr>
<td>12.0–12.30</td>
<td>Rome group: &quot; Siberia &quot; (Gior-</td>
<td>8.10 Stockholm: Svensden No. 2, etc.</td>
<td>9.0 Turin group: &quot; Siberia &quot; (Gior-</td>
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<tr>
<td>4.0</td>
<td>Brussels 1: Trés, songs</td>
<td>12.10 Hilversum 1: Organ.</td>
<td>10.15 Stockholm: Svendsden No. 2, etc.</td>
</tr>
<tr>
<td>5.0</td>
<td>Beromünster: Viola, quartet.</td>
<td>4.0 Paris (PTT): Organ.</td>
<td>12.20 Stuttgart: Frankfurt: Wagner, etc.</td>
</tr>
<tr>
<td>5.5</td>
<td>Warsaw: Szotompha (pft.)</td>
<td>6.40 Hilversum 2: &quot; Trout Quintet (Schubert).&quot;</td>
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<tr>
<td>5.5</td>
<td>Oslo: Song, Hardanger violin.</td>
<td>7.10 Leipzig: Songs to the guitar.</td>
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<tr>
<td>6.0</td>
<td>Regional: Haydn programme.</td>
<td>8.30 Bucharest: Quartet (Mozart).</td>
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<tr>
<td>7.30</td>
<td>Budapest: Choir.</td>
<td>8.40 Oslo: Finnish songs.</td>
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<tr>
<td>8.0</td>
<td>Eiffel Tower: Song, pianoforte.</td>
<td>9.0 Paris (PTT): Schwart's Trout Quintet, etc.</td>
<td></td>
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<tr>
<td>8.50</td>
<td>Kalundborg: Women's choir.</td>
<td>9.15 Frankfurt: Trio.</td>
<td></td>
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<tr>
<td>9.5</td>
<td>Hilversum 2: Organ, bass, violin.</td>
<td>9.20 Munich: Quartet (Schubert).</td>
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<tr>
<td>8.30</td>
<td>Brussels: By Plane through Germany.</td>
<td>7.10 Frankfurt: &quot; Der Tümer. &quot;</td>
<td>8.0 National: &quot; George Edwardes. &quot;</td>
</tr>
<tr>
<td>8.55</td>
<td>Beromünster: &quot; Winke, bunten Wimpel. &quot;</td>
<td>8.0 Budapest: &quot; Torquato Tasso &quot; (Goethe).</td>
<td>9.0 Roma group: &quot; L'uomo di Bir-</td>
</tr>
<tr>
<td>9.10</td>
<td>Turin group: One-act comedy.</td>
<td>8.10 Sala: Radio Orchestra.</td>
<td>zulsh.&quot;</td>
</tr>
<tr>
<td>4.0</td>
<td>Sparerbrücken, etc.: Orch. and vocal.</td>
<td>2.30 Kalundborg: Radio Orchestra.</td>
<td>12.0 Kalundborg: Restaurant orchestra.</td>
</tr>
<tr>
<td>6.15</td>
<td>Brussels 2: Salon orch., soprano.</td>
<td>6.50 Cologne: Orchestra, pft.</td>
<td>4.60 Deutschlandsender: Orchestra, choir, soprano.</td>
</tr>
<tr>
<td>8.10</td>
<td>Vienna: Strauss waltzes.</td>
<td>10.30 Deutschlandsender: Dobrindt Orch.</td>
<td>7.15 Cologne: Radio Orchestra.</td>
</tr>
<tr>
<td>8.20</td>
<td>Hilversum 1: Popular prog.</td>
<td>10.30 Deutschlandsender: Dobrindt Orch.</td>
<td>7.55 Hilversum 1: Russian music.</td>
</tr>
<tr>
<td>8.30</td>
<td>Lille: Radio Orchestra, songs.</td>
<td>11.0 Brussels 2: Restaurant orch.</td>
<td>8.6 Radio-Paris 2: Accorsons, songs.</td>
</tr>
<tr>
<td>10.10</td>
<td>Kalundborg: Johann Strauss.</td>
<td></td>
<td>8.10 Deutschlandsender: Dobrindt Orch.</td>
</tr>
<tr>
<td>10.30</td>
<td>Kalundborg: Johann Strauss.</td>
<td></td>
<td>9.10 Hilversum 1: Dances, light orch.</td>
</tr>
<tr>
<td>11.0</td>
<td>Brussels 2: Restaurant orch.</td>
<td></td>
<td>9.15 Breslau: Silesian peasant music.</td>
</tr>
<tr>
<td>11.0</td>
<td>Brussels 2: Restaurant orch.</td>
<td></td>
<td>9.15 Kalundborg: Opera music.</td>
</tr>
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<td></td>
<td>10.0 Sotten's: Orchestra, pianoforte.</td>
</tr>
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<td></td>
<td>10.15 Oslo: A Musical Journey.</td>
</tr>
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<td></td>
<td></td>
<td>10.20 Kalundborg: Popular orchestral.</td>
</tr>
<tr>
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<td></td>
<td>10.30 Hamburg, etc.: Light and dance music.</td>
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<td></td>
<td>11.10 Budapest: Cigány Band.</td>
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<tr>
<td><strong>Light Orchestral Bands</strong></td>
<td><strong>Operettas</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.10</td>
<td>Hilversum 2: Holland v. France (Polo).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.0</td>
<td>Paris (PTT): Second round of International Football Cup.</td>
<td></td>
<td></td>
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<tr>
<td>8.0</td>
<td>Brussels 2: Variety concert.</td>
<td></td>
<td></td>
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<tr>
<td>8.30</td>
<td>Eiffel Tower: Variety.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.30 Brussels 1: Cabaret.</td>
<td>10.30 Poste Parisien: Cabaret.</td>
</tr>
</tbody>
</table>
## Like To Hear?

### WEDNESDAY, June 15

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.00</td>
<td>Radio Eireann</td>
<td>Beethoven quartet.</td>
</tr>
<tr>
<td>8.00</td>
<td>Warsaw (PTT), Turin</td>
<td>Three bands.</td>
</tr>
<tr>
<td>8.25</td>
<td>Oslo</td>
<td>Grieg and anniversary.</td>
</tr>
<tr>
<td>8.30</td>
<td>Lille</td>
<td>&quot;Wilhelm Tell&quot;.</td>
</tr>
<tr>
<td>9.20</td>
<td>Regional, National (260)</td>
<td>&quot;La Bohème&quot; (with Benin).</td>
</tr>
<tr>
<td>9.30</td>
<td>Stockholm</td>
<td>Court Orchestra.</td>
</tr>
<tr>
<td>9.45</td>
<td>Stockholm</td>
<td>Three operas.</td>
</tr>
</tbody>
</table>

### THURSDAY, June 16

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.15</td>
<td>National</td>
<td>From Bowiemouth.</td>
</tr>
<tr>
<td>7.10</td>
<td>Cologne</td>
<td>Orchestras, choirs, soloists.</td>
</tr>
<tr>
<td>7.55</td>
<td>Stockholm</td>
<td>Eiffel Tower.</td>
</tr>
<tr>
<td>8.00</td>
<td>Frankfurt</td>
<td>Swedish, Finnish programme.</td>
</tr>
<tr>
<td>8.45</td>
<td>Radio Paris</td>
<td>&quot;The Barber of Seville&quot;.</td>
</tr>
<tr>
<td>9.00</td>
<td>Kalundborg</td>
<td>Berlioz, Franck, Rousset.</td>
</tr>
<tr>
<td>9.00</td>
<td>Rome</td>
<td>&quot;Der Rosenkavalier&quot;.</td>
</tr>
</tbody>
</table>

### FRIDAY, June 16

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.30</td>
<td>National, Brussels</td>
<td>1 (8.20) &quot;Die Meistersinger.&quot;</td>
</tr>
<tr>
<td>7.40</td>
<td>Hilversum</td>
<td>1 Mass in B minor (Bach).</td>
</tr>
<tr>
<td>8.20</td>
<td>Brussels</td>
<td>Contemporary music.</td>
</tr>
<tr>
<td>8.30</td>
<td>Strasbourg</td>
<td>&quot;Salammbo&quot; (Royer).</td>
</tr>
<tr>
<td>8.30</td>
<td>Lille</td>
<td>&quot;Héroïde&quot; (Massenet).</td>
</tr>
<tr>
<td>8.30</td>
<td>Paris</td>
<td>PTT group; Brahms, Casella, etc.</td>
</tr>
<tr>
<td>9.45</td>
<td>Budapest</td>
<td>Brahms, Schumann.</td>
</tr>
</tbody>
</table>

### SATURDAY, June 18

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.00</td>
<td>Brussels</td>
<td>Quartets.</td>
</tr>
<tr>
<td>8.40</td>
<td>Paris</td>
<td>Old music.</td>
</tr>
<tr>
<td>9.50</td>
<td>Stockholm</td>
<td>Song, piano forte.</td>
</tr>
<tr>
<td>10.00</td>
<td>Breslau</td>
<td>Contemporary music.</td>
</tr>
<tr>
<td>10.30</td>
<td>Brussels</td>
<td>Contemporary music.</td>
</tr>
<tr>
<td>10.30</td>
<td>Paris</td>
<td>PTT; Old music.</td>
</tr>
<tr>
<td>10.40</td>
<td>Stockholm</td>
<td>Sacred music.</td>
</tr>
<tr>
<td>10.40</td>
<td>Brussels</td>
<td>Studio operetta.</td>
</tr>
<tr>
<td>11.00</td>
<td>Brussels</td>
<td>Light music.</td>
</tr>
<tr>
<td>11.00</td>
<td>Paris</td>
<td>&quot;Léo&quot; (Hervé).</td>
</tr>
<tr>
<td>11.00</td>
<td>Paris</td>
<td>&quot;Der Rosenkavalier&quot;.</td>
</tr>
</tbody>
</table>

### WORLD -RADIO

- **Operas in France:**
  - "Die Meistersinger" (with Benin).
  - "La Bohème" (with Benin).
- **Other Events:**
  - Military marches.
  - Works by Brahms, Haydn, etc.
  - Modern operas.
  - Chamber music.
  - Ballet music.
  - Light orchestras.
  - Sacred music.
  - Studio operas.
  - Dance music.
  - Light music.
Long and Medium Wave Programmes

SUNDAY JUNE 12

WORLD RADIO

National

Time Signal 12.30; 12.30 a.m. Greenwich; 12.30 Western; 9.30 D.S.T.

10.30 (D) - Weather Forecast.

10.45 (D) - Wyrondale Rewards Over.

11.15 - Richard Carrack's Orchestra.

12.0 - Constance Carrodus with Great British Tchaikovsky (Balatinka). Geoffrey Sacey (Guitar).

12.30 p.m. (D) - Spelling Bee.

4.20 p.m. (D) - Mario Addel, Violin, Gregori Tcherniak (Pfte.) - Service from St. Martin's-in-the-Fields.

9.25 a.m. - National Band.

9.55 a.m. - National Band.

4.0 p.m. - Regional.

9.55 a.m. - National Band.

4.0 p.m. - Regional.

4.20 - Mario Addel, Violin.

6.0 - Regional.

9.55 a.m. - National Band.

4.0 p.m. - Regional.

6.50 - Troise and his Mandoliers.

5.45 - "Round the Courts." Alfred Cave (Violin).

10.45; 10.55 a.m. - BBC Theatre Chorus and Orchestra.

10.10 - Protestant Service.

9.59 a.m. - National Band.

4.0 p.m. - Regional.

10.10 - Protestant Service.

10.0 - Chimes.

10.0 a.m. - Talk on the 9.5 News ; Sports. 6.0 a.m. - Homing Pigeon Notes ; News.

4.15 - Military Band from Kogice.

5.0 - Chamber Music. Part II: Old Dances.

4.15 - Military Band from Kogice.

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4.15 - Military Band from Kogice.

5.0 - Chamber Music. Part II: Old Dances.
8.15—"Der Freischiitz" (Weber).

9.15—News.

8.30—Opera Records.

9.30—Choir.

8.10—Protestant Service.

9.45—Walter Hoffmann Band.

10.0—Service.

11.15—Weather.

8.0—Weather; Water Level; Talk.

9.0—Weather; Water Level; E. 

10.30—Protestant Service.

11.15—Weather.

8.10—Protestant Service.

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8.0—Weather; Water Level; Talk.

9.0—Weather; Water Level; E.

10.30—Protestant Service.

11.15—Weather.

8.10—Protestant Service.

9.45—Walter Hoffmann Band.

10.0—Service.

11.15—Weather.
3.25 - Missa
1.0-3.0
3.0 - Reports:
8.15 - School Choir.
KONIGSBERG (Heilsberg)
8.30 - Records.
7.0 - News ;
' Cello Duet from the
Conductor:
Willi Tom (Compere).
Heinz
Bierotte
Granada " and
Reports.
" Donna Diana " (v, Reznicek).
from Hamburg.
the
Masurian Lake District.
Hans
Band.
Johannisburg.
Bathing Resorts.
Overture.
2.0 a.m.

2

Aria,
120 kW.
519 kc/s (405.4 m.) ;
8.0 a.m.-Police Messages.

2.55 -Talk.

9.15 - For Workers.
9.0 - For Farmers ;
6.58 a.m.-Programmes ;
5.45 -Brass Band Records.
4.30 - Brno Symphony Orchestra.
1.50 -For Farmers ;
9.0 -Recitations.
7.50 -News.
12.00 noon-Yatove Orchestra ;
11.15-Visciano Orchestra
(No. 3, D. 8, 218 m.) ;
7.0 -Old
Stations.

1.0-3.0
10.40 -See Konigsberg,
from Hamburg.

2.0 a.m.

2

Aria,
120 kW.
519 kc/s (405.4 m.) ;
8.0 a.m.-Police Messages.

2.55 -Talk.

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1.0-3.0
10.40 -See Konigsberg,
from Hamburg.

2.0 a.m.

2

Aria,
120 kW.
519 kc/s (405.4 m.) ;
8.0 a.m.-Police Messages.

2.55 -Talk.
4.25 - Records.
7.10 - Records.
6.45 - Weather.
6.40 - Police Notes; Church News.
5.55 - Records.
11.40 - Police Notes.
9.10 - Greetings.
2.30 - Radio Orchestra. Conductor: van Raalte.
10.40 - News.
3.10 - Records.
2.40 - Francis de Paep (Songs).
12.10 p.m. - Kovacs Lajos Orchestra and Soprano.
10.55 - Piet van Egmond (Organ).
9.40 - Service.
Records.
"The lovely Galatea" (Suppé).
Schafer).
"Seaside." (Kuhlau). Excerpts, "Kaffee-
Hoven).
Relays 60 kW until 8.40 p.m.
kc/s (301.5 m.)
kc/s (236.8 m.).
kc/s (531 m.).
kc/s (291 m.)
kc/s (1,648 m.)
kc/s (1,031 m.)
kc/s (240 m.)
kc/s (180 m.).
kc/s (75 m.).
kc/s (415.4 m.).
kc/s (539 m.).
kc/s (296 m.)
kc/s (75 m.).
kc/s (60 m.).
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TUESDAY June 14

NATIONAL

For Time Signals, see Monday.
16.15 m. (D) Service.
16.16 (D) Shopping talk.
16.15 (D) For Schools.
16.15 (D) Made in Great Britain.
16.15 (D) The American on Duty.
16.15 (D) Russia News.
16.15 (D) Japan News.
16.15 (D) The Past Laureate.
16.15 (D) Hebrew Opera.
16.15 (G) German News.
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WORLD RADIO
TUESDAY (June 14)

BRUSSELS (No. 1)

8.30 - See Strasbourg.
7.0 - Roman Catholic Review;
6.30 - Records: Perbal (Violin).
12.35 - Radio BUDAPEST
9.45 - Café Concert.
10.45 - News (German, English).
9.30 - News;
8.15 - Opera Music (Record);
7.0 - News;
6.50 - Snapshots.
12.0 noon - Records.
10.55 - 11.0 - Christus vincit (Liszt).
7.0 - News.
6.50 - Snapshots.
12.0 noon - Station Orchestra.
7.30 - Ferenc Schmidt.
4.10 - For Women.
2.35 - News.
12.5 p.m. - Stepat Balalaika Band;
7.0 - Talk. 7.15 - FAzla Mandoline Eland.

HILVERSUM (No. 1)

260 kc/s (483.9 m.)
620 kc/s (483.9 m.)
995 kc/s (301.5 m.);
1995 kc/s (301.5 m.);
904 kc/s (331.9 m.);
785 kc/s (382.2 m.)
362 kc/s (1,153.8 m.)
468 kc/s (1,153.8 m.)
312 kc/s (1,875 m.)
1,104 kc/s (271.7 m.)
1,571 kc/s (301.5 m.)
2,401 kc/s (1,153.8 m.)
2,401 kc/s (1,153.8 m.)
1,571 kc/s (301.5 m.)
740 kc/s (405.4 m.);
750 kc/s (405.4 m.);
730 kc/s (405.4 m.);
700 kc/s (405.4 m.);
670 kc/s (405.4 m.);
648 kc/s (463 m.)
540 kc/s (1,153.8 m.)
300 kc/s (1,153.8 m.)

11.00 - 11.00 - News ; Request Records.
10.50 - 11.00 - News ; Request Records.
10.30 - See Hamburg.
9.30 - Village Band,
8.30 - Song Postcards;
7.30 - Sketch.
6.30 - Talk ; News.
5.30 - Talk ; News.
4.30 - Talk ; News.
3.30 - Talk ; News.
2.30 - Talk ; News.
1.30 - Talk ; News.
10.30 - Concert,
9.30 - Village Band,
8.30 - Song Postcards;
7.30 - Sketch.
6.30 - Talk ; News.
5.30 - Talk ; News.
4.30 - Talk ; News.
3.30 - Talk ; News.
2.30 - Talk ; News.
1.30 - Talk ; News.
10.30 - Concert,
9.30 - Village Band,
8.30 - Song Postcards;
7.30 - Sketch.
6.30 - Talk ; News.
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10.30 - Concert,
9.30 - Village Band,
8.30 - Song Postcards;
7.30 - Sketch.
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10.30 - Concert,
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8.30 - Song Postcards;
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8.30 - Song Postcards;
7.30 - Sketch.
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8.30 - Song Postcards;
7.30 - Sketch.
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10.30 - Concert,
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8.30 - Song Postcards;
7.30 - Sketch.
6.30 - Talk ; News.
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10.30 - Concert,
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8.30 - Song Postcards;
7.30 - Sketch.
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10.30 - Concert,
9.30 - Village Band,
8.30 - Song Postcards;
7.30 - Sketch.
6.30 - Talk ; News.
5.30 - Talk ; News.
4.30 - Talk ; News.
3.30 - Talk ; News.
2.30 - Talk ; News.
1.30 - Talk ; News.
10.30 - Concert,
TUESDAY (June 14)

9.00 - "Le Bonheur fini!" 9.60 - "La Comtesse du Marais" 10.00 - News 10.30 - News 11.00 - News

PARIS (PIT) 475 kc/s (313 m.) 120 kW Transmits at intervals from 6.30 a.m.

8.00 - "La Comtesse du Marais" 8.60 - "La Comtesse du Marais" 9.00 - News 9.30 - News 10.00 - News 10.30 - News 11.00 - News

9.00 - "La Comtesse du Marais" 9.60 - "La Comtesse du Marais" 10.00 - News 10.30 - News 11.00 - News

9.00 - "La Comtesse du Marais" 9.60 - "La Comtesse du Marais" 10.00 - News 10.30 - News 11.00 - News

9.00 - "La Comtesse du Marais" 9.60 - "La Comtesse du Marais" 10.00 - News 10.30 - News 11.00 - News

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9.00 - "La Comtesse du Marais" 9.60 - "La Comtesse du Marais" 10.00 - News 10.30 - News 11.00 - News
For Time Signals, see Monday.

10.30 (D) -BBC Northern Orchestra

10.45 -BBC Military Band: Three Dances (Gerrard Williams)

11.15 -Oscar Rabin's Orchestra.

11.25-12.0 -Regional.

12.00-12.30 -BBC Welsh Announcements.

12.15 -BBC Military Band:

12.20 -Regional.

12.25 -For Schools.

12.30 -National.

12.35 -On the Way (Radio Times).

12.40 -Regional.

12.45 -Weather Forecast. For Time Signals, see Monday.

1.00 -News.

1.05 -Talk: History.

1.10 -Tommy Handley's Show.

1.15 -BBC Repertoire.

1.20 -News.

1.25 -Music for Children.

1.30 -BBC Military Band: Flugs (Heykens).

1.35 -Radio Times.

1.40 -National.

2.00 -News.

2.05 -Records.

2.10 -The Second News.

2.15 -Exchange; Markets; Records.

2.20 -Regional.

2.25 -For Schools.

2.30 -National.

2.35 -Records.

2.40 -National.

2.45 -Local News.

2.50 -Regional.

2.55 -BBC Military Band: Flugs (Heykens).

3.00 -Regional.

3.05 -Records.

3.10 -National.

3.15 -Regional.

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12.00 -Regional.

12.05 -Regional.

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12.15 -Regional.
THURSDAY (June 16)

8:00 - Frances Quarterly at 8 M.
     (Mills, N., Rome, No. 2, etc.)
     News and Talk in German.
     8:45 - Vienna Symphony Orchestra
            (Gabiico) for the Nineteenth An-
            nual Summer Tour of America.
     8:55 - Popola. After the Performance.
     11:10 - News.

8:45 - Vienna Light Orchestra, Con-
       dire: Andrassy. Overture, "Le Nozze".

9:00 - Deutsche Heimat - "The"
       Zanzibar Players and Bremen.

9:15 - Vienna Light Orchestra, Con-
       dire: Godard. "La Fille de Madame
       Angot" (Nicolai). "Johann Strauss".

9:30 - Prague Symphony Orchestra,
       Con: Otto Mann. "Die Fledermaus".

10:30 - Terra Nova - Vienna Orches-
        tra, Conductor: Paasch.
        "S藻ten" (Castaldi). "Danske".

12:00 - World Radio, Vienna.
       News of broadcast activities.

12:15 - Radio-Doppia, Turin.
       "Sassoletto" (Chopin). "Domenico".

12:30 - Radio-Doppia, Turin.
       "Riccardo" (Liszt). "Mecenate".

12:45 - Radio-Doppia, Turin.
       "Bruno" (Boieldieu). "Mephisto".

1:00 - Radio-Doppia, Turin.
       "Bellini" (Smetana). "Glinka".

1:15 - Radio-Doppia, Turin.
       "Gibson" (Bach). "Kreisler".

1:30 - Radio-Doppia, Turin.
       "Conrad" (Liszt). "Glinka".

1:45 - Radio-Doppia, Turin.
       "Donizetti" (Liszt). "Glinka".

2:00 - Radio-Doppia, Turin.
       "Tchaikovsky" (Liszt). "Glinka".

2:15 - Radio-Doppia, Turin.
       "Mendelssohn" (Liszt). "Glinka".

2:30 - Radio-Doppia, Turin.
       "Dvorak" (Liszt). "Glinka".

2:45 - Radio-Doppia, Turin.
       "Puccini" (Liszt). "Glinka".

3:00 - Radio-Doppia, Turin.
       "Liszt" (Liszt). "Glinka".

3:15 - Radio-Doppia, Turin.
       "Verdi" (Liszt). "Glinka".

3:30 - Radio-Doppia, Turin.
       "Gershwin" (Liszt). "Glinka".

3:45 - Radio-Doppia, Turin.
       "Stravinsky" (Liszt). "Glinka".

4:00 - Radio-Doppia, Turin.
       "Rimsky-Korsakov" (Liszt). "Glinka".

4:15 - Radio-Doppia, Turin.
       "Bach" (Liszt). "Glinka".

4:30 - Radio-Doppia, Turin.
       "Prokofiev" (Liszt). "Glinka".

4:45 - Radio-Doppia, Turin.
       "Khatchaturian" (Liszt). "Glinka".

5:00 - Radio-Doppia, Turin.
       "Rachmaninoff" (Liszt). "Glinka".

5:15 - Radio-Doppia, Turin.
       "Shostakovich" (Liszt). "Glinka".

5:30 - Radio-Doppia, Turin.
       "Gould" (Liszt). "Glinka".

5:45 - Radio-Doppia, Turin.
       "Sibelius" (Liszt). "Glinka".

6:00 - Radio-Doppia, Turin.
       "Mozart" (Liszt). "Glinka".

6:15 - Radio-Doppia, Turin.
       "Beethoven" (Liszt). "Glinka".

6:30 - Radio-Doppia, Turin.
       "Brahms" (Liszt). "Glinka".

6:45 - Radio-Doppia, Turin.
       "Dohnanyi" (Liszt). "Glinka".

7:00 - Radio-Doppia, Turin.
       "Respighi" (Liszt). "Glinka".

7:15 - Radio-Doppia, Turin.
       "Rimsky-Korsakov" (Liszt). "Glinka".

7:30 - Radio-Doppia, Turin.
       "Grieg" (Liszt). "Glinka".

7:45 - Radio-Doppia, Turin.
       "Chopin" (Liszt). "Glinka".

8:00 - Radio-Doppia, Turin.
       "Bach" (Liszt). "Glinka".

8:15 - Radio-Doppia, Turin.
       "Beethoven" (Liszt). "Glinka".

8:30 - Radio-Doppia, Turin.
       "Brahms" (Liszt). "Glinka".

8:45 - Radio-Doppia, Turin.
       "Dohnanyi" (Liszt). "Glinka".

9:00 - Radio-Doppia, Turin.
       "Respighi" (Liszt). "Glinka".

9:15 - Radio-Doppia, Turin.
       "Rimsky-Korsakov" (Liszt). "Glinka".

9:30 - Radio-Doppia, Turin.
       "Grieg" (Liszt). "Glinka".

9:45 - Radio-Doppia, Turin.
       "Chopin" (Liszt). "Glinka".

10:00 - Radio-Doppia, Turin.
       "Bach" (Liszt). "Glinka".

10:15 - Radio-Doppia, Turin.
       "Beethoven" (Liszt). "Glinka".

10:30 - Radio-Doppia, Turin.
       "Brahms" (Liszt). "Glinka".

10:45 - Radio-Doppia, Turin.
       "Dohnanyi" (Liszt). "Glinka".

11:00 - Radio-Doppia, Turin.
       "Respighi" (Liszt). "Glinka".

11:15 - Radio-Doppia, Turin.
       "Rimsky-Korsakov" (Liszt). "Glinka".

11:30 - Radio-Doppia, Turin.
       "Grieg" (Liszt). "Glinka".

11:45 - Radio-Doppia, Turin.
       "Chopin" (Liszt). "Glinka".

12:00 - Radio-Doppia, Turin.
       "Bach" (Liszt). "Glinka".

12:15 - Radio-Doppia, Turin.
       "Beethoven" (Liszt). "Glinka".

12:30 - Radio-Doppia, Turin.
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12:45 - Radio-Doppia, Turin.
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1:00 - Radio-Doppia, Turin.
       "Respighi" (Liszt). "Glinka".

1:15 - Radio-Doppia, Turin.
       "Rimsky-Korsakov" (Liszt). "Glinka".

1:30 - Radio-Doppia, Turin.
       "Grieg" (Liszt). "Glinka".

1:45 - Radio-Doppia, Turin.
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2:00 - Radio-Doppia, Turin.
       "Bach" (Liszt). "Glinka".

2:15 - Radio-Doppia, Turin.
       "Beethoven" (Liszt). "Glinka".

2:30 - Radio-Doppia, Turin.
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2:45 - Radio-Doppia, Turin.
       "Dohnanyi" (Liszt). "Glinka".

3:00 - Radio-Doppia, Turin.
       "Respighi" (Liszt). "Glinka".

3:15 - Radio-Doppia, Turin.
       "Rimsky-Korsakov" (Liszt). "Glinka".

3:30 - Radio-Doppia, Turin.
       "Grieg" (Liszt). "Glinka".

3:45 - Radio-Doppia, Turin.
       "Chopin" (Liszt). "Glinka".

4:00 - Radio-Doppia, Turin.
       "Bach" (Liszt). "Glinka".

4:15 - Radio-Doppia, Turin.
       "Beethoven" (Liszt). "Glinka".

4:30 - Radio-Doppia, Turin.
       "Brahms" (Liszt). "Glinka".

4:45 - Radio-Doppia, Turin.
       "Dohnanyi" (Liszt). "Glinka".

5:00 - Radio-Doppia, Turin.
       "Respighi" (Liszt). "Glinka".

5:15 - Radio-Doppia, Turin.
       "Rimsky-Korsakov" (Liszt). "Glinka".

5:30 - Radio-Doppia, Turin.
       "Grieg" (Liszt). "Glinka".

5:45 - Radio-Doppia, Turin.
       "Chopin" (Liszt). "Glinka".

6:00 - Radio-Doppia, Turin.
       "Bach" (Liszt). "Glinka".

6:15 - Radio-Doppia, Turin.
       "Beethoven" (Liszt). "Glinka".

6:30 - Radio-Doppia, Turin.
       "Brahms" (Liszt). "Glinka".

6:45 - Radio-Doppia, Turin.
       "Dohnanyi" (Liszt). "Glinka".

7:00 - Radio-Doppia, Turin.
       "Respighi" (Liszt). "Glinka".

7:15 - Radio-Doppia, Turin.
       "Rimsky-Korsakov" (Liszt). "Glinka".

7:30 - Radio-Doppia, Turin.
       "Grieg" (Liszt). "Glinka."
<table>
<thead>
<tr>
<th>Time</th>
<th>Program</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>3.40-7.10</td>
<td>VARA Programme</td>
<td>Begins with religious address, followed by excerpts from &quot;Axel an Himmel&quot;.</td>
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<tr>
<td>7.10</td>
<td>VARA Programme</td>
<td>Includes news and excerpts from &quot;Sonata&quot;.</td>
</tr>
<tr>
<td>10.20</td>
<td>VPRO Religious Programme</td>
<td>Features announcements and news.</td>
</tr>
<tr>
<td>10.0</td>
<td>News</td>
<td>Relayed from Danzig, 5 kW.</td>
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<tr>
<td>12.0</td>
<td>News</td>
<td>Relayed from Nurnberg, 1,267 kc/s.</td>
</tr>
<tr>
<td>6.15</td>
<td>News</td>
<td>Transmitting at intervals from 5.50 a.m.</td>
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<tr>
<td>9.45</td>
<td>Programme Notes</td>
<td>Includes announcements and news.</td>
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<tr>
<td>6.0</td>
<td>11.30-12.30</td>
<td>For Women.</td>
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<tr>
<td>12.00-1.00</td>
<td>Educational</td>
<td>Features announcements and news.</td>
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<tr>
<td>5.30</td>
<td>Transmission Notes</td>
<td>Includes news and announcement.</td>
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sat,sun
JUNE 10, 1938

Page 1

9.10—News Review.
10.30—S. News and Notes.
11.0 a.m.—Programme.

PRAGUE (470,720 m.), 120 kW. Transmits at intervals from 6.0 a.m. to 11.0 p.m. Schedule: 7.0—News ; Weather. 8.0—For Poles Abroad: Weber, "Der Freischütz". 8.30—News. 9.0—Programme. 9.30—See Brno. 10.0 a.m.—Station Orchestra.

11.0—For Town and Country. 12.0 noon—Symphony Orchestra; Conductor: Kolářík, "Die Fledermaus" (Cukor). 12.30—See Berlin. 12.45—See Madrid. 1.0—Radio Orchestra, Conductor: Schröder. 1.15—See Paris (Radio-Pop). 2.0—Week-end Concert. 2.15—See Hamburg. 3.0—News Review. 3.45—See Berlin. 4.15—See Budapest. 4.30—See Moscow. 5.0—for Children. 5.30—Topical Report. 5.45—See Frankfurt.

SATURDAY

JUNE 18, 1938

VIENNA

972 kW (506.5 m.); 100 kW. Transmits at intervals from 6.15 a.m. to 11.0 p.m. 6.0 a.m.—Notes: Weather. 7.45 a.m.—See Berlin. 7.60—See Berlin. 8.0—For Children. 8.30—See Königsberg. 9.0—Waltzes. 9.30—See Berlin. 10.0—For Town and Country. 10.30—See Vienna Symphony Orchestra; Conductor: Kolářík, "Die Fledermaus" (Cukor). 10.45—See Stromboli. 11.0—See Berlin. 11.15—See Lisbon.