



WORLD-RADIO

DOMINION & FOREIGN PROGRAMMES

The Official Foreign & Technical
Journal of the B.B.C.

Vol. XV No. 370

Registered at the G.P.O.
as a Newspaper.

FRIDAY, AUGUST 26, 1932

Three Pence

NATIONAL RADIO EXHIBITION (GENERAL AND TECHNICAL ARTICLES)

THE MARCONI EXPERIMENTS

BROADCASTING AND INDIA'S FUTURE

THE GERMAN WIRELESS EXHIBITION



The exterior of Olympia, the home of the National Radio Exhibition

The New M23 Consolette

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TONE

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

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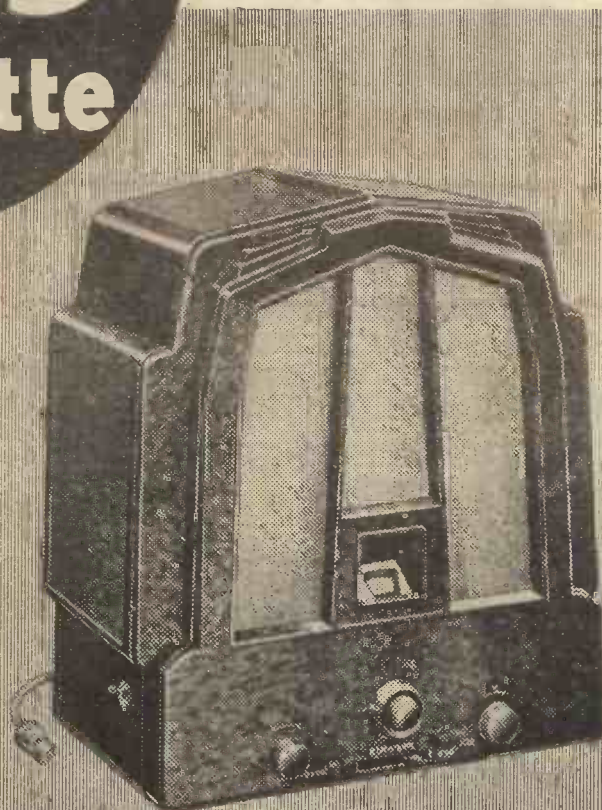
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The above are brief extracts from Test Reports which have appeared in "The Wireless Trader," "The Broadcaster," "Amateur Wireless," etc.



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ALL-ELECTRIC RADIO

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THREE PENCE



Letters should be addressed to the Editor,
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Great Exhibitions

WE have now entered on the season of wireless exhibitions, and for the first time the opening and closing dates of the National Radio Exhibition at Olympia have coincided with those of Berlin. To many it may seem a pity, not only that the two shows should be held simultaneously, but that the Olympia Exhibition should occur in the height of the holiday season, and in weather which, to say the least, was not conducive to concentrated attention to exhibits. But there is no doubt that there were excellent reasons for the alteration of dates in the case of the National Radio Show.

Articles which will be found elsewhere in this issue give a good idea of the Olympia Show from various points of view. As "The Searcher" points out in his article, which is written from the angle of the long-distance listener, this section of the radio public now receives ample attention at the hands of the manufacturers, who have striven, and striven successfully, to put into their hands receivers which reconcile two qualities, formerly thought to be irreconcilable—namely, selectivity and quality.

The superheterodyne receiver after a period of comparative eclipse has blossomed forth in abundance; and much has been done in the design of receivers in general to simplify tuning and control, and dials marked off in metres have a considerable vogue. Mains-driven receivers are in the ascendant to a degree which is surprising in view of the large proportion of houses in this country which still are unconnected to electrical mains.

It is satisfactory to observe that short-wave apparatus is much in evidence, and it is a safe prophecy to say that next year's exhibition will see a very considerable increase in this type of receiver.

At the Berlin Exhibition the tale is the same, but in Germany the ratio of electrically-fitted to non-electrically-fitted houses is higher. That very useful instrument, the radio-gramophone, has attained a high degree of popularity and, in many instances, also of quality. As our German correspondent points out, the German wireless industry, because of the growth of protective duties and the fall from the gold standard on the part of several countries, is more than ever forced to rely on the

German market, but the manufacturers are hoping by the opening of several high-power stations in Germany to increase considerably the number of listeners, and consequently of potential buyers.

Improved tuning devices play a large part in the Berlin Exhibition, one receiver having a scale arranged horizontally across the whole apparatus, and containing printed names of all stations. Fortunately for purchasers, arrangements have been made to supply them automatically with a new scale when wavelengths change. That, of course, is the principal trouble with any fixed scale of stations' wavelengths. For a long time past the German Post Office has been active in its campaign for the elimination of interference, and like Olympia, the Berlin Exhibition has an important section displaying devices for overcoming this evil. One of the most noteworthy features of the German Exhibition is the display of electrical musical instruments. The Theremin instrument, the Trautonium, and the Hellertion have already been described in these pages, and some are already being manufactured on a commercial scale.

The French National Wireless Exhibition, to be held at the Grand Palais, Paris, is to be opened by the Minister of Posts, Telegraphs, and Telephones on September 8, and other similar exhibitions will follow in due course. These national radio shows, as foci of the progress made in radio manufacture, are of the greatest possible interest to all, whether they have any technical knowledge or not, and a visit is incumbent on all who profess and call themselves broadcast listeners.

Viâ Ether

Goethe's Birthday

THE German stations lose no opportunity of paying homage to Goethe, and on SUNDAY next, the anniversary of his birth, a number of programmes of commemoration are to be broadcast. Frankfurt, the city in which he was born, is to relay a service in his honour from St. Paul's Church, with music, and addresses by the Mayor, the Minister of the Interior, and Gerhart Hauptmann. That begins at 11 a.m. with fanfares and the church bells, and at 8.15 in the evening the play *Iphigenia on Tauris* is to be performed in the studio: Königs Wusterhausen relays it. A full-dress performance of *Egmont*, with Beethoven's music, comes from Leipzig, beginning at 8 p.m., and Schweizerischer Landessender takes it, too. Hamburg has arranged a programme of music which owes its origin to the poet, calling it "A birthday garland for Goethe": it is timed for 8, and at 8.40 Berlin (Witzleben) follows suit with a similar offering of music. Two of the earlier plays, both short, are to be broadcast from Vienna at 8.10, and *Pandora*, a play which is less well known outside Germany than most of the others, has been chosen for Breslau's celebration of the anniversary. The most

fervid admirer of the sage and poet will find it quite impossible to share in so many tributes at once, but there is a generous feast offered from which to choose.

* * *

Fête-Day in Holland

THE head that wears a crown lies less uneasily than once it did, or so, at least, the ordinary optimist would like to think. But in Holland, at any rate, it is not allowed to rest overlong upon its pillow, particularly on birthday mornings. At 8.10 a.m. on WEDNESDAY, August 31, her Majesty the Queen of Holland is to be saluted by an Aubade—a serenade in the morning, as the Irishman called it—of an impressive order. An orchestra and a choir of no fewer than 2,500 voices take part in it, and their music, together with an address by the Mayor, is to be relayed by Hilversum from Rotterdam. The Queen's subjects, as well as listeners in other lands, will thus have a chance of sharing in the loyal good wishes which prompt such a tribute; as all the world knows, there is no sovereign anywhere who is held in truer affection. The celebrations begin already on the previous evening, with a big gathering in that famous hall, the Concertgebouw at Amsterdam. Speeches in honour of the fête will be delivered there, and a choir is to sing national music: Huizen station devotes an hour and a half, from 7.40 p.m. on TUESDAY, to that introduction to the day of rejoicing, and on the day itself the programmes are all more or less in tune with birthday greetings and devotion.

* * *

A Choice of Operas

IN a week which promises more opera broadcasts than of late, pride of place must be given to Beethoven's *Fidelio*, on WEDNESDAY, August 31. Not only does it promise to be an outstanding performance of a masterpiece which is not too often heard; it is also the last evening of this year's Salzburg Festival, one which has more than worthily upheld the high standard of past seasons. It is to be relayed by Vienna and many other stations throughout Europe. Another opera which makes only rare appearances is Hugo Wolf's *The Corregidor*, on the Alarcon story which is the plot also of Falla's merry ballet, *The Three-cornered Hat*. Munich is to broadcast Wolf's work on FRIDAY at 8.45. On TUESDAY, by one of those coincidences which are always turning up in broadcast programmes, there are to be two performances of Verdi's *Aida*, one from the National Theatre at Prague, and one, from the La Scala records, at Radio-Paris. Massenet's *Thaïs* is to be relayed from the Paris Opéra on Saturday evening at 8.30, by the Eiffel Tower station and Strasbourg, and from the Italian stations there may be heard another Verdi opera, *The Sicilian Vespers* (Rome on WEDNESDAY at 8.45), and *Maggiolata Veneziana* by that popular conductor, Maestro Rito Selvaggi. Turin and the other stations of the Northern group have set it down for THURSDAY evening.

ETHERVIATOR

The National Radio Exhibition

A DX Man at Olympia

By "THE SEARCHER"

IT was a particularly interesting Exhibition to any long-distance man, because it proved that listeners nowadays are becoming long-distance enthusiasts almost to a man—or to a woman. There were very few sets on view that were not so designed as to be able to receive some foreign stations, and the majority of exhibitors made a strong point of the sensitiveness and the selectivity of their apparatus.

Another proof of the increasing popularity of long-distance wireless was to be found in the large number of super-heterodynes exhibited. The super-heterodyne has had a rather curious history in this country. Really it was born out of due season, for when it first made its appearance some eight or nine years ago only general-purpose valves and a sprinkling of small-power valves were available. We could not apply negative grid bias to high-frequency or intermediate-frequency valves in those days; in fact, we had to give them as a rule a pretty strong positive bias to hold them down. The early super-heterodynes were squealing, hissing, distorting horrors which speedily went out of fashion. There was, in fact, for many years a widespread feeling that no super-heterodyne could ever provide even reasonably good quality. Modern valves, modern components, and modern circuits have changed all this, and there is certainly no more satisfactory set to use for long-distance work than the super-heterodyne of first-rate design.

Not only the super-heterodyne but also the highly-selective "straight" receiving set are helped enormously this year by the introduction of what may be called tone balancing low-frequency transformers. One reason why long-distance listening was in the past not so popular as it might have been was that the quality obtainable from far-away stations was often noticeably inferior to that of the local station. For DX work nowadays the set must be made highly selective, and whether this is done by the employment of a number of sharply tuned high-frequency (or intermediate-frequency) circuits or by a considerable tightening of the reaction coupling, the general result is the same; the outer sidebands corresponding to the higher frequencies are poorly dealt with by the receiving set, while the lower frequencies are reproduced at their full value. In a word, the treble is smothered by the bass.

The tone-balancing transformer, made by several firms, allows the treble to be restored to its proper value by cutting down suitably the bass response of one or more note-magnifying circuits. The transformer is controlled by an adjustable resistance of potentiometer type, and the knob of this enables the loud-speaker output to be balanced to a nicety.

Yet another sign of the demand for foreign stations is seen in the large use of tuning dials calibrated in one way or another in order to facilitate searching. Some are marked off in wavelengths, and I must say that in testing

several of this season's sets I have been agreeably surprised by the accuracy of the calibration. Others have the actual names of stations whose programmes can be brought in by the simple process of switching on and turning a pointer to the required name. This kind of dial will probably make a stronger appeal to the beginner than to the old hand, and I think that the same may be said of the wavelength scale. Personally I have a strong preference for the dial clearly marked off into divisions or degrees—100 full divisions, with half-divisions, for preference. With such a dial one can calibrate a selective and stable set almost to a hairbreadth, and it then becomes a wavemeter as well. Speaking of tuning devices, I was very much impressed by the micrometer dials which allow readings to be taken to one-tenth of a division. These will be exceedingly useful for short-wave work.

There is one kind of tuning device which will



The B.B.C. Publications Stand

be particularly welcome to the super-heterodyne user. This is what may be styled a resonance indicator. When using a big super-heterodyne it is often exceedingly difficult to judge by ear the exact tuning of a station; but it is essential that precise resonance should be obtained or distortion is bound to occur. The simplest kind of indicator takes the form of a millimeter in the plate circuit of the detector valve. The resonance point is shown when the highest possible reading is obtained with an anode-bend detector, or the lowest with a cumulative grid detector. Neither the man nor the woman in the street, however, is fond of a measuring instrument as part of a receiving set. A method of indicating resonance employed by some firms consists in the use of a small neon lamp, whose light supplies the necessary information. In other sets a rather broad shadow appears on the dial as the settings of a station are approached. Resonance is indicated by the shadow becoming a thin line.

Automatic volume control, which is seen this year for the first time in this country, will make a special appeal to the long-distance man who uses a big super-heterodyne receiver. One of the super-heterodyne's very few bad points is that, owing to its wonderful selectivity, you have very little indication that you are approaching the settings of a station as you turn the control

knob. You are trying perhaps for a distant foreign station with the volume control very nearly in the "full on" position. Almost before you know what is happening you have tuned in one of the powerful home stations. There is an ear-shattering roar and you wonder for a moment whether the loud-speaker has not turned itself inside out! Automatic volume control does away with this kind of thing.

It is applicable, at present at any rate, only to all-electric sets, and so far as I know it is to be found only in super-heterodynes. In parallel with the second detector is a control valve whose function is to increase the bias of the variable-mu high-frequency valve (or intermediate-frequency, if there is no high-frequency stage) when the signal rises beyond a certain strength, and to reduce the bias if it falls below this strength.

When the set is first brought into operation automatic control is regulated by tuning in the local station and adjusting its strength to exactly the level that is required. This done, every other station within the loud-speaker range of the set comes in at the same volume and no more. A further advantage is that when fading of the not very violent type is occurring automatic volume control can keep the signal steady. It cannot, however, deal with the violent type of fading, which introduces distortion during minimum periods.

One's first impressions when using a set with automatic volume control are somewhat mixed. It is a great boon to be relieved from sudden outbursts of noise while searching, and one can find by actual experiment that stations which are fading slightly when an ordinary set is in use do not do so to any appreciable extent with the automatically-controlled receiver. On the other hand, the set seems at first to be extraordinarily flat-tuned. This is due to the fact that the amplification automatically increases as you turn away from resonance. You grow used to this after a short time. The only real drawback of automatic volume control is that when a station is fading interference is usually not behaving in the same way. You are therefore conscious that though the signal's strength remains steady, atmospherics and other background noises are at one moment barely audible and at the next interfere badly with the transmission.

There were a good many short-wave sets of excellent design to be seen, though not perhaps quite as many as one had expected. There is sure to be a very big demand for short-wave apparatus by the end of this year when the Empire station comes into operation. Interesting, too, are this season's adapters which enable the "broadcast" receiving set to be used for short-wave work. The simplest type enables a set with no high-frequency stages to be converted into a "straight" short-wave set. The more elaborate kinds are for use with sets containing one or more high-frequency stages. Used with one of these adapters, a "straight" broadcast receiver becomes a short-wave super-heterodyne. Neither of these ideas is of course

(Continued on page 426)

"Fans" and Fancies

FRIDAY, August 19, was the hottest day of the year—or so the papers would have it—and yet in the great Olympia building, on the opening night of the 1932 Radio Exhibition, everyone must have enjoyed comparative coolness. Quantities of cloth were used to stop the intense concentration of the sun's rays through the glass roof of the building, and this, added to the wise philanthropy of at least one great firm in the shape of paper fans, distributed gratis and wholesale, avoided what might easily have been an uncomfortable evening. So in this frame of mind, uplifted as I was by the unexpected pleasantness of the atmosphere, I started walking prepared to absorb as far as possible the smallest detail.

It took me little time to gather in which direction the general public's taste in wireless sets is veering. I have not the slightest hesitation in saying that the portable is fast disappearing. The small all-mains sets and the large mains-driven radio-gramophones—which now, incidentally, have reached a very low price—were being exhibited in vast quantities. The public choice is obvious and yet it is an astounding fact that battery sets, both stationary and portable, are still to be found in thousands of British homes where electric current is connected. A battery receiver in a house where there is electric light is an incomprehensible anachronism.

The leading manufacturers of radio-gramophones appear to be reaching a standard in cabinet design. Futuristic effects are being introduced to a lesser degree, but these, too, lean toward a standard—a sturdy, heavily-built, invariably legless affair, with only a loud-speaker fret and perhaps an odd knob or two to indicate the reason for its presence in the furnishing of a room. The models by the leading record makers were the "things" of the Show, and I think no one will begrudge them this, my piece of praise, when I say that all others were, of necessity, subservient to them. The super-heterodyne is making itself felt again, and an outstanding example by a firm which has recently come to the fore in tremendous strides was one wherein decorative lines were brought from the loud-speaker, which was built into the left side of the face of the rectangular cabinet and, as they approached the right-hand side of the set, introduced the control knobs into the general design they were weaving. The whole was in a light wood and would have entered with considerable ease into any scheme where modernist furniture was employed.

Only one radio-gramophone did I see with self-contained provision for the storage of records. I have always imagined this should be an obvious item to any designer, and yet it appears not to be. I am surprised.

An original idea in sets was one in the shape of the conventional grandfather clock, of a height, though, to ensure convenience of manipulation. The exterior detail was correct even to the existence of a small glass window through which the pendulum is usually seen, but no swinging rod, naturally, of course, was here.

There was the usual glorification of the set equipped with automatic tuning. Two examples I saw, and although ingenious in their design and operation will, I think, prove only to be a passing phase in the development of the perfect receiver set. The constant changing of

wavelengths renders the idea impracticable for the person who desires automatic tuning and trouble-free radio—if station-finding can be termed a trouble. It is a significant fact that none of the real leaders in set design has adopted automatic tuning by means of switches in their main productions—and is not this surely a pointer to its worth?

Two sets by different manufacturers embodied clocks with, in one instance, two lamps with shades—one on either side—and in the other instance, two flower vases overburdened with flowers. The result was incongruous and yet another passing phase. The efforts that are made to acquire novelty in design are extraordinary and yet, as time has proved so often, it is not on these lines that a successful series of productions will be built up. With the British public, at any rate, it is the quiet—in so far as appearance is concerned—reliable, straightforward set which will always soar to the great heights. This is exactly as it should be, because there is definitely no substitute for pure quality.



A view of the decorative scheme

Set chassis were shown in extraordinary numbers. The workmanship in the assembly of the various parts was superb, particularly in one short-wave kit. None, however, appeared to attract any great attention, and, I think, in the majority of cases to-day, it is the external appearance and audible performance of a set which will enable it to be sold.

A famous manufacturer of moving coil speakers had two units mounted side by side in a large sheet of plate glass. As I was passing the stand, a selection from "Congress Dances" was being played. While the advisability of employing a plate-glass baffle board would be a matter for discussion by acoustical experts, there can be no doubt that the use of the glass enabled visitors to realise that the main principle of the loud-speaker was the dual-speaker idea to which reference was made on page 368 of last week's issue of *World-Radio*.

The general colour scheme everywhere was blue and silver, and matching well with this, as any colours would, and fitting into the surrounding landscape, were girls dressed colourfully and appropriately to depict the more im-

portant European nationalities. The types were good, too, and I may even have gone so far as to appear over-inquisitive by peering too closely in an endeavour to establish whether they were really talking the languages of their temporarily-adopted countries—so good was their make-up.

The gramophone turntable was greatly used as a medium for the display of notices and items of manufacture. One famous firm had built a gigantic one several times the size of the normal. The cost of this must have been enormous in proportion. Yet I suppose ample return will be made by the publicity it afforded, and in publicity, provided the article is worth it, too much faith and importance cannot be placed.

One stand had its assistants comfortably clad in "duck" jackets—a thoughtful innovation by the sponsors, in view of the hot work ahead talking to and cajoling prospective purchasers of their productions.

Hearing on all sides, as we are doing at present, the great need for "Buying British," I was surprised to see that in only one instance was an attempt made to emphasise that the goods were of British manufacture. A massive group it was—a Colossus in 2-volt accumulators accompanied by a mammoth in electric torches with a background of the Union Jack.

At last, after many searchings, I discovered the hiding-place of the metal Robot around whom so much newspaper publicity has lately been written. He was on the top floor, and I found him to be much smaller than I imagined. A dense crowd was around him, and although I remained fifteen minutes, nothing of any importance developed—no telling of the time, no reading of anything in any European language except Russian! But he was beautifully made of shimmering metal—at least, from the shoulders upwards—just so much, on account of the throng, could I see of him.

And now, looking back upon this first show night and the impressions it gave me, I find I am able to say something which, in the glimpses I have had at these shows in past years, I can truthfully say I have never been able to decide before. It is usually a difficult thing to single out from a multiplicity of exhibits such as were here gathered together, one that is outstanding, one that strikes the vulnerable spot; but of all the thousands of sets and their necessary components which were before my eyes last Friday night, I still retain in my mind's eye, standing out clearly, an image of a magnificent production, a gorgeous production of a superhet., likened by the manufacturer to a sports car, and in that a touch of genius is displayed. The right note has been struck.

I finished my tour on the balcony overlooking the ground floor. Over the edge of the balustrade I looked on to the scene below. That was a sight worth seeing, and enhanced by the fact that by now there were fewer humans walking the avenues between the stands. Blue and silver, and pearly white globes of light. And then my eyes wandered upwards. Here was deep grey draping, suggesting a starless night sky. On the right and left walls, shining towards me, were two columns of red and green lights, and straight ahead I saw suddenly a gigantic representation of the crest of the R.M.A. with the words *Radio Maximo Arvo*. Read those words and understand them.

J. S.

An Exile's Impression

By "YODELLER"

I HAVE visited Continental wireless exhibitions; but, although I have been a listener since the very earliest days, long before exhibitions were ever thought of, I have never been able to get to London for our own show. So that it was with lively interest that I betook myself to Olympia this year, and I must say my expectations were amply fulfilled. If asked what impressed me most about the National Radio Exhibition when compared with similar affairs abroad, I would unhesitatingly say the way in which the whole thing was arranged and laid out; the order, beauty, and symmetry of things in general. And I imagine this aspect would strike Continental visitors before everything else.

One walks through the main entrance, and, having passed the large dance floor—the cheapest ballroom in London, for one may dance there all day without charge—one suddenly finds oneself confronted by a towering fountain of light; this pillar of beauty, acting as a centrepiece for row after row of gleaming orange lights, with, at the end of the building, symmetrical arches the full height of the lofty ceilings. Photographs which I have seen do not do full justice to the beauty of the scene. It is obvious, to even a casual observer, that here is no haphazard decorative scheme, but a carefully-thought-out whole. A cunning mind has conceived it, and its originator deserves a high degree of praise.

I expected to hear a rude blare of music from a multitude of loud-speakers. I imagined that it would be difficult to hear oneself talk. But this was far from being the case. Walking up the stairs and standing on the balcony looking out over the great length of the main hall, I saw before me a fairyland, and from this fairyland drifted upwards a pleasant music, soft, well-modulated, and in no way raucous. And, as I walked slowly round from stall to stall, it seemed

that the music, quiet and orderly, was coming from the particular loud-speaker opposite which I was at the moment, and that this was the only loud-speaker in operation in the whole building. Another thing which struck me was the sober earnestness of the crowd. After attending a Paris exhibition and watching the excited, jostling, gesticulating throng of sightseers, our own people seemed staid, almost lugubrious, until one listened to their conversations, when one heard the quaint—and to the foreigner, unintelligible—humour, and realised that the Englishman was taking his enjoyment seriously.

The day of my visit was a very hot one, and I found myself eyeing the lightly-clad—and beautiful—lady attendants at some of the stalls with envy. I arrived at the conclusion that all men are fools and that the person who designed men's clothing was a lunatic. These stall attendants in their bright costumes lent an additional note of colour to the place, and before I had gone far I found myself loaded up with advertising literature—for how could one refuse a pamphlet when it was proffered by such charming hands?

I thought the G.P.O. exhibit one of the most interesting. Here I listened to the roaring interference created by flashing sky signs, domestic electric equipment, and by a full-sized working model of a "Stop-Ready-Go" traffic signal. I had no idea some of these devices could create such a terrific noise in a wireless receiver, and the demonstration of the amazingly successful methods used to overcome this interference was an eye-opener to me. If your radio reception is ruined by neighbouring electric equipment, a journey to Olympia would be justified, if for no other reason than to see how the trouble may be overcome. One is requested to inform the authorities of such interference on the spot.

The B.B.C. show, with its model of Broadcasting House and the glass-windowed amplifying-room, was vastly interesting. I watched the working of the apparatus used for supplying and amplifying the music supplied to every stall,

and if one was technically-minded it was doubly interesting to be able to observe the indicator dials which gave visible proof of just what was happening in the machinery before one's eyes. And, having inspected the B.B.C. publications stall, I passed on towards the Iron Man, the Robot gentleman.

Here a great crowd was gathered to watch this fellow—reminiscent of a strangely modern knight in shining armour—speak and move. It was with an almost uncanny feeling one watched this automaton talk, and saw his mouth open and shut with perfect synchronisation as he voiced each syllable. And when the thing stood up, sat down, ponderously raised one arm and then the other in response to its master's commands, it verged on the supernatural. A very awkward gentleman to run up against in a deserted lane on a dark night, was my instinctive thought.

I have no intention of describing the multitude of stalls. There seemed no end to the originality of the ideas embodied in their several lay-outs, and no two stalls were alike. My prevailing impression was that if one desired a wireless set, the greatest trouble would be to decide which to honour with one's custom; everything seemed so uniformly good. Every set on view seemed to be an improvement on last year's model and two things struck me forcibly: one was that an ever-increasing number of manufacturers appear to be turning their attention to radio-grams, particularly instruments with automatic record-changing devices; and the other was the radical change-over by so many firms to be super-heterodyne—in my opinion, the set of the future.

I will conclude with one strange fact. At several stalls I made inquiries concerning export trade. Some firms refused point-blank to entertain the idea of exporting; others offered excuses or seemed vaguely uninterested in such business—an attitude of mind which left me puzzled and a little uneasy. Other countries appear to want export trade; I thought we did, too.

THE NATIONAL RADIO EXHIBITION

(Continued from page 424)

new, but we have not previously seen such a variety of good designs or such modest prices.

A further interesting development is the "all-wavelength" set, of which a few were to be seen. In the United States of America, where designers are not troubled by long-wave problems, since there is no broadcasting on wavelengths above 550 metres, the medium-and-short-wave set made its appearance some time ago. The triple-wavelength set is a purely British development, and a good deal is likely to be heard of it in the future. There is, of course, one difficulty: with the small-capacity tuning condenser required to make their reception easy, the short waves used for broadcasting really occupy not one waveband but at least three. Most short-wave enthusiasts have therefore three separate sets of coils, and use variable condensers with a maximum capacity of .00015 or .00025 mfd. at the outside. It is easy enough to reduce the capacity of the tuning condensers when the switch is turned to the short-wave position by arranging for fixed condensers to come into series with them; but the problem of bringing into action any one of five different sets of coils (long, medium and three short-wave) presents considerable complications. It has been surmounted in several cases in the most ingenious manner by making one set of short-wave coils cover a very wide range. The all-wave set, again, will probably appeal more to the beginner than to the expert; the latter does not mind the slight trouble of coil changing and he does prize the very high efficiency obtainable in either a broadcast receiver or short-wave set specially designed for its own particular job.

Letters to the Editor

Gaelic or Erse?

To the Editor of WORLD-RADIO

SIR,—In the interesting article by "Recorder" in your issue of August 12, "Gramophone Broadcasts," by the description of Irish (Gaelic) announced from Cork Station as Erse, he falls into a fairly common error. "Erse" is applied to the language spoken by the Gaelic speakers in the West Highlands of Scotland.

Yours faithfully,

Dublin, Aug. 14, 1932. "NA BAC LEIS."

HENRI ET JULES

(Continued from page 429)

that these two caught us off our guard, but to this day we are not quite satisfied as to the main cause of our losing half our drink on the floor. However, we were prepared for future occasions and, the next time they touched their glasses we raised ours with equal dexterity and, although no glasses were actually broken, we realised that we had shown them that we wanted no half-measures in this cementing of the *entente cordiale*.

Dinner was then announced, and we retired to the dining-room. The first and the best dish of that meal was the *potage*, and never in our lives have we heard better soup. Jules adopted a somewhat plaintive refrain, chiefly in the minor key, but it contained some really rousing crescendo passages. Henri preferred a more sibilant, lively refrain, and kept it up to the bitter end. It was during this meal that we learned a good deal about these two through the medium of our own driver, who fired question after question at them, and then interpreted their answers to us.

(To be continued)

THE NINTH GERMAN WIRELESS EXHIBITION

(Continued from page 428)

world belongs to Germany, Germany belongs to the world." The man sitting next to me said I had misunderstood the words and that they had said *hört* (hears), and not *gehört* (belongs). By the way, while the German national anthem was being played I and a number of others stood up, though this is not usually done in Germany, but the film seemingly had worked everyone up to do this—I think that is the greatest compliment I can pay the film.

The next film was not quite so serious, but was even better than the first. Munich's Press representative had written the manuscript, and the actors were members of the actual staff of the Munich station. Among the radio papers filmed I noticed that *World-Radio* was the only foreign journal appearing. Spontaneous clapping closed the performance.

And that closed my performance, too. Meanwhile it was 2 p.m., and I had been at the exhibition since 10 a.m. I was disappointed that the only thing left to do was to sit out in the gardens under the *Funkturm* and have lunch. On the way out I passed the new ultra-short wave transmitter. It was not working at that moment, but was spitting a long flame.

A. G. A.

ON April 1 last, the number of registered broadcasting listeners in Iceland reached 4,700, or 4½ per cent. of the population of the country

The Ninth German Wireless Exhibition

A General Survey

IN spite of the very difficult economic position in which the German wireless industry is at present, the great exhibition in Berlin, which surveys the work done in the wireless industry during the year, has received as many exhibits as last year. The German wireless industry is more than ever forced to supply principally the German market, because foreign countries have almost entirely prevented the export of German wireless apparatus by Customs barriers and quotas. During the first half of 1932 the German export of wireless material has decreased by more than half, in comparison with the same period of time in 1931. The result is that manufacturers can rely only upon

exhibited wireless receivers for motor-cars; these sets are affixed permanently, and can be used only in the cars. As a source of current, the 6 to 8 volt batteries of the cars are used, and these supply the current through a transformer. Both the receiver and the moving coil loud-speaker are built in, and all the knobs for adjusting are arranged on the steering wheel column, whence they are connected to the receiver itself.

The output of transportable sets has diminished very considerably, because past experience has shown that the public is not much interested in them. Short-wave receivers are represented at this exhibition only by two exhibits, because the bad reception in Germany of short-wave



The German Radio Exhibition: exterior of the exhibition hall in Berlin

the German market. The erection of the great German broadcasting stations—of which Breslau and Leipzig will function within a few days, while Munich and Frankfurt-on-Main will open in the near future, and Hamburg and Berlin next spring—justifies the hope that the number of listeners will increase very considerably. It is especially the depths of the country which will be conquered by these big stations more than ever, because there the density of broadcast listeners is still very low.

The German wireless industry has, therefore, made the greatest efforts to produce highly-efficient apparatus.

The greatest attention has been given to attractive appearance of the apparatus. The idea that a receiving set was a scientific apparatus and had to look like it has given way to the conviction that a receiver is also an article of furniture and must have a correspondingly pleasant appearance. Architects of the highest standing have designed the new cabinets, using either expensive woods or very beautiful pressed material. An interesting development to be seen in some sets is a means of station identification, whereby the name of the station which is being heard is illuminated, while the names of the other stations remain in the dark. Other firms have combined this arrangement with a second table, on which the frequency numbers are also illuminated. One firm has arranged its scale horizontally across the whole receiver, and has provided it with printed names of all the stations. If any wavelengths are changed, those who have bought this receiver will be supplied automatically with a new scale which can be inserted easily. All the receivers are, of course, provided with a device for reproducing gramophone music.

For the first time in Germany there are

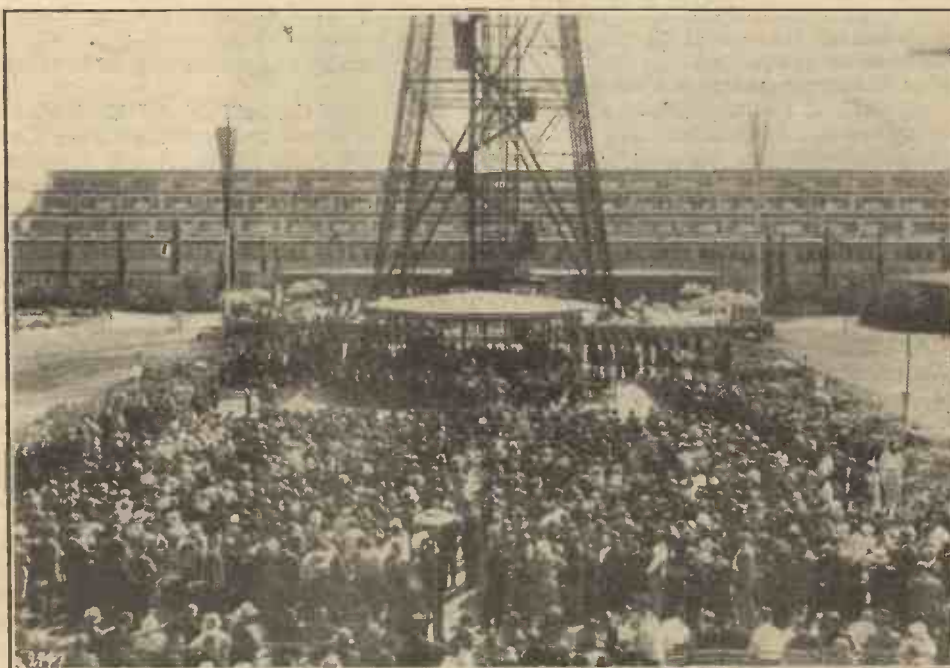
transmission does not encourage manufacturers to build such apparatus. Short-wave transmitters are, of course, not being shown at all, because German law prohibits transmission by private persons.

Many other interesting things are to be seen at the Berlin Exhibition besides receivers. There are, firstly, the stands of the Government concerns; there are exhibits by the German G.P.O., the R.R.G., and the Heinrich Hertz

Institute for Wave Research. The Reichspost shows two transportable transmitters, which work with short waves, and are intended for outside broadcasts of such a kind that a fixed microphone cannot be used. These two short-wave transmitters are mounted on motor-cars, and are supplied with current by a generator which is driven by the car engine. The Reichspost, like all the important industrial firms, are paying the greatest attention to the elimination of interference. Thus we have already on the market condensers which eliminate interference which cost less than one mark, and are entirely satisfactory. The R.R.G. has a very interesting exhibit entitled "Broadcasting and Pictorial Art," because this company supports in every way the artists who seek their motive in broadcasting. The Reichspost, in conjunction with the Heinrich Hertz Institute, has arranged an exhibition of electrical-musical instruments, where are to be seen the Neo-Bechstein grand piano by Professor Nernst, which was exhibited last year, and also the "Trautonium" and the "Hellertion." This apparatus, which was described in detail in *World-Radio* on the occasion of last year's exhibition, has been improved. The "Trautonium," which can reproduce all sound effects, from the timpanum to the piccolo, is already being manufactured industrially, but still costs as much as 400 marks. The most important instrument seems at present to be the Theremin apparatus, which has been developed in such a way that it will not cost more than 40 marks. At the same time, the manner of operating it has been simplified to such an extent that this apparatus will soon become very popular, particularly as this instrument is the only one which had an individual tone quality, while all the other ether wave apparatus can only imitate other instruments. The electric violin and the electric 'cello, which are exhibited, can hardly be taken seriously by musicians.

Receiving sets with batteries have almost disappeared from the exhibition, because electrification in Germany has made very great progress. So far as loud-speakers are concerned, types of dynamic, magnetic, and free-edged cone, loud-speakers have been constructed which have proved successful in the past.

The gramophone industry was not officially represented at this exhibition this year, and only a few small firms had stands. This is due to the fact that last year the gramophone exhibits did not show the results which had been



The opening ceremony of the ninth German Radio Exhibition

expected. Apart from the technical side of the exhibition, the entertainment section is very attractive. The Funkstunde has used the large automobile hall, which has 12,000 square metres floor space, for a transmitter studio, whence the evening broadcasts are made in the presence of a public of 10,000. From the gardens belonging to the exhibition concerts are broadcast also, and social evenings will be organised. On the opening day of the exhibition there was a record attendance, and the weather which we are having in Germany at present justifies the hope that all previous records of attendance will be surpassed.

H. W. P.

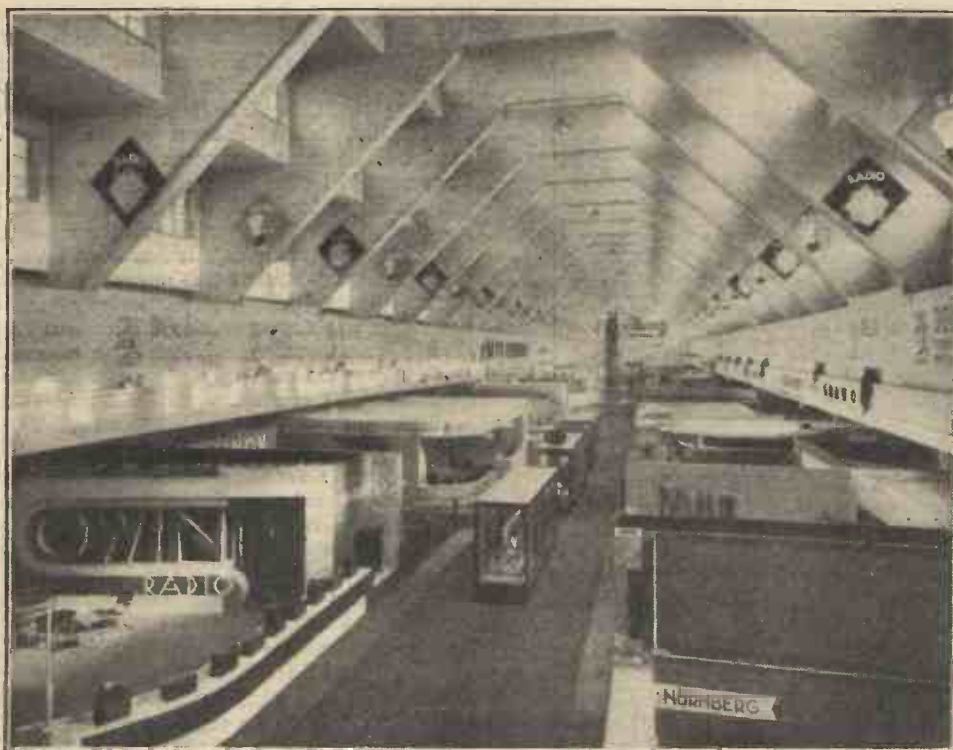
A Woman's Point of View

I CANNOT say that I have much experience of radio exhibitions, but I am a keen listener—so keen that when bringing in distant stations I sometimes forget to go to bed.

At the opening ceremony of the Berlin Exhibition this morning I pitied those important personages whose duties obliged them to wear

section appealed most to me. First the Neo-Bechstein grand. I was dumbfounded at the possibilities of such an instrument. Only I should prefer the special loud-speaker cabinet to be hidden somewhere underneath the grand. A musical instrument should not look so very "technical." That is the drawback to the Trautonium also. The Trautonium sounds much better than a cinema organ, I think, although it is, of course, possible to play only single-note tunes on it. It is wonderful to be able to play saxophone or horn or drum all on a single wire. The Theremin instruments, played by a man shaking his hand at a rod, sound very well when played by an expert. As for the 'cello and the violin that are played electrically *via* loud-speaker, I consider these merely technical curiosities.

In the big hall, reserved for the German Post Office and the R.R.G. exhibits, I liked very much the interior decoration scheme of cream and red and that of many of the stands. Television was demonstrated here. It will be wonderful when we are able both to see and



One of the Berlin Wireless Exhibition halls

black coats and silk hats—with the temperature in the heat wave region.

I first walked round the stands where receivers were displayed. If I were thinking of buying a set for my new flat, I should probably take one of the self-contained ones standing on legs or mounted in a cabinet. Next would come the ones in which clocks are mounted. I think this one of the best ideas; it saves one having to look round to see what time it is when one has an "appointment" for listening on the set.

In Berlin, it seemed to me, all the sets were made for men. All much alike and strictly utilitarian. Women would certainly like more variety in the styles of cabinet. After all, the set is a piece of furniture as well as a radio receiver, and most women like something which will look individual.

I always wonder why manufacturers must spread gilt cloth in front of the loud-speaker opening. Could they not use cloth that harmonises as much as possible with the woodwork? Why always this gilt and shiny stuff, which reminds me of curtains in a Victorian drawing-room?

At last we passed out of the halls with receiving sets and came to the special electrical music auditorium, which seats 300 people. This

hear, at the same time, by wireless. But what I saw had hardly reached the stage to be enjoyable at home.

The part of the exhibition I liked most was that where I heard a record of King George opening the Naval Disarmament Conference, where I listened to Bernard Shaw and Sinclair Lewis, to Dr. Eckener, and to Herr von Papen and General von Schleicher. The R.R.G. had made records of various happenings, and one needed only to ask for the record one wanted and it was put on and played.

Close by I saw the anti-interference exhibition. I should have liked to walk off with some of the electric household appliances, but otherwise I am afraid I was not interested in the wire cages or other gadgets.

We finished up by seeing two short films, one contrasting broadcasting in 1923 with that in 1932. This film was made by the R.R.G., and the second film, showing a day in the Bavarian station's programme, by the Bavarian Broadcasting Company. The first film was very good acoustically, whereas the photography was poor in parts. But even so, it still remains a very good film. The only thing I did not like about it was the massed choir speaking "The

(Continued in col. 3, page 426)

Radiations and Reactions

IN Soviet Russia the authorities are alive to the possibilities of radio, and there is certainly no Government in the world which has been more assiduous in the dissemination of information and propaganda by means of loud-speakers. But there are times, one imagines, when even the Russian palate must feel somewhat sated. Wireless has been installed in the trains between Moscow and Leningrad, and loud-speakers inform the passengers of the names of the stations *en route*—a very necessary service this. But between the stations the passengers are treated to propaganda. The only instance one can recall of an equally inappropriate occasion for propaganda is furnished by the tale of a poor wretch who was about to be executed before an immense crowd in America. He was asked if he would avail himself of the culprit's privilege of making a speech to the "gallery." He impatiently refused. Whereupon a man stepped on to the platform and said: "Seeing that our unfortunate brother does not wish to speak, I should like to say a few words on the merits of the Single Tax."

Miss Dora West, in a recent talk from 3YA Christchurch, referred enthusiastically to her former chief, Mr. Lloyd George, as "A man of dynamic energy and driving force. Without a doubt he has some secret source of energy not given to ordinary mortals. When he comes into a room he seems to radiate a vital energy felt by everyone." Quite clearly Mr. Lloyd George is being wasted in the House of Commons. Such dynamic energy ought surely to be harnessed to some high-power transmitter. Then we would have radiations and reactions of such high frequency and intensity that the International Broadcasting Union would be working overtime dealing with complaints of heterodyning.

Amos 'n' Andy, who are credited with being the most popular radio entertainers in the world—they certainly have been on the air for a longer and more continuous period than any other celebrated artists except Jack Payne—have introduced into their sketch an appeal for buying for prosperity. Says Amos: "Don't be shamed to buy nuthin'—if you kin 'ford it, buy it. Every time you buy sumpin you help de man dat can't 'ford to buy nuthin' cause you put people to work." A very good bit of economic philosophy to take with you to Olympia. It is a sound idea for Amos 'n' Andy to take to politics considering how immensely successful the politicians were as radio stars during the Conventions at Chicago.

A French inventor has devised a snore cure. He claims that the tempestuous noises created by sleepers can be suppressed if a microphone is suspended above the head of the snorer. When his transmissions reach a certain level an electric shock is administered which wakens him up. It seems an ingenious, if somewhat complicated, idea, but one wonders if it is really as effective as a good dig in the ribs. In any event it is of too limited application. What is wanted is something that will waken the easy-chair slumberer, who has settled down to enjoy Professor — on "Eliminating polysyllabic circumlocution."

REAGENT

Henri et Jules

IT was in France that we met them, Henri and Jules, while we were preparing for the Somme Memorial O.B. at Thiepval. We had arrived at Boulogne to find that the transport provided for us was hopelessly inadequate, and a search was immediately begun for some form of local transport to carry our twelve-hundredweight of apparatus by road to its destination. An English friend volunteered to produce a lorry, so we retired to lunch. A phone message at 4.30 p.m. sent us hurrying to the Gare Maritime, there to find our cases being loaded on to a somewhat dilapidated truck, entirely devoid of any form of tailboard, sideboard, or roofing. However, the apparatus soon became firmly attached thereto, and we retired to the transport offices to discuss the best route.

It was then that we became aware of Henri and Jules, the driver and mate of this lorry. Henri, the driver, was young and slight of build, with a tousled head of hair almost entirely hidden by a villainous-looking driver's hat with a sinusoidal peak. Jules was, by comparison, an elderly man, dark and somewhat swarthy, with a wicked-looking moustache that curled and tapered at the ends. His thirty-five years showed fully in his face, but his spirit was as young as Henri's. Both of them were obviously French and both spoke that language with a velocity that just left one standing. We found that it would be impossible for the lorry to return that night, so Henri and Jules were told that they must remain in Albert, or some such suitable spot, until the morning. This they were quite willing to do, but Henri stipulated that he must first warn his wife on his way out of the town. Jules was either callous or a bachelor, for he expressed no wish other than to get away at the earliest possible moment.

It was arranged that the lorry should precede our car, and conduct us *via* Henri's home, and it was thus that we set forth. But the traffic was not kind to us in the main square, for, while we in the car saw the lorry gaily sailing across the square and ourselves firmly planted behind a stationary tramcar, those in the lorry seemed only to see a mental vision of Henri's home, somewhere in Boulogne, which sight seemed to spur them on to greater deeds. We saw them dive to the right and, in due course, roared after them, but their lead was commanding. We thought that we saw them several times after this, but eventually found ourselves touring along the main Calais road without trace of Henri, Jules, or the lorry. Our driver, an Englishman who spoke very good French, asked a pedestrian if he had seen such a lorry as ours, and for two minutes this good man gave reply, and when it was all over our driver told us that he had said "Yes," and for a while we proceeded.

Finally we had to admit that we were lost, for we found ourselves looking for a lorry, the number of which we did not know, and which was at an address also unknown to us; the main point, and the one which worried us most, was that attached to that lorry was our apparatus, the total worth of which was something in the nature of £500. The joke being on us, we retraced our steps slowly, looking down every possible byway and alley when, to our amazement and joy, from out of a side turning about fifty yards ahead of us, crawled our lorry. Without apparently realising that they had lost us minutes ago, they set off on the journey, and we followed them delightedly. The hunt was up! We had gone some ten kilometres before a head, complete with waxed moustachios flapping in the wind, was seen dangling out of the cab of the lorry, and we then knew that Jules, at least, was aware of our

Richard Strauss



DR. RICHARD STRAUSS conducts the performance of Beethoven's *Fidelio* on Wednesday, August 31, with which this year's Festival at Salzburg comes to an end. Beginning at 7 p.m., the opera will be relayed by Vienna and many European stations.

immediate presence. After a while we came to a small village with a sharp right turn but, to our annoyance, the lorry shot clean across the square and utterly ignored our repeated warnings on the horn. We drew in, and our driver got out to investigate matters, returning with the report that Henri was kissing a middle-aged lady with much gusto. This rather shocked us until we understood that he was merely greeting the good lady who kept the best café in the village. After this abrupt refreshment we got on the way again with an understanding that no more stops were to be made until dusk, since Henri did not trust his lights to any great extent. For the next hour or so we had a good chance of gaining some impression as to the merits of Henri's driving, and the final impression was a distinctly favourable one. On all corners he kept rigidly to his own side of the road and, although his speed did not seem to diminish to any marked degree, yet he duly heralded his proximity by repeated squawkings on a high-pitched, resonant sporting

horn, the sound of which must have carried a good hundred yards. Thus we carried on until dusk, with nothing of note to disturb our tranquillity other than the occasional leaning out of the cabin ahead of a good three-quarters of Jules's body, but these actions were, we imagined, intended to find out if we were still following, rather than, as it appeared, repeated attempts at a crude form of suicide.

Finally we reached Frévent, and, as it was nearly dark, we decided to refresh our travel-stained bodies. We retired to the bar and offered drinks to our companions. They ordered some bilious-looking concoctions, chiefly notorious for their sickly red colour, while we, for safety, stuck to *bière*. The raising of the glasses was a great occasion, for Henri and Jules somehow managed things so that all five of our glasses met in mid-air with a sound of shattering glass and, to the loud shoutings of "A bon santé," Henri and Jules were half-way through their drinks. It may have been

(Continued at foot of col. 2, page 426)

Broadcasting and India's Future

By Lt.-Col. H. R. HARDINGE, I.A. (Retd.)

[Below we print the first of three articles in which the writer pleads for a reorganised and greatly extended system of broadcasting in India.

BROADCASTING has achieved wonders in Western countries, among peoples that are predominantly literate. How much more wonderful are the potentialities of such services in the East, where illiteracy is the rule and not the exception!

The benefits conferred by broadcasting upon our civilised world—education, instruction, entertainment, the dissemination of news—are now so widely known from the practical experience of the past ten years that it would be superfluous to dwell upon them; but those which a broadcasting service might confer upon such a country as India are not so self-evident.

India, that vast congeries of nations, with its population of more than 360,000,000, its amazing diversities of race, caste, and creed, and its more than 200 different languages and dialects, presents a problem altogether without parallel; and not for broadcasting alone, but for any scheme intended to promote the welfare and enlightenment of its people. Scattered over so vast an area, in some 250,000 cities, towns, and villages; all but a minute fraction in these villages, of which there are more than 240,000, mostly many miles from any railway, even from any good road, and without exception of inconsiderable size—how can we hope substantially to reduce the illiteracy, the ignorance, the superstition, the ultra-conservatism, and the resultant squalor of these people, and open up for them a fuller and a more prosperous future? Without doubt, by means of a broadcasting service, for in no other conceivable way can any substantial advance be made within a reasonable period of time, as it is the object of this article to demonstrate.

At this point the reader will probably be disposed to remark that India already has a broadcasting service; that at Bombay and Calcutta there are high-powered transmitters which have been in operation for the past five years; and that from all accounts, these services have not been as successful as was expected of them. In fact, that it would appear that broadcasting in India has been tried out and has proved a failure. To a certain extent this undoubtedly is so, but a little consideration will show that there are substantial grounds for thinking that the result might well have been otherwise had certain fundamental facts received the consideration they merited when the Indian Broadcasting Company came into being; and that past failure may be turned into future success if these fundamental facts are taken into account and a fresh start is made upon such a basis.

When the Indian Broadcasting Company was formed and it resolved to install comparatively high-powered transmitters at Bombay and Calcutta, the deciding factor probably was that only in such large centres could the talent be found to make it possible to put out, day after day and month after month, daily programmes of sufficient merit and interest to justify the establishment of the services. Also, that from the large populations of those cities it was considered reasonable to expect, within a comparatively short time, sufficient subscribers (i.e., licence fee payers) not only to cover the cost of maintenance, but eventually to show a profit for the shareholders.

The Indian broadcasting service was in-

augurated in 1927 by his Excellency the Viceroy. In his opening broadcast speech Lord Irwin outlined its possibilities as a factor in India's development; this was followed by a message from Lord Birkenhead (the then Secretary of State for India) broadcast by means of a gramophone record which had been specially made for the occasion in England; the service commenced, and no reasonable person could have found fault thereafter with the quality of the transmissions or the skill with which the programmes were devised from the limited resources available. But before very long it became evident that the hopes of the promoters were not materialising. The returns from the 10 per centum levy upon imports of wireless apparatus did not produce the return expected of it; the receipts from licence fees did not grow as rapidly as had been anticipated; the programmes did not sufficiently satisfy the public. Three years later the Company went into liquidation and the broadcasting services were taken over by the Government of India, and have since been kept alive at Government expense, but anyone who has listened to the



[Photo, by courtesy of High Commissioner for India.

The Bazar, Peshawar City

programmes broadcast nowadays from Bombay or Calcutta cannot but feel that unless something is done to put broadcasting in India upon a different footing it might as well be closed down entirely.

It is always easy to be wise after the event. Knowledge comes as the result of experience. Because it is now suggested that the original plan was fundamentally wrong, it should not be thought that it is intended to cast any aspersions upon those who so valiantly strove to attain success in circumstances that would now seem to have rendered failure inevitable. Situated as they were in coastal cities, nearly half the power put out from the transmitters at Bombay and Calcutta was wasted over the sea. The comparatively high power, and therefore the considerable effective range of these transmitters, while more than sufficient to supply a good service to the inhabitants of those cities, was not sufficient to serve effectively other important places owing to the great distances between such places in India, even when atmospheric conditions are favourable—unless perhaps by the use of multi-valved and consequently expensive receivers, placing the service quite beyond the means of more than an entirely insignificant few Europeans or comparatively well-to-do Indians; and in the monsoon season, when atmospherics are far more troublesome than is normally the case in Europe, even these highly sensitive and expensive receivers are only occasionally serviceable. The programmes were not—could not be—sufficiently good, or varied, or frequent, by reason of lack of sufficient talent, to satisfy the highly critical tastes of the European and the sophisticated Indian urban

population of Bombay or Calcutta, which, moreover, could find all the entertainment it needed in the numerous local theatres and cinemas; and, for information, there were the many local and other newspapers published in India, both in English and in the principal vernaculars, ready to hand.

In short, to the average member of the Indian public the service was not worth the initial outlay upon a receiver, not to mention the recurring expense of its upkeep and of the licence fee. In consequence, it became and has since remained in the main the hobby of the enthusiastic wireless "fan," the spare-time toy of the educated Indian, or the "side-line" hope of the enterprising trader, who prefers to sell one expensive multi-valved receiver to a rich customer, from whom he can confidently expect to derive a perennial profit upon upkeep of batteries, or the supply of accessories, than many cheap sets without such prospects of ultimate gain. But that does not constitute a public service!

In one way only can an Indian broadcasting service be made a success, and it is by providing programmes that will be of interest, and that will serve a useful purpose, to the common people of India—those who live in its more than 240,000 far-flung villages, speaking more than 200 different languages, and representing a host of races, castes, and creeds. The service must be extremely cheap, or it will be entirely beyond the means of those for whom it should be intended; and the programmes must be suited to their own peculiar tastes and needs, and broadcast in their own particular dialect. The aim must be to get down to the lowest, and not up to the highest, in the land.

Obviously, therefore, the original plan of a few high-powered transmitters was fundamentally wrong. What was required was a great number of comparatively low-powered (and, therefore, relatively inexpensive) transmitters, each serving the area covered by a particular dialect—and, therefore, the people following the same customs and to whom some one particular style of programme would appeal.

Decentralisation, not centralisation, should have been the keynote of organisation. The Civil District was the obvious unit, not the Province. Difficulties of finding "suitable and sufficient talent" were beside the point, since the mentality of the villager—the only class that really mattered—could not rise to such heights. He wants some simple knowledge; plain facts touching upon his primitive mode of living and methods of livelihood; crude—almost childish—entertainment; a little concerning affairs of local interest; information regarding the prices his crops or the products of his craft may fetch; advice concerning his health or that of his family; all this in his own simple phraseology, at hours that suit his habits. Briefly, programmes devised and supplied by those intimate with his simple needs, to serve him to the utmost possible.

If such a scheme could be brought into being, it might fairly be termed a public service. How such a service might be organised, financed, and administered; why its creation is nothing less than a necessity to the welfare and the progress of India; and what must be the outcome thereof in the course of time—will be the subjects of subsequent articles.

ALL the broadcasting stations in Japan are members of one association. No programme is permitted to be broadcast until it has been submitted to and has received the full sanction of the Imperial Japanese Department of Communications. The regulations under which the broadcasting company operates do not permit it to broadcast advertising programmes or political speeches.

Broadcasting Intelligence

THE EMPIRE TASMANIA

*Maritana—*from the Scene of its Inspiration
(From our Australian Correspondent)

The Tasmanian national broadcasting station, 7ZL Hobart, on the night of June 29, broadcast Vincent Wallace's opera, *Maritana*, from the long, old-fashioned Bush Inn on the River Derwent, backed by the gently swelling mountain ranges, where the Irish musician stayed when he composed the groundwork of the opera. It was the picturesque serenity of the Derwent River which inspired Wallace to write the theme song of *Maritana*—"Scenes that are Brightest"—and on June 29 the scene which Wallace immortalised resounded to music it had inspired.

FOREIGN

German Programme Changes

(From our Berlin Correspondent)

CHANGES in the programme of the Berlin Funkstunde are announced as beginning on August 28. Dance music, which has hitherto been played every evening up to half-past twelve, will stop at midnight, except on Saturdays. Twice weekly, from midnight onwards, concerts will be given which will be relayed by the German short-wave station also. This will enable Germans living abroad, as well as others interested in German music, to listen at a time more convenient to them than the time arranged to suit those at home. These late concerts will be announced in the German, English, and Spanish languages. Other German stations as well as Berlin will broadcast along similar lines at the same time. The countries which Germany has particularly in view for these midnight programmes are the United States and South America. Sports news will be considerably shortened in the daily topical news bulletin, as it is considered that only really big sporting events in all branches are of burning interest to the general public. To enable really important items of either musical or cultural interest to gain a deeper hold on the imagination of listeners than has hitherto been the case they will be broadcast twice, and, in special cases, even three times, at different times of the day. This means that final rehearsals of big numbers in a programme will now be broadcast.

In the case of radio plays, authors will be able to ask for higher fees. This system of repetition started some time ago with important political speeches, and found great favour. It is of particular value to those groups, or clubs, which gather round a communal loud-speaker, either in the local inn, or schoolhouse, or in a friend's home. New stress will be laid on broadcasting the works of authors whose fame entitles them to be called classic, without entirely neglecting the work of the new generation writing for the wireless. It is believed that by these means much can be done to popularise old favourites intrinsically worth far more than the present generation has believed. The intention, announced some time ago, of taking each of Germany's important municipal theatres in turn, and broadcasting items from their repertoire, is to take effect on Sept. 1, with a cross-section from the programme of operas, operettas, and plays given by the Stettin Theatre. Cornelius Bronsgeest is responsible for the broadcasting arrangements. Every big German city will be dissected as regards cultural life and local colour in much the same way as the theatres. Potsdam is the centre chosen for Sept. 2. The sub-title is "Prussianism and Prussia style" and much can be learned of the spirit of Potsdam, so often maligned and so little understood from a closer examination of what Berlin's Versailles really

does represent in the national life. Both these theatrical and municipal studies were scheduled for this season before the change in administration took place, and have nothing to do with any particular political outlook or propaganda.

Dr. Friedrich Carl Duske, the successor of Dr. Flesch, as General Manager in Berlin, is a former General Director of the Programme Committee of Germany's broadcasting stations. At the same time as Dr. Flesch, the chief of the department for broadcasts on topical themes, Dr. Kürschner resigned his post. His successor is the well-known literary man and fine writer, Arnold Bronnen, whose reputation alone should be sufficient to guarantee a very high level of intellectual entertainment. The political commissioners for Prussia's principal broadcasting stations outside Berlin have not all been definitely appointed, but the names announced for Cologne, Frankfurt, and Königsberg are those of well-known officials in the higher ranks of the police administration. That firm control is necessary is amply proved by the shouts of ill-advised enthusiasts which marred the opening of Berlin's wireless exhibition this week. The public noted with approval that "Red Front," "Iron Front," and "Hail Hitler" fanatics meet with the same forcible removal whenever they express themselves at unseemly moments.

FRANCE

The General Ferrié Plan

(From our Paris Correspondent)

An announcement as to the measures that were being taken in connexion with other stations in pursuance of the General Ferrié Plan caused a certain amount of uneasiness to the listeners of Lille (PTT). A delegation which visited M. Queuille, the Minister for Posts, Telegraphs, and Telephones, pointed out to him that the territory for the new Lille station has been purchased; buildings and pylons had been partly erected; Lille, Roubaix, and other places had voted subsidies, yet the work had been at a standstill for the last eighteen months. The Minister replied that the Lille station was considered as being under construction and that the work would be continued at an early date after certain legal formalities connected with the acquisition of part of the site had been complied with. The site chosen for the Nice-Cannes station is in the commune of Biot, between Cagnes-sur-Mer and Antibes, and sites for several more new stations have also been selected.

GERMANY

A Novel Type of Aerial

(From our Breslau Correspondent)

The new Breslau transmitter in Rothsürben, which is about to begin its transmissions, has been equipped with a new type of aerial, the shape of which differs considerably from that of the usual aerial and which has the advantage of creating greater field intensities. Moreover, this new type of aerial has the advantage that the nearest zone of fading occurs at a greater distance than before, which means that a larger area is served by the surface wave and is therefore free from fading.

ITALY.

(From our Rome Correspondent)

The Marconi Ultra Short-Wave Experiments

The successful result of Marconi's experiments with ultra-short waves of 57 centimetres has been the subject of much comment in the Press, especially the technical Press, here. Further details of the experiments have been published in a telegram from Marchese Marconi to the Minister of Communications, from which we learn that the power used for the transmissions was only 14 watts, and that the transmitters

consisted of small provisional apparatus taken up to the meteorological observatory of Rocca di Papa, a hill village some twenty-two miles from Rome.

Professor Piccard

Professor Piccard was approached soon after his descent into Italian territory near Desenzano to broadcast for the E.I.A.R. He agreed, and gave a brief account of his experiences from Desenzano, which was linked up with the Milan transmitting station, which, in turn, relayed the address to the chief Italian stations. Prof. Piccard, however, who is under contract with a Scandinavian organisation for the full report, especially on the scientific side, of his adventures, did not offer more than some generalities, which were, all the same, extremely interesting. His message was relayed also to America through the NBC system. It was picked up from the Rome short-wave station.

SPAIN

Broadcasting Allayed Panic

(From our Madrid Correspondent)

The great part played by broadcast during the recent disturbances in Spain is of considerable interest. The calming effect on the populace of hearing all the current news concerning the rising in the frequent bulletins issued by Madrid and other stations from eight o'clock in the morning until one o'clock next morning is incalculable. This was especially true in connexion with an incident at Seville: General Sanjurjo isolated himself and broadcast a statement from the local station saying that the Government was overthrown and the Cortes dissolved; but listeners tuned into Madrid and were speedily able to convince themselves of the true state of affairs.

U.S.A.

(From our Washington Correspondent)

Cities Devoid of Broadcasting

In spite of an over-supply of broadcasting stations in the United States, there are six cities, each of more than 100,000 population, which have no broadcasting facilities, viz:—Cambridge, Lynn, and Lowell in the State of Massachusetts; Waterbury in Connecticut; and Elizabeth in New Jersey, all Eastern cities, and Duluth, Minnesota, a Western city.

Plans for Higher Power Transmissions

In several parts of the country, broadcasting stations are building new transmitting plants with higher power. The general trend is towards the maximum power allowed by the Federal Radio Commission, namely 50 kW., and experiments are now being carried out with transmissions at much higher figures. The gradual decrease in the number of stations licensed is making the way easier for fewer but much more powerful stations. A new 10 kW. transmitter is being built at Washington for Station WJSV. This will be ready in September, as the Columbia Broadcasting System's key transmitter in the capital. In Philadelphia, Station WCAU is completing its new 50 kW. station. A "dead spot" has been blamed for the unusual difficulty experienced in broadcasting successfully from Philadelphia to New York, a train ride of only two hours. The new station is expected to send Philadelphia programmes to New York as clearly as local programmes. In New York, Station WOR will soon begin building operations on a 50 kW. transmitter, recently authorised by the Federal Radio Commission. Station WCCO, "the voice of the great North-West," at Minneapolis-St. Paul, will increase its power from 5 kW. to 50 kW. this summer. In the South, the Nashville (Tennessee) station WSM will go "on the air" in the autumn with a 50 kW. transmitter. It will use a modern vertical aerial, 878 feet high, and an aeroplane beacon will be installed on the roof of the main building.

TECHNICAL SECTION

Olympia in Review

ONE of the most striking impressions that one gets from a tour round the stands at Olympia is the remarkable similarity of most of the receivers, more particularly as regards outward appearance, but, to some extent, internally as well. The general shape of the cabinets is considerably different from that of most cabinets of a few years ago, and such things as tuning dials and conspicuous rows of knobs are steadily becoming things of the past. The fronts of cabinets are no longer covered with numerous labels denoting the functions of the various dials, knobs, switches, etc., and controls are now so few in number that labels are superfluous in most cases. The use of ganged condensers has enabled a single tuning control to suffice, and by employing reduction gearing of various types this control takes the form of a small knob which is made to harmonise with the general appearance of the cabinet and with the knobs of volume control and wavelength changing. Gone are the 3in. ebonite dials graduated in degrees, and neat recessed scales, in many cases illuminated, have taken their place; these are graduated in wavelengths and in some cases the names of stations are indicated.

It is the rule, rather than the exception, for the loud-speaker to be incorporated in the one cabinet with the receiver, and the majority of the receivers can be classed as transportable and even as portable in a number of cases. This is largely true not only of mains operated receivers, but also of battery operated receivers. The old type of portable receiver in suit-case form is still represented, but has not been accorded the prominence it had a few years ago. It appears to have been superseded by the more handsome cabinet type and retains the advantages of the self-contained receiver which can be carried from room to room, but is not quite so suitable for transport on picnic expeditions.

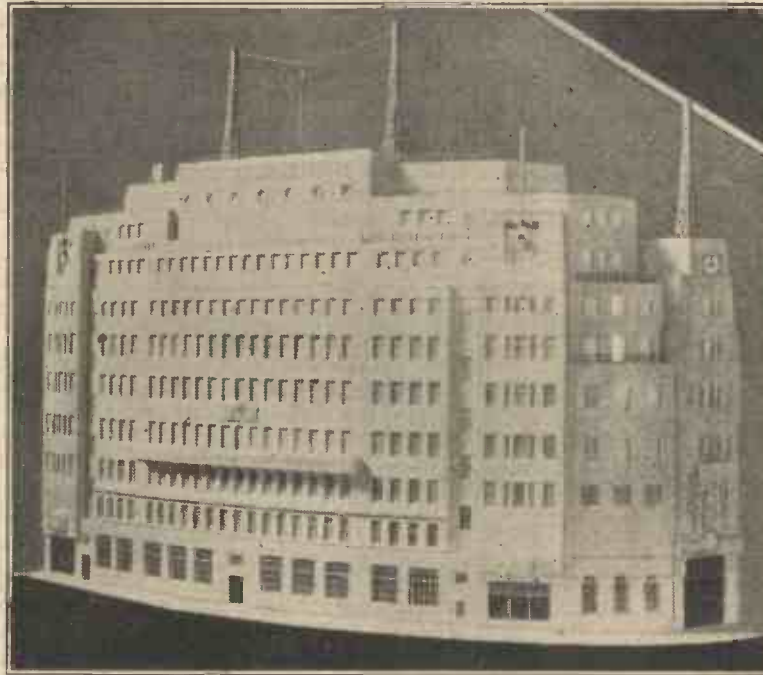
Mains operated receivers were very much in evidence this year, and the fact that a very large proportion of listeners have D.C. supply mains has not been overlooked. In spite of the demand for mains operated receivers many people, through force of circumstances, require battery operated sets and there was ample choice of this type.

New Circuit Designs

Internally, development seems to be along the same general lines as last year. The all metal chassis type of construction was found to be universal and has superseded the baseboard-panel type of assembly of numerous odd components joined together by long lengths of wire. The simple straightforward type of receiver employing one high frequency stage, detector and output stage is still popular. Multi-valve receivers employing eight or more valves were much more in evidence than last year. They were mostly of the superheterodyne type, some of them employing as many as eight tuned circuits giving a very high degree of selectivity. In some cases variable tone control devices have been fitted in the low frequency stages, thus permitting the listener to adjust the tonal

response to his own particular liking. Several of the more comprehensive receivers embody automatic volume control.

A very large number of receivers claimed to incorporate band-pass tuning, though what precisely this means is not very clear. It can no doubt be assumed that some form of coupled circuits is employed, but how much true band-pass effect is obtained is a matter which requires experimental investigation, but unfortunately manufacturers are very reluctant to publish particulars of the performance of their receivers. Numerous kits of parts were being exhibited for the home constructor who wishes to make up his own receiver with the minimum of trouble. The more expensive radiograms were well represented, but in addition there are one or two models of the lower-priced types to suit the person of limited means who can dispense with the additional refinements of the more expensive models. In fact, one might well say that the 1932 Olympia caters first and foremost in



The model of Broadcasting House, forming part of the B.B.C. exhibit

every respect for the person of modest means. Although the poor man's crystal set does not appear to be represented at all, there are poor man's valve sets which are excellent value for money and give results much superior to those obtainable from a crystal set.

Electric Gramophones

An outstanding feature is the completeness with which manufacturers have taken up the problem of radio-cum-gramophone assembly. In past years manufacturers appeared to be a little doubtful as to the success of such a combination, but there is now no question of this; such instruments form at least fifty per cent. of complete instruments exhibited. One exhibitor is offering circuit diagrams together with kit for the assembly of his radio-gramophone by the home constructor.

In general appearance a great improvement was seen. Cabinet-work is solid and well constructed, and a definite effort has been made to make the whole outwardly distinctive. In this respect, however, many manufacturers have

not pursued the idea to the limit sought by a few would-be purchasers. Some cabinets, far from symbolising the interior, resemble the early box of gadgets from which we should have been delivered several years ago. One model only was noticed where the tuning control, wave-change and gramophone, and other necessary switches were on the motor board with the gramophone turn-table. On radio and gramophone the lid can be closed, the instrument becoming an artistic piece of furniture.

On the radio side of such combinations there appears to be little change in the lower-priced models. In the higher priced and *de luxe* types one finds big improvements in selectivity and sensitivity and automatic volume controls to overcome fading. The improvements are rendered possible by the extensive use of band-pass circuits, screened-grid H.F. stages and variable-mu valves, and the wide use of the superheterodyne principle. Volume and tone improvements are represented by the provision of adequate power handling output stages, dual loud-speakers and tone correction circuits.

On the gramophone side of these instruments, there are many more models embodying automatic mechanism. The falling record principle finds popular favour, the releasing mechanism accommodating both ten and twelve inch discs. A few models are fitted with repeat and reject switches.

Two models of radio-gramophones were seen incorporating switches for obtaining a number of pre-selected conditions. One of them utilises a rotary, positive-grip switch for "off," gramophone, and the choice of twelve radio programmes. The same switch, when rotated in the reverse direction, permitted by a slipping clutch, acts as a volume control. In the case of the second model similar conditions are obtained by the operation of push buttons on the front of the set. Everything considered, the prices are reasonable. Prices range from sixteen guineas for the simpler models up to one hundred and ten guineas for a very comprehensive instrument including many modern refinements.

Television and Home Talkies

Despite recent announcements regarding Television, this side of Radio was almost unrepresented at the Exhibition except for a Baird Television receiver on the stand of a well-known West End store. It is understood, however, that this model, which has been on the market for over a year, is shortly to be superseded by an instrument before which several people can sit and watch the image in comfort. The new model is to have a larger viewing screen than the old type and will, it is understood, embody several refinements.

Although last year there were a number of stands showing home recorders for gramophone reproduction, there is only one of these exhibiting this year. Complete acoustic equipments for attachment to an ordinary gramophone for the recording of music and speech are available for 31s. 6d., whilst electric radio, radiogram, and electric models *de luxe* are obtainable for 7, 8, and 15 guineas respectively. These equipments are stated to be 100 per cent British productions, and the electric models especially are capable of giving very good results.

Loud-speakers

For the visitor seeking information as to the latest developments in loud-speaker design, perhaps the most noticeable feature of the exhibition was the remarkable preponderance of the moving-coil type over all others. Loud-speakers embodying free-edge coil-driven cones were exhibited on almost every stand, the cones varying between the extremes of six inches and over a foot in diameter. Many manufacturers are specialising in the production of the small diameter type employing permanent magnets for the production of the necessary magnetic field. Some of these loud-speakers retail at well under £2. This type of speaker is fitted as standard in the great majority of the self-contained three-valve receivers which are now so popular, and of which so many employ a pentode valve in the output stage. It is, of course, hardly to be expected that the quality of reproduction from such equipment will bear direct comparison with that of the larger moving-coil types which have become well established during the past few years as providing a recognised standard of high quality. Nevertheless, a step does seem to have been taken in the direction of providing relatively good loud-speaker reproduction at a very moderate price.

Another feature demanding attention is the virtual abandonment of the flat baffle and the mounting of the loud-speaker units in small cabinets. Such an arrangement constitutes a remarkable improvement from the point of view of appearance and the cabinets form excellent articles of furniture.

Unfortunately, however, in very few cases indeed has the manufacturer taken adequate steps to avoid the undesirable box resonance which results from such a method of construction. Consequently, loud-speaker reproduction at Olympia this year, though in some ways an improvement on that of previous years, was characterised by the particularly "boomy" quality and false accentuation of the bass register associated with box resonance. A hopeful sign is that kits for the acoustical treatment of loud-speaker cabinets with mineral wool were



exhibited on certain stands. In addition to the moving-coil loud-speakers, forming the largest class and intended principally for reproduction in the home, a number of coil-driven loud-speakers fitted with logarithmic horns and intended for public address work were exhibited.

It must not be supposed that the exhibition gave no prominence to any other types of speakers. Several examples of balanced armature and reed-driven cones were seen, together with a number of balanced armature units for home constructors. These still possess the advantage of providing a very good tonal output at a very reasonable cost. Portable sets also are mainly fitted with this type of loud-speaker.

Mention must also be made of the inductor type of loud-speaker, exhibited on several stands, and giving very adequate bass response, free from boom and with good definition.

From what was seen it is clear that, until some entirely new method of attacking the problem of sound reproduction is evolved, the future of broadcast reception will be associated with the moving-coil loud-speaker.

Short-Wave Receivers

Manufacturers are steadily realising the immense possibilities of the short-wave field, with the result that short-wave enthusiasts saw a range of apparatus offering them a wider choice of receivers, receiver-adaptors, and components, than ever before. Complete receivers for batteries and mains operation included superheterodyne and straight types. Overseas visitors found instruments specially designed for them, embodying components and construction principles calculated to withstand extreme variations in climatic conditions.

The straight receivers exhibited comprised several types, including models incorporating screened-grid H.F. stages, and others employing a simple reacting detector valve as the only radio-frequency stage. Some of these instruments were in kit form for home construction. Receiver-adaptors were of the reacting-detector and superheterodyne types, and models for adaptation of mains and batteries operated receivers were seen at prices of £2 and upwards.

An instrument of note was a rotary convertor deriving input power from an accumulator and supplying H.T. for the operation of all types of receivers and especially of short-wave receivers. Two such models were exhibited, both occupying very small space, being slightly larger than an H.T. battery. They are very silent in operation both electrically and mechanically, and should prove extremely useful to listeners situated in isolated districts where H.T. battery supplies are difficult to obtain.

Short-wave components are in greater evidence than in past years, and manufacturers have realised, for instance, that a short-wave condenser is not merely a smaller edition of the condenser

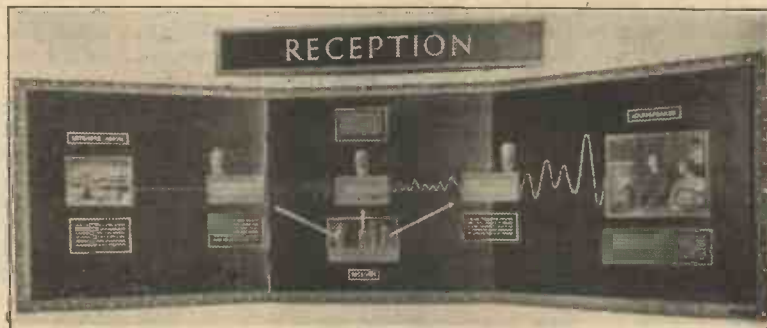
used, say, for medium-wave tuning, but must be constructed according to certain specific requirements. Its physical dimensions must be small, it must be mechanically rigid, it must be as nearly as possible a pure capacity—i.e., it must be non-inductive—and must conform to a number of other requirements well known to the short-wave experimenter. Several well-made short-wave condensers were exhibited, and were reasonably priced between 5s. and 10s. Short-wave coils and chokes were shown, and several manufacturers are listing six-pin coils covering a wave range from about 12 to 80 metres, and in certain instances dual and triple range coils were exhibited, wave changing being accomplished by means of a switch, as in the case of wave-changing on the normal broadcast waves.

Very little apparatus for the ultra-short-wave enthusiast was seen, but the designs of a few of the short-wave and neutralising types of condensers render them suitable for ultra-short-wave use. One firm exhibited ultra-short-wave experimental transmitters and oscillators,

and a 7-metre adaptor, also a valveholder in which stray capacity is reduced to a minimum.

New Valves

A tour of the exhibition did not disclose any very startling innovations in valves. This is not surprising for several reasons, the chief being that valve manufacturers do not, as a rule, wait for the exhibition before announcing new products. New productions are generally released to manufacturers some months beforehand to enable them to design their new season's circuits. It is perhaps not generally realised



Above and below—Another part of the B.B.C. exhibit illustrating the various changes which occur as a signal passes from microphone to loud-speaker.

that circuits, to be really successful, must be designed around the valve, and it naturally follows that the valves on show at the Radio Exhibition were announced some months previously. For example, the new micro-mesh valves are entirely new productions, although they had been announced, and samples were available some month or two ago. These valves represent a great advance in design and construction, and special circuits are required in order that their maximum available efficiency may be employed. One wonders whether these valves will come into general use for some time to come, as not all standard receivers are capable of using them without considerable redesign. Home constructors will find their own circuits easily adaptable to the new characteristics.

It is particularly noticeable that the majority of commercial broadcast receivers use pentode output stages. Probably the chief reason for this is that set designers may cut off the upper audio-frequencies in the radio frequency circuits to obtain selectivity, whilst leaving the pentode output valve to balance the tonal response without additional tone correction amplifiers. It has been pointed out in several articles in *World-Radio* that the use of a pentode valve can give rise to a large proportion of third harmonic distortion, and it seems that its retention in receivers, other than portable receivers, requires a certain amount of justification.

Variable- μ valves are rapidly gaining favour. Several makers are now marketing two-volt battery variable- μ valves in addition to the indirectly-heated cathode types. There seems to be a tendency to increase the mutual conductance of variable- μ valves. An increase of conductance means, as a rule, an increase in cross modulation level, and a variable- μ valve with a high conductance may tend to defeat its own object. Although variable- μ valves have been on the market for over 12 months it is still difficult to obtain properly designed potentiometers with which to control them. Two of the most useful values of potentiometer are 4,000 ohms and 8,000 ohms, and they should have graded windings. Only a few potentiometer manufacturers were found who were making graded windings, and these were usually of the wrong ohmic resistance and not always of the best workmanship. The potentiometer, like the valve, must be built up to quality and not down to price.

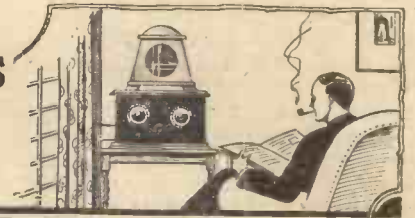
(Continued in column 1, page 437)



The Elements of Wireless

(Part 29)

By E. REDPATH



VALVE CHARACTERISTICS (Continued)

In the method of rectification (or detection of wireless signals by means of a three-electrode valve) now to be explained, the interception by the grid of electrons emitted from the filament—referred to as *grid current* at the conclusion of last week's article—plays a very important part. Remembering the essential principle which governs electron flow through the valve, *viz.*, that the electrons from the hot filament are attracted to and absorbed by a cold electrode (anode or grid) when the latter is positive with respect to the filament, and repelled when negative to the filament; and visualising, for a moment, the situation of the grid within the valve—surrounding the filament and between it and the anode—it will be understood that changes of grid potential, in addition to controlling the electron flow to the anode, will also result, under certain conditions, in variations of the number of electrons attracted to and absorbed by the grid itself.

By means of a circuit arrangement which enables the grid voltage to be varied and the corresponding changes in grid current (electron flow) to be noted, characteristic curves may be plotted to illustrate graphically the effects produced. Such curves are known as *grid voltage—grid current* characteristics, and may be obtained by means of apparatus arranged as shown in Fig. 82, in which the valve filament is heated by the battery LT (low-tension or low-voltage battery), the anode voltage is maintained at a steady value by the battery HT (high-tension battery), and variations in grid potential are effected by means of the resistance P and its associated battery.

A resistance provided with a variable contact (usually a sliding contact) and connected across a battery is termed a *potentiometer*. The *termination-meter* suggests, of course, a measuring device of some kind which it is *not*, and "potential divider" would be a more accurate name. The potential of the battery falls evenly along the resistance and, by means of the sliding contact, it may be "divided" as required. Note, however, that in the particular arrangement shown in Fig. 82, the *centre point* of the grid battery (four 2-volt accumulator cells in series) is connected to the negative side of the filament. Thus, with the slider at the electrical centre of the resistance, the potential on the grid of the valve will be that of the filament (the negative side of which is regarded as "zero" potential). When the slider is moved right to the upper end of the resistance wire, the grid will be made 4 volts *positive* and, with the slider at the bottom of the resistance the grid will become 4 volts *negative* with respect to the filament.

The actual voltage applied to the grid is indicated upon the voltmeter V_g and the resulting grid current upon the *micro-ammeter* C_g . As the values of current in this case are extremely small it is important that the voltmeter V_g should be of a special type which indicates the

voltage without actually passing any current, otherwise the micro-ammeter will not indicate true values of grid current. The circuit diagram Fig. 82 also shows a milliammeter C_a in the anode circuit by means of which the anode current at different grid voltages can be noted if desired, but this is not required in connexion with the grid voltage—grid current characteristic.

Now let us consider the more important conditions which may prevail at the grid. Modern receiving valves, in general, have grids consisting of fairly open spirals of thin wire through the spaces of which electrons, *en route* to the anode, can pass readily. Relatively very few come into contact with the grid wire. An increase in the diameter of wire forming the spiral, or a decrease in the "pitch" (*i.e.*, bringing adjacent turns of the spiral closer together) will increase the number of electrons intercepted, and consequently the grid current.

The nearness of the grid to the filament also affects the grid current. If the grid is some little distance from the filament many electrons, emitted with low velocity, and not having travelled far enough to accelerate appreciably, merely fall back again, those from the negative end tending to fall into the positive end of the filament. Placing the grid nearer to the filament enables it to intercept numbers of these "idling" electrons, which again results in an increase of grid current.

Increasing the anode voltage reduces the grid current because this results in more rapid acceleration of the electrons once they have left the filament and there is therefore a greater tendency for them to pass through the grid spaces without being deflected towards the grid wire. An increase in filament current, on the other hand, causes an increase in grid current at any particular grid potential. The reason for this is simply that the increased filament current results in a greater electron emission; the "cloud" of electrons *en route* to the anode is more dense, and increased numbers impinge upon the grid wires.

These factors just enumerated are, of course, additional to and sometimes associated with the main operating factor of grid potential as determined by external means—such as the potentiometer arrangement of Fig. 82, for example, or, as will be discussed presently, an incoming wireless signal applied to the grid in the form of an oscillatory voltage.

Fig. 83 shows two typical grid voltage—grid current characteristic curves with quite arbitrary current values. The right-hand curve (O) illustrates the type of curve obtained with an open-spiral grid, and that on the left (C) the curve of a close-spiral or "wire mesh" grid. From the former curve (O) it will be seen that grid current (electrons intercepted) practically ceases at "zero" grid potential and disappears completely when the grid is made about 0.75 volt negative. In the case of the "close" grid (curve C), however, approximately twice as much current flows at "zero" grid potential and complete cessation does not occur until the grid is made approximately 1.5 volts negative. Also, at positive grid potentials, the current for a given voltage is much greater in the case of the "close" grid, and the "bend" at the foot is more pronounced than with the "open" grid.

From the explanation already given of "lower anode bend" rectification (see last week's article and the accompanying diagrams, Figs. 78 and

79), it will be noted from Fig. 83 that if a steady initial potential or "bias" is given to the grid so as to maintain the steady grid current at or near the upper portion of the sharp bend—*i.e.*, at the point where the *rate of increase in current* changes more or less abruptly—the rise in grid current for a given increase of grid potential will be greater than the drop in current for a corresponding decrease in potential. In other words, an alternating current applied to the grid of a valve "biased" in this manner will be rectified *at the grid* quite irrespective of the "working point" upon the anode current curve (grid voltage—*anode current* characteristic).

If any reader cares to follow the procedure adopted in the case of lower anode bend rectification (illustrated in Fig. 79 referred to above)

and apply it to Fig. 83, he will readily demonstrate for himself the effect upon the grid current produced by applying an alternating current which varies the grid voltage by, say, 0.5 volt on either side of the zero potential line. Incidentally he will discover that the "close grid" type of valve (curve

C) is the more effective rectifier of the two illustrated.

Before proceeding farther let us consider the action occurring at the grid of the valve when the steady initial potential is not "zero" but has some value either appreciably negative or positive with respect to the filament. When the grid potential is *negative*, the electrostatic charge upon the wires of which it is formed repels electrons and none strike the wires, therefore no grid current flows. If the grid is sufficiently *negative* the electric field surrounding each wire of the spiral spreads out until, with the assistance of the field from adjacent wires on either side, the spaces between the grid wires are occupied by a negative field or charge of such strength as to reduce greatly or even prevent the passage of electrons from filament to anode. In this case all, or practically all, the electrons from the filament are either returned to the filament—particularly to the positive end of it, this being the most positively charged body at hand—or constitute a "space charge" in the form of a cloud of electrons in the space between grid and filament, and there will be no anode and grid currents.

If the grid is given an initial potential of some *positive* value, not only will the grid assist the anode to draw electrons from the filament but it will definitely attract them to itself so that, in addition to the number of electrons which will strike the grid wires, accidentally as it were, there will be a number deflected from the anode stream and absorbed by the grid with a consequent increase in grid current. With large positive potentials applied to the grid this deflection of the anode stream will actually reduce the anode current because the total number of electrons available from the filament is not unlimited, and once the point of

(Continued in column 3, page 435.)

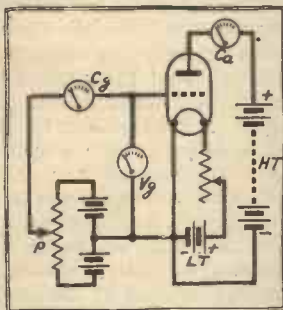


Fig. 82.

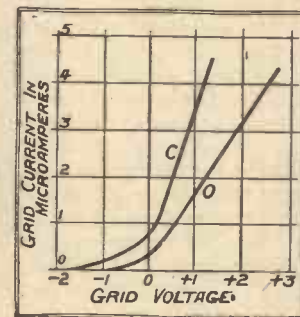


Fig. 83.

Technical Topics

By "DECIBEL"

WE are apt to think that because broadcasting is only about ten years old wireless telephony is not very much older than this, and is very much younger than wireless telegraphy. It is a fact, however, that speech was transmitted over distances of about a mile by wireless telephony as long ago as the year 1900. In those days, of course, the apparatus available was considerably more primitive than it is to-day, and the thermionic valve was not even invented. The only means of producing high-frequency oscillations was the spark gap, and there were no such things as amplifiers for amplifying the signals at either the transmitting or the receiving end.

The Poulsen Arc

A few years later the arc became available as a source of high-frequency oscillations, and in the year 1907 music transmitted by means of an arc using an input of less than 1 kilowatt was actually heard 300 miles away. An area within a 300-mile radius could hardly be regarded as the service area of the station as we understand the term "service area" to-day, but think of the excitement of those early experimenters when they first heard the music at such a distance.

In order to modulate the high-frequency carrier the microphone was actually placed in the aerial circuit and had to carry part of the aerial current. Considerable trouble was experienced, of course, with the large currents and voltages, and several microphones were usually connected in series or in series-parallel. One of the arrangements used by Poulsen in 1907 is shown in the accompanying diagram. The six microphones in series were connected across a variable condenser in the aerial circuit, and when the microphones were acted on by sound waves their resistance changed accordingly and caused corresponding changes in the aerial current.

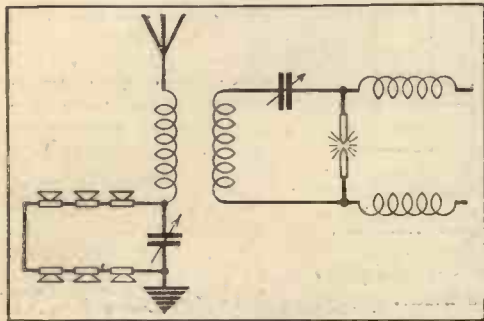


Diagram illustrating modulation of arc transmitter

With this arrangement the frequency of the carrier did not remain constant, but changed appreciably when the amplitude was altered by sound waves causing variations in the resistance of the microphones. In other words there was "frequency modulation" as well as "amplitude modulation." Modern broadcasting transmitters employ amplitude modulation only, and every endeavour is made to avoid any frequency modulation at the same time, as this introduces distortion. In the early days, however, the important thing was to receive signals, and distortion was of secondary importance.

It is obvious that the difficulties experienced in the transmission of speech and music by wireless telephony must have been considerably greater than the transmission of morse signals by wireless, with the result that the progress of wireless telegraphy was considerably more rapid than that of wireless telephony. Development work in wireless telephony still proceeded,

however, and other sources of high-frequency oscillations were employed as they became available, such as the high-frequency alternator and, finally, the thermionic valve.

Methods of detection also improved, and when satisfactory amplification became available as a result of the development of the valve as an amplifier, wireless telephony passed from the purely experimental stage. This experimental stage lasted for something like twenty years without very much progress, and it might have been appreciably longer if the War had not resulted in concentration on the problems associated with wireless telegraphy and telephony for war purposes. The lessons learnt during the War were applied to commercial uses immediately afterwards, with the result that progress in wireless telephony during the last ten years has been truly remarkable.

Wired Wireless. . . . ?

Having pointed out that wireless telephony is not as recent an invention as many people appear to think, I have a few things to say about something else which is not quite as novel as might appear. I refer to the distribution of news, plays, music, etc., to the homes of the people from a central distributing point; in other words I mean broadcasting, either by wireless or by other means.

I have in my library a book* which I received as a prize when at school. Why I was awarded the prize does not concern the subject under discussion, but the contents of the book most certainly do, although the date of its publication is 1902. (Now do not jump to the conclusion that I received the book in 1902, and therefore my age must be round about so-and-so. I did not receive the book in 1902 but I did receive it some years before the War, therefore my age is not so-and-so but something quite different.)

But to resume my Topic—This book contains an article on wireless telegraphy, dealing with the subject up to the time that "tuning" was introduced. This will give you some idea of the age of the book. It also contains a description of an early form of broadcasting which I find very interesting indeed in the light of modern developments. Unfortunately, I cannot give a detailed account owing to lack of space, but the main facts are as follows:—

In the year 1893 a "newspaper" was formed in Budapest, worked entirely on the telephone. This "newspaper" was more like a modern broadcasting station than a newspaper except that distribution was by telephone and not by wireless. Subscribers were informed of the news by announcers who were called "stentors" with "powerful and trained voices." The so-called "newspaper," in addition to being a first-class journal, was "entertainer, lecturer, preacher, actor, political speaker and musician"; also "the offices are connected by wire with the theatres, churches, and public halls, drawing from them by means of special receivers the sounds that are going on there, and transmitting them again over the wires to the thousands of subscribers."

Each subscriber had a programme which was rigidly adhered to, and "the advertising fiend, too, must have his say, though he pays dearly for it." Apparently for the sum of one florin the "stentor" would devote a period of 12 seconds to advertising purposes in between items of news. At the time the article was written there were over six thousand subscribers who paid about a penny a day for twelve hours a day. Whether it was a success I do not know, but it is goes to show that there is nothing new under the sun. There was even a Children's Hour in the form of a special weekly period set aside for their special entertainment. Well! Well!

* *The Romance of Modern Invention.* By Archibald Williams. Seeley & Co., Ltd.

ELEMENTS OF WIRELESS

(Continued from page 434)

saturation is reached grid current can be increased only at the expense of anode current.

When the grid is connected to the filament—as, for instance, in Fig. 82 where the circuit is completed *via* the micro-ammeter Cg, potentiometer P, and grid battery—the electrons arriving upon the grid simply flow round to the filament and a steady flow of grid current is maintained dependent upon the value of the initially applied potential.

At this point we will consider the little exercise mentioned at the end of the previous article. Readers were asked to redraw the circuit diagram (Fig. 81) so as to show an oscillatory circuit connected direct to the negative side of the filament on the one side and, *via* a small fixed condenser, to the grid of a three-electrode valve on the other, the filament and anode batteries being shown connected as in the original diagram. As the condenser in the grid circuit acts as an insulator and prevents the flow of direct current through it, electrons can no longer flow from grid to filament *via* the external circuit. Naturally they cannot flow from grid to filament within the valve. Therefore, as soon as the circuit is completed a small flow of electrons from filament to grid occurs. Very rapidly the electrons accumulate on the grid, lowering the grid potential (and causing a reduction in anode current) until a state of equilibrium is reached when the grid is just sufficiently negative to repel further electrons.

When a carrier wave is tuned in and the oscillating potentials across the tuning condenser are applied to the grid, each *positive* half-cycle makes the grid momentarily positive and a rush of electrons to the grid occurs which tends to nullify the positive charge and further increases the negative potential of the grid. Each *negative* half-cycle merely increases the negative grid potential temporarily. Therefore the net result of each complete cycle of oscillation is to increase the negative charge upon the grid and, as the grid is insulated in the case under consideration, it is clear that the result of the applied carrier-wave oscillation is to cause a negative charge to accumulate upon the grid. Incidentally, this will cause a reduction in anode current and, if the applied oscillation is of sufficient strength, the negative charge on the grid may reach such a value (practically instantaneously) as to cut off the anode current altogether, a kind of paralysis effect which can be noted occasionally with valve receivers during exceptionally strong atmospherics.

Now, will those readers who carried out the above-mentioned exercise consider what modification in the behaviour of the valve is effected by shunting the grid condenser with a non-inductive resistance having a value of, say, one megohm?

(To be continued)

PROGRESS COMPETITION No. 5

The examination of the Test Papers has been completed just as we go to press, and we have pleasure in announcing the prize-winners as follows:—

1st Prize (Four Guineas) divided equally between Mr. S. C. PALMER, 93, Priory Road, Hornsey, and Mr. ERNEST W. DUNN, 167, Cooper Road, Grimsby.

2nd Prize (Two Guineas) divided equally between Mr. JAMES THOMAS, 36, Garden City, Llangennech, Carm., and Mr. W. T. FELLOWS, 12, Derby Road, North End, Portsmouth.

Next week's issue of *World-Radio* will contain the answers and references to answers to the questions set for this test paper.

Reliability in Wireless Reception

Part 7.—Maintenance of Valve Receivers

(Continued from page 320, August 12)

MULTI-VALVE receivers, owing to their nature, are possibly more liable to give trouble than simple apparatus, as there are so many points at which faults may develop. It is therefore all the more important that such equipment should be maintained carefully, and it is useful to inaugurate a system of regular periodic tests, to include measurement of the current taken by the anodes of the valves, and other matters.

The accompanying circuit diagram illustrates a typical four-valve receiver embodying a stage of high-frequency amplification of the screened-grid type, a detector, low-frequency amplifier, and a power amplifier. The high-tension current taken by such a receiver will depend to a large extent upon the voltage of the source of supply. For instance, the average receiver deriving power from a battery with a maximum voltage of 140 volts will not consume as much current as one operated from a 240-volt battery or mains system. The question of voltage measurements will be dealt with later.

H.F. Valves

Of all the valves in the modern receiver, the high-frequency valve (V_1 in the diagram) is that which usually consumes the smallest amount of high-tension current. A milliammeter having a maximum reading of about 10 m.a., or less, may be used for measuring the high-tension current passed by this valve, and the meter is to be inserted in the anode circuit as shown.

In this position the milliammeter is also useful for determining whether the valve is being overloaded. Such a defect will be shown by a tendency of the anode current to rise or fall considerably when the sensitivity of the stage is adjusted. If distortion is evident or interference between programmes is noticeable when the receiver is tuned to the carrier-wave of the desired transmitter, it may be advisable to reduce the input signal to the control grid by means of the volume control, R_1 . If changes of anode current become apparent when the tuning circuits are being adjusted, and no carrier-wave is being received, this most probably indicates instability and self-oscillation in the H.F. circuits. Adjustments of the grid bias and the control grid voltages may overcome this, but if such are not helpful, H.F. coupling between the grid and anode circuits may be suspected and the screening arrangements may need attention. In this, as in subsequent cases, if the anode current is erratic and the source of power is constant, this most probably indicates the development of a fault in the circuits or components associated with the valve, or possibly in the valve itself.

There is no point in measuring the current taken by the screening grid, and this part of the circuit is best checked by means of a voltmeter. The value of the steady anode current taken when the valve is behaving normally should be compared with that specified by the makers in their characteristic curve of the valve. These curves show values of anode current plotted against values of control grid, grid bias, and high-tension voltages. Any serious deviation

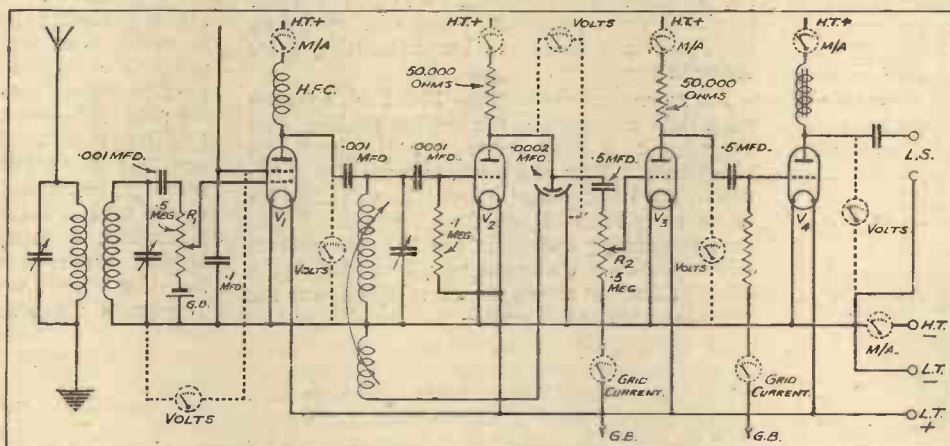
from the maker's specification should be regarded as an indication of a faulty circuit or valve.

Detector Valves

The rectifying valve, V_2 , providing it is behaving normally, and by reason of its function when biased positively to serve as a leaky-grid rectifier, passes less H.T. current when a signal is being received than when there is no input from the aerial. If used as an anode bend rectifier—i.e. when biased negatively, the current will rise when signals are being received. Therefore, when measuring the anode current of a detector valve, the first measurement may be taken with the aerial disconnected from the set, and the second when the aerial is connected and the local programme is being received. There will be a difference between the two readings. This difference is commonly known as the rectified current reading.

If the voltage actually applied to the anode of a leaky-grid rectifier is 150 volts or over, it is extremely unlikely that this valve will be overloaded by the incoming signal and cause audible distortion, so long as the rectified current or reduction in current reading due to the voltage of the signal on the grid, does not exceed approximately one-tenth of the normal steady current.

If irregular current readings are observed, and these are noted when the aerial is dis-



connected, this shows a fault either in the anode circuit or in the grid circuits associated with this valve. Intermittent variations in rectified current readings can be due to a fault in the aerial system, or in the circuits preceding the rectifier valve. It is advisable to make quite certain, when taking current measurements in this part of the receiver, that no reaction is in use and that the use of the meter is not causing instability through "feed-back" between the meter connecting leads and other parts of the circuit.

Low-Frequency Valves

The low-frequency valve, V_3 , is an intermediate amplifier used to build up the received signals to a sufficient value to operate satisfactorily the power valve, V_4 . A milliammeter to measure up to 10 or 20 milliamperes may be necessary to test this valve. The meter is best used when signals are being received. In this way it is possible to ascertain whether overloading is taking place owing to the impression of strong signals on the grid. This overloading will show in the anode circuit in the form of marked fluctuations of the pointer of the meter, and will inevitably result in distortion in the loud-speaker.

The remedy is to reduce the input to the grid of the first L.F. valve by means of the volume control, R_2 . The reading obtained with normal values of grid bias should, as in other cases, be compared with the characteristic curve of the valve published by the makers.

The power amplifying valve, V_4 , is dealt with in the same manner as V_3 , and fluctuations of anode current, when a programme is being received, reduced by the volume control, R_2 .

Grid Current

Under certain conditions—for example, with low values of negative bias—comparatively large values of grid current may flow in the circuits of low-frequency amplifying or power valves, either momentarily or permanently. This will inevitably give rise to distortion in the reproduction of the loud-speaker, and no measurable grid current should flow in the small power amplifying valves of ordinary home receiving sets.

Grid current can also be caused by the breakdown of the insulation between transformer windings or grid blocking condensers, and if it appears that the grid bias voltage is correct for the particular anode voltage in use, these components should be examined for faults, and replaced. The presence of grid current is to be suspected if the anode current is unduly high for given values of H.T. and grid voltages, and this can be verified by the use in the particular grid circuit of a milliammeter with a scale reading of not more than about 0.5 m.a., although a good quality meter with a larger maximum of, say, 1 m.a. may be used. In bad cases the grid current may be flowing permanently, whilst in others it will only appear on "peaky" passages of music.

Reduction of grid current may be accomplished by decreasing the anode voltage or increasing the grid bias. The former method is not desirable. If the maximum undistorted output is desired, the anode voltage must be kept high and the grid bias voltage increased to normal proportions as advised by the valve makers. If grid current is detected and the trouble is rectified by adjustments to the grid bias, or the substitution of new parts, fresh measurements should be taken of the anode circuit

for record purposes after these adjustments have been made.

Measurements of Supply Voltages

A voltmeter is to be used to check the condition of the grid-bias batteries, and should be connected across the batteries, or across grid-bias resistances in the case of "all mains" receivers. It is important that the voltage applied to the grid of each valve should correspond with the value given in the instructions issued by the makers.

When anode current measurements have been made, the voltage actually applied between the anode and filament should be measured. These measurements are to be taken with a high-resistance voltmeter arranged as shown in the circuit diagram. The relative values can then be arranged in tabular form for future reference.

When the voltage and anode current measurements have been taken, it is possible for the owner to compare the performance of his valves with the average performance quoted by the makers in the instructions issued with them. Measurements of this kind should be taken at

(Continued in column 1, page 437)

SHORT-WAVE SECTION

Canadian Experimental Station VE9GW

THE transmitter operating under the call VE9GW, was first put in service on a regular schedule in April, 1930. The use of a high-frequency transmitter, in conjunction with our other broadcast services, was conceived necessary in order to give service towards the north, taking in those sparsely populated regions in Northern Ontario, Northern Manitoba, and on toward the northernmost portions of Canada, wherein lie outposts held by members of the Royal Canadian Mounted Police. It was first decided that the equipment would be of low power and purely of an experimental nature, and that experiments were to be concentrated on the development of three main lines: (1) A highly efficient, non-directional, antenna; (2) precision frequency control and (3) high quality, high percentage, modulation. One of the rules of the game was to develop something entirely different; in other words, to develop something that was not an imitation of equipment already developed by someone else. In some respects the apparatus had to follow the general trend.

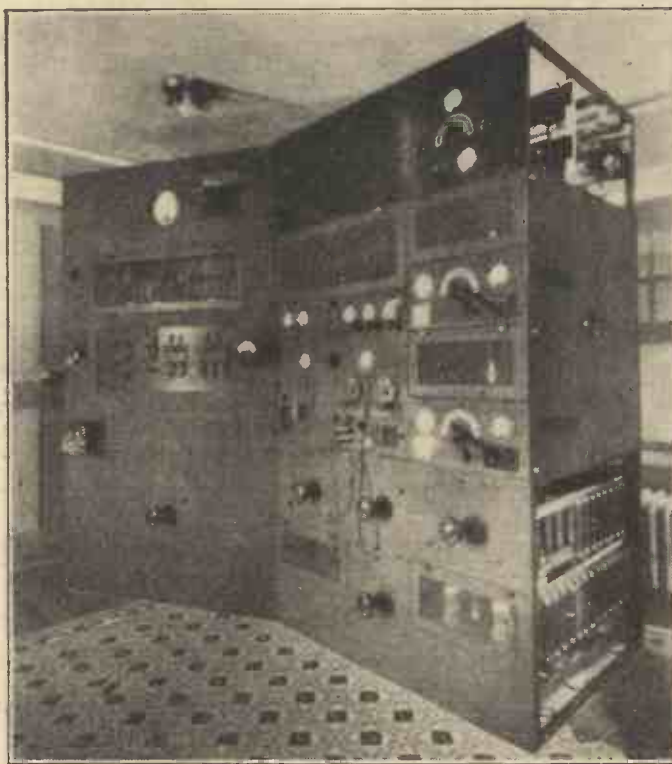
The initial transmitter had a power output of 10 watts, being capable of complete modulation and producing peaks of the order of 40 watts. In acknowledging reports this transmitter was always rated at 25 watts, which of course, was slightly more than the R.M.S. power when modulated. The reason for this high rating was that, at first, observers of our signals, in various parts of the country, quite candidly stated their opinion of our veracity. The transmitter operated on a regular schedule during 1930, until September 18, on which date it ceased operating on 6,095 kc/s at 8.03 a.m., not to resume operations on this frequency again until May 8, 1932. This particular transmitter was then rebuilt and started operating on 11,810 kc/s on October 8, at 6.05 p.m., the object on this frequency being to obtain data: (1) as to the number of listeners operating short-wave receivers; (2) as to what distances could be covered consistently with the same power as on the lower frequency.

It was quite easy to design the transmitter to meet the three requirements as laid down at the beginning. At first there were very few listeners on this frequency, and our signals were at times overwhelmed by powerful transmitters on neighbouring channels, and which the very simple receivers in use at that time were incapable of tuning out. During the summer of 1930, five to six letters were received per week. If nothing else was proven during that time and the early autumn, from listeners' letters it was clear that the superhet. receiver gave far better selectivity than the regenerative detector, sometimes with one stage of tuned H.F. It was very unfortunate for us that our frequency assignment was placed within 5 kc/s of the high-powered transmitter at Bound Brook, N.J.

Range of the New Transmitter

During the winter of 1930-31 the number of listeners began to increase, until by January the

acknowledgment department was nearly swamped. The records show a tremendous listener increase during that autumn and winter: reports were received from listeners in New Zealand, Great Britain, Norway, Johannesburg, S.A., South America, and dozens of out-of-the-way places. After making as thorough an analysis as possible of the reports received, it was decided to increase the power of this channel to 200 watts. It was decided, too, that, during the construction of the high-powered transmitter, transmissions would be made on the higher frequency of 11,810 kc/s. The results of observations made over about 1400 hours of operation on 11,810 kc/s showed that a greater knowledge is required with regard to the speed with which the zone of reception shifts along the earth's surface in relation to the sun's position and the distance from the transmitter. This frequency seems to be very badly affected by disturbances which do not have such tremendous affect at 6,000 kc/s. For instance, the disturbance which causes the most brilliant auroral displays would completely obliterate radiation on this channel for days on end with the power used. Daylight reception zone limit for this frequency,



Short-Wave Transmitter VE9GW

at 3 p.m. during March, seemed to be 1,200 to 1,500 miles, the field being strongest in a south-easterly direction. The greatest coverage on this frequency was the Gold Coast, South Africa, and as far east as the Straits of Gibraltar. Inside the straits toward Sardinia, and along the coast of Algeria, the signal strength dropped below a working value. This transmitter was operated until May 27, 1932, when it was discontinued as the object of the transmissions had been achieved.

As already stated it had been decided to increase the power on the 6,095 kc/s channel. One of the reasons for this was to increase the reliability of reception at far greater distances from the transmitter. By increasing the power

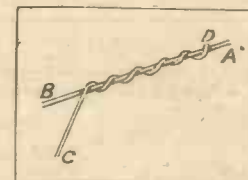
the field intensity would be raised to such a value that, when fading took place, i.e. fading of the carrier and side bands in phase, the field intensity at its minimum would probably be two or three microvolts per meter, whereas with the lower power it would drop below a useful value. Increasing the power would also give a better signal-to-noise ratio. With the increase in power, larger valves could be used with advantage, because in some of the amplifier stages of a high-frequency transmitter the efficiency is very poor, sometimes not more than 40 or 50 per cent., the loss showing up as heat in the valves. When small valves are used in these amplifiers, there is very little power available to drive the following stages, and anything approaching practical operating economy, or transmitter free from frequency creep, is difficult to attain.

The power of 200 watts was chosen for three reasons: (1) cost; (2) availability of valves; (3) it represented a power ratio, as compared with the low-power transmitter, of 20 to 1. The new transmitter was completed over a period of fifteen months, and was first tested out on the air on May 5, 1932. Sunday, May 15, 1932, was the first time that the transmitter operated until 10 p.m., and on this night it was reported from England and Ireland. It has been reported since from Great Britain, Germany, France, the island of Madeira, California, North West Canada, Newfoundland, and British West Indies. Taking into account the time of year and the power used, the results must be considered as fairly satisfactory.

W. A. S.

Two Programmes—One Aerial

THE scheme described below offers at least one advantage to the listener, viz.: the impressing of friends with his knowledge of the science of radio. To receive two programmes from one aerial suggests an unselective receiver, but receiving two good programmes entirely free from interaction is a simple matter if you possess a short-wave receiver. Only one aerial is generally available for reception, and the broadcast set is frequently required by the family, whereas the reader may wish to listen around the short waveband. All that he requires is a short length of single flex. Wind it around the lead-in wire, as shown in the illustration: AB is the main aerial lead-in wire connected to the broadcast receiver, and CD is the twisted flex. C is connected to the short-wave receiver. If the lead-in wire is bare, take care that the end D of the flex does not touch AB.



If the winding is spaced as illustrated, it may extend for a length of about 10 or 12 inches, but the extent and closeness may be a matter for experiment. The short-wave receiver could also be coupled to the aerial lead *via* a neutralising condenser, set near its minimum position. No interaction nor interference has been experienced by the writer although even the same battery eliminator has been used for both receivers simultaneously. When two separate out-door aerials were employed the broadcast programmes were also received on the short-waver. The reader will readily understand that the twisting of the insulated flex around the aerial lead forms a miniature condenser of the order of a few micro-microfarads connecting the short-wave receiver in series with the main aerial. The loading effect of this combination is not sufficient to affect reception of medium and long wave signals

W. H. M.

Below 100 Metres

By "VERNIER"

RECEPTION conditions during the past week have been excellent. In fact, now is the time for those who contemplate taking up short-wave listening to purchase their receivers. My best station during the past week has undoubtedly been W2XAD, which has provided loud-speaker strength regularly from 9.30 to 11.30 p.m. During the earlier part of the week reception even of this transmitter, however, was somewhat marred by static.

Only a few weeks ago the reception of all U.S.A. transmitters was extremely bad, but now the position is reversed. W8XK was an excellent signal from 11 p.m. to 3 a.m. on the night of Thursday, August 18. At 9 a.m. the same programme could be heard from the Pittsburg transmitter on 48.86 metres at loud-speaker strength, but interfered with by atmospherics. Moscow (50 metres) was also broadcasting at this hour—a most unusual occurrence. Other U.S.A. stations received the same night were W2XAF, W3XAL, and W9XF.

Madrid (EAQ) has been received at excellent volume during the early hours of the morning, but the quality is not all that could be desired.

G5SW in England

G5SW has again been very well received of late in Surrey. The reception of the Chelmsford transmitter must be extremely varied in this country, for in some parts it has never been heard at all. At the moment there is some argument as to whether the new Empire short-wave transmitter will be heard by British listeners. Transmissions on the 49-metre band should be heard well in many parts, but experiment will decide the matter. There are several stations in the short-wave list which I have never heard, yet which I know, from correspondence, to be transmitting regularly. VS1AB, Singapore, has, as far as I know, never been heard in this country, although his transmission is very well received in India and Ceylon. Johannesburg, on 49.2 metres, is another station which should, by rights, be heard, yet I have never even succeeded in heterodyning his carrier. I shall be interested to hear whether any readers of *World-Radio* have succeeded in logging these stations.

Correspondence

Interference on G5SW's Wave

To the Editor of WORLD-RADIO

SIR,—In the July 29th issue of *World-Radio* you ask for reports on interference with G5SW. Radio Colonial, on 25.63 metres, does interfere slightly, but far worse is the interference caused by Rome, on 25.40 metres; it is seldom that we can tune in Chelmsford without a background from Rome. I sincerely hope that the Empire S.W. station, with its new wavelengths, will be free from this trouble.

Another complaint is that those responsible for choosing the items broadcast in the S.W. programmes always seem to pick on the most depressing and doleful selections from the National and Regional programmes; I think the majority of people abroad who listen to G5SW would prefer the more lively pieces from either Regional or National, and not educational items such as the Foundations of Music which we are so often given.

Yours faithfully,

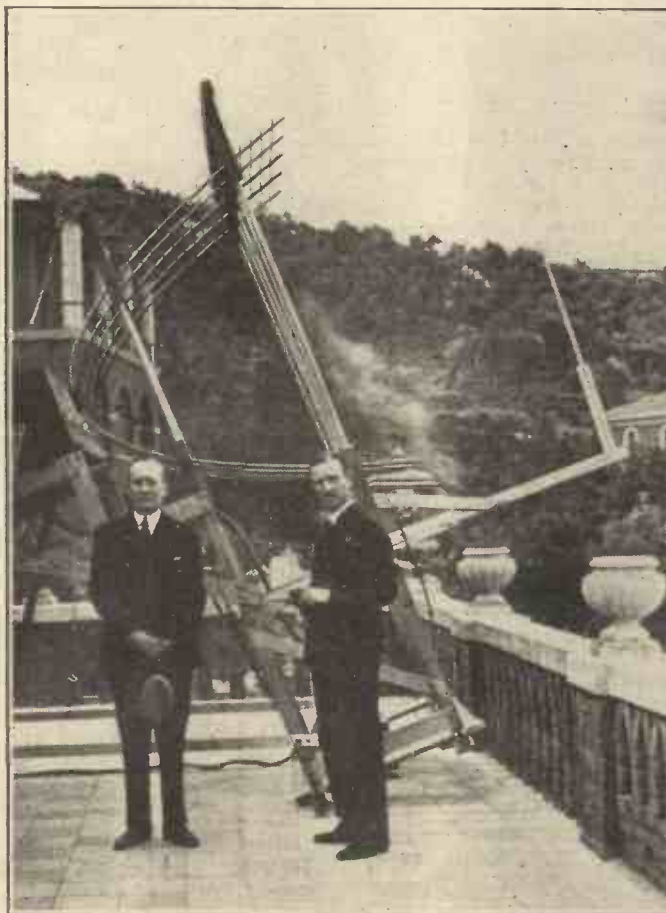
Port Said, Egypt.

H. FREEMAN.

["Microm" has already dealt with some aspects of the station separation and short-wave interference problems in "Below 100 Metres" in *World-Radio*, August 19, 1932.—ED.]

Marconi's Experiments

A RECENT announcement by Marchese Marconi is to the effect that, as the result of a considerable period of experimental work, he has been able to communicate over a distance of approximately 170 miles between his yacht *Elettra* off Cap Figari, in Sardinia, and the Rocca di Papa, which is near Rome and 2,500 feet above sea level, using a wavelength of 57 centimetres. The radiator and reflector system is illustrated in the accom-



[Photo by courtesy of Marconi W.T. Co., Ltd.]
Marchese Marconi (left) with one of his assistants. In the back of the picture is the radiator and parabolic reflector system used for concentrating the 57-centimetre waves

panying photograph. Hitherto the maximum distance covered by waves of this length has been of the order of twenty miles, or roughly optical range.

The formula which appeared in an article in *World-Radio* for July 29 gives the optical range from the height of the Rocca di Papa as approximately seventy miles. It is quite certain that these very short waves are quasi-optical waves, in so far as the ionisation density of the atmosphere is not sufficient to refract them. Thus it seems probable that some form of reflector relay has been employed in these experiments in order to cover the long distance of 170 miles. Until confirmation of this is available, or until some authoritative statement is issued, we cannot be more certain of the exact conditions and apparatus employed.

Assuming that such results can be reproduced in other situations, there is no doubt that these exceedingly short wavelengths will become of extreme importance in radio communication. It is, of course, well known that they can be successfully modulated by a much wider band of frequencies than can the longer waves of several metres' length.

The path of the waves between the Rocca di Papa and Cap Figari is almost entirely over the sea, which of course eliminates the possibility of wave distortion due to irregularities of the surface of the earth.

W. F. F.

Mr. Mollison via W2XAD

By "MICROM"

AT 9.45 p.m. on Sunday evening last, having casually tuned in W2XAD, the 19.56 metre relay of WGY, I was greeted with the excited accents of an NBC announcer who, from his insecure perch on the ledge of a hangar, 50ft. above Roosevelt Field, New York, was proclaiming to all and sundry that shortly, via a coast-to-coast linkage of the National Broadcasting Company, we should have the pleasure of hearing the welcome given to Mr. Mollison at Hangar "F" on his arrival from New Brunswick, where he had landed from his Atlantic crossing.

Reception from W2XAD was not too good, however, mainly owing to bad atmospherics—an exceptional event, for one may listen on almost any other night in the year without hearing a single atmospheric on this station. Nevertheless, in spite of the fading and static, the commentary and interview with Mr. Mollison were followed without great difficulty. At 10 p.m., B.S.T., the second commentator, who was on the aerodrome, apparently with yards of microphone cable trailing about him, managed to squeeze into "F" hangar, and asked Mr. Mollison to say a few words to the "Radio Audience."

Mr. Mollison's voice was clearly heard, and, in reply to the commentator's question as to what was the most difficult part of his trip, he said that he thought it had all been difficult. After this brief interview, Mr. Mollison joined the reception committee at about 10.10 p.m., forty-five minutes after he had landed on the aerodrome.

At this time reception became more patchy, and I was reluctantly forced to bid both Mr. Mollison and Schenectady good night.

Short-Wave Notes

AN amendment to the transmission schedule of Kemikawoa-Cho-Chiba-Ken, Tokio, the Japanese station using 38.07 and 19.36 metres, is shown in the short-wave list this week. Programmes of Japanese music are broadcast regularly, and announcements are made in both Japanese and English.

* * * *

A READER (H. M. C., of Witham) has been informed by the owners of VE9GW, Bowmanville, Ontario, that during the summer they are broadcasting on 6,095 kc/s from 10 p.m. to 4 a.m. B.S.T. on weekdays.

* * * *

G5SW's morning transmissions will begin at 12 noon on Friday and Saturday, September 2nd and 3rd, in order to take the B.B.C. relay of the commentary on the Harmsworth Trophy which is to be relayed from Detroit.

TO OUR READERS

Kindly mention *World-Radio* when replying to advertisements.

Short-Wave Broadcasting Stations

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

M.	Kc/s.	kW.	Station	Dial Readings	M.	Kc/s.	kW.	Station	Dial Readings
80	3750	..	Rome (Italy) I2RO.	.....	41	7313	2.5	Bangkok HSP2 (Testing). MON. only,	.....
76	3947	...	Maracaibo (Venezuela) YV11AM.	.....				2-5 p.m.	
70.2	4273	20	Khabarovsk (U.S.S.R.).	10-1 p.m.	39.7	7556	..	Bogotá (Colombia) HKF.	.....
62.56	4795	..	London (Ontario) VE9BY.	SUNDAY,	39.4	7612	..	Nuevo Laredo (Mex.) X26A. THURS.,	.....
				6 a.m. on.				5-6 p.m.	
62.5	4800	..	Long Island, W2XV. FRI.,	12-2.30 a.m.	38.07	7880	..	Kemikawoa-Cho-Chiba-Ken, Tokio	.....
58	5172	..	Prague. TUES. and FRI.,	8.30-10.30 p.m.				(Japan). Daily, 11 a.m.—1 p.m.	
54.52	5502	..	Brooklyn (N.Y.) W2XBH. Relays		34.68	8650	..	London (Ontario) VE9BY. MON.,	.....
				WCGU.				9-10 p.m. and irreg.	
52.7	5692	..	Tananarive (Madagascar) FIUI. SAT.		34.68	8350	..	Long Island W2XV. FRI., 11 p.m.—	.....
				SUN., 7-10 p.m. Other days 3.15—				1.30 a.m.	
52.5	5714	..	Quito, Ecuador, HCJB. Daily exc.		33.5	8928	..	Guatemala City (S. America) TGX.	.....
				TUES., 1.30-4 a.m.	33	9090	0.5	SUN., 4-6 a.m. Weekdays, 8-9 a.m.	
51.22	5857	20	Chapultepec (Mex.) XDA. 4-5 p.m.					Radio LL (France). Daily, 12.30—	
50.6	5928	..	Medellin (Colombia) HKO. TUES.,					1 p.m. and 6-6.30 p.m. SUN., MON.,	
				THURS., SAT., 2-4 a.m. WED.,				WED. and FRI., 8-10 p.m. SAT.,	
				SUN., 12 midnight to 2 a.m.				7-8.30 p.m. SUN., 10 a.m.—	
50.26	5969	10	Vatican City (Italy) HVJ. Daily, 8.0—		32.5	9230	..	12.30 p.m. and 2.30-4 p.m.	
				8.15 p.m. SUN., 12-12.30 p.m. also.				Paris (France) FLJ. Time Sig., 3.56	
50	6000	..	Barcelona Radio Club (Spain) EAJ25.					a.m. and p.m.	
				SAT., 9-10 p.m.	32.26	9300	6	Rabat (Radio Maroc) SUN., 8-10 p.m.	
50	6000	..	Barranquilla (Colombia) HKD. Daily		31.58	9500	..	Rio de Janeiro (Brazil). 10.30 p.m.	
				2-4 a.m.	31.55	9510	5	Melbourne (Australia) VK3ME. WED.	
50	6000	0.3	Bucharest (Romania),					and SAT., 11 a.m.—12.30 p.m.	
50	6000	..	Moscow RW59 (Relays Moscow T.U.).		31.51	9520	0.5	Skamlebaek (Denmark) OXY. Relays	
49.96	6005	4	Drummondville, VE9DR. 1-5 a.m.					Copenhagen. Daily from 7 p.m.	
49.96	6005	2.5	Tegucigalpa (Honduras), HRB. Daily		31.48	9530	40	Schenectady (N.Y.) W2XAF. Relays	
				(except SUN.), 1 a.m.—6 a.m.				WGY. Daily, 11 p.m.—5 a.m.	
49.83	6020	5	Chicago (Ill.) W9XF. Relays WENR		31.38	9560	8	Zeessen (Germany), DJA. 8 p.m.	
				SUN., 5-7 a.m., 1-5.30 p.m., 8.30	31.35	9570	1	Poznan (Poland), SR1. TUES., 6.45—	
				—11 p.m., and 1-6 a.m. (MON.).				9.45 p.m. THURS., 6.30 p.m.—1 a.m.	
				Weekdays, 3.15-4.45 p.m., 8.30 p.m.	31.35	9570	..	Springfield (Mass.) W1XAZ.	
				—12 m't and (ex. SAT.) 1.30-6 a.m.	31.3	9582	0.5	Philadelphia (Pa.) W3XAU. Daily	
49.8	6023	..	Mexico City (Mexico) XEW. 2-4					(except THURS. and FRI.); 9 p.m.—	
				a.m. SUN., to 8 a.m.	31.28	9590	3	6 a.m.	
49.67	6040	2.5	Miami Beach (Florida) W4XB.					Melbourne (Australia) VK3ME. WED.	
49.59	6050	0.02	Halifax (N.S.) VE9HX. Relays CHNS.		31.28	9590	12	and SAT., 11 a.m.—12.30 p.m.	
49.5	6060	10	Cincinnati, W8XAL. Relays WLW.					Sydney (Australia) VK2ME. SUN., 6—	
49.5	6060	..	Havana, Cuba, GMCI. 3-5 a.m.					8 a.m., 10.30 a.m.—2.30 p.m. and	
49.5	6060	..	Nairobi (Kenya), 7LO.					7.30-9.30 p.m.	
49.5	6060	0.5	Philadelphia (Pa.) W3XAU. Relays		31.26	9596	..	Eindhoven (Holland) PCJ.	
				WCAU. Daily 2-9 p.m. THURS.	31.25	9598	2	Lisbon (Portugal) CT1AA.	
				and FRI., 2 p.m.—6 a.m.	30.4	9869	20	Madrid (Spain) EAQ. Daily, 12.30 a.m.	
49.43	6069	..	Vancouver (B.C.) VE9CS.					—2 a.m. SAT., 7 p.m.—2 a.m. SUN	
49.4	6072	..	UOR2, Vienna Experimental.		30	10,000	..	Belgrade. MON. only, 8-9 p.m.	
49.34	6080	0.5	Chicago (Ill.) W9XAA. Relays WCFL.		29.3	10,238	0.015	Heredia (Costa Rica) TI4NRH. Daily,	
				Daily, 2-5 a.m.				11 p.m.—12 midnight and 3-4 a.m.	
49.22	6095	0.2	Bowmanville (Canada) VE9GW. Week-		28.98	10,350	20	Buenos Aires LSX. 9.30 p.m.—1.30.	
				days, 10 p.m.—4 a.m. SUNDAYS,	26.83	11,181	0.05	Funchal (Madeira) CT3AQ. TUES. and	
				5.30 p.m.—1 a.m.				THURS., 11 p.m.—12.30 a.m. SUN.	
49.2	6096	5	Johannesburg (S. Africa), JB. 4.30—					4.30-6 p.m.	
				9.30 p.m.	25.63	11,705	..	Radio Colonial (Paris). Daily, 9 p.m.—	
49.18	6100	20	Bound Brook (N.J.) W3XAL. Daily,					12 midnight.	
				10 p.m.—6 a.m.	25.6	11,715	2	Winnipeg (Canada) VE9JR. Dly. (exc.	
49.02	6120	0.5	Richmond Hill (N.Y.) W2XE. Relays					SAT. and SUN.) 5.45-7.30 p.m.	
				WABC. D'ly, 1 p.m.—5 a.m. next day.	25.53	11,750	12	Chelmsford G5SW. 12.45-1.30 p.m.	
49	6122	..	Bombay (India) VUB. (Exptl.) MON.,					(SAT., 1-2 p.m.) and 6.30 p.m.—12	
				WED. and FRI., 5-6.30 p.m.				midnight. News Bulletins at 12.30	
43.95	6127	..	Maracaibo (Venezuela) YV11BMO.					p.m. (SAT. 12.45), 6.15 p.m. and 12	
				2-5 a.m.	25.5	11,763	20	midnight. No transmission on SUNS.	
41.86	6140	40	Pittsburgh East (W8XK). Relays		25.4	11,810	..	Chapultepec XDA. Daily, 9-10 p.m.	
				KDKA. Daily, 10 p.m. onwards.				Bowmanville (Canada) VE9GW.	
40.8	6147	3.5	Winnipeg (Canada) VE9CL. Daily					(Exptl.). Daily (exc. SUN.) 6-9 p.m.	
				(except SUN.) from 12 m't—2.30 a.m.	25.4	11,810	9	Rome (Italy) 2RO.	
40.65	6167	..	Mexico City X1F.		25.34	11,840	..	Chicago (Ill.) W9XAA. Relays WCFL.	
38.35	6205	..	Bogotá (Colombia) HKC. Daily 4 p.m.		25.27	11,870	40	Pittsburgh East W8XK. Daily, 9 p.m.—	
48.05	6243	..	Barranquilla (Colombia), HKD.					3 a.m.	
48.2	6220	9	Rome (Italy) 2RO.		25.2	11,905	..	Radio Colonial (Paris). Daily, 4.30—	
48	6250	..	Casablanca (N. Africa) CN8MC. Re-					7.30 p.m.	
				lays Rabat, MON., 9-10 p.m. TUES.,	23.28	12,882	2.5	Rabat (Radio Maroc) SUN., 12.30 p.m.	
				1-2 p.m. and 9-10 p.m.	20.5	14,630	20	Chapultepec XDA. D'ly, 8.30-9 p.m.	
47	6382	..	Quito (Ecuador) HC1DR. D'ly 2-4 a.m.		19.9	15,075	..	Heredia (Costa Rica) TI4NRH. SAT.,	
46.67	6426	..	London (Ontario) VE9BY. THURS.,					SUN. & MON. 5-6 p.m. & 10-11 p.m.	
				2.30-3.30 a.m. SAT., 1-1.55 a.m.,	19.84	15,123	10	Vatican City (Italy) HVJ. Daily,	
				and SUN., 2-4 a.m.				11-11.15 a.m.	
46.69	6425	..	Bound Brook (N.J.) W3XL. FRI., 10—		19.72	15,210	..	Pittsburgh East W8XK. Relays KDKA	
				11.45 p.m. and 4.6 a.m. SAT. 6.30				Daily, 12.30-10 p.m.	
				—11.45 p.m. and 4-6 a.m.	19.73	15,200	8	Zeessen (Germany) DJB. 2-6 p.m.	
45.38	6611	..	Moscow, REN (Russia).		19.68	15,234	..	Radio Colonial (Paris). Daily, 1-4 p.m.	
45.31	6620	..	Riobamba (Ecuador) PRADO. FRI.,		19.56	15,330	20	Schenectady W2XAD. Weekdays,	
				3-5 a.m.				9 p.m.—12 midnight. SAT. and	
45	6667	0.01	Guatemala City (S. America) TGW.					SUN., 7 p.m.—12 midnight.	
				Daily 4-6 a.m.	19.36	15,490	..	Kemikawoa-Cho-Chiba-Ken, Tokio	
45	6667	0.2	Constantine (Algeria) 8KR.					(Japan). Daily, 11 a.m.—1 p.m.	
43	6976	..	Madrid (Spain) EAR 110. TUES. and		16.57	18,105	..	Chicago (Ill.) W9XAA. Relays WCFL.	
				SAT., 11.30 p.m.	14.47	20,730	..	Buenos Aires (Argentina) LSY. Ap-	
41.7	7195	..	Singapore (Straits Settlements), VS1AB					prox. 10 p.m. SUN.	
				SUN. and WED., 3.30-5 p.m.	13.92	21,540	..	Pittsburgh East W8XK. Daily, 12.30—	
41.6	7211	0.05	Tenerife Radio Club EAR58					5 p.m.	

For Long and Medium Wave Stations see page 444.

FRENCH

"Pierre et Camille" (Alfred de Musset)—V.
(Continued from WORLD-RADIO, August 19)

IL n'était que trop facile à madame des Arcis de comprendre le motif de ce voyage. Le chevalier était bien éloigné de songer à abandonner sa femme; mais, en dépit de lui-même, il éprouvait un besoin irrésistible de s'isoler tout à fait pendant quelque temps, ne fût-ce que pour revenir plus tranquille. Toute vraie douleur donne, la plupart du temps, ce besoin de solitude à l'homme, comme la souffrance physique aux animaux.

Madame des Arcis fut d'abord tellement surprise, qu'elle ne répondit que par ces phrases banales qu'on a toujours sur les lèvres quand on ne peut pas dire ce qu'on pense: elle trouvait ce voyage tout simple; le chevalier avait raison, elle reconnaissait l'importance de cette démarche, et ne s'y opposait en aucune façon. Tandis qu'elle parlait, la douleur lui serrait le cœur; elle dit qu'elle se trouvait lasse, et s'assit sur un banc.

Là, elle resta plongée dans une rêverie profonde, les regards fixes, les mains pendantes. Madame des Arcis n'avait connu jusqu'alors ni grande joie ni grands plaisirs. Sans être une femme d'un esprit élevé, elle sentait assez fortement et elle était d'une famille assez commune pour avoir quelque peu souffert. Son mariage avait été pour elle un bonheur tout à fait imprévu, tout à fait nouveau; un éclair avait brillé devant ses yeux au milieu de longues et froides journées, maintenant la nuit la saisissait.

Elle demeura longtemps pensive. Le chevalier détournait les yeux, et semblait impatient de rentrer à la maison. Il se levait et se rasseyait. Madame des Arcis se leva aussi enfin, prit le bras de son mari; ils rentrèrent ensemble.

L'heure du dîner venue, madame des Arcis fit dire qu'elle se trouvait malade et qu'elle ne descendrait pas. Dans sa chambre était un prie-Dieu où elle resta à genoux jusqu'au soir. Sa femme de chambre entra plusieurs fois, ayant reçu du chevalier l'ordre secret de veiller sur elle; elle ne répondit pas à ce qu'on lui disait. Vers huit heures du soir elle sonna, demanda la robe commandée à l'avance pour sa fille, et qu'on mit le cheval à la voiture. Elle fit avertir en même temps le chevalier qu'elle allait au bal, et qu'elle souhaitait qu'il l'y accompagnât.

Camille avait la taille d'un enfant, mais la plus svelte et la plus légère. Sur ce corps bien-aimé, dont les contours commençaient à se dessiner, la mère posa une petite parure simple et fraîche. Une robe de mousseline blanche brodée, de petits souliers de satin blanc, un collier de graines d'Amérique sur le cou, une couronne de bluets sur la tête, tels furent les atours de Camille, qui se mirait avec orgueil et sautait de joie. La mère, vêtue d'une robe de velours, comme quelqu'un qui ne veut pas danser, tenait son enfant devant une psyché, et l'embrassait coup sur coup, en répétant: Tu es belle, tu es belle! lorsque le chevalier monta. Madame des Arcis, sans aucune émotion apparente, demanda à son domestique si on avait attelé, et à son mari s'il venait. Le chevalier donna la main à sa femme, et l'on alla au bal.

C'était la première fois qu'on voyait Camille. On avait beaucoup entendu parler d'elle. La curiosité dirigea tous les regards vers la petite fille dès qu'elle parut. On pouvait s'attendre à ce que madame des Arcis montrât quelque embarras et quelque inquiétude; il n'en fut rien. Après les politesses d'usage, elle s'assit de l'air le plus calme, et tandis que chacun suivait des yeux son enfant avec une espèce d'étonnement ou un air d'intérêt affecté, elle la laissait aller par la chambre sans paraître y songer.

Camille retrouvait là ses petites compagnes;

FOREIGN LANGUAGES
SECTION

elle courait tour à tour vers l'une ou vers l'autre, comme si elle eût été au jardin. Toutes, cependant, la recevaient avec réserve et avec froideur. Le chevalier, debout à l'écart, souffrait visiblement. Ses amis vinrent à lui, vantèrent la beauté de sa fille; des personnes étrangères, ou même inconnues, l'abordèrent avec l'intention de lui faire compliment. Il sentait qu'on le consolait, et ce n'était guère de son goût. Cependant un regard auquel on ne se trompe pas, le regard de tous, lui remit peu à peu quelque joie au cœur. Après avoir parlé par gestes presque à tout le monde, Camille était restée debout entre les genoux de sa mère. On venait de la voir aller de côté et d'autre; on s'attendait à quelque chose d'étrange, ou tout au moins de curieux; elle n'avait rien fait que de dire bonsoir aux gens avec une grande révérence, donner un petit *shake-hand* à des demoiselles anglaises, envoyer des baisers aux mères de ses petites amies, le tout peut-être appris par cœur, mais fait avec grâce et naïveté. Revenue tranquillement à sa place, on commença à l'admirer. Rien, en effet, n'était plus beau que cette enveloppe dont ne pouvait sortir cette pauvre âme. Sa taille, son visage, ses longs cheveux bouclés, ses yeux surtout, d'un éclat incomparable, surprenaient tout le monde. En même temps que ses regards essayaient de tout deviner, et ses gestes de tout dire, son air réfléchi et mélancolique prêtait à ses moindres mouvements, à ses allures d'enfant et à ses poses, un certain aspect d'un air de grandeur; un peintre ou un sculpteur en eût été frappé. On s'approcha de madame des Arcis, on l'entoura, on fit mille questions par gestes à Camille; à l'étonnement et à la répugnance avaient succédé une bienveillance sincère, une franche sympathie. L'exagération, qui arrive toujours dès que le voisin parle après le voisin pour répéter la même chose, s'en mêla bientôt. On n'avait jamais vu un si charmant enfant; rien ne lui ressemblait, rien n'était si beau qu'elle. Camille eut enfin un triomphe complet, auquel elle était loin de rien comprendre.

Madame des Arcis le comprenait. Toujours calme au dehors, elle eut ce soir-là un battement de cœur qui lui était dû, le plus heureux, le plus pur de sa vie. Il y eut entre elle et son mari un sourire échangé, qui valait bien des larmes.

Cependant une jeune fille se mit au piano, et joua une contredanse. Les enfants se prirent par la main, se mirent en place, et commencèrent à exécuter les pas que le maître de danse de l'endroit leur avait appris. Les parents, d'autre part, commencèrent à se complimenter réciproquement à trouver charmante cette petite fête, et à se faire remarquer les uns aux autres la gentillesse de leurs progénitures. Ce fut bientôt un grand bruit de rires enfantins, de plaisanteries de café entre les jeunes gens, de causeries de chiffons entre les jeunes filles, de bavardages entre les papas, de politesses aigres-douces entre les mamans, bref, un bal d'enfants en province.

Le chevalier ne quittait pas des yeux sa fille, qui, on le pense bien, n'était pas de la contredanse. Camille regardait la fête avec une attention un peu triste. Un petit garçon vint l'inviter. Elle secoua la tête pour toute réponse; quelques bluets tombèrent de sa couronne, qui n'était pas bien solide. Madame des Arcis les ramassa, et eut bientôt réparé, avec quelques épingles, le désordre de cette coiffure qu'elle avait faite elle-même; mais elle chercha vainement ensuite son mari: il n'était plus dans la salle. Elle fit demander s'il était parti, et s'il avait pris la voiture. On lui répondit qu'il était retourné chez lui à pied.

Le chevalier avait résolu de s'éloigner sans dire adieu à sa femme. Il craignait et fuyait toute explication fâcheuse, et comme, d'ailleurs, son dessein était de revenir dans peu de temps, il crut agir plus sagement en laissant seulement une lettre.

GERMAN

(Continued from WORLD-RADIO, August 19)

to zu—is cognate with English "to." Originally it was an adverb which in time also assumed the function of the old Preposition *ze*, still used in dialect. In its primary sense this Preposition expressed "proximity to," and is always followed by a Dative: Er kommt zu mir.—Das ging ihm zu Herzen (That went near his heart).

Compound verbs with zu can be conveniently arranged in the following groups:—

(1) Verbs which govern a Dative which is really due to zu and indicating the direction indicated by the verb to a certain person or thing:—zufliegen: Ihm flogen alle Herzen zu.—zuflüstern: Er flüsterte mir zu (He whispered to me).—Wir schauten (or sahen) zu (We watched, looked on).

(2) Verbs which, though indicating the direction of the action, do not admit of a Dative due to zu:—zugreifen: Bitte, greifen Sie zu (Please help yourself).—zureden: Er redete (or riet) mir zu (He tried to encourage me). The Dative is not due to zu:—zutreffen: Das trifft nicht zu (That's not so)—zufahren: Er fuhr auf mich zu (He drove towards me).—zuziehen: Er hat sich eine Erkältung zugezogen (He has caught a cold).—Das fällt ihm zu (That falls to his share).

(3) Verbs in which zu indicates the addition of something to something else:—zubekommen: Die Blumen bekommen Sie zu (The flowers are thrown in—gratis)—zugießen: Gießen (or Schütten) Sie etwas Wasser zu (Add a little water).—Er hat mir die Schokolade zugegeben (He did not charge me for the chocolate).

(4) Verbs in which zu indicates the preparation for a purpose:—zureiten: Er reitet die Pferde selber zu (He trains the horses himself)—zubereiten or zurüsten: Sie hat das Fleisch als Ragout zubereitet or zugerichtet (She has made a stew of the meat).—zuzutzen: Er hat mir den Bart zugestutzt (He has trimmed my beard).

(5) Verbs in which zu is the opposite of auf:—zumachen: Machen Sie das Fenster zu.—zubinden: Er hat den Sack zugebunden (tied up)—zuknöpfen: Er hatte den Rock zugeknöpft (His coat was buttoned up).—zunähen: Sie hat den Riss zugenäht (She has sewn up the tear).

(6) Verbs in which zu indicates the continuation of the action:—zureiten: Reiten Sie nur zu! (Go on, ride ahead!)—zublasen: Der Wind blies immer zu (continued blowing).—zubleiben: Die Tür soll zubleiben (The door is to remain shut).

Students of German are recommended to study compound verbs with special care, for they offer many stumbling blocks, and are perhaps the most important chapter in the whole language—Und so Gott befohlen!

O. S.

SPANISH

Algunas consultas.

UN lector, que supone erróneamente que los adjetivos *alguno* y *ninguno* sólo tienen aplicación a número de objetos, y no a cantidad o porción de un todo, me pide que le traduzca las frases siguientes:—

"Henry drank *some* of the milk that was on the table, but I didn't take *any*; I didn't want *any*." (Enrique bebió de la leche que estaba en la mesa, pero yo no tomé *ninguno* ni no la quería.)

"Have you *any* bread?" "None." "What!

No bread!" (¿Tiene Vd. pan? —No, no tengo. —¿Cómo! ¿que no tiene pan!)
 "Some soap is scented and some is not."
 (Hay jabón que está perfumado y jabón que no lo está.)

Por los ejemplos que preceden se verá que, tratándose de cantidad, lo usual es omitir los adjetivos *alguno* y *ninguno*, pero hay casos donde es difícil prescindir de ellos, como sucede en "I didn't take any (of the milk)." La última frase de las tres no puede traducirse literalmente, porque en ella *some* no se emplea en sentido partitivo, como ería el caso si dijéramo "some of the soap" (parte del jabón).

Otro lector me pregunta como en español se acentúa el verbo en las frases:—

"I am surprised at your not going to see him."
 (No deja de sorprenderme que Vd. no vaya a verle.)

"He would go, in spite of my entreaties."
 (Se empeñó en ir, a pesar de mis súplicas o ruegos.)

"That is kind of you." (Vd. sí que es amable, o ¡qué amable es Vd!)

Un antiguo corresponsal mío de Madrid, refiriéndose a los cambios que se han efectuado en España desde la instauración (*restoration*) de la República, me escribe como sigue:—

"Estamos todavía en estado de plena revolución, pues el advenimiento (*advent*) de la República no fué sino (*was but*) el principio del período de transición. Describir la situación desde aquí es algo así como (*somewhat like*) tratar de describir una erupción volcánica estando uno debajo de la lava. Es tan difícil apreciar todo el alcance (*the ultimate effect*) de los cambios radicales efectuados por el Gobierno en la vida política y económica del país, que forzosamente ha de pasar algún tiempo antes que podamos juzgar de si con ellos hemos de salir ganando o perdiendo. Entre los Monarquistas una de las manías (los caprichos) del momento es llevar el color *verde*, porque se da el caso (*it happens*) de que las cinco letras de esta palabra forman las iniciales de "¡Viva El Rey De España!"

(concluid.)

W. F. BLETCHER.

Esperanto Transmission (Aug. 28—Sept. 3)

Sunday.—Lille, 9 a.m., Course and news.

Tuesday.—Brno, 6 p.m., Talk.

Tallinn, 8 p.m., News.

Ljubljana, 8 p.m., Talk.

Wednesday.—Stuttgart, 6.25 p.m., el "Originala Verkaro"

(Dro. Vogt.).

Marseille, 8 p.m., News.

Thursday.—Paris PTT, 5.45 p.m., Course and talk.

Limoges PTT, 5.45 p.m., Course and talk.

Alpes-Grenoble, 5.45 p.m., Course and talk.

Kaunas, 9.20 p.m., Talk.

Valencia, 10.5 p.m., "Babilajoj."

Breslau, 10 p.m., 10 minutes Esperanto.

Gleitwitz, 10 p.m., 10 minutes Esperanto.

Friday.—Stuttgart, 6.50 p.m., Week's programme.

Radio-Côte d'Azur, 8.10 p.m., Course, Talk.

Radio-Normandie, 9 p.m., Talk.

Lisbon CTIAA, 11 p.m., News.

Saturday.—Heilsberg, 6.10 p.m., Week's programme.

Lyon-la-Doua, 8.20 p.m., Talk.

Lisbon, 10.30 p.m., Course (S. Carreira).

Scottish National Transmitter

Public Reception Tests

THE reception-test transmissions from the National programme transmitter at the Scottish-Regional Station are being continued, on a wavelength of 288.5 metres (1,040 kc/s), and the National transmitter will radiate a programme of dance or orchestral music from 5.15-6.0 p.m. each evening, and it will radiate the late dance music from 10.30 or 11.0 p.m. to midnight.

On each evening from 5.15-6.0 p.m. the Scottish Regional transmitter on 376.4 metres (797 kc/s) will radiate the Children's Hour, and from 11.0 to 12 midnight it will radiate a programme by the Heather Quintet as an alternative to the programmes radiated by the National transmitter.

Last Week's Log

(August 14—20)

By "NORTHERNER"

IF, as I believe, the North has been a little more favoured in escaping the very worst of the atmospheric outbursts during the last few weeks, such was certainly not the case since my last review was closed, for ever since that time static has ruled the ether, almost completely wiping out the pleasures of foreign reception. During the whole of the week, between August 14 and August 20, long-wave reception was out of the question, and although daylight results were a little better occasionally, there was always fairly heavy interference.

On the medium-waves conditions, as is usual, were better, and the Monday and Wednesday nights, when several of the high-power stations were well received above the interference, were undoubtedly the best.

As much as possible was made of the few nights when disturbances were least, and on such occasions those stations which we normally look upon as favourites were, on the whole, but little changed.

Prague seems to be recovering his full strength again, and Florence, too, was excellent, while Brussels No. 1, Langenberg, Beromünster, Toulouse, and Heilsberg have all provided very powerful signals, and the darker evenings are making a distinct improvement in the case of some of the weaker stations; but so far many have not been worth listening to, particularly during a week which is at all marred through atmospheric. The Russian transmitter, which has recently made its appearance on the same wavelength as the North Regional station, was heard very well early in the week after the latter had closed down, but I have not yet been able to identify it, although, according to several of the announcements (in English), the station seems to relay Moscow; and the signals are certainly becoming stronger each time they are heard. Judging by the way in which Poste-Parisien has been heard ever since he was first opened, there seems every indication that he will be one of the best stations during the coming winter season, while a feature of the transmissions is almost complete steadiness in strength throughout the evening. Katowice is certainly coming back to form again, and we should soon be able to rely upon him entirely from day to day, while Berlin-Witzleben is much better than he was a few weeks ago. An almost certain sign of improving conditions for distant reception is the fact that on tuning to the various common wavelengths one generally finds the usual heterodyning stronger owing to the return of the weaker stations.

Hilversum has maintained his excellent strength during the week, both for daylight and evening reception, and only poor conditions have prevented most satisfactory results from him.

Barcelona is being frequently heard again, although not so well as I reported him some weeks ago, but there should soon be an improvement.

The violent atmospheric on the Friday night forced me to seek my radio fare on the short-waves, where I was just in time to hear Professor Piccard's talk through one of the Italian 'phone circuits being transmitted to New York. Results were much better than on the higher wavelengths, but even so a fair amount of noise was audible. After having listened to a badly distorted transmission from Rome on 25.4 metres, very good loud-speaker reception was obtained from W8XK until about 1 a.m., with only a little fading at intervals.

Again, on the Saturday, when the long and medium waves were useless for entertainment, I found solace in EAQ's transmission on 30.4 metres, which comes through at excellent strength just now.

Heard on the Continent

By "CENTRAL EUROPEAN"

AFTER the bad reception of July had given way to the better conditions of August, Central Europe experienced another heat wave during the second third of the month which again affected broadcast reception. In spite of this, however, reception was not so definitely bad as in July. Although atmospheric made themselves felt, the range of most transmitters was somewhat greater.

Of course, atmospheric were worst within the range of the long waves. But Warsaw could be heard practically at its normal intensity, which is still the greatest in Europe. Motala was not loud enough to afford good reception. Kalundborg, on the other hand, was surprisingly clear when not interfered with by morse signals. Radio-Paris and Daventry National could not be received on a single occasion, and the Russian transmitters were also extremely weak, as they close down at 9 p.m. British Summer Time—that is to say, at an hour when the atmosphere is still rather disturbed. The best stations are still those transmitting on the longer medium waves.

Vienna has increased in strength and is now better than Graz, which formerly was the best and most easily heard of the Austrian transmissions. Brussels No. 1 was well discernible, but weaker than Brussels No. 2. Surprising was the strength of Florence, which I now regard as the best Italian station.

It is not quite clear why Katowice has weakened so considerably. When comparing this Polish station with what it was a year ago, it is hardly conceivable that the transmissions of the station should diminish to such an extent. Its strength has rapidly failed during the last few months, much more than is normally the case during the summer months. Radio-Suisse Romande has improved its strength, and Bucharest could be easily tuned in. As has been the case for some months, Radio Toulouse continued to be weak. Lwów is a very powerful transmitter, which, however, suffers from temporary fading. During the last two weeks, not much could be heard of the Scottish Regional transmission, as its strength was rather poor. Brno was very strong and even swamped Brussels No. 2 when the latter station happened to be fading. Otherwise the reception of Brussels No. 2 is very satisfactory indeed.

Among the French transmissions, the new Poste Parisien was most easily picked up, this station having a really fantastic power. The small station of Breslau was completely swamped by Poste Parisien and by Göteborg. However, this state of affairs is likely to continue for only one more week, when Breslau will have its own 75 kilowatt transmitter. The North National was easier to tune in than during the previous weeks, although this station has not yet returned to the strength it had during May and June. Bratislava has again come more and more to the fore and occasionally it swamps even Heilsberg, although the difference in frequency between these two stations is 11—12 kilocycles. Heilsberg is another very strong station and possibly gives the best reception of all the Germans. The experimental transmissions from Bari were difficult to receive. Apparently, this transmitter is not yet in perfect order, as its strength should be considerably greater for 20 kilowatts. It is remarkable that not one of the big British transmitters can be heard at a constant strength throughout Europe. Hörby was quite loud, and interfered with reception of the Leipzig transmission. Trieste was very satisfactory, but for occasional interference by a small Swedish relay transmitter. Moravská-Ostrava has somewhat decreased in strength, but not sufficiently so to cease interfering with London National, which, incidentally, showed very considerable fading.

Interference between Stations

(August 14-20)

THE above period has been marked by some excellent nights, when distant reception was quite powerful, sometimes even comparable to winter conditions. Several stations have made their reappearance.

For instance, the Norwegian relays, using 671 kc/s, have interfered with Paris PTT on the same wavelength. The latter station is, of course, a more powerful signal.

Bari, the new Italian station making test transmissions, is actually using 1,112 kc/s, as he has announced. This wavelength, allotted to Greece, is unoccupied by that country, and was used provisionally by Bremen, a German relay. Bremen, probably in order to escape the interference caused by Bari, is using 1,123 kc/s. This results, of course, in an interference between Bremen and Valencia, the Spanish station.

It may be noted that the last Italian stations put into operation—viz., Palermo, Bolzano, and Bari—are all using wavelengths allotted to countries other than Italy. I have already mentioned the interference between Palermo and Riga (571 kc/s). This interference is again observable now; Palermo is using 570 kc/s instead of 571, and the heterodyne is quite noticeable. Turin, it will be remembered, caused much trouble to Tallinn by using its exclusive frequency of 1,013 kc/s. All the steps taken against Turin in order to remove that station from 1,013 kc/s were fruitless. Finally, Tallinn, which had been interfered with for more than a year, had to adopt Milan's wave of 598 kc/s. This step proved successful: Turin left 1,013 kc/s in order to use its present frequency of 1,096 kc/s, and Tallinn ceased to interfere with Milan on 598 kc/s and came back to his proper wave of 1,013 kc/s. Since then he has exchanged it with Hilversum, and uses 1,004 kc/s, where he can be heard between 8.30 and 9 p.m. L.B.

Which Station Was That?

Replies to Queries

WLS (Keswick): Your wavelength appears to be wrong as the call was apparently that of Rome ("Roma-Napoli"), on 25.4 m.; the station heard below was W8XK, Saxenburg, relaying KDKA, on 25.27 m. AT IT AGAIN (Ramsgate): (1) regret, cannot trace (2) possibly WND, Lawrenceville, N.J. (trans-Atlantic telephony) working with GBS, Rugby, on 22.4 m.; (3) surely W2XAF, Schenectady; (4) cannot trace. H. H. C. (Newcastle-on-Tyne): (1) would tally with Rabat, testing on 32.26 m.; (2) new Russian short-wave transmitter at Moscow working on 19.95 m.; already reported by other listeners. WATER (Willenhall): PAOIM, Dutch experimental amateur transmitter at Amsterdam. The words "Italia-Morocco" were used to denote the last two letters of the call. WHAT'S THAT? (Iver): Please number your queries. (1) Reykjavik; (2) Radio Maroc (Rabat). METROPOLITAN (Purley): Possibly LR 3, Radio Nacional, Buenos Aires, direct. YAHNA (Brixham): Algiers. C. J. P. (Cambridge): Brussels No. 1; Clowns Miki and Polino. BARNABARIAN (Manor Park): WABC, Wayne Township (N.J.); main Columbia station. Possibly a relay of a concert broadcast by LR4, Buenos Aires. MEMFEG (St. Annes-on-Sea): Regret, cannot trace. POWER STATION GREASER (Wallasey): (1) LR3, Radio Nacional, Buenos Aires, direct; (2) regret, cannot trace. G. B. (Newcastle-on-Tyne): New Russian short-wave station on 19.95 metres (Moscow). JOSS (Stockton-on-Tees): "There is no Russian station operating on a channel near that wavelength; possible Bergen, but cannot confirm. FIVES (N.22): Eiffel Tower, Paris. The call was: Tour Eiffel. TAURUS (Peterborough): Reykjavik. WHAT-WOZIT (Walthamstow): Prague; gramophone records. WUFF WUFF (Barnsley): Augsburg-Kaiserslautern relaying Munich. MYSTIFIED (Lowestoft): (1) Radio Normandie (Ecamp); (2) Trieste: interval signal. RAZOR KEEN (Witham): Klipheuve (Cape Colony, S.A.) on 15.89 m.; Public Telephony service; (18) VEIAX, Experimental amateur transmitter, Halifax (Nova Scotia); (19) WTAM, Cleveland (Ohio) relaying WEAJ (New York) programme. SANDY (West Hartlepool): British experimental amateur transmitter; cannot be traced without knowing exact call-letters. VERIFICATION (Plymouth): WABC, Wayne Township (New York); main Columbia broadcasting station, direct. RETLAW (Oldham): Warsaw. GETUM (Birmingham): SPEECHLESS (Glasgow); OMEGA (Temple Ewell); IATROS (Bristol); C. E. (Gatterick): Commercial Company testing. TUNER (Putney): (1) details are vague; possibly Copenhagen direct; Radio L.L. (Paris). MESHUGANEH (Glasgow): Brussels (No. 1); pron. Brew-sel. OBERTELLE (East Didsbury): (183) Motala relaying Stockholm; (182) Oslo BEATS ME (Poole): Novosibirsk (RV6) has been reported working on 1,380 metres. DAS UNTERSUCHENER (Eastbourne): (12) regret cannot trace; (13) Cuba Trans-Atlantic Radio Corporation, Havana; (14) regret, cannot trace. We cannot give wavelengths of telegraphy stations in these columns. AFTERIT (Eastbourne): (183) Szekeshevar (Hungary); (184) Lisbon. AUF WIEDERHOEN (Dundee): The Polish stations did not advertise a relay of Munich on that date; possibly Leningrad or Kharkov, which frequently rebroadcast foreign programmes. OZTHEL (Middlesbrough-on-Tees): Regret, cannot trace. CHURN KNOB (Blewbury): Kaunas; a relay of dance music. GRID BIAS (Thornton Heath): (1) International

Bureau of the Telegraph Union (Berne); (2) Suy, Cairo (15.63 m.); (3) Possibly DAC, Cuxhaven Radio (Germany); (4) apparently, not registered in official list, but a Belgian transmitter; there are several calls incorporating the letters ON4K with a final letter (not a number). AUF WIEDERSEHEN (Exmouth): New commercial short-wave station testing; (2) cannot trace; (3) cannot confirm, but believe on 28.8 m. (as Sydney).

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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.1.

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In addition to the free service of "Which Station was That?" printed in these columns, replies to 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."

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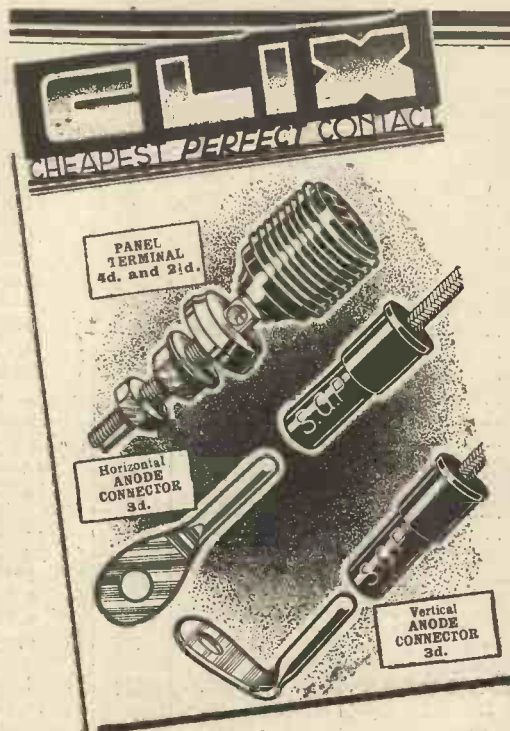
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STAND 32
GRAND HALL, National Radio Exhibition, OLYMPIA, AUG. 19-27.

Stations in Order of Frequencies and Wavelengths

Corrected in accordance with the latest official information available at the time of going to press
 The figures in black type represent the power according to the Copenhagen Power-Rating, but carrier-wave power only is shown

Kc/s	M.	k.W.	Station	Dial Readings	Kc/s	M.	k.W.	Station	Dial Readings
155	1935	7	Kaunas (Lithuania)		680	441	50	Rome (Italy)	
160	1875	8.5	Huizen (Holland) (Hilversum pro-grammes and announcements)		689	436	0.25	Malmberget (relays Boden) (Sweden)	
167	1796	54	Lahti (Finland) (relays Helsinki)		697	430.4	55	Stockholm (Sweden)	
174	1725	75	Radio Paris (France)				2.5	Belgrade (Yugoslavia)	
183.5	1635	60	Königs Wusterhausen (Zeeseen) Ger-many Relays Berlin				2	Madrid (Union Radio)(EAJ7) (Spain)	
193	1554.4	30	Daventry National (Great Britain)		707	424.3		7—8.30 p.m. and (except Monday) 10 p.m. to 12 midnight	
195	1538	7	Ankara (Turkey)					Madrid (Radio España) (Spain) 5—7 p.m. (Mon. 5 p.m. to 12 midnight)	
202.6	1481	100	Moscow (Old Komintern) (Russia)		715	419.5	100	Moscow-Stalin (Russia)	
207.5	1445.7	13	Eiffel Tower Paris (France)		721.1	416	1.5	Berlin (Witzleben)	
212.5	1411	120	Warsaw No. 1 Poland)		725	413	6	Rabat (Morocco)	
222.2	1350	0.5	Kasbah (Tunis)		734	408	1.2	Dublin (Ireland)	
222.5	1348	30	Motala (Sweden) (relays Stockholm)		743	403	16	Katowice (Poland)	
230.1	1304	100	Moscow (Trades Union) (Russia)				25	Radio Suisse Romande (Sottens) (Switzerland)	
238.1	1260	4	Novosibirsk (Russia)		752	398.9	25	Midland Regional (Great Britain)	
242.5	1237		Vienna Experimental (Austria)		761	394	12	Bucharest (Romania)	
244	1229.5	0.6	Boden (Sweden)		770	390	10	Archangel (Russia)	
250	1200	5	Istanbul (Turkey)				1.5	Frankfurt-a-M. (Germany)	
256	1171.5	21	Reykjavit (Iceland)		779	385	8	Toulouse (Radio) (France)	
260	1153	7.5	Tashkent (Russia)		788	381	16	Lwów (Poland)	
			Kalundborg (Denmark) (relays Copen-hagen)		792.5	378.6		Moscow (Russia)	
268.5	1116	40	Moscow, Popoff (Russia)		797	376.4	50	Scottish Regional (Nr. Falkirk) (Gt. Britain)	
277	1083	60	Oslo (Norway)		806	372	1.5	Hamburg (Germany)	
280	1071	10	Tiflis (Russia)		810	370.4	1.2	Radio LL. Paris (France)	
290	1034	36	Kiev (Russia)				1	Bolzano (Italy)	
300	1000	100	Leningrad (Russia)		815	368.1	13.2	Helsinki (Finland)	
320	937.5	20	Kharkov (Russia)				1.5	Seville (Union Radio) (EAJ5) (Spain)	
353.5	848.7	4	Rostov-Don (Russia)		816	367.6	0.7	Fredriksstad (Norway) (relays Oslo)	
385	778	2	Petrozavodsk (Russia)		824	364	1	Bergen (Norway)	
389	770	0.6	Östersund (Sweden) (relays Sundsvall)		825.3	363.3	13	Algiers (N. Africa)	
394	761.4	1.8	Nijni Novgorod (Russia)		832	360.5	60	Stuttgart (Mühlacker) (Germany)	
395	760	1.5	Geneva (Switzerland)		842	356.3		Tiraspol (Russia)	
416.7	720	20	Moscow (Experimental) (Russia)		843	356	50	London Regional (Great Britain)	
428.6	700	4	Minsk (Russia)		852	352.1	7	Graz (Austria) (usually relays Vienna)	
442	680	0.6	Lausanne (Switzerland)		855.5	351	1.2	Leningrad (Russia)	
522	574.7	2.5	Ljubljana (Yugoslavia)		860	349	8	Barcelona (Radio Barcelona) (AEJ1) (Spain)	
527	570	0.25	Freiburg-im-Breisgau (Germany) (re-lays Stuttgart)		869	345	11.5	Strasbourg (Brumath) (France)	
530	566	2	Grenoble (PTT) (France)		878	342	35	Brno (Czechoslovakia)	
531	565	0.25	Hanover (Germany (relays Hamburg))		887	338.2	15	Brussels No. 2 (Belgium) (Flemish programme)	
533	563	2	Smolensk (Russia)				5.5	Cadiz (Spain)	
		16	Wilno (Poland)		896	335	1.9	Poznań (Poland)	
536	560	0.25	Augsburg (Germany)(relays Munich)		905	331.5	7	Milan (Italy)	
		1.5	Kaiserslautern (Germany) (relays Munich)		914	328.2	60	Poste Parisien (Paris)	
		0.7	Hamar (Norway) (relays Oslo)		923	325	1.5	Breslau (Germany)	
545	550	18.5	Budapest No. 1 (Hungary)		932	322	10	Göteborg (Sweden) (relays Stockholm)	
554	542	3	Palermo (Italy)				0.25	Dresden (Germany) (relays Leipzig)	
563	533	10	Sundsvall (Sweden)		941	319	1.5	Naples (Italy)	
563	533	1.5	Munich (Germany)				1	Sofia (Rodno-Radio) (Bulgaria)	
572	525	15	Riga (Latvia)		950	315	1.6	Marseilles (PTT) (France)	
581	517	15	Vienna (Rosenhügel) (Austria)				1.5	Cracow (Poland)	
590	509	15	Brussels No. 1 (Belgium)		959	312.8	10	Genoa (Italy)	
599	500.8	20	Florence (Italy)				1	Radio-Vitus, Paris (France)	
			Nijni Novgorod (Russia)		968	309.9	1	Cardiff (Great Britain)	
603.6	497	1.2	Moscow (Russia)		977	307	0.5	Falun (Sweden)	
608	493.4	1.2	Trondheim (Norway)		986	304	0.75	Zagreb (Yugoslavia)	
614	488.6	120	Prague (Czechoslovakia)		995	301.5	13	Bordeaux-Lafayette (PTT) (France)	
625	480	50	North Regional (Manchester) (Great Britain)		1004	298.8	50	North National (Manchester) (Great Britain)	
630.2	476	1.2	Sebastopol (Russia)		1013	296.1	11	Tallinn (Estonia)	
635	473	60	Langenberg (Germany)				20	Hilversum (Holland) (Huizen pro-grammes and announcements)	
644	465.8	1.5	Lyons (La Doua) (France) (relays PTT)		1022	293	7*	Kosice (Czechoslovakia)	
		0.5	Tartu (Estonia)				2.5	Limoges (PTT) (France)	
653	459	60	Schweizerischer Landessender (Beromünster) (Switzerland)		1031	291	0.7	Pietarsaari (Jacobstad) (Finland) (re-lays Helsinki)	
		0.5	Bödo (Norway)				0.25	Tampere (Finland) (relays Helsinki)	
		0.5	Danzig (Free City) (relays Königs-berg)				1	Viipuri (Viborg) (Finland) (relays Helsinki)	
		0.5	Klagenfurt (Austria) (relays Vienna)				13.2	Bournemouth (Gt. Britain)	
		0.7	Porsgrund (Norway) (relays Oslo)				1	Plymouth (Gt. Britain)	
662	453.2	1	Salamanca (Spain) (EAJ22)		1040	288.5	0.12	Scottish National (Nr. Falkirk) (Gt. Britain)	
		0.6	San Sebastian EAJ8 (Spain) (Mon., Wed., Fri. 7.30—9 p.m., other days 10 p.m. to midnight)				50	Swansea (Gt. Britain)	
		0.1	Tromsø (Norway)		1043	287.6	0.12	Radio Lyons (France)	
		0.15	Uppsala (Sweden) (relays Stockholm)		1049	286	0.7	Montpellier (France)	
660	450.4	4	Odessa (Russia)				0.8	Berlin Relay (Germany)	
		0.35	Aalesund (Norway)		1050	283	0.5	Magdeburg (Germany)	
		0.08	Notodden (Norway)				0.5	Stettin (Germany) (relays Berlin)	
671	447.1	0.7	Paris (PTT) (Ecole Supérieure) (France)				0.5	Innsbruck (Austria) (relays Vienna)	
		0.15	Rjukan (relays Oslo) (Norway)						

* Until 4.40 p.m.

† Radiates public reception tests.

STATIONS IN ORDER OF FREQUENCIES AND WAVELENGTHS (Continued)

Kc/s	M.	kW.	Station	Dial Readings	Kc/s	M.	kW.	Station	Dial Readings
1063	282.2	2	Lisbon (Portugal)		1283	235	2	Lodz (Poland) (Experimental)	
1067	281	0.75	Copenhagen (Denmark)		1292	232.2	0.25	Kiel (Germany) (relays Hamburg)	
1071	280		Radio Liège (Belgium)				0.25	Norrköping (Sweden)	
1076	279	14	Bratislava (Czechoslovakia)				0.2	Hälsingborg (Sweden)	
1085	276.5	60	Heilsberg (Germany) (rel. Königsberg)		1301	231	1.25	Malmö (Sweden) (relays Stockholm)	
1096	273.7	7	Turin (Italy)				0.2	Umea (Sweden)	
1103	272	1.3	Rennes (France)		1310	229	0.05	Uddevala (Sweden)	
1112	270	0.25	Bremen (Germany) (relays Hamburg)		1319	227.4	0.5	Flensburg (Germany) (relays Hamburg)	
		20	Bari (Italy) (Testing)						
1121	267.6	0.7	Oviedo (Spain)		1328	226	0.15	Hudiksvall (Sweden)	
		1.5	Radio Valencia (Spain)		1337	224.4	1	Cork (Ireland)	
1130	265.4	1.3	Lille (PTT) (France)		1345	223	10	Fécamp (Radio Normandie) (France)	
1137	263.8	11	Moravská-Ostrava (Czechoslovakia)				0.7	Pori (Björneborg) (Finland) (relays Helsinki)	
1147	261.6	50	London National (Great Britain)		1373	218	0.5	Salzburg (Austria) (relays Vienna)	
1157	259	2	Leipzig (Germany)				0.25	Karlstad (Sweden)	
1166	257	10	Hörby (Sweden) (relays Stockholm)		1382	217	0.5	Königsberg (Germany)	
1175	255	0.7	Toulouse (PTT) (France)				0.2	Halmstad (Sweden)	
1184	253	5	Gleiwitz (Germany) (relays Breslau)		1391	216	3	Radio Chatelineau (Belgium)	
		1	Almeria (Spain) (EAJ18)				1	Aberdeen (Gt. Britain)	
1193	252	1	Barcelona (Association Nat.) (EAJ15)		1400	214.3	1	Newcastle (Gt. Britain)	
		0.25	Trollhättan (Sweden)		1420	211.3	1	Csepel (Hungary)	
1202	249.6	0.3	Varberg (Sweden)		1428	210		Borås (Sweden)	
1205	249	0.8	Juan-les-Pins (Nice) (France)		1450	207	0.15	Ornsköldsвик (Sweden)	
1211	247.7	0.2	Kalmar (relays Stockholm)		1460	206	0.2	Gävle (Sweden) (relays Stockholm)	
		10	Trieste (Italy)		1470	204	0.2	Krinstinehamn (Sweden)	
		0.5	Berne (Switzerland)		1480	203	0.25	Jönköping (Sweden) (relays Stockholm)	
		0.4	Cartagena (Spain)		1490	222	0.25	Karlskrona (Sweden) (relays Stockholm)	
		0.25	Cassel (Germany) (relays Frankfurt)		1530	196	0.2	St. Quentin (France)	
1220	246	0.2	Eskilstuna (Sweden) (relays Stockholm)		1714	175			
		0.25	Kiruna (Sweden) (relays Boden)						
		0.5	Linz (Austria) (relays Vienna)						
		0.4	Säffle (Sweden) (relays Stockholm)						
		0.6	Turku (Abo) (Finland) (relays Helsinki)						
1229	244.1	0.5	Basle (Switzerland)		239.2	1254	—	Vienna Experimental (Austria)	
1236	242.7		Liège Experimental (Belgium)		401	748	—	Ostersund (Sweden) (relays Sundsvall)	
1238	242	1	Belfast (Ireland)		812.1	369.3	—	Radio LL (France)	
1247	240.6	0.5	Stavenger (Norway)		902.8	332.2	—	Milan (Italy)	
1250	240	1.5	Radio Beziors (France)		968.9	309.5	—	Radio Vitus (France)	
1256	239	2	Nürnberg (Germany) (relays Munich)		1187.3	252.6	—	Barcelona (Association National) (EAJ15) (Spain)	
		3	Bordeaux Sud-Ouest (France)		1123	267.1	—	Bremen (Germany) (relays Hamburg)	
1265	237.2	1	Radio-Nimes (France)		1200.8	249.8	—	Juan-les-Pins (Nice) (France)	
		0.2	Örebro (Sweden) (relays Stockholm)		1327.5	226.1	—	Fécamp (Radio Normandie) (France)	
1274	235.5	0.5	Christiansand (Norway)						

DEVIATIONS

The following are the actual deviations from the official frequencies, as noted during measurements made at the Tatsfield Checking Station. All differences of 1.9 kc/s and over are shown.

239.2	1254	—	Vienna Experimental (Austria)
401	748	—	Ostersund (Sweden) (relays Sundsvall)
812.1	369.3	—	Radio LL (France)
902.8	332.2	—	Milan (Italy)
968.9	309.5	—	Radio Vitus (France)
1187.3	252.6	—	Barcelona (Association National) (EAJ15) (Spain)
1123	267.1	—	Bremen (Germany) (relays Hamburg)
1200.8	249.8	—	Juan-les-Pins (Nice) (France)
1327.5	226.1	—	Fécamp (Radio Normandie) (France)

Schedule of Advance Programmes

(STRICTLY COPYRIGHT)

For the benefit of traders who may wish to make arrangements for demonstrating, we are printing each week this schedule of the programmes to be transmitted by the National and Regional stations. It is felt that these programmes—which are roughly divided into one midday, three afternoon, and four evening items (on Sunday one evening item only)—will be of service to those of our readers able to use them in connexion with the reception of the Experimental Short Wave Station, G5SW, which relays either the National (5XX) or London Regional Programmes from 7 p.m.

News Bulletins are transmitted daily (except on Sunday) at 12.30 p.m. (Saturday, 12.45), 6.15 p.m., and midnight.

SUNDAY, SEPTEMBER 11

NATIONAL	LONDON REG.	MIDLAND REG.	NORTH REG.	SCOTTISH REG.
Organ Recital	As National		As National	As National
Studio Orchestra	As National		Studio Orchestra	As National
Gram. Records	As National		As National	As National
Military Band	Sonata Recital	Studio Orchestra	As London Reg.	As National
Dinh Gilly Rec.				As National
Orchestral Con.	Hotel Orchestra	Military Band	Band Concert	As National

MONDAY, SEPTEMBER 12

NATIONAL	LONDON REG.	MIDLAND REG.	NORTH REG.	SCOTTISH REG.
Studio Concert	As Midland Reg.	Cinema Orch.	As Midland Reg.	As National
Cinema Orch.	As North Reg.	As North Reg.	Organ Recital	As National
Gram. Records	As Midland Reg.	Studio Orchestra	As Midland Reg.	As National
Hotel Orchestra	As National		As National	Studio Orchestra
Talks	Light Orch. Con.	Light Music	Studio Orch.	As National
Concert Party	Promenade Con.	As London Reg.	As London Reg.	As National
Orchestral Con.	"Prom." Con. contd.	As London Reg.	As London Reg.	Meal and Ale
Dance Music.	Dance Music	As London Reg.	As London Reg.	As National

TUESDAY, SEPTEMBER 13

NATIONAL	LONDON REG.	MIDLAND REG.	NORTH REG.	SCOTTISH REG.
Cinema Organ	As North Reg.	As North Reg.	Buxton Orchestra	As National
Hotel Orchestra	Ballad Concert	As London Reg.	As London Reg.	As National
Gram. Records	As Midland Reg.	Studio Orchestra	As Midland Reg.	As National
Hotel Orchestra	As National		Evensong	Scottish Concert
Dance Records	Orchestral Con.	Studio Orchestra	Hotel Orchestra	"Fishing News"
Promenade Con.	Vaudeville	As London Reg.	As London Reg.	As National
Alfredo's Band	Play	As London Reg.	As London Reg.	As National
Dance Music	Dance Music	As London Reg.	As London Reg.	As National

WEDNESDAY, SEPTEMBER 14

NATIONAL	LONDON REG.	MIDLAND REG.	NORTH REG.	SCOTTISH REG.
Cinema Organ	Cinema Orch.	As London Reg.	As London Reg.	As National
Gram. Records	As Midland Reg.	Organ Recital	As Midland Reg.	Organ Recital
Hotel Orchestra	As North Reg.	As North Reg.	Studio Orchestra	Gram. Records
Symphony Con.	As National		As National	Studio Concert
Talks	Band Concert	Pfte. Recital	Blackpool Relay	As National
Promenade Con.	Concert Party	Theatre Relay	Military Band	As National
Dance Records	Orchestral Con.	Band Concert	Studio Orchestra	As National
Dance Music	Dance Music	As London Reg.	As London Reg.	As National

THURSDAY, SEPTEMBER 15

NATIONAL	LONDON REG.	MIDLAND REG.	NORTH REG.	SCOTTISH REG.
Cinema Organ	As North Reg.	As North Reg.	Hotel Orchestra	As National
Cinema Orch.	As Midland Reg.	Cinema Organ	As Midland Reg.	As National
Abby Evensong	As North Reg.	As North Reg.	Studio Orchestra	Mid-Week Scr.
Dance Music	As National		As National	Studio Orchestra
Talks	Light Music	Play	Dance Music	As National
Play	Promenade Con.	As London Reg.	As London Reg.	Philharmonic Concert
'Cello Recital	"Prom" Con. contd.	As London Reg.	As London Reg.	Song Recital
Dance Music	Dance Music	As London Reg.	As London Reg.	As National

FRIDAY, SEPTEMBER 16

NATIONAL	LONDON REG.	MIDLAND REG.	NORTH REG.	SCOTTISH REG.
Cinema Orch.	As Midland Reg.	Cinema Organ	As Midland Reg.	Studio Concert
Organ Recital	As North Reg.	As North Reg.	Cinema Orch.	As National
New Gram. Rec.	As Midland Reg.	Studio Orchestra	As Midland Reg.	As National
As Scottish Reg.	As National		As National	Studio Orchestra
Light Music	Military Band	Studio Orchestra	Band Concert	"Muckle Friday"
Vaudeville	Prom. Concert	As London Reg.	As London Reg.	As National
"Serenade"	"Prom" Con. contd.	As London Reg.	As London Reg.	Concert Party
Dance Music	Dance Music	As London Reg.	As London Reg.	As National

SATURDAY, SEPTEMBER 17

NATIONAL	LONDON REG.	MIDLAND REG.	NORTH REG.	SCOTTISH REG.
As North Reg.	As North Reg.		Studio Orchestra	As National
Organ Recital	As National		As National	As National
Cinema Orch.	As National		As National	As National
Orchestral Con.	As National	Dance Music	As National	Choral Concert
Military Band	Light Music	Violin and Organ	Whitby Orch.	Concert Party
Promenade Con.	As North Reg.	As North Reg.	Theatre Relay	As National
Dance Records	Orchestral Con.	Mus. Com. Prog.	Studio Orchestra	As National
Dance Music	Dance Music	As London Reg.	As London Reg.	As National

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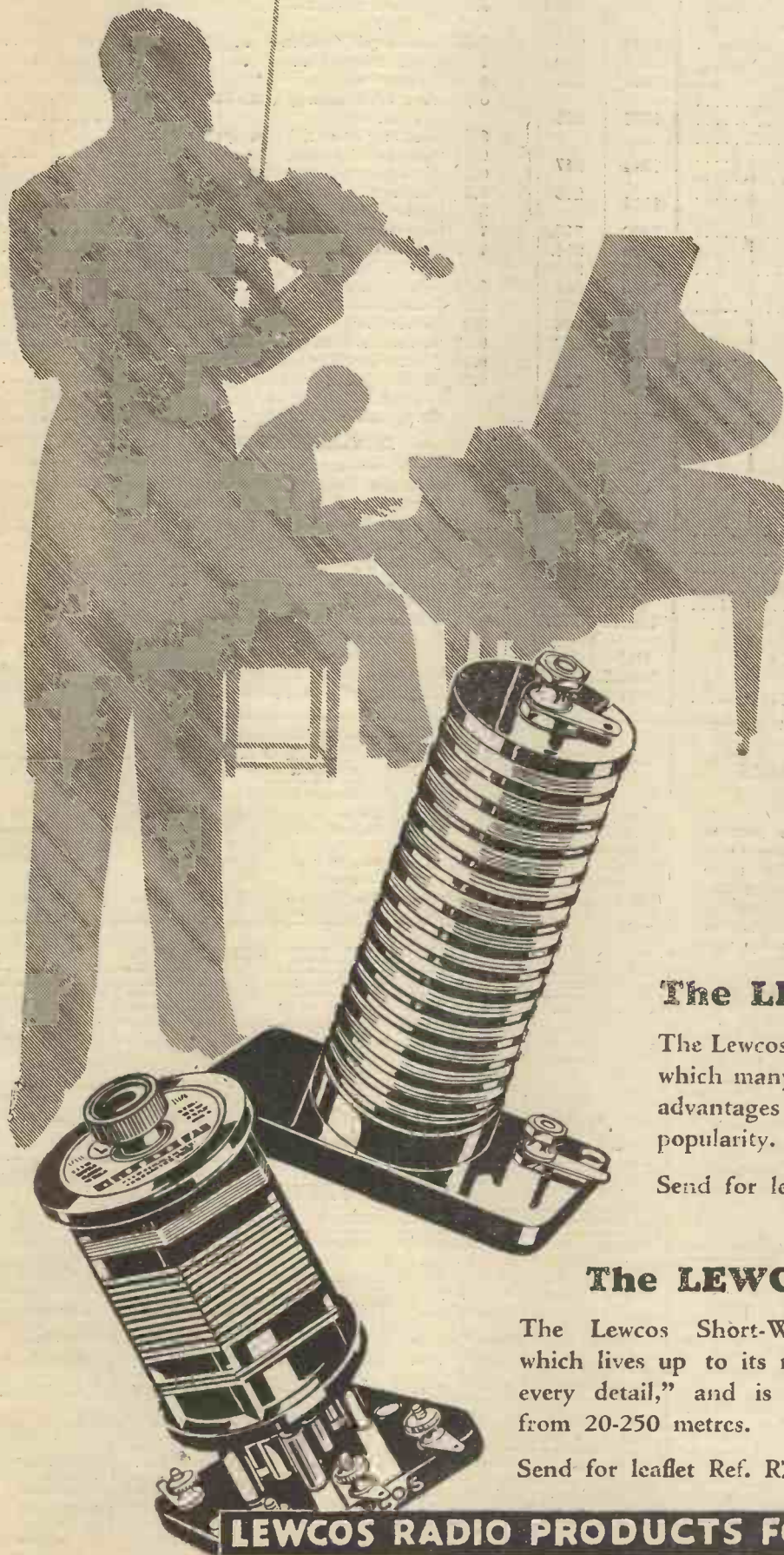
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PROGRAMMES FOR SUNDAY (August 28)

PRINCIPAL EVENTS.

SERVICES AND SACRED MUSIC

- 10.0 a.m. Warsaw: High Mass from Lowicz.
- 10.50 " Oslo: Protestant Service.
- 1.45 p.m. Brussels No. 1: Service in honour of Dr. Poppe.

CONCERTS (Vocal and Instrumental)

- 6.15 a.m. Hamburg Harbour Concert.
- 11.0 " Frankfurt, etc.: Goethe Festival.
- 2.40 p.m. Hilversum: From Scheveningen.
- 5.0 Warsaw: The Station Orchestra.
- 7.0 " Heilsberg, Königs Wusterhausen, etc.: Serenade from Königsberg Castle.
- 7.50 " Prague: Brass Band.
- 8.0 " Hamburg: "A Garland for Goethe."
- 8.0 " Munich: Light Symphony.
- 8.0 " Warsaw: The Philharmonic Orchestra.
- 8.40 " Berlin (Witzleben): Goethe programme.
- 9.0 " Brussels No. 1, Huizen: From Ostend Kursaal.
- 9.0 " Brussels No. 2: From Knocke Casino.
- 10.0 " Copenhagen: Light Orchestral.
- 10.30 " Frankfurt, Stuttgart, Königs Wusterhausen: Late Concert.

OPERA AND OPERETTA

- 8.30 p.m. Italian Stations (Northern): Anima allegra (Vittadini).
- 8.45 " Rome: "The Merry Widow" (Lehár).

PLAYS

- 8.0 p.m. Leipzig, Schweizerischer Landessender: "Egmont" (Goethe) with Beethoven's Music.
- 8.10 " Vienna: Two Goethe plays.
- 8.15 " Frankfurt, Stuttgart, Königs Wusterhausen: "Iphigenie" (Goethe).
- 8.30 " Breslau: "Pandora" (Goethe).

DANCE MUSIC

- 5.0 p.m. Brussels No. 1; 10.0 p.m. Warsaw; 10.35 p.m.: Berlin, Hamburg; 10.50 p.m.: Copenhagen.

Goethe and Beethoven

Goethe's birthday is being celebrated in many broadcast programmes to-day, and LEIPZIG is giving his *Egmont*, with Beethoven's music. SCHWEIZERISCHER LANDESSENDER is to relay it. The poet and the musician had a sincere regard for one another: Bettina von Arnim, who was a friend of both, has left it on record that Beethoven told her,



[By Courtesy of the German Railways Information Bureau.]

Goethe's Birthplace, Frankfurt

"Goethe's poems have great power over me; I am stimulated to compose by language which already bears in itself the mystery of the harmonies." It is she, too, who quotes Goethe as saying of Beethoven: "he has the guiding light of genius which often illumines his mind like a lightning flash, while we sit in darkness and scarcely suspect the direction from which daylight will break." But besides the interest which Goethe's poetry had for him, the figure of Egmont himself in the play made the same kind of appeal to Beethoven's sympathies as Coriolanus and other heroes, and, though the music to the play was commissioned for Vienna, Beethoven told a friend that he had composed it out of love for the story. He composed not only the Overture, but four entr'actes, the two songs which Clärchen sings in the course of the play, a beautiful little piece which is played at the moment of her death on the stage, when the candle which stands beside her flickers out as she draws her last breath, a melodrama which accompanies Egmont's dream, and a Symphony of Victory which comes immediately after his farewell speech upon the scaffold. The music is on a splendid plane, and it is a thousand pities that in this country we have so few chances of hearing any of it except the Overture. It, to be sure, is likely to hold its place for always among the noblest things Beethoven gave us.

Zygmunt Noskowski

Noskowski, who is represented in WARSAW's programme this evening, as, indeed, he often is, was a native of that city and a pupil, in its great School of Music, of his illustrious fellow-countryman, Moniuszko. After spending some years abroad, he returned to Warsaw in 1881, at the age of thirty-five, becoming eventually Conductor of the Philharmonic Concerts and of the opera. He left a great deal of strong and wholesome music, most of it distinctly Polish in character, and so full of melody and rhythm that it is likely to be popular for many years to come. He died in Wiesbaden in 1909.

NATIONAL

	kc/s.	m.	kW.
London:	1,148	261.3	50
Daventry:	193	1,554.4	30
Northern:	995	301.5	50

- 10.30-10.45 a.m. (Daventry)—Time Signal (Greenwich), Weather Forecast for Farmers and Shipping
- 12.30 p.m. (Daventry)—An Organ Recital by Berkeley Mason.
- 1.0 (Daventry)—The Scottish Studio Orchestra directed by Guy Daines. Montgomery Fyffe (Tenor).
- 2.15 (Daventry)—A Recital of Gramophone Records. Madrigals etc.
- 3.0 (Daventry)—The Sydney Baynes Light Orchestra. Garda Hall (Soprano).
- 4.0—Bible Reading.
- 4.15—Time Signal (Greenwich).
- 4.15 Orchestral Concert. The B.B.C. Orchestra (Section C), conducted by Percy Pitt. Heddlé Nash (Tenor). Overture, Figaro (Mozart). O Loveliness beyond compare (Magic Flute) (Mozart). Serenade No. 2 (Glazunov). Down her pale cheek (L'Elisir d'amore) (Donizetti). Tableaux pittoresques (Jongén). Songs. Two Waltzes (Dvorák).
- 5.30-6.0—A Violoncello Recital by May Muckle.
- 8.0-8.45 (Daventry)—A Religious Service relayed from All Saints', Hove, Parish Church.
- 8.45 (Daventry)—The Week's Good Cause. Appeal in aid of the Mercantile Marine Masters' and Officers' Relief Fund by Commodore Sir Bertram Hayes.
- 8.50—"The News."
- 9.0—Time Signal (Greenwich).
- 9.5 (Daventry)—Tom Jones and The Grand Hotel, Eastbourne, Orchestra. Mavis Bennett (Soprano). Orchestra: Rhapsody No. 1 (Liszt). Mavis Bennett: Je suis Titania (Mignon) (Ambrose Thomas). Orchestra: Fantasy, Martha (Flotow). Tom Jones: Romance (Rubinstein, arr. Wilhelmj); La Gitana (Kreisler); Polischinelli (Kreisler). Mavis Bennett: Cradle Song (Jarnefeld); Norwegian Mountain Song (arr. Jenny Lind). Orchestra: Suite, L'Arlesienne (Bizet).
- 10.30—Epilogue.

REGIONAL

	kc/s.	m.	kW.
London:	842	356.3	50
Midland:	752	398.9	25
Northern:	626	479.2	50
Scottish:	7.7	376.4	50

- 12.30-4.0 (except Midland)—Daventry National Programme.
- 1.0 p.m. (Scottish)—A Concert. The Studio Orchestra. Montgomery Fyffe (Tenor).
- 2.15-6.0 (Scottish)—Daventry.
- 4.0 (London)—The Wireless Military Band, conducted by Charles Leggett. Dale Smith (Baritone).
- 4.0 (Midland)—A Band Concert. St. Hilda's Band, conducted by James Oliver.
- 4.0 (Northern)—The Northern Studio Orchestra. Irene Crowther (Pianoforte).
- 5.0-5.30 (London)—A Harp Recital by Mildred Dilling.
- 5.0-5.30—The Music of Gabriel Faure. A Pianoforte Recital by Judith de Leeuw.
- 8.0 (except Midland)—A Religious Service, relayed from All Saints', Hove, Parish Church.
- 8.45—Daventry National Programme.
- 8.50—"The News." Weather Forecast. General News Bulletin.
- 9.0—Regional News.
- 9.5 (London and Midland)—The Canadian Trio: Ida Neilson (Violin); Sara Nelson (Violoncello). Francesco Ticiatti (Pianoforte). Soffi Schöningg (Soprano). Trio: Trio in B Flat (K. 502) (Mozart): 1. Allegro; 2. Larghetto; 3. Finale: Allegretto. Soffi Schöningg: Dei vieni non tardar (O come do not delay); Porgi amor (Mighty Love) (Figaro) (Mozart). Trio: Trio in C (Haydn). Soffi Schöningg: Liebesbotschaft (Love's Message); Im Frühling (In Spring) (Schubert); Widmung (Dedication); Am Sonnenschein (In the Sunshine) (Schumann). Trio: Trio in C Minor, Op. 1, No. 3 (Beethoven).
- 9.5 (Northern)—The Horwich R.M.I. Band, conducted by W. Wood. The Bury Athenaeum Musical Circle, conducted by Baguley Waters.
- 9.5 (Scottish)—Daventry National Programme.
- 10.30—Epilogue.

The Frequencies and Wavelengths given in the following programmes are those published by the stations in question. For more accurate measurements, readers are referred to our Table of Frequencies and Wavelengths.

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO BRITISH SUMMER TIME

ALGIERS (N. Africa)
825.3 kc/s (363.3 m.); 13 kW.
Transmits at intervals from 11.20 a.m. 7.0 p.m.—Concert of Dance Music. 7.30—Violin and Cello Recital. 7.45—Cabaret Music. 8.0—Instrumental Solos. 8.45—Recital of Opera Songs. 9.0—Concert of Spanish Songs. 9.30—Dance Music. 10.0 (approx.)—Close Down.

BARCELONA (Spain)
Radio-Barcelona (EAJ1). 860 kc/s (349 m.); 8 kW.
Transmits at intervals from 8.15 a.m. 2.0 p.m.—Popular Music on Gramophone Records. In an interval at 2.30—Theatre Guide. 3.0—Film Review, followed by a Sextet Concert. 4.0—Programme for Hospitals and other Charitable Institutions, with Gramophone Records. 5.0-6.30—Interval. 6.30—Popular Music on Gramophone Records.

BERLIN (Germany)
Witzleben. 715 kc/s (419.5 m.); 1.5 kW.
Transmits at intervals from 6 a.m. 11.0 a.m.—See Frankfurt.
12.30 p.m.—Concert by the German Concert Orchestra, conducted by Prof. Gustav Havemann. Overture, Manfred (Schumann). Four Tone Poems by Arnold Böcklin, Op. 128 (Regér): (a) Der geigende Eremit, (b) Im Spiel der Wellen, (c) Die Toteninsel, (d) Bacchanal. Symphonic Poem, Fatum (Tchaikovsky). Overture, "Oberon" (Weber). Symphonic Poem, Orpheus (Liszt). Kaiser-Walzer (Johann Strauss). 2.0—Talk for Parents. 2.30—Concert for Children. 3.0—Gottfried Kolwel reads from his own Works. 3.30—Band Concert from the Kroll Garden. Topical Programme in the Interval. 4.30—Concert of Light Music from the Radio Exhibition. In the interval: Arrival of the Competitors in the International Round-Europe Air Race. 6.0—Talk: Car Driver, Cyclist and Pedestrian. 6.25—Pianoforte Recital by Siegfried Schultze. 6.55—Literary Programme in commemoration of the Birth of Goethe. 7.50—Sports Notes. 8.0—Wind Instrument Concert, conducted by Carl Woitschach, relayed from the Radio Exhibition. 8.30—News and Sports Notes. 8.40—Concert of Music to Goethe's Texts. The Berlin Radio Orchestra, conducted by Bruno Seidler-Winkler. Gertrud Baumann (Soprano). Margarethe Roll (Mezzo-Soprano). Fred Drissen

BERLIN (Germany)
Königs Wusterhausen. 183.5 kc/s (1,635 m.); 60 kW.

Transmits at intervals from 6.0 a.m. (Gymnastics and Hamburg Relay). 11.0 a.m.—See Frankfurt.
12.30-2.30 p.m.—See Berlin (Witzleben). 2.30—Hans Wolfgang Emiler reads from his own Works. 3.0—Talk: The German Peasant's Garden. 3.30-6.0—See Berlin (Witzleben). 6.0—See Leipzig. 6.30—New Songs from the New Song Book by Father Kempff. 7.0—See Heilsberg. 8.0-10.0—See Frankfurt. 10.0—News, Weather and Sports Notes. 10.30—See Frankfurt. 12 midnight (approx.)—Close Down.

BERLIN (Germany)
Witzleben. 715 kc/s (419.5 m.); 1.5 kW.
Transmits at intervals from 6 a.m. 11.0 a.m.—See Frankfurt.
12.30 p.m.—Concert by the German Concert Orchestra, conducted by Prof. Gustav Havemann. Overture, Manfred (Schumann). Four Tone Poems by Arnold Böcklin, Op. 128 (Regér): (a) Der geigende Eremit, (b) Im Spiel der Wellen, (c) Die Toteninsel, (d) Bacchanal. Symphonic Poem, Fatum (Tchaikovsky). Overture, "Oberon" (Weber). Symphonic Poem, Orpheus (Liszt). Kaiser-Walzer (Johann Strauss). 2.0—Talk for Parents. 2.30—Concert for Children. 3.0—Gottfried Kolwel reads from his own Works. 3.30—Band Concert from the Kroll Garden. Topical Programme in the Interval. 4.30—Concert of Light Music from the Radio Exhibition. In the interval: Arrival of the Competitors in the International Round-Europe Air Race. 6.0—Talk: Car Driver, Cyclist and Pedestrian. 6.25—Pianoforte Recital by Siegfried Schultze. 6.55—Literary Programme in commemoration of the Birth of Goethe. 7.50—Sports Notes. 8.0—Wind Instrument Concert, conducted by Carl Woitschach, relayed from the Radio Exhibition. 8.30—News and Sports Notes. 8.40—Concert of Music to Goethe's Texts. The Berlin Radio Orchestra, conducted by Bruno Seidler-Winkler. Gertrud Baumann (Soprano). Margarethe Roll (Mezzo-Soprano). Fred Drissen

(Baritone), Julius Burger (Pianoforte) and Fritz Neumayer (Harpischord).
10.0—News and Dance Music. 12 midnight—Close Down.

BORDEAUX-LAFAYETTE (France)
(P.T.T.). 986 kc/s (304 m.); 13 kW.
12 noon—Relay from Paris (Ecole Supérieure), 671 kc/s (447.1 m.). 2.0 p.m.—Relay from Paris or Relay of a Local Celebration. 6.15 (approx.)—Radio Journal. 7.55—Lottery Results. 8.0—Popular Music on Gramophone Records. 8.30—Variety Programme.

BRESLAU (Germany)
923 kc/s (325 m.); 1.5 kW. Relay by Gleiwitz, 1,184 kc/s (253 m.).
Transmits at intervals from 6.15 a.m. 4.15—Orchestral Concert. 5.15—Talk: Interviews with Notable Men. 5.30—Concert (contd.). 6.15—The Growing Pains of Genius. Goethe before and after his Italian Journey—Radio Sequence (Nettie Sutro). 7.15—Concert by the Silesian Philharmonic Orchestra, conducted by Dr. Johannes Brockt. 7.55—Weather for Farmers, and Sports Notes. 8.0—Talk: The History of East Prussia. 8.30—Goethe Programme by the Silesian Philharmonic Orchestra, conducted by Hermann Behr, with Hans Bachmann (Baritone) and Prof. Dr. Eugen Kühnemann (Speaker). Panegyric. A Faust Overture (Wagner). "Pandora"—Play (Goethe) Orchestral Melodies on Goethe's Lieder (Hugo Wolf): (a) Anakreons Grab, (b) Mignon, (c) Prometheus, (d) Der Rattenfänger. 10.0—Time, Weather, News, Sports Notes and Programme Announcements. 10.30—See Frankfurt. 12 midnight (approx.)—Close Down.

BRUSSELS (Belgium) (No. 1)
I.N.R. 590 kc/s (509 m.); 15 kW.
5.30 a.m. and at hourly intervals throughout the day—Pigeon Flyin' Report. 12 noon—Orchestral Concert. 1.0 p.m.—Le Journal Paris

SUNDAY continued

azade (Rimsky-Koraskov). 10.5—News Bulletin. 10.45—Concert from Berlin (Witzleben).

LEIPZIG (Germany) 1.157 kc/s (259 m.); 2 kW. Relayed by Dresden, 941 kc/s (319 m.).

Transmits at intervals from 6.0 a.m. 11.0—See Frankfurt. 12.30 p.m.—Concert relayed from Berlin (Witzleben). 2.0—Weather Forecast and Time Signal, followed by Programme Announcements for the Coming Week. 2.25—Hints for Farmers. 2.35—Talk: The Moselle. 3.0—From the Prædium to the Prelude—A Pianoforte Recital. 3.35—Goethe Programme by Fritz Adolf Hünich.

4.0—Concert by the Kaufmann Orchestra, Dresden. In the interval from 5.0—5.15—A Report from Berlin (Witzleben) on the Round-Europe Air Race. 6.0—Topical Reports on Gramophone Records. (a) Opening of a Youth Hostel in Schwarzburg, (b) Half-Time in the German-Austrian Handball Championship, from the Stadium, Weissenfels.

7.0—A German Folk Song Play (Zilcher). Sixteen Folk Songs for a Vocal Quartet and Pianoforte, Op. 32. Irmgard Genzel-Roehling (Soprano), Henriette Lehne (Contralto), Hanns Fleischer (Tenor), and Philip Göpelt (Baritone). 8.0—"Egmont"—(Goethe), with Beethoven's Music. 10.0—Microphone Report: An Afternoon on the Gabelbach in Goethe's Time. 10.15—News Bulletin, followed by Dance Music from Berlin (Witzleben).

LYONS (France) La Doua (PTT). 644 kc/s (465.8 m.); 1.5 kW.

Transmits at intervals from 8.0 a.m. 11.0 a.m.—Sports Notes. 11.10—Opera and Operetta Music by the Station Orchestra. 11.30—Dance Music by the Station Orchestra. 12 noon till Close Down—Relay from Paris (Ecole Supérieure), 671 kc/s (447.1 m.).

MADRID (Spain) Aranjuez (EAQ). 9,869 kc/s (30.4 m.); 20 kW. 12.30 a.m. (Monday)—Concert of Light Music. 12.45—Humorous

Talk. 1.0—Concert of Variety Music. 1.35—Talk. 1.40—Popular Music. 2.0 (approx.)—Close Down.

MADRID (Spain) Union Radio (EA17). 707 kc/s (424.3 m.); 2 kW.

9.0—10.30 a.m.—Topical Review. 3.30 p.m.—Chimes, Time Signal, Weather Forecast and Theatre Notes. 3.45 (approx.)—Concert of Light Music. Sevilla (Albeniz). Waltz, Katiuska (Sorozabal). Neapolitan Song (Marcucci). Selection from "Aida" (Verdi). La poupee valsante (Poldini). El señor Joaquin (Caballero). Fantasia (Chueca). Polonaise No. 2 (Liszt). Overture, "Orpheus in the Underworld" (Offenbach).

5.0—Interval. 8.0—Chimes and Request Gramophone Records. 9.30—Interval. 11.0—Chimes and Time Signal, followed by Talk with Musical Illustrations. After the Programme, Concert by the Municipal Band relayed from "Rosales", Conductor, M. Villa. 1.30 a.m. (Monday)—Chimes and Close Down.

MILAN (Italy) Ente Italiano Audizioni Radiofoniche. 905 kc/s (331.5 m.); 7 kW.

See Turin.

MOSCOW (Russia) Trades Union. 230.1 kc/s (1,304 m.); 100 kW.

Transmits at intervals from 12 noon. 6.10 p.m.—Popular Music. 6.30—Young Communists' Radio Journal. 7.10—Popular Music. Talk in English: Bolshevism. 9.55—Time Signal.

MUNICH (Germany) 563 kc/s (533 m.); 1.5 kW.

Relayed by Augsburg and Kaiserslautern, 536 kc/s (560 m.) and Nürnberg, 1,256 kc/s (239 m.).

Transmits at intervals from 10.0 a.m. 11.0 a.m.—See Frankfurt. 12.30 p.m.—Concert of Chamber Music by the Augsburg Paepke Quartet. 1.5—Time Signal, Weather Forecast, and Programme Announcements. 1.15—Agricultural Talk. 1.35—Concert of Light Music on Gramophone Records. 2.30—Elementary Chess Lesson. 3.15—Programme for Children.

3.35 (from Nürnberg)—Variety Programme. 4.15—Reading. 4.30—Organ Recital by Gustav Schoedel. 4.55—Talk on Birds. 5.15—Musical Curiosities. 6.25—Reading from the Works of Pieps Dangler. 6.45—Pianoforte Recital by Franz Osborn. Sonata No. 3 in F minor, Op. 5 (Brahms). 7.25—Talk: How to see Towns. 7.45—Weather Forecast and Sports Notes. 8.0—Symphony Concert by the Station Orchestra, conducted by Karl List. Soloist: Heinz Hammer (Baritone). 9.0—Talk on Goethe. 9.20—Concert (contd.). 10.20—Time Signal, Weather Report, News Bulletin and Sports Notes. 10.45—Concert from Vienna. 12 midnight—Close Down.

OSLO (Norway) Kringkastingsselskapet. 277 kc/s (1,083 m.); 60 kW.

Relayed by Fredrikstad, 816 kc/s (367.6 m.); Hamar, 536 kc/s (560 m.); Notodden, 671 kc/s (447.1 m.); Porsgrund, 662 kc/s (453.2 m.); and Rjukan, 671 kc/s (447.1 m.). 10.50 a.m.—Chimes and Divine Service Relay.

1.0 p.m.—Military Band Concert, relayed from a Park. 5.30—Gramophone Concert of Classical Music. 6.20—Talk in German: Young People's Festival Day in Germany. 6.45—Recital of Norwegian Songs by Ida Theresia Singer. 7.15—Weather and News. 7.30—Talk: The Struggle for Liberty in Czechoslovakia. 8.0—Time Signal. 8.2—Orchestral Concert. Chamber Music for Strings and Pianoforte (Herrmann). Rhapsody No. 1 (Svendsen). Chanson triste (Tchajkovsky). Danse slave (Chabrier). Ballet Suite (Pouget). Melodies (Ulfrstad): (a) Kyrkjebaten, (b) Under Romsdalshorn, (c) Fra Trollheimen. Countryside Suite (Eric Coates). Waltz, Au revoir (Waldeufel). Turkish March (Mozart).

9.40—Weather and News. 10.0—Topical Talk. 10.15—Recitations. 10.45—Dance Music on Gramophone Records. 12 midnight—Close Down.

PALERMO (Italy) Ente Italiano Audizioni Radiofoniche. 554 kc/s (542 m.); 3 kW.

Transmits at intervals from 10.25 p.m. 5.30—6.30—Sextet Concert. Canzone di giocatori (Rulli). Serenata elegante (De Micheli). Selection from "The Rose of Stamboul" (Fall). Song: Campagnola (Vittadini). Selection from "Tannhäuser" (Wagner). Song. Selestina (Viama). 8.0—Announcements and Giornale Radio. 8.20—Sports Notes. 8.25—Popular Music on Gramophone Records. In the interval at 8.30—Time and Announcements.

8.45—Symphony Concert, conducted by A. La Rosa Parodi. Soloists: M. Cottone (Pianoforte) and Marisa Bentivegna (Oboe). Overture, "Coriolanus" (Beethoven). Concerto in G Minor for Pianoforte and Oboe (Mendelssohn). Three Preludes from "Oedipus Rex" (Pizzetti). Toccata (Rossi-Toni). Selection from "Le donne curiose" (Wolf-Ferrari). In the interval: Talk. After the Concert, Book Review.

10.0 (approx.)—Variety Programme. 10.55—News Bulletin.

PARIS (France) Eiffel Tower (FLE). 207.5 kc/s (1,445.7 m.); 13 kW.

Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (preliminary and 6-dot signals). 1.0 p.m.—News Bulletin. 1.10—Weather Forecast. 1.25—2.30—Symphony Concert, conducted by M. Flament. Soloists: M. Krabanski (Cello) and M. Charon (Violin). Overture, Le Songe d'une nuit d'été (A Thomas). Melody from "The Barber of Seville" (Rossini-Nardon). Cello Solo: Scherzo-Waltz (Chabrier-Rudd). Selection from "Les Bavards" (Offenbach-Gauwin). Violin Solo: Waltz (O. Straus). Dance of the Hours from "La Gioconda" (Ponchielli). Estudiantina (Turina-Chapelier).

6.45—Le Journal Parlé. 7.45—Programme for Children. 8.20—Weather Forecast. 8.30—Gramophone Concert. Part I: Music by Bizet. Part II: Light Music. 10.0 (approx.)—Close Down.

PARIS (France) Poste Parisien. 914 kc/s (328.2 m.); 69 kW.

10.0 a.m.—Press Review. 10.5 a.m.—1.5 p.m.—Sponsored Concerts. 1.5 Light Music on Gramophone Records. 2.0—7.0—Interval. 7.0—News Bulletin and Press Review. 7.5—Popular Music on Gramophone Records. 7.15—Sports Review. 7.25—Gramophone Concert (continued). 8.15—Catholic Notes. 8.30—Radio Journal and General News Bulletin. 8.45—Orchestral Concert. Soloist: M. Emile Rousseau (Songs). Four Songs: (a) Melody from "Ciboulette" (Hahn), (b) Ballade de Francois Villon (Debussy), (c) Marine (Lalo), (d) Au bord de l'eau (Faure). En vue d'Alger—Prelude to the "Suite algérienne" (Saint-Saëns). Waltz, Brune ou Blonde (Waldeufel). Ballet de Cour (G. Pierné). Prelude, Minuet, Rigaudon and Finale from "Le Tombeau de Couperin" (Ravel). Ballet de Siang-Sin (Hue). Waltz (Florent Schmitt). Petite Suite (Büsser). Entr'acte from "Les Armailles" (Doret). Ballet Music from "Antar" (Gabriel Dupont). Melody for Strings: Berceuse gasconne (Lacombe). Rondes d'enfants (Turina).

10.45—News Bulletin. 10.50—Experimental Transmission on the Coupleux-Givelet Wireless Organ. M. Olivier Messiaen (Organist). Fantasia and Fugue in G Minor (Bach). Improvisations.

10.55—News Bulletin.

PARIS (France) Radio-Paris (CFR). 174 kc/s (1,725 m.); 75 kW.

7.45 a.m.—Light Music on Gramophone Records. 8.0—Weather and Press Review. 8.30—Physical Culture. 12 noon—Religious Address. 12.20 p.m.—Sacred Music. Fantasia in G Minor (Bach). Choral No. 3 (Franck). Improvisation (Louis Vierne). 12.30—Bilboquet. 12.45—Press Review, News and Weather Forecast.

1.0—Concert of Reynaldo Hahn's Music on Gramophone Records. Two Airs from "Brummel." Paysage. L'heure exquise. Si mes vers avaient des ailes. Mai. Offrande. Three Airs from "Ciboulette." 1.30—Popular Gramophone Concert. 2.0—Variety

SEE WHAT THE PRESS SAYS ABOUT..

PERTRIX



"EVENING STANDARD" — JULY 1, 1932
When taken off discharge for recuperation it showed good recuperative quality. Voltage distribution throughout was very even. After test the battery was broken open. The zincs were in good condition. No apparent sign of bursting or corrosion.

"POPULAR WIRELESS" — MAY 21, 1932
A GOOD BATTERY. This new Pertrix HT Battery is passing its P.W. tests in an admirable manner. We have Batteries are first class. Batteries in our used many Pertrix Batteries in our Research Dept., and so far not one has ever let us down. very good value for money.

"WIRELESS TRADER" — JULY 9, 1932
a watt hour capacity of 1.73 for a cell of this size under the condition of test is very good, particularly in view of the fact that the price of the battery is very low. The Pertrix is very well made and can be recommended as very good value for money.

"MUSIC SELLER" — JUNE, 1932
The battery has good staying power and it has been carefully designed to provide that extra output which makes for Sales Records well constructed and high class materials have been used. The zincs were found to be quite free from corrosion. It represents very good value for money and has the Music Seller O.K.

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MONDAY (August 29)

PRINCIPAL EVENTS

SYMPHONY CONCERT

- 9.0 p.m. Prague.
- CONCERTS (Vocal and Instrumental)**
- 3.30 p.m. Copenhagen: Café Concert.
- 4.30 " Radio-Paris: From the American Conservatoire.
- 5.0 " Brussels No. 2: The Symphony Orchestra.
- 5.0 " Warsaw: The Police Orchestra.
- 7.40 " Hilversum: Operatic Programme.
- 7.40 " Huizen: Light Orchestra.
- 8.0 " Copenhagen: Suppé, Offenbach.
- 8.0 " Königs. Wusterhausen: Promenade Concert (Wagner) from London.
- 8.0 " Stockholm: Swedish Programme.
- 8.30 " Italian Stations (Northern). Popular Orchestral.
- 8.30 " Rome: Light Orchestra.
- 8.30 " Schweizerischer Landessender: "Grotesque Music."
- 8.30 " Strasbourg: Military Band.
- 8.45 " Radio-Suisse Romande.
- 9.0 " Brussels No. 1: From Knocke Casino.
- 9.0 " Brussels No. 2: From Ostend Kursaal.
- 10.15 " Copenhagen: Sibelius and Strauss programme.
- 11.30 " Budapest: Cigány Band.

OPERA AND OPERETTA

- 8.15 p.m. Warsaw: "La Traviata" (Verdi) (gram.)
- 10.15 " (app.) Leipzig: "A Tango at Midnight."

CHAMBER MUSIC

- 9.30 p.m. Radio-Paris: Quartet (Debussy), etc.
- 10.0 " Stockholm: Mozart Quartets.

RECITALS

- 5.10 p.m. Hilversum: Organ and Song.
- 7.45 " Heilsberg: Cello and Pianoforte.
- 8.0 " Oslo: Cello and Pianoforte.
- 9.30 " Frankfurt, Stuttgart: Pianoforte.

DANCE MUSIC

- 6.20 p.m. Warsaw; 10.15 p.m. Vienna;
- 10.40 p.m. Hilversum; 10.50 p.m. Warsaw.

The Tannhäuser Overture

Often as this Overture is heard—HAMBURG is to broadcast it at eight this evening, and WARSAW and HUIZEN at the same hour on Friday—it may help to a fuller enjoyment of it to read an explanation by Wagner himself. He wrote it expressly for the benefit of orchestral players, in the pious hope that they might read it, and so play the work with a real understanding of its intention. The gist of his note, as it is of the opera's story, is as follows: "To



Sibelius (Copenhagen, 10.15 p.m.)

begin with, the orchestra leads before us the Pilgrims' Chant alone; it draws near, then swells into a mighty outpour, and finally passes away. Evenfall: last echo of the chant. As night breaks, magic sights and sounds appear, a rosy mist floats up, exultant shouts assail our ear." Tannhäuser hears a siren voice and sees Venus herself in all her wonderful beauty; drawing near the goddess, he sings his ecstatic song in her praise. Her attendant nymphs crowd round him and carry him off to the realm of "Being-no-more." And night breaks once more over the scene. "But the dawn begins to break; from afar the Pilgrims' Chant is heard again, and the day drives further back the night till the sun ascends at last in splendour, and the Pilgrims' Chant proclaims to all the world, 'salvation won'."

Franz von Suppé

The composer whom the whole world knows as Franz von Suppé, had the much more imposing name of Francesco Ezechiele Ermengildo Cavaliere Suppé Demelli. Although his taste for music developed so early that when he was fifteen he had a Mass of his own sung in church, he was intended, like many another musician, for a more prosaic career. It was only after his father's death that he persuaded his mother to allow him to take up music in earnest. He had not long to wait for success, and, besides having one conducting post after another, he had no difficulty in getting his own music produced under the best auspices. For the greater part of his life he lived in Vienna, and it was there that most of his operas and operettas were first staged, though many of them quickly made their way much farther afield. More than one was produced in London, and Paris also succumbed to the lure of his melodious gaiety. His industry was such that according to one authority he left the amazing number of 165 light operas and smaller works as well as, at least, two grand operas. Among the former, there is one which anticipated *Lilac Time*, a little opera called *Franz Schubert*, in which some of Schubert's own melodies were incorporated. Known now chiefly by the overtures to a few of his operettas, his name is likely to endure for many generations to come. COPENHAGEN broadcasts his music to-night.

NATIONAL

- | | kc/s. | m. | kW. |
|-----------|-------|---------|-----|
| London: | 1,148 | 261.3 | 50 |
| Daventry: | 193 | 1,554.4 | 30 |
| Northern: | 995 | 301.5 | 50 |
- 10.15 a.m. (Daventry)—The Daily Service.
- 10.30—10.45—Time Signal (Greenwich), Weather Forecast for Farmers and Shipping.
- 12 noon—John Duncan (Baritone). The Grimson Quartet.
- 12.45 p.m.—The Commodore Grand Orchestra directed by Joseph Muscant.
- 1.0—Time Signal (Greenwich).
- 2.0—2.30—Gramophone Records.
- 4.0 (Daventry)—Leonardo Kemp and his Piccadilly Hotel Orchestra.
- 4.45—Time Signal (Greenwich).
- 5.15 (Daventry)—Children's Hour.
- 5.15 (London and Northern)—Gramophone Records of Dance Music.
- 6.0—Time Signal (Big Ben).
- 6.0—"The First News."
- 6.30—Time Signal (Greenwich).
- 6.30—"The Foundations of Music. Bach's Preludes and Fugues, by Victor Hely-Hutchinson.
- 6.55—"New Books." Mr. Desmond MacCarthy.
- 7.10—Gramophone Records.
- 7.30—The B.B.C. Orchestra (Section C). Conductor, Adrian Boult. Dorothy Stanton (Soprano). Overture, No. 6, in B Flat (Arne). Air, Let the bright Seraphim (Samson) (Handel). Symphony No. 35 in D (K. 385) (The Haffner) (Mozart). A Green Cornfield (Head); Love's Secret (Bantock); Forgetfulness (Eugen Hildach). Suite, Céphale and Procris (Grétry, arr. Mottl); Overture, The Two Friends from Salamanca (Schubert).
- 8.40—"Oxford Blazers."
- 9.0—Time Signal (Greenwich).
- 9.40—"The Second News."
- 9.55 (Daventry)—Shipping Forecast.
- 10.0—Mr. Alan Pryce-Jones: "Arrival in Bolivia."
- 10.15 (Daventry)—Gramophone Records of Dance Music.
- 11.0—12 midnight (Daventry)—Dance Music.
- 11.30—Time Signal (Greenwich).

REGIONAL

- | | kc/s. | m. | kW. |
|-----------|-------|-------|-----|
| London: | 842 | 356.3 | 50 |
| Midland: | 752 | 398.9 | 25 |
| Northern: | 626 | 479.2 | 50 |
| Scottish: | 757 | 376.4 | 50 |
- 10.15 (except Midland)—The Daily Service.
- 10.30—10.45 (except Midland)—Daventry National Programme.
- 12 noon (except Scottish)—Ernest Parsons and his Orchestra.
- 12 noon—2.30 p.m. (Scottish)—Daventry National Programme.
- 1.0 (except Scottish)—Reginald Dixon at the Organ.
- 1.45—2.0 (except Scottish)—The Midland Studio Orchestra. George Taylor (Baritone).
- 4.0 (London and Northern)—Leonardo Kemp and his Piccadilly Hotel Orchestra.
- 4.0 (Scottish)—McGill and Vaughan (Comedy Duets). The Studio Orchestra.
- 4.45 (Scottish)—Dance Music.
- 5.15—The Children's Hour.
- 6.0—"The First News."
- 6.30 (London)—The Gershwin Parkington Quintet. John Collinson (Tenor).
- 6.30 (Midland)—Light Music by British Composers.
- 6.30 (Northern)—Newcastle Programme.
- 6.30—9.55 (Scottish)—Daventry.
- 7.35—7.55 (Northern)—Professor W. Sherard Vines: Topical Reading.
- 8.0—Promenade Concert. Wagner. Florence Austral, Keith Falkner. The B.B.C. Symphony Orchestra, conducted by Sir Henry Wood. A Faust Overture. Florence Austral and Orchestra: Elizabeth's Prayer, Elizabeth's Greeting (Tannhäuser). Klingsor's Magic Garden and Flower-Maidens' Scene (Parsifal). Keith Falkner and Orchestra: Hans Sachs' Monologues (The Mastersingers). Funeral March (Dusk of the Gods). Prelude and Liebestod (Tristan and Isolde).
- 9.30—Interlude.
- 9.40—"The Second News."
- 9.55 (Scottish)—Scottish News.
- 10.0—12.0 (Scottish)—Daventry.
- 10.0—Dance Music Records.
- 10.30—11.0 (Midland)—As London.
- 10.30—12 midnight (London and Northern)—Dance Music.

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO BRITISH SUMMER TIME

ALGIERS (N. Africa)

825.3 kc/s (363.3 m.); 13 kW.

Transmits at intervals from 12.30 p.m.—7.0 p.m.—Market Prices and Exchange Quotations. 7.10—Shipping Notes and Weather Forecast. 7.15—Concert of Light Music. 7.35—News Bulletin and Time Signal. 8.0—Concert by a Symphony Orchestra. 9.30—Programme of Monologues and Humorous Sketches. 9.45—Dance Music.

BARCELONA (Spain)

Radio-Barcelona (EAF1). 860 kc/s (349 m.); 8 kW.

Transmits at intervals from 12 noon. 8.0 p.m.—Trio Concert. Selection from "Rienzi" (Wagner). Waltz in A (d'Ambrosio). The Butterflies (Couperin). Polonaise in G Flat (Schubert).

8.30—Exchange Quotations, Talk in Catalan, Request Gramophone Records, Sports Notes and News. 10.0—Chimes, Weather Forecast and Market Prices. 10.5—Orchestral Concert of Light Music. 11.0—Pianoforte Recital by Juan Gibert Camins. Prelude (Rachmaninov). In the Convent (Borodin). Dance No. 3 (Granados). Danza del fuego (Fallá). Recitations in the intervals. 11.30—Vocal and Orchestral Concert. Soloist: Concepcion Callao (Songs). 12.30 a.m. (Tuesday)—Dance Music by the Melody Boys Orchestra, relayed from the Excelsior Dance Hall. 1.0 a.m. (approx.)—Close Down.

BERLIN (Germany)

Königs Wusterhausen. 183.5 kc/s (1,635 m.); 60 kW.

Transmits at intervals from 5.45 a.m.—12.5 p.m.—English Talk for Schools, followed by Gramophone Concert and Weather for Farmers. 12.55—Nauen Time Signal. 1.35—News Bulletin. 2.0—Gramophone Concert of Light Music relayed from Berlin (Witzleben). 3.0—Talk: Tobacco-growing in the Dutch Indies. 3.30—Weather and Exchange. 3.40—Talk for Young People. 4.0—Educational Talk. 4.30—5.30—See Berlin (Witzleben). 5.30—

Talk: The Modern Newspaper. 6.0—Making Music with Invisible Partners. 6.30—Elementary Spanish Lesson. 6.55—Weather for Farmers. 7.0—Topical Talk. 7.30—Agricultural Talk, followed by Weather for Farmers. 8.0—Wagner Concert relayed from the Queen's Hall, London. 9.30—Reading from "Werthers Leiden" (Goethe). 10.15 till Close Down.—See Berlin (Witzleben). 12 midnight—Close Down.

BERLIN (Germany)

Witzleben. 715 kc/s (419.5 m.); 1.5 kW.

Transmits at intervals from 6 a.m.—4.30 p.m.—Chopin Pianoforte Recital by Josef Wagner. 4.55—Schumann Songs—Recital by Roland Hell (Tenor). 5.15—Richard Strauss Songs—Recital by Hans Wrana (Baritone). 5.30—Talk for Young People: The Good Old Days of Football. 5.50—Talk: The German East Frontiers. 6.15—Mandoline Orchestra Concert, conducted by Bruno Henze. 6.55—The Witzleben Station informs its Listeners. 7.0—Topical Talk. 7.10—Reading. 7.35—Talk: Travelling in Autumn. 8.0—See Breslau. 9.0—News and Sports Notes. 9.10—Concert by the Edwin Fischer Chamber Orchestra, conducted by Paul van Kempen. 10.15—Political Press Review, followed by News and Dance Music. 12 midnight—Close Down.

BORDEAUX-LAFAYETTE

(France) (PTT). 986 kc/s (304 m.); 13 kW.

Transmits at intervals from 12.45 p.m.—7.30 p.m.—News Bulletin, Exchange Quotations and Market Prices. 7.40—Popular Music on Gramophone Records. 8.10—Lottery Results. 8.15—Charades. 8.20—News and Weather Forecast. 8.30—Concert. Arabian Song from "Scheherazade" (Rimsky-Korsakov). The Cygne (Saint-Saëns). In questa tomba oscura (Beethoven). Wiegand (Mozart). Plaisir d'amour (Martin). Sonata for Two Violins (Léclair). Impromptu and Sicilienne (Fauré). Gopak (Mussorgsky). Largo for Violin, Pianoforte and Harp (Handel). Les Berceaux (Fauré).

BRATISLAVA

(Czechoslovakia) 1,076 kc/s (279 m.); 14 kW.

Transmits at intervals from 10.0 a.m.—6.0 p.m.—Chess Lesson. 6.15—Light Music on Gramophone Records. 6.25—Violin Recital. 6.45—Talk. 6.55—See Prague. 7.25—Song Recital by Dr. Blaha. 7.45—See Prague. 8.0—See Brno. 9.0—See Prague. 10.15—Programme Announcements. 10.20—Concert of Popular Music, relayed from the Café "Muzeum."

BRESLAU (Germany)

923 kc/s (325 m.); 1.5 kW.

Relayed by Gletwitz, 1,184 kc/s (253 m.).

Transmits at intervals from 6.0 a.m.—6.20 p.m.—English Lesson. 6.35—Talk: Goethe and Schiller. 7.0—Gramophone Concert. The Berlin Municipal Opera House Orchestra, conducted by Alois Melichar: Overture, "Die Zwillingbrüder" (Schubert). Wilhelm Kempff (Pianoforte): (a) Bagatelle in C, (b) Scottish Dances (Beethoven). Bronislaw Huberman (Violin): Concerto in E Minor, Op. 64 (Mendelssohn). The Lamoureux Orchestra: Siciliana from "Pelleas et Melisande" (Fauré). Alexander Brailovsky (Pianoforte): (a) Pastorale and Caprice (Scarlatti-Taussig), (b) Perpetuum mobile (Weber). The Berlin State Opera House Orchestra, conducted by Mascagni: Lyric Vision (Mascagni). The Berlin State Opera House Orchestra, conducted by Richard Strauss: Selection from "Le bourgeois gentilhomme" (Richard Strauss). The Berlin Philharmonic Orchestra, conducted by Wilhelm Furtwängler: Hungarian Dance No. 3 (Brahms). The Berlin State Opera House Orchestra, conducted by Dr. Max von Schillings: Entry of the Gods into Valhalla, from "The Ringgold" (Wagner). 7.30 (in an interval)—Weather for Farmers. 8.0—"Rübezahl's Pranks"—Scenes for the Radio (Ernst Schenke).

MONDAY
continued

8.30—Goethe Programme—V. 10.5—
News and Sports Notes. 10.20—Con-
cert of Light Music and Dance
Music. 12 midnight—Close Down.

LEIPZIG (Germany)
1.157 kc/s (259 m.); 2 kW.
Relayed by Dresden, 941 kc/s (319
m.).

Transmits at intervals from 6.0 a.m.
6.0 p.m.—Book Review. 6.30—
Literary Talk: Jeremias Gotthelf.
6.50—The Leipzig Station informs its
listeners. 7.0—Talk on the Ter-
centenary of John Locke's Birth: The
English and the German Mind.
7.30—Concert by Marek Weber's
Orchestra, on Gramophone Records.
Melodies from "Rose-Marie"
(Friml). Nocturne No. 3 (Liszt).
Waltz, Marienklaenge (Jos. Strauss).
Melodies from "Madame But-
terfly" (Puccini). Niki March from
"A Waltz Dream" (O. Strauss).
8.0—Summer Evenings—A Musical
and Literary Radio Sequence
(Herrmann). 10.5—News Bulletin.
10.15 (approx.)—Excerpts from "A
Tango at Midnight"—Operetta (Karl
Komjati), by the Leipzig Symphony
Orchestra, conducted by Theodor
Blumer, and Soloists from the Johann
Strauss Theatre, Vienna.

LJUBLJANA (Yugoslavia)
522 kc/s (574.7 m.); 2.5 kW.
Transmits at intervals from 12.15 p.m.
6.0 p.m.—Quintet Concert. 7.0—
Relay of Polish Stations. 7.30—Talk.
8.0—Quintet Concert (contd.).
9.0—Concert of Dance Music, re-
layed from Bled. 10.0—Time Signal
and News Bulletin, followed by a
Gramophone Concert.

LWÓW (Poland)
788 kc/s (381 m.); 16 kW.
Transmits at intervals from 11.58 a.m.
7.15 p.m.—Miscellaneous Items. 7.35
—See Warsaw. 7.45—News Bulletin.
8.0—See Warsaw. 11.30 (approx.)—
Close Down.

LYONS (France)
La Doua (PTT). 644 kc/s (465.8
m.); 1.5 kW.
Transmits at intervals from 8.0 a.m.
7.0 p.m.—Gramophone Concert. 7.30
—Radio Gazette for Lyons and the
South-East. 8.30—Concert by the
Station Orchestra.

9.0—Concert of Music by Bach,
Beethoven and Brahms. Soloist:
Paul Lyonnet (Pianoforte).

MADRID (Spain)
Aranjuez (EAQ). 9,869 kc/s (30.4
m.); 20 kW.
12.30 a.m. (Tuesday)—Programme of
Light Music. 12.45—Radio Journal.
1.0—Popular Concert. 1.35—Talk.
1.40—Light Music. 2.0 (approx.)—
Close Down.

MADRID (Spain)
Union Radio (EA17). 707 kc/s
(424.3 m.); 2 kW.
Transmits at intervals from 12.45 p.m.
8.0 p.m.—Chimes, Exchange Quo-
tations, Market Prices, followed by
Request Gramophone Concert. 9.15
—General News Bulletin. 9.30
(approx.)—Close Down.

MILAN (Italy)
Ente Italiano Audizioni Radic-
ofoniche. 905 kc/s (331.5 m.);
7 kW.
See Turin.

MORAVSKÁ-OSTRAVA
(Czechoslovakia)
1,137 kc/s (263.8 m.); 11 kW.

Transmits at intervals from 10.0 a.m.
6.55 p.m.—See Prague. 8.0—See
Brno. 9.0—See Prague. 10.15—
Programme Announcements and
Theatre Notes. 10.20—Light Music
on Gramophone Records.

MOSCOW (Russia)
Trades Union. 230.1 kc/s
(1,304 m.); 100 kW.
Transmits at intervals from 12 noon.
6.30 p.m.—Young Communists' Radio
Journal. 7.10—Popular Music. 9.0
—Talk in English. Heard in the
Law Courts. 9.55—Time Signal.

MUNICH (Germany)
663 kc/s (533 m.); 1.5 kW.
Relayed by Augsburg and Kaisers-
lautern, 536 kc/s (560 m.), and
Nürnberg, 1,256 kc/s (239 m.).
Transmits at intervals from 6.45 a.m.
5.0 p.m.—Orchestral Concert. Soloist:
Lotte Medak (Soprano). Overture,
"Alessandro Stradella" (Flotow).
Waltz, Die Pesther (Lanner).
Russian Fantasia (Grothe-Kirch-

stein). Melody (Gabriel-Marie).
Songs from (a) "I Pagliacci"
(Leoncavallo), and (b) "Turandot"
(Puccini). Gallop (Bizet). Selection
from "Die Faschingsfee" (Käl-
mán). By the Blue Hawaiian Waters
(Ketelbey). Radetzky March (Joh.
Strauss).

6.15—Talk in connexion with the
Thirty-eighth German Vinicultural
Congress, relayed from Neustadt a.d.
Haardt. 6.45—Time, Weather, and
Agricultural Notes. 6.50—Talk:
Opera in America. 7.10—Talk: Two
Thousand Years of the Theatre.
7.30—Choral Concert. 8.0—See
Frankfurt.

9.0—Variety Programme. Part One—
Programme by Rolf Siebert, Paula
Menari (Soprano), Hans Weber
(Tenor), and the Hugo Weisz Or-
chestra. Part Two—"Der romische
Druck"—Wireless Drama in Ten Acts
and an Epilogue (Kaspar). 10.20—
Time and News. 10.45—Orchestral
Concert. 12 midnight—Close Down.

OSLO (Norway)
Kringkastingselskapet. 277 kc/s
(1,083 m.); 60 kW. Relayed by
Fredrikstad, 816 kc/s (367.6 m.);
Hamar, 536 kc/s (560 m.); Notod-
den, 671 kc/s (447.1 m.); Porsgrun-
d, 662 kc/s (453.2 m.); and Rykan,
671 kc/s (447.1 m.).

Transmits at intervals from 11.5 a.m.
5.30 p.m.—Instrumental Concert,
6.30—Ole Bull Grieg reads from his
own Works. 7.0—Announcements,
Weather and News. 7.30—Agri-
cultural Talk. 8.0—Time Signal.

8.2—Cello Recital.
8.30—Pianoforte Recital by Waldemar
Alme. Rondo in G (Beethoven).
Nocturne in Three Movements
(Palmgren). Humoresque (Rach-
maninov). Rhapsody No. 12
(Liszt).

9.10—Political Review. 9.40—
Weather and News. 10.0—Topical
Talk. 10.15—Concert by Charles
Lassen (Songs) and Boris Borisov
(Balalaika). Songs from (a) "La
Bohème" (Leoncavallo), and (b)
"Tosca" (Puccini). Melody (Lehár).
Waltz (Stoltz). Tango, The Flower
Girl at Naples (Lander). Waltz,

Les roses rougent et print
(Westher). Waltz, Nyota (Holm-
quist). Russian Music for Balalaika.
11.15 (approx.)—Close Down.

PALERMO (Italy)
Ente Italiano Audizioni Radio-
foniche. 554 kc/s (542 m.); 3 kW.
Transmits at intervals from 12.45 p.m.
5.30—6.30 p.m.—Light Music on
Gramophone Records. 8.0—An-
nouncements, Tourist Talk, Agri-
cultural Notes, Report of the Royal
Geographical Society, and Giornale
Radio. 8.20—Popular Music on
Gramophone Records. In an In-
terval at 8.30—Time Signal and News
Bulletin.

8.45—Recital by Niny Misiti (Piano-
forte), G. Gagliano (Cello), Jole
Rondini (Violin) and Grignani
(Tenor). Pianoforte Solos: (a)
Prelude (Rachmaninov), (b) Poli-
chienne (Rachmaninov). Cello
Solos: (a) Aria (Caminiti), (b)
Guitar (Moskowsky). Violin Solos:
(a) Fugue in A (Tartini-Kreisler),
(b) Sirventese (Pick Manziagalli),
(c) Novelletta (Manno). Songs:
(a) Di te (Tirindelli), (b) Aria from
"André Chénier" (Giordano).

9.30—"Lu sul fu"—Comedy in
One Act (S. Volpes Lucchesi). 10.0
(approx.)—Recital (contd.). Song:
Pena d'amore (Mascagni). Violin
Solos: (a) Aria (Morasca), (b) Scherzo
Tarantella (Wieniawsky). Cello
Solo: Hungarian Rhapsody (Popper).
Pianoforte Solos: (a) Un soupir
(Liszt), (b) Les Papillons (Lavalle).
10.55—News Bulletin.

PARIS (France)
Eiffel Tower (FLE) 207.5 kc/s
(1,445.7 m.); 13 kW.
Time Signals (on 2,650 m.) at
10.26 a.m. and 11.26 p.m. (pre-
liminary and 6-dot signals).
Transmits at intervals from 1.0 p.m.
6.45 p.m.—Cinema Review. 7.0—Le
Journal Parlé. 8.20—Weather Fore-
cast. 8.30—Variety Programme. 9.30
—Concert of Dance Music. 10.0
(approx.)—Close Down.

PARIS (France)
Poste Parisien. 914 kc/s (328.2
m.); 60 kW.
12.0 noon—2.0 p.m.—News and Light
Music on Gramophone Records.
In the intervals at 1.0—Press Review

and at 1.30—Exchange and News.
7.0—News Bulletin and Press Review.
7.5—Popular Music on Gramophone
Records. 8.0—Sports Talk. 8.20—
Talk: Walks in and around Paris.
8.30—Radio Journal and News.
8.45—Sponsored Concert. 9.45—
Dance Music from "Les Ambas-
sadeurs." 10.45—News Bulletin.

PARIS (France)
Radio-Paris (CFR). 174 kc/s
(1,725 m.); 75 kW.

Transmits at intervals from 6.45 a.m.
6.45 a.m.—Physical Culture. 7.30—
Weather and Physical Culture (con-
tinued). 7.45—Light Music on
Gramophone Records, Press Review,
and Weather Forecast. 12.0 noon—
Concert of Liszt's Music on Gramo-
phone Records. 12.30—Light Music
on Gramophone Records. 1.0—
Exchange Quotations, News, and
Weather Forecast.

1.5—Concert of Berlioz Music on
Gramophone Records. Overture,
"Carnaval romain." L'Absence.
Four Pieces from "The Damnation
of Faust." Three Pieces from
"Romeo and Juliet." Symphonie
fantastique. In the intervals at
1.30 and 2.0—Exchange Quo-
tations. 3.45—Exchange and
Market Prices.

4.30—Concert relayed from the
American Conservatoire, Fontaine-
bleau. 6.30—Market Prices, Weather,
Agricultural Report, Talk, and Racing
Results.

7.0—Gramophone Concert. Fontane
(Padilla). Miami (Mearsi). En-
grupido (Enriotti). Nobleza (Ro-
vatti). Sous les toits de Paris
(Moretti). C'est vous (Greenberg).
La mélodie du bonheur (Sylvain).
Bonsoir, Madame la Lune (Mari-
nier). Joujou (Nelson-Fischer).
Marche des petits pierrots (Bosc).

7.45—Commercial Prices and News.
8.0—Dramatic Programme: (a)
"Chevalerie rustique"—Comedy
(Verga), (b) "Petit, Mouillabourg
et Consorts" (Courteline). In the
interval at 8.30—News, Sports
Results, and Weather Forecast.
9.15—Press Review and News.

9.30—Chamber Concert. Theme and
Variations for Pianoforte (Faure).
String Quartet (Debussy). Ex-
cerpts from "Le Bourgeois Gentil-

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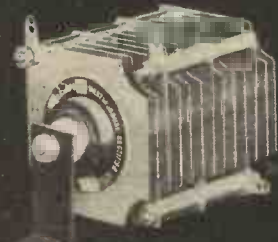
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PITTSBURGH (U.S.A.)

Westinghouse Electric (KDKA). 980 kc/s (306 m.); 25 kW. Relayed by W8XX on 48.86 m. and 25.27 m. (See Short Wave List.) Transmits at intervals from 12 noon. 9.0 p.m.—Teaberry Baseball Scores. 9.5—Business News. 9.15—Programme to be announced. 9.30—Weather Report. 9.32—Market Reports. 9.45—Programme to be announced. 10.0—KDKA Kiddies' Klub. 10.15—Teaberry Baseball Scores. 10.20—David Lawrence Dispatch. 10.25—KDKA Artist Bulletin. 10.28—Programme Announcements. 10.30—The Singing Lady, from New York. 10.45—Little Orphan Annie. 11.0—Time Signal. 11.1—Temperature Report. 11.2—Who's News Today. 11.6—Teaberry Sport Review. 11.11—Press News-Reeler. 11.14—Weather Report. 11.15—Westinghouse Parade. 11.45—1.30 a.m. (Tuesday)—New York Relay. 11.45 p.m.—Today's News by Lowell Thomas. 12.0 midnight—Pepsodent Amos 'n' Andy. 12.15 a.m.—Tastyest Jesters. 12.30—Stebbins Boys. 12.45—Billy Jones and Ernie Hare. 1.0—Time Signal and Carnation Contented Programme. 1.30—Programme to be announced. 2.0—4.0—New York Relay. 2.0—Sinclair Minstrels. 2.30—George Olson's Orchestra. 3.0—The Country Doctor. 3.15—Absorbine, Jr. Footnotes. 3.30—Tish. 3.45—Jane Froman and her Band. 4.0—Time Signal. 4.1—Teaberry Sport Review. 4.11—Temperature Report. 4.12—Weather Report. 4.15—The Music Box. 4.30—Jack Pettis and his Orchestra. 5.0—Terrace Gardens Orchestra, from New York. 5.30—Time Signal and Good Night.

PRAGUE (Czechoslovakia)

674 kc/s (438.6 m.); 120 kW. Transmits at intervals from 6.15 a.m. 5.50 p.m.—Talk: Next Season's Films. 6.0—Talk. 6.10—Light Music on Gramophone Records. 6.15—Agricultural Notes. 6.25—German Transmission: Talk on Taxes. 6.55—Harp Recital by Emilie Brozova. Nocturne (Klicka). Concert Waltz (Hasselmanns). Caprice, Gnomes (Hasselmanns). 7.15—Song Recital. 7.45—Talk. 8.0—See Brno. 9.0—Time Signal and News Bulletin, followed by a Symphony Concert, conducted by Vilem Mlejnek. 10.0—Time Signal, News Bulletin and Sports Notes. 10.15—Miscellaneous Announcements and Theatre Notes. 10.20—Light Music on Gramophone Records.

RADIO-SUISSE ROMANDE (SOTTENS) (Switzerland)

743 kc/s (403 m.); 25 kW.; Lausanne, 442 kc/s (680 m.); and Geneva, 395 kc/s (760 m.). 12.30 p.m.—Time Signal from Neuchâtel Observatory. 12.31—News Bulletin and Weather Forecast. 12.40 (from Lausanne)—Light Music on Gramophone Records. 1.0—Financial Notes. 1.5 (from Lausanne)—Popular Music on Gramophone Records. 1.45—5.0—Interval. 5.0—Time Signal from Neuchâtel Observatory. 5.1 (from Lausanne)—Programme for Children. 5.30—Concert by a String Orchestra. 7.0—Weather Forecast. 7.1 (from Lausanne)—Illustrated Talk: The Best Gramophone Records of 1932. 7.40 (from Geneva)—Recitations. 7.55—News Bulletin. 8.0 (from Geneva) Talk: The Coming Fortnight at Geneva. 8.10 (from Geneva)—Concert of Chamber Music. 8.45—Concert by the Station Orchestra. Soloist: Mlle. Magda Lavanchy (Violin). 10.0—News Bulletin and Weather Forecast. 10.15 (approx.)—Close Down.

REYKJAVIK (Iceland)

250 kc/s (1,200 m.); 21 kW. 11.0 a.m.—Weather Report. 5.0 p.m.—Weather Report. 8.30—Weather Forecast. 8.40—Popular Music by the Radio Quartet. 9.0—Chimes and Gramophone Records of Songs and Violin Solos. 9.30—News Bulletin.

RIGA (Latvia)

572 kc/s (525 m.); 15 kW. Transmits at intervals from 9.30 a.m. 6.30 p.m.—Agricultural Talk. 7.0—Weather Report. 7.5—Orchestral Concert of Operatic Music. 8.0—News Bulletin. 8.20—Orchestral Concert (cont'd). 9.0—News and Weather Report. 9.10 (approx.)—Concert (cont'd). 9.30—Concert of Popular Music. 10.15 (approx.)—Close Down.

ROME (Italy)

Ente Italiano Audizioni Radiofoniche (IRO). 680 kc/s (441 m.); 50 kW. Relayed by Naples, 941 kc/s (319 m.) and 2RO, 11,810 kc/s (25.4 m.). 8.15—8.30 a.m.—Giornale Radio and Announcements. 12.30—2.15 p.m. (approx.)—Weather, followed by Gramophone Concert of Variety Music. In the intervals at 1.20—Giornale Radio and Exchange, and at 1.30—Time and Announcements. 5.0—Exchange, Children's Radio Review, Giornale Radio and Announcements. 5.30—6.15—Instrumental and Vocal Concert. Soloists: Vera Nadia Poggioli (Soprano) and Antonio Saldarelli (Cello). Sonata, Op. 19, for 'Cello and Pianoforte (Rachmaninov). Soprano Solos: (a) Sognando (Guarnieri), (b) Aria from 'Edgar' (Puccini), (c) Aria from the Third Act of 'Louise' (Charpentier). 'Cello Solo: Popular Spanish Suite (Falla). Soprano Solo from 'Le Cid' (Massenet). 7.10 (Naples)—Shipping and Sports Notes. 7.15—Agricultural Notes, Announcements, and Giornale Radio. 8.0—Time, Announcements and Gramophone Records of Light Music. 8.20—Review of Books. 8.30—Sports Notes, Announcements and Tourist Report. 8.35 (approx.)—Concert of Light Music—Programme of Modern Songs by the Orchestra, conducted by M. Bonavolontà, the Station Chorus, Goret la Gori (Soprano), Sirenetta Altieri (Soprano), Juanita Plata (Soprano), Giovanni Baroni (Tenor), Ciglio (Tenor) and Nando del Duca (Tenor). Part I. Canzoniere 1932 (Cunzio). Duet for Soprano and Tenor: L'ammore cheste vo' (Lama). Tenor Solo. Cuori lontani (Ferruzzi). Soprano Solos with Chorus: Sorrisi d'amore (Alfieri). Tenor Solo with Chorus: Capri gentile (Valente). Soprano Solo, 'O cunto 'e Mariarosa (Tagliaferri). Tenor Solo, Nun me, ne 'mporta niente (Soffi). Soprano Solo, Varca d'oro (Lama). Talk. Part II. Duet for Soprano and Tenor: Quel che possiedi tu (Cioffi). Soprano Solo, Arvederici, Mimi (Bonavolontà). Tenor Solo with Chorus: Senza Maria (d'Annibale). Soprano Solo, Quando sei sul mio cuore (Marchetti) Tenor Solo with Chorus, M'ammore all'erta sta (Tagliaferri). Soprano Solo with Chorus: Canta, gioventù (Lama). Tenor Solo, Voce 'e chitarre (Tagliaferri). Duet for Soprano and Tenor, Beato te (Cioffi). Announcements. Part III. Tenor Solo with Chorus, Campagno d'o core (Cioffi). Soprano Solo, Promesse 'e femmene (Tagliaferri). Tenor Solo, Mi chiamo Armando (Brero) Soprano Solo, Ciara Memè (Valente). Tenor Solo, Dimme addo stàie (Cioffi). Soprano Solo, Sciantusella (Valente). Tenor Solo, Armunia d'ammore (Bonavolontà). Soloists and Chorus: Maggio menestrello (Marchetti). News Bulletin.

STOCKHOLM (Sweden)

Radiotjänst (SASA). 689 kc/s (436 m.); 55 kW. Relayed by Boden, 244 kc/s (1,229.5 m.); Göteborg, 932 kc/s (322 m.); Hörby, 1,166 kc/s (257 m.); Motala, 222.5 kc/s (1,348 m.); Östersund, 389 kc/s (770 m.); and Sundsvall 554 kc/s (542 m.). Transmits at intervals from 8.0 a.m. (Divine Service). 5.5 p.m.—Concert of Light Music. 5.40—Reading. 6.0—Popular Music on Gramophone Records. 7.0—The Practical Corner. 7.15—Weather and News Bulletin. 7.30 (from Göteborg)—Talk: Icelandic Culture. 8.0—Orchestral Concert of Swedish Music. 9.15—Literary Review. 9.45—Weather Report and News. 10.0—Chamber Music. Mozart Programme. String Quartet, No. 7, in D. Pianoforte Quartet in E Flat. 11.0 (approx.)—Close Down.

STRASBOURG (France)

Radio-Strasbourg (PTT). 869 kc/s (345 m.); 11.5 kW. 11.30 a.m.—Gramophone Concert of Variety Music. 12.45 p.m.—News in French and German. 1.0—Time Signal and Exchange Quotations. 1.10—Concert from Bordeaux-Lafayette. 1.50—Gramophone Records of Light Music. 2.0—4.45—Interval. 4.45—Talk: The History of the Jews in Alsace. 5.0—Orchestral Concert, conducted by Roskam. Cigány March (Oscheit). Waltz, Karnevals-botschaft (Fetras). Intermezzo, Omaka (Scassola). Overture, 'Haydée' (Auber). Selection from 'Sylvia' (Delibes). Intermezzo (Kalkmann). Spanish Piece, Almeria (Mahy). Les Airs de Mistinguette (Salabert). 6.0—Talk in French: The Tercentenary of Locke. 6.15—Topical Review. 6.30—Orchestral Concert, conducted by Roskam. Overture, 'La dame blanche' (Boieldieu). Simple avenue (Thomé). Waltzes (Brahms). Chansons de Miarka (Alexandre Georges). Selection from 'Cavalleria Rusticana' (Mascagni). Waltz, 'Träume' (Wagner). Polonaise from 'Eugene Onegin' (Tchaikovsky). 7.30—Time and News in French and German. 7.45—Orchestral Concert, conducted by Roskam. Ballet Music from 'Faust' (Gounod). Selection from 'Le Chemineau' (Leroux). Overture, 'Czar and Carpenter' (Lortzing). Entry March of the Halberdiens (Blankenburg). 8.30—Band Concert relayed from Thionville. La Robertsau (Sellenick) Overture, La Fête au Village voisin (Boieldieu). Saxophone Selection from 'Rigoletto' (Verdi). Pastorale, Intermezzo and Farandole from 'L'Arlesienne' (Bizet). Marche de la Garde Consulaire à Marengo. Address by the Rev. Heckmann: The Marriage of General Hoche at Thionville. Cigány March (Reyer). Selection from 'Lohengrin' (Wagner). Polka for Flute, La Volière (Corbin). Ballet Music from 'Isoline' (Messager). Sambre et Meuse (Rausky). 10.30 (approx.)—Close Down.

SCHENECTADY (U.S.A.)

General Electric Company (WGY). 790 kc/s (379.5 m.); 50 kW. Relayed at intervals by W2XAF and by W2XAD. (See Short Wave List.) Transmits at intervals from 11.45 p.m. 9.0 p.m.—Book Chat. 9.15—William Steven (Baritone). 9.30—Studio Ensemble. 9.50—News Items. 10.0—Stock Reports and Police Notices. 10.15—Swanee Serenaders, from New York. 10.40—A.B.C. Thumbail Sketches. 10.45—Swanee Serenaders, from New York. 11.0—Waldorf Astoria Orchestra, from New York. 11.30—Gordie Randall's Orchestra. 11.55—Baseball Scores. 12.0 midnight (WGY only)—Under the Big Top. 12.0 (W2XAF only)—Stock Reports. 12.15 a.m. (Tuesday)—Chandu, the Magician. 12.30—4.0—New York Relay. 12.30—Maxwell House Programme. 12.45—The Goldbergs. 1.0—Soconyland Sketch. 1.30—Voice of Firestone. 2.0—A & P Gipsies. 2.30—Parade of the States. 3.0—National Radio Forum. 3.30—Do You Remember? 4.0—Arm Chair Chats. 4.15—Johnny Albright (Crooner). 4.30—Gordie Randall's Orchestra. 5.0—Rex Koury (Organist). 5.30 (approx.)—Close Down.

SCHWEIZERISCHER LANDESSENDER (BEROMÜNSTER) (Switzerland)

653 kc/s (459 m.); 60 kW.; Basle, 1,229 kc/s (244.1 m.); and Berne, 1,220 kc/s (246 m.). 12.28 p.m.—Time Signal from Neuchâtel Observatory. 12.30—Weather Forecast and News Bulletin. 12.40

MONDAY continued

(from Basle)—Concert of Light Music, conducted by Otto Waldreit. 1.35—Weather Forecast and Exchange Quotations. 1.45—3.30—Interval. 3.30—Concert by the Small Station Orchestra. 4.0—An Afternoon in Spain—Concert on Gramophone Records. 5.0—Weather Forecast. 5.2—6.30—Interval. 6.30 (from Berne)—Talk for Children. 7.0—Time Signal and Weather Forecast, followed by Swiss Choral Music on Gramophone Records. 7.30 (from Berne)—Talk by Dr. Erwin Dreifuss. 8.0 (from Zürich)—Concert of Waltzes by the Station Orchestra, conducted by Hermann Hofmann. 8.30 (approx.)—Concert of Grotesque Music with Introductory Talk by Dr. Herbert Fleischer. 9.30—Weather Forecast and News Bulletin. 9.40—Orchestral Concert relayed from the Kursaal, Baden. Conductor: Ernő Kaisz. 10.30 (approx.)—Close Down.

TOULOUSE (France)

Radiophonie du Midi. 779 kc/s (385 m.); 8 kW. Transmits at intervals from 12.30 p.m. 5.0 p.m.—Transmission of Pictures. 5.15—Exchange Quotations. 5.30—Hawaiian Guitar Music. 5.45—Opera Music. Airs from (a) 'The Tales of Hoffmann' (Offenbach), (b) 'Le Jongleur de Notre-Dame' (Massenet), (c) 'Faust' (Gounod), (d) 'Tannhäuser' (Wagner). 6.0—Dance Music. 6.15—Exchange Quotations and Horse Racing Results. 6.30—Gramophone Records of Variety Music. 7.30—Programme Announcements and News. 7.45—Concert. Melodies from (a) 'Elle est à vous' (Yvain), (b) 'The Land of Smiles' (Lehár), (c) 'Tosca' (Puccini), (d) 'La Traviata' (Verdi) and (e) 'Lakmé' (Delibes). 8.15—Military Music. Melody from 'Light Cavalry' (Suppé). Overture, 'Zampa' (Hérold). Washington Post March (Souza). Manhattan Beach. 8.30—Accordion Solos. 8.45—Melodies from (a) 'La Fille de Madame Angot' (Lecocq), (b) 'Mam'zelle Nitouche' (Hervé) and (c) 'A Waltz Dream' (O. Straus). 9.0—Orchestral Music. 9.15—Sound Film Music. 9.30—Programme by a Viennese Orchestra. Rêve idéal (Fucik). Valse triste (Sibelius). Melody from 'Gipsy Love' (Lehár). Les cloches de Locarno (Murzillo). Piccolo, Piccolo (Joh. Strauss). 9.45—Opera Music. Melodies from (a) 'Sigurd' (Reyer), (b) 'Samson and Delilah' (Saint-Saëns), (c) 'The Magic Flute' (Mozart), and (d) 'L'Africaine' (Meyerbeer). 10.0—Concert of Light Music. In the interval at 10.30—North African News. 11.0—Concert—Ce n'est que votre main, Madame (Erwin). Mio Padre (Morctti). In a Chinese Temple Garden (Kettelbey). Le Baptême des Oiseaux (Bach-Laverne). Messe de Saint Hubert (Blondiaux). Melody from 'Les Millions d'Arlequin' (Drigo). Blanche de Castille (Bléger). Scènes alsaciennes (Massenet). Pensée d'automne (Massenet). C'est pour Raymond (Puig). La Toulousaine (Deffès). 12.0 midnight—Weather and Announcements.

TRIESTE (Italy)

Ente Italiano Audizioni Radiofoniche. 1,211 kc/s (247.7 m.); 10 kW. Transmits at intervals from 8.15 a.m. 7.0 p.m.—Quintet Concert. Carnival. Melody (Brodsky). Sotto al verone (De Micheli). Golden Rain (Waldteufel). Mosca bianca (Salomone). Selection from 'La Favorita' (Donizetti). Delia (Ferraris). Melody (German). 8.0 till Close Down—See Turin

TURIN (Italy)

Ente Italiano Audizioni Radiofoniche. 1,096 kc/s (273.7 m.); 7 kW. Relayed by Milan, 905 kc/s (331.5 m.), and Genoa, 959 kc/s (312.8 m.) and Florence, 599 kc/s (500.8 m.). Transmits at intervals from 8.15 a.m. 6.35 p.m.—Giornale Radio, Report of the Royal Geographical Society, Agricultural Notes and Announcements. 7.0—Musical Programme. Introduction, 'Dans une Pagode fleurie' (Mouton). Humoresque (Dvorák). A Festival in Bangkok (Norden). 7.25—Tourist Report. 7.30—Time, Announcements and Gramophone Records of Variety Music. 8.0—Giornale Radio, Weather and Gramophone Records of Light Music. 8.20—Review of New Books. 8.30—Orchestral Concert. Overture, 'Luisa Miller' (Verdi). Intermezzo from 'Cavalleria Rusticana' (Mascagni). Selection from 'Fedora' (Giordano). Prelude to the First Act of 'Dejanice' (Catalani). A Fête in Aranjuez (Demersmann) Overture, 'Maritana' (Wallace). 9.20—A One-Act Comedy. 10.0—Concert (cont'd). Suite, En Voyage (Gabriel-Marie). Prelude to the First Act of 'Edmea' (Catalani). Selection from 'Carmen' (Bizet). Bacchanale from 'Il Guarany' (Gomez). Overture, 'Queen for a Day' (Adam). 11.0—Giornale Radio.

VATICAN CITY (Italy)

15,123 kc/s (19.84 m.) (Morning), and 5,966 kc/s (50.26 m.) (Evening); 10 kW. 11.0—11.15 a.m.—Religious Information in Italian. 8.0—8.15 p.m.—Religious Information in Italian.

VIENNA (Austria)

Radio-Wien. 587 kc/s (517 m.); 15 kW. Relayed by Graz, 852 kc/s (352.1 m.); Innsbruck, 1,058 kc/s (283 m.); Klagenfurt, 662 kc/s (453.2 m.); Linz, 1,220 kc/s (246 m.); and Salzburg, 1,373 kc/s (218 m.). Transmits at intervals from 9.20 a.m. 4.55 p.m.—Vocal and Instrumental Concert. 6.15—Talk: A Journey through Middle Burgenland. 6.35—Talk: Vienna and its Suburbs. 7.0—Talk: Man and Machines. 7.20—Time, Weather and Programme Announcements. 7.30—Concert by George Boulanger and his Company. Walzerparaphrase (Joh. Strauss-Grünfeld). Volga Boat Song. Potpourri of Russian Folk Songs. Minuet (Beethoven). Flageolet-Waltz (Boulanger). Doina (Boulanger). Hora (Dinicu). Hungarian National Songs. Russian Canary Song. Schön Rosmarin (F. Kreisler). Max and Moritz (Boulanger). Quand je suis content (Boulanger). Das gibt's nur einmal (Heymann). Waltz from 'The Dubarry' (Millocker—Mackeben). Radetzky-March (Joh. Strauss). 8.30—'The Farewell Banquet'—Radio Operetta in Three Acts (Cvancara). Music by Fritz Seemann. The Orchestra of the Vienna Volksoper. 10.0—News and Announcements. 10.15—Gramophone Dance Music.

WARSAW (Poland)

Polskie Radio, 212.5 kc/s (1,411 m.); 120 kW. 11.58 a.m.—Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m.—Programme Announcements. 12.10—Polish Press Review. 12.20—Interval! 12.40—Weather Forecast. 12.45—Light Music on Gramophone Records. 1.25—Interval. 1.35—Light Music (cont'd). 2.10—Interval. 3.0—Economic Report. 3.10—Variety Music on Gramophone Records. 3.30—Traffic Report. 3.40—Popular Music on Gramophone Records. 4.35—Announcements. 4.40—Talk in French. 5.0—Concert by the Police Orchestra, conducted by A. Sielski. Polonaise, No. 8 (Oginsky). Waltz from 'Frau Luna' (Lincke) Caprice, (Katski). Selection from 'The Gipsy Baron' (Joh. Strauss). Mazurka from 'Halka' (Moniuszko). Slav March (Tchaikovsky). 6.0—Talk. 6.20—Dance Music from the Café 'Gastronomia'. 7.15—Miscellaneous Announcements. 7.35—Radio Journal. 7.45—Agricultural Notes. 7.55—Programme Announcements. 8.0—Reading. 8.15—'La Traviata'—Opera (Verdi) on Gramophone Records. Radio Journal in the Interval. 10.30—Interval. 10.35—Aviation Weather Forecast. 10.40—Sports Notes. 10.50—Dance Music. 11.30 (approx.)—Close Down.

Palace Theatre. Melody in A (Dawes). Intermezzo (d'Albert). Elegie in F (Edith Sahlström). Bayadere Dance from the Indian Suite, 'Taj Mahal' (Süling). Waltz Song, Hawaii (Rizzoli). 10.20—Recital of Arias from Verdi's Operas by Fritz Löffler (Baritone). Songs from 'La Traviata', 'Il Trovatore', 'A Masked Ball' and 'Rigoletto'. 10.40—Chamber Music on Gramophone Records. 11.0—Time, News and Weather. 11.55—Weather. 12 noon—Orchestral Concert from the Café Wilhelmsbau. Waltz Potpourri, Was die Donau erzählt (Moréna). Overture, 'Maritana' (Wallace). Intermezzo, In a Persian Market (Kettelbey). Potpourri of Viennese Songs and Operetta Music (Hruby). Selection from 'Tiefland' (d'Albert). Violin Solo: Falling Leaves (Carenna). Radetzky March (Joh. Strauss). 1.15 p.m.—Time, Weather, News, and Programme Announcements. 1.30—Gramophone Records of Eddie Saxon and his Orchestra. 2.0—2.15—Sponsored Programme with Gramophone Music. 4.30—Talk on Philately for Young People. 5.0—Concert from Munich. 6.15—Time and Weather. 6.25—Talk: The First Scheduled Transatlantic Air Service. 6.50—See Frankfurt. 7.15—Time, Weather, and Agricultural Notes. 7.30—10.20—See Frankfurt. 10.20—Time, Weather, News and Programme Announcements. 10.40—Talk on Chess. 11.5—Concert from Munich. 12 midnight (approx.)—Close Down.

TOULOUSE (France)

Radiophonie du Midi. 779 kc/s (385 m.); 8 kW. Transmits at intervals from 12.30 p.m. 5.0 p.m.—Transmission of Pictures. 5.15—Exchange Quotations. 5.30—Hawaiian Guitar Music. 5.45—Opera Music. Airs from (a) 'The Tales of Hoffmann' (Offenbach), (b) 'Le Jongleur de Notre-Dame' (Massenet), (c) 'Faust' (Gounod), (d) 'Tannhäuser' (Wagner). 6.0—Dance Music. 6.15—Exchange Quotations and Horse Racing Results. 6.30—Gramophone Records of Variety Music. 7.30—Programme Announcements and News. 7.45—Concert. Melodies from (a) 'Elle est à vous' (Yvain), (b) 'The Land of Smiles' (Lehár), (c) 'Tosca' (Puccini), (d) 'La Traviata' (Verdi) and (e) 'Lakmé' (Delibes). 8.15—Military Music. Melody from 'Light Cavalry' (Suppé). Overture, 'Zampa' (Hérold). Washington Post March (Souza). Manhattan Beach. 8.30—Accordion Solos. 8.45—Melodies from (a) 'La Fille de Madame Angot' (Lecocq), (b) 'Mam'zelle Nitouche' (Hervé) and (c) 'A Waltz Dream' (O. Straus). 9.0—Orchestral Music. 9.15—Sound Film Music. 9.30—Programme by a Viennese Orchestra. Rêve idéal (Fucik). Valse triste (Sibelius). Melody from 'Gipsy Love' (Lehár). Les cloches de Locarno (Murzillo). Piccolo, Piccolo (Joh. Strauss). 9.45—Opera Music. Melodies from (a) 'Sigurd' (Reyer), (b) 'Samson and Delilah' (Saint-Saëns), (c) 'The Magic Flute' (Mozart), and (d) 'L'Africaine' (Meyerbeer). 10.0—Concert of Light Music. In the interval at 10.30—North African News. 11.0—Concert—Ce n'est que votre main, Madame (Erwin). Mio Padre (Morctti). In a Chinese Temple Garden (Kettelbey). Le Baptême des Oiseaux (Bach-Laverne). Messe de Saint Hubert (Blondiaux). Melody from 'Les Millions d'Arlequin' (Drigo). Blanche de Castille (Bléger). Scènes alsaciennes (Massenet). Pensée d'automne (Massenet). C'est pour Raymond (Puig). La Toulousaine (Deffès). 12.0 midnight—Weather and Announcements.

TRIESTE (Italy)

Ente Italiano Audizioni Radiofoniche. 1,211 kc/s (247.7 m.); 10 kW. Transmits at intervals from 8.15 a.m. 7.0 p.m.—Quintet Concert. Carnival. Melody (Brodsky). Sotto al verone (De Micheli). Golden Rain (Waldteufel). Mosca bianca (Salomone). Selection from 'La Favorita' (Donizetti). Delia (Ferraris). Melody (German). 8.0 till Close Down—See Turin

TURIN (Italy)

Ente Italiano Audizioni Radiofoniche. 1,096 kc/s (273.7 m.); 7 kW. Relayed by Milan, 905 kc/s (331.5 m.), and Genoa, 959 kc/s (312.8 m.) and Florence, 599 kc/s (500.8 m.). Transmits at intervals from 8.15 a.m. 6.35 p.m.—Giornale Radio, Report of the Royal Geographical Society, Agricultural Notes and Announcements. 7.0—Musical Programme. Introduction, 'Dans une Pagode fleurie' (Mouton). Humoresque (Dvorák). A Festival in Bangkok (Norden). 7.25—Tourist Report. 7.30—Time, Announcements and Gramophone Records of Variety Music. 8.0—Giornale Radio, Weather and Gramophone Records of Light Music. 8.20—Review of New Books. 8.30—Orchestral Concert. Overture, 'Luisa Miller' (Verdi). Intermezzo from 'Cavalleria Rusticana' (Mascagni). Selection from 'Fedora' (Giordano). Prelude to the First Act of 'Dejanice' (Catalani). A Fête in Aranjuez (Demersmann) Overture, 'Maritana' (Wallace). 9.20—A One-Act Comedy. 10.0—Concert (cont'd). Suite, En Voyage (Gabriel-Marie). Prelude to the First Act of 'Edmea' (Catalani). Selection from 'Carmen' (Bizet). Bacchanale from 'Il Guarany' (Gomez). Overture, 'Queen for a Day' (Adam). 11.0—Giornale Radio.

VATICAN CITY (Italy)

15,123 kc/s (19.84 m.) (Morning), and 5,966 kc/s (50.26 m.) (Evening); 10 kW. 11.0—11.15 a.m.—Religious Information in Italian. 8.0—8.15 p.m.—Religious Information in Italian.

VIENNA (Austria)

Radio-Wien. 587 kc/s (517 m.); 15 kW. Relayed by Graz, 852 kc/s (352.1 m.); Innsbruck, 1,058 kc/s (283 m.); Klagenfurt, 662 kc/s (453.2 m.); Linz, 1,220 kc/s (246 m.); and Salzburg, 1,373 kc/s (218 m.). Transmits at intervals from 9.20 a.m. 4.55 p.m.—Vocal and Instrumental Concert. 6.15—Talk: A Journey through Middle Burgenland. 6.35—Talk: Vienna and its Suburbs. 7.0—Talk: Man and Machines. 7.20—Time, Weather and Programme Announcements. 7.30—Concert by George Boulanger and his Company. Walzerparaphrase (Joh. Strauss-Grünfeld). Volga Boat Song. Potpourri of Russian Folk Songs. Minuet (Beethoven). Flageolet-Waltz (Boulanger). Doina (Boulanger). Hora (Dinicu). Hungarian National Songs. Russian Canary Song. Schön Rosmarin (F. Kreisler). Max and Moritz (Boulanger). Quand je suis content (Boulanger). Das gibt's nur einmal (Heymann). Waltz from 'The Dubarry' (Millocker—Mackeben). Radetzky-March (Joh. Strauss). 8.30—'The Farewell Banquet'—Radio Operetta in Three Acts (Cvancara). Music by Fritz Seemann. The Orchestra of the Vienna Volksoper. 10.0—News and Announcements. 10.15—Gramophone Dance Music.

WARSAW (Poland)

Polskie Radio, 212.5 kc/s (1,411 m.); 120 kW. 11.58 a.m.—Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m.—Programme Announcements. 12.10—Polish Press Review. 12.20—Interval! 12.40—Weather Forecast. 12.45—Light Music on Gramophone Records. 1.25—Interval. 1.35—Light Music (cont'd). 2.10—Interval. 3.0—Economic Report. 3.10—Variety Music on Gramophone Records. 3.30—Traffic Report. 3.40—Popular Music on Gramophone Records. 4.35—Announcements. 4.40—Talk in French. 5.0—Concert by the Police Orchestra, conducted by A. Sielski. Polonaise, No. 8 (Oginsky). Waltz from 'Frau Luna' (Lincke) Caprice, (Katski). Selection from 'The Gipsy Baron' (Joh. Strauss). Mazurka from 'Halka' (Moniuszko). Slav March (Tchaikovsky). 6.0—Talk. 6.20—Dance Music from the Café 'Gastronomia'. 7.15—Miscellaneous Announcements. 7.35—Radio Journal. 7.45—Agricultural Notes. 7.55—Programme Announcements. 8.0—Reading. 8.15—'La Traviata'—Opera (Verdi) on Gramophone Records. Radio Journal in the Interval. 10.30—Interval. 10.35—Aviation Weather Forecast. 10.40—Sports Notes. 10.50—Dance Music. 11.30 (approx.)—Close Down.

PRINCIPAL EVENTS

TUESDAY (August 30)

SYMPHONY CONCERTS

- 5.0 p.m. Warsaw: The Philharmonic Orchestra.
- 7.50 " Stuttgart, Frankfurt.
- 8.0 " Budapest.
- 8.10 " Vienna.
- 8.25 " Munich.

CONCERTS (Vocal and Instrumental)

- 12.30 p.m. Radio-Paris: Ambroise Thomas programme.
- 3.0 " Copenhagen: Light Orchestral.
- 5.0 " Brussels No. 2: Opera Selections.
- 7.30 " Stuttgart, Frankfurt: Lehár's Music.
- 7.40 " Huizen: The Eve of the Queen's Birthday.
- 8.0 " Berlin (Witzleben).
- 8.0 " Radio-Suisse Romande: A Village Orchestra.
- 8.0 " Warsaw: Popular Orchestral.
- 8.30 " Breslau: Orchestral programme.
- 8.30 " Strasbourg: Light Music from Paris.
- 9.0 " Brussels No. 1: From Ostend Kursaal.
- 9.0 " Hamburg: Weber programme.
- 9.25 " Huizen: Light Orchestral.
- 10.0 " (app.) Rome: Japanese Music.
- 10.0 " Stockholm: Popular Orchestral.
- 10.15 " Copenhagen: French Romantic Music.

OPERAS AND OPERETTAS

- 7.30 p.m. Prague: "Aida" (Verdi).
- 8.0 " Radio-Paris: "Aida" (Verdi) (gram.)
- 8.30 " Italian Stations (Northern): "Hasschisch" (Delli Ponti, De Gregori).
- 9.45 " Schweizerischer Landessender: Operetta programme.

CHAMBER MUSIC

- 8.45 p.m. Rome.

PLAYS

- 8.30 p.m. Langenberg, Heilsberg: "Schneider Wibbel" (Müller-Schlösser).
- 8.40 " Copenhagen: "Wild Birds" (Pontoppidan).

DANCE MUSIC

- 9.45 p.m. Vienna; 10.0 p.m. Warsaw; 11.0 p.m. Copenhagen.

Ambroise Thomas

Thomas, in honour of whose birthday RADIO-PARIS gives a special gramophone programme to-day, was one of the long line of illustrious French masters who won the chief award of the Paris Conservatoire. Endowed with many of the gifts which make for success, among them a real instinct for the stage and a great capacity for hard work, he gave promise in



Ambroise Thomas

his youth already of rising to the summit in his own realm, a promise which his career fulfilled in no half-hearted way. Known now, outside France at any rate, almost solely by *Mignon*, an opera which is full from end to end of the charm and grace we associate with the French stage, he was the composer of at least twenty operas and full-sized ballets which enjoyed great popularity in the second half of last century. In his own day, indeed, he was easily the most popular of composers for the Paris stage. The latter part of his life was spent, however, in teaching, as head of the Paris Conservatoire, a post which he held for twenty-five years. It was the success of his opera, *Hamlet*, following on *Mignon*, which won him that distinction, and to *Mignon* he owed also the award of the Grand Cross of the Legion of Honour which was given to him on the occasion of its thousandth performance. Our picture is from a drawing bequeathed by the late W. Barclay Squire to the Royal College of Music: it appears in "Grove's Dictionary of Music and Musicians," and is reproduced here by courtesy of the College and of Messrs. Macmillan.

Saint-Saëns's *Henry VIII*

Saint-Saëns's opera on the subject of Henry VIII centres round the King and Anne Boleyn. The Ballet, which STOCKHOLM broadcasts this evening, is part of the wedding festivities, and in this concert arrangement consists of four movements. The first is called "Entry of the Clans," and begins with something of a Scots lilt. The second movement is also Scottish in character. Strings, with the woodwinds responding, begin it, and then the oboe plays a tune meant to be reminiscent of the bagpipes, with the harp and cellos imitating the drone. The third movement is a vivacious gipsy dance. The drum here is prominent with a rhythmic figure, and the boisterous dance tune is presented first by the violins and English horn. Only in the last movement is there the suggestion of England which the opera would lead one to expect. It is a jig, violins and then woodwinds playing the merry tune. There is a middle section with a new melody for the woodwinds and another, quieter, for violins, and then the Suite comes to an end with a really exhilarating Finale.

NATIONAL

	kc/s.	m.	kW.
London:	1,148	261.3	50
Daventry:	193	1,554.4	30
Northern:	995	301.5	50
10.15 a.m. (Daventry)—The Daily Service.			
10.30—10.45 (Daventry)—Time Signal (Greenwich), Weather Forecast for Farmers, and Shipping.			
12 noon—Edward O'Henry at the Organ.			
1.0 p.m.—Time Signal (Greenwich).			
1.0—Leonardo Kemp and his Piccadilly Hotel Orchestra.			
2.0—2.30—Gramophone Records.			
4.0 (Daventry)—The Scottish Studio Orchestra. Peggy Dow (Contralto).			
4.45—Time Signal (Greenwich).			
5.15 (Daventry)—The Children's Hour.			
5.15 (London and Northern)—Billy Merrin and his Commanders.			
6.0—Time Signal (Big Ben).			
6.0—"The First News." Weather Forecast, First General News Bulletin and Bulletin for Farmers.			
6.30—Time Signal (Greenwich).			
6.30—"The Foundations of Music. Bach's Preludes and Fugues, played by Victor Hely-Hutchinson.			
6.55—7.25—"Pride and Prejudice," by Jane Austen, read by Mr. Ronald Watkins.			
7.30—Pianoforte Recital by Vitya Vronsky.			
8.0—Promenade Concert. Mendelssohn. Noel Eadie; Robert Easton; Isoldé Menges; The B.B.C. Symphony Orchestra conducted by Sir Henry Wood. Overture, A Midsummer Night's Dream. Aria, I'm a Roamer (Son and Stranger). Scherzo (Octet in G Minor). Violin Concerto in E Minor. Noel Eadie and Orchestra: On Wings of Song; Fairy Revel. Symphony No. 4 in A (Italian).			
9.0—Time Signal (Greenwich).			
9.35—Interval.			
9.40—"The Second News."			
9.55 (Daventry)—Shipping Forecast.			
10.0—"The Pinchbeck Ring," an original play by Felix Aylmer.			
10.40—12 midnight (Daventry)—Dance Music. The B.B.C. Dance Orchestra.			
11.30—Time Signal (Greenwich).			

REGIONAL

	kc/s.	m.	kW.
London:	842	356.3	50
Midland:	752	398.9	25
Northern:	626	479.2	50
Scottish:	797	376.4	50
10.15 a.m. (except Midland)—The Daily Service.			
10.30—10.45 (except Midland)—Daventry National Programme.			
12 noon (except Scottish)—The Buxton Municipal Orchestra.			
12 noon (Scottish)—Daventry.			
1.0 p.m. (except Scottish)—A Ballad Concert.			
1.55 (Scottish)—Herring Bulletin.			
2.0—3.0 (except Scottish)—The Midland Studio Orchestra.			
2.0—2.30 (Scottish)—Daventry.			
4.0 (London)—Daventry National.			
4.0 (Northern)—Evensong, relayed from York Minster, York.			
4.0 (Scottish)—The Studio Orchestra.			
4.30 (Scottish)—An Organ Recital by Dr. W. Greenhouse Allt.			
4.45 (Northern)—Daventry National.			
5.15—The Children's Hour.			
6.0—"The First News."			
6.30—9.55 (Scottish)—Daventry.			
6.35 (London)—The Pini Tango Orchestra. Nino Maudini (Tenor).			
6.35 (Midland)—Ernest Parsons and his Orchestra.			
6.35 (Northern)—Dance Music.			
7.15 (Northern)—"All i't' Fam'ly."			
7.30 (Midland)—Organ Recital by Dr. Harold Rhodes.			
7.45 (London)—The Wireless Military Band. William Busch (Pianoforte).			
7.45 (Northern)—Gramophone.			
8.0 (Northern)—Mr. Noel Bell: From Leeds to Hull by Barge.			
8.5 (Midland)—"Bored and Lodging," by Graham Squires.			
8.20 (Northern)—Newcastle Programme.			
9.0—"The Second News."			
9.20 (London)—Raymond Newell (Baritone). The B.B.C. Orchestra.			
9.20 (Midland)—Recdnradio. A Gramophone Entertainment.			
9.20 (Northern)—"Shepherd's Purs." A Country Mood.			
9.55 (Scottish)—Scottish News.			
10.0—10.40 (Scottish)—Daventry.			
10.30—11.0 (Midland). 10.30 p.m.—12 midnight (London and Northern)—Dance Music.			

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO BRITISH SUMMER TIME

ALGIERS (N. Africa)

825.3 kc/s (363.3 m.); 13 kW. Transmits at intervals from 12.30 p.m. 7.0 p.m.—Exchange Quotations and Market Prices. 7.10—Shipping Notes and Weather Report. 7.15—Variety Concert. 7.45—Songs from Operas. 7.55—News Bulletin and Time Signal. 8.0—Concert of Chamber Music. 9.0—Concert of Oriental Music.

BARCELONA (Spain)

Radio-Barcelona (EAJI). 860 kc/s (349 m.); 8 kW. Transmits at intervals from 8.15 a.m. 8.0 p.m.—Trio Concert. Ochsennuett (Haydn). Romance (Chopin). Canzonetta (Toselli). Selection from "I Pagliacci" (Leoncavallo). 8.30—Exchange Quotations and Request Gramophone Records. 9.15—Talk on Football. 9.30—Request Gramophone Records (contd.) and News Bulletin. 10.0—Chimes. Weather Report, Programme for Seamen and Market Prices. 10.10—Orchestral Music. Spanish March (Dreyer). Selection from "The Circus Princess" (Kalman). Waltz, Dans les nuages (Waldteufel). 10.30—Song Recital. 11.0—Vicente Diez de Tejada reads his Story, "Immortalidad." 11.15—Concert by a Male Voice Choir. 12 midnight—Dance Music by the Crazy Boys' Orchestra, relayed from the San Sebastian Casino. 1.0 a.m. (Wednesday)—Close Down.

BERLIN (Germany)

Königs Wusterhausen. 183.5 kc/s (1,635 m.); 60 kW. Transmits at intervals from 5.45 a.m. 12 noon—Weather for Farmers, followed by Gramophone Concert and Second Weather for Farmers. 12.55 p.m.—Nauen Time Signal. 1.35—News Bulletin. 2.0—Gramophone Concert of Operatic Duets relayed from Berlin (Witzleben). 3.0—Programme for the Housewife, relayed from Munich. 3.50—Weather and Exchange. 4.0—Talk: False Conceptions of Careers.

4.30—5.30—See Leipzig. 5.30—Talk: Books on the Industrial Crisis. 6.0—Musical Exercises. 6.30—Talk: Russian Affairs and German Industry. 6.55—Weather for Farmers. 7.0—Talk for Civil Servants. 7.30—A Forecast of the September Radio Programmes. 7.40—Radio Technical Talk, followed by Weather for Farmers. 8.0 (approx.)—10.30—See Berlin (Witzleben). 10.30—Concert from Hamburg. 12 midnight (approx.)—Close Down.

BERLIN (Germany)

Witzleben. 715 kc/s (419.5 m.); 1.5 kW. Transmits at intervals from 6.0 a.m. 6.25 p.m.—Review of Books. 6.55—The Witzleben Station informs its Listeners. 7.0—Topical Talk. 7.10—Concert of Folk Songs. 7.40—Reading. 8.0—Orchestral Concert conducted by Bruno Seidler Winkler. 8.45—Round Berlin—with Introductory Talk by Wilhelm Scheuermann. 9.30—Concert (contd.). 10.15—News Bulletin.

BORDEAUX-LAFAYETTE (France)

(P.T.T.) 986 kc/s (304 m.); 13 kW. Transmits at intervals from 12 noon. 7.30 p.m.—News Bulletin and Exchange Quotations. 7.40—Popular Music on Gramophone Records. 8.10—Lottery Results. 8.15—News and Weather Forecast. 8.30—See Paris (Eiffel Tower).

BRATISLAVA (Czechoslovakia)

1,076 kc/s (279 m.); 14 kW. Transmits at intervals from 10.0 a.m. 6.0 p.m.—Programme for Children. 6.20—Sonata in A Minor, Op. 36, for Cello and Pianoforte (Grieg). 7.0—See Prague. 10.15—Programme Announcements. 10.20—Concert by a Cigány Orchestra.

BRESLAU (Germany)

923 kc/s (325 m.); 1.5 kW. Relayed by Gleütz, 1,184 kc/s (253 m.). Transmits at intervals from 6.0 a.m. 6.40 p.m.—Recital of Spanish Violin Music by Elise Berry-Szephazy. Sonata for Violin and Pianoforte (Cassado). Arabian-Spanish Cigány Song, La Gitana (Kreisler).

Tango, Op. 165, No. 2 (Albeniz). Spanish Dance from "La vida breve" (Falla-Kreisler). 7.15—Weather for Farmers. 7.17 (approx.)—Gramophone Concert. 8.0—Talk: Goethe and Science. 8.30—Concert by the Silesian Symphony Orchestra, conducted by Rischka. Overture, "Egmont" (Beethoven). Procession to the Minster from "Lohengrin" (Wagner). Minuet in E Minor (Grieg). Overture, "William Tell" (Rossini). Waltzes (G. E. Rischka): (a) Waltz in A Minor, (b) Waltz in F Minor, (c) Waltz in B Minor. Karelia Suite (Sibelius). Turkish March (Mozart). Waltz: "Trau, schau, wem (Strauss). 9.50—Time, Weather, News, Sports Notes and Programme Announcements. 10.20—Sports Talk. 10.30—Dance Music. 12 midnight (approx.)—Close Down.

BRNO (Czechoslovakia)

878 kc/s (342 m.); 35 kW. Transmits at intervals from 10.0 a.m. 6.0 p.m.—Talk in Esperanto. 6.15—Talk for Workers. 6.25—German Transmission: Talk and Agricultural Report, followed by Agricultural Talk. 7.0—See Prague. 10.15—News Bulletin. 10.20—Light Music on Gramophone Records.

BRUSSELS (Belgium) (No. 1)

I.N.R. 590 kc/s (509 m.); 15 kW. 12 noon—Gramophone Concert of Light Music. 1.0 p.m.—Le Journal Parlé. 1.10—Soloist Concert on Gramophone Records. Pianoforte Solo, Valse oubliée (Liszt). Violin Solo, Gitana (Kreisler). Flute Solo, Carnaval de Venise (Genin). Harp Solo, Etude de Concert (Godefroy). Clarinet Solo, Prelude and Waltz (Laparra). Cello Solo, Chansca villageoise (Popper). Celesta Solo, Le Carillon (Blauw). Horn Solo, Romance in F (Saint-Saëns). Horn Solo, Réverie (Bellonot). Air varié for two Cornets (Wittmann). Xylophone Solo, La Fourterelle (Damaré). Saxophone Solo, Saxophobie (Wiedoeffl). Balalaika Selection: Czardas (Monti). First Dance from La vida breve (Falla). Organ Solo, Amapola (Popy).

TUESDAY
continued

5.0—Concert by the Radio Orchestra, conducted by M. Walpot. Marche aux flambeaux (Meyerbeer). Selection from "Bocaccio" (Suppé). Gavotte des basiers (Popy). Muguet (Missa). Abandon (Waldeufel).
5.45—Programme for Children.
6.20—Literary Review. 6.30—Gramophone Records of Celebrated Pianists. Francis Planté: (a) At the Fountain (Schumann), (b) Le Psame pendant la rafale (Chopin). Emile Sauer: La Campanella (Liszt). Paderewsky: Etude (Chopin). Arthur de Greef: Hungarian Fantasia (Liszt). Rachmaninov: Prelude in C Sharp Minor (Rachmaninov). Brailovsky: Perpetuum mobile (Weber). Cortot: Second Hungarian Rhapsody (Liszt). 7.15—Catholic Bulletin. 7.30—Cinema Review.

8.0—Orchestral Concert, conducted by M. Kumps. Hungarian Comedy Overture (Keler-Bela). Selection from "Sunny" (Kern). Bibelots (Rapp). Waltz (Scassola). Ballet des parfums (Popy). 9.0—Concert from the Kursaal, Ostend. Conductor: Toussaint de Sutter. Soloist: Mme. Yvonne Andry. Marche jubilaire (Lebrun). Concert Overture (Glazounov). Aria for Violin (Bach). Aria from "Tosca" (Puccini). Spanish Caprice (Rimsky-Korsakov). Aria from "Carmen" (Bizet). Overture, "Russian and Ludmilla" (Glinka). After the Concert: Journal Parlé and Gramophone Dance Music. 11.0 (approx.)—Close Down.

BRUSSELS (Belgium) (No. 2)

N.I.R. 887 kc/s (338.2 m.); 15 kW. Programme in Flemish.
12 noon—Gramophone Concert. Airs from "The Queen of Sheba" (Gounod). L'Apprenti Sorcier (Dukas). Melody from "Figaro" (Mozart). Le Cor (Flegier). Dans la Forêt (de Fay). Slav Dance No. 16 (Dvorak). Slav Rhapsody (Friedemann). Alma de Dios (Serrano). Partita (Alvarez). Air from "The Bartered Bride" (Smetana). Academic Overture (Brahms).
1.0—Le Journal Parlé. 1.10—Gramophone Concert (contd.). Selection from "La Vida Breve" (Fallá). Trumpet Voluntary (Purcell). Kentucky Babe (Geibel). Valse Caprice (Barrios). Sing you Sinners (Coslow). Spanish Dances (Moszkowsky). The Woman in the Shoe (Freedor Brown). Tango, Valencia (Pizzaro). Melody (Stolz). Waltz (Payne). Air (Oostermans). Melody (Rotter). Gallop (Galaverni).
5.0—Opera Selections by the Orchestra, conducted by Jean Kumps.
5.45—Programme for Children.
6.20—Concert of Gramophone Music. March, The Ruins of Athens (Beethoven). On the Wings of Song (Mendelssohn). Romance in F (Beethoven). The Unfinished Symphony (Schubert). Ewige Liebe (Brahms).
7.15—Talk. 7.30—Le Journal Parlé.
8.0—Concert of Request Gramophone Music. Emperor Waltz (Joh. Strauss). The Canary (Poliakini). Mattinata (Leoncavallo). Prelude (Rachmaninov). Thème and Variations (Proch). Humoresque (Dvorak). Dites-moi si je suis belle (Massenet). Air from "La Gioconda" (Ponchielli). 8.40—Variety Programme. In an interval at 10.0—Le Journal Parlé. 11.0 (approx.)—Close Down.

BUCHAREST (Romania)

Radio-Bucarest. 761 kc/s (394 m.); 12 kW.
Transmits at intervals from 11.0 a.m. 4.0 p.m.—Concert of Light Music and Romanian Music by the Motosi Orchestra. 6.0—Educational Talk. 6.40—Popular Music on Gramophone Records. 7.0—Time Signal.
7.11—Concert of Light Music by the Station Orchestra. 7.30—Talk to be announced.
7.45—Song Recital by S. Szekely. 8.15—Orchestral Concert (contd.). 8.45—News Bulletin.

BUDAPEST (Hungary)

545 kc/s (550 m.); 18.5 kW.
Transmits at intervals from 9.15 a.m. Programme also relayed on 210 m. from 8.0 p.m.—12 midnight.
6.0—Concert by the Band of the Royal Hungarian Postal Officials, relayed from the Margareteninsel. 7.30—Programme by S. Szöllösy.
8.0—Symphony Concert by the Concert Orchestra. Soloist: Elisabeth Horvay. Carneval roman (Berlioz). Eine kleine Nachtmusik (Mozart). Scherzo (Mendelssohn). Song: Aria from "Turandot" (Puccini). Rurality Hungarian (Dohnányi). Air from "Euryanthe" (Weber). Selection from "Faust" (Gounod). Symphony No. 4 (Tchaikovsky). 9.15—News Bulletin, Talk and Concert by the Nándor Sovánka Cigány Orchestra from the Café Baross.

COPENHAGEN (Denmark)

1,067 kc/s (281 m.); 0.75 kW. Relayed by Kalundborg, 260 kc/s (1,153 m.).
Transmits at intervals from 7.27 a.m. 12 noon—Time and Chimes from the Town Hall. 12.5 p.m.—Weather Report. 12.7—String Ensemble Concert, relayed from the Hotel d'Angleterre. 2.0—3.0—Interval.
3.0—Concert by Mogens Hansens' Instrumental Ensemble. Soloist: Gustav Hellemann (Songs). Overture, "Les Dragons de Villars" (Maillart). Waltz, Krolls Balklange (Lumbye). Invocation (Gounod). Serenade (Gade). Rheinlegendchen (Mahler). Selection from "Sylvia" (Delibes). Danish Songs: (a) Nu er det Vaar i Skove, (b) Ved Søen i Skoven and (c) Solnedgang (J. P. E. Hartmann), (d) I det Frie (Emil Hartmann), (e) Flyv lille Sommerfugl (R. Bay), (f) Violerne (Gade), (g) O Du er lig en Rose rod (Rosenfeld), (h) Hvorfor straks jeg dig elsked (Lembecke), (i) Midsommersang (Enna). Hungarian March from "Hunyadi Laszlo" (Erkel). Sommersang (Jacobsen). Waltz (Ganne). Sylphs' Dance from "The Damnation of Faust" (Berlioz). Selection from "King and Marshal" (Heise). Festpolonaise (Svendsen).
5.0—Programme for Children: Reading from "David Copperfield" (Dickens). 5.40—Exchange and Fish Market Prices. 5.50—Talk and Readings in German: Stefan George, Rainer Maria Rilke and Hugo von Hofmannsthal. 6.20—German Lesson for Beginners. 6.50—Weather Forecast. 7.0—News Bulletin. 7.15—Time Signal. 7.30—Talk: Politics in the Month of August. 8.0—Chimes from the Town Hall.
8.5—Classical Music for String Instruments. The Station String Orchestra, conducted by Launy Grondahl. Overture, "Euristeo" (Hasse). Minuet from "Berenice" (Handel). Rondo, Air and Minuet from the Suite for Strings (Purcell). Serenata notturna (Mozart).
8.40—"The Wild Fowl"—Comedy in Three Acts (Pontoppidan), followed by Weather Report. 10.0—News Bulletin.
10.15—French Romantic Music by the Station Orchestra, conducted by Launy Grondahl. Overture, "Djamileh" (Bizet). Selection from "The Pearl Fishers" (Bizet). Pastoral, Nocturne, March and Stretta from the Orchestral Suite (Massenet). Prelude to "Mirella" (Gounod). March and Selection from "The Queen of Sheba" (Gounod).
11.0—Dance Music from the Bellevue Strandhotel. In the interval at 12 midnight—Time and Chimes from the Town Hall. 12.30 a.m. (Wednesday)—Close Down.

DUBLIN (Ireland)

(2RN). 725 kc/s (413 m.); 1.2 kW. Relayed by Cork, 1,337 kc/s (224.4 m.).
1.30—2.0 p.m.—Time Signal, Weather Forecast, Stock Report and Popular Music on Gramophone Records. 6.0—Light Music on Gramophone Records. 6.15—Programme for Children. 7.0—Variety Music on Gramophone Records. 7.15—News and British Market Report. 7.30—Time Signal. 7.31—Gaelic Talk. 7.45—Tennis Lesson. 8.0—Concert by the Augmented Station Orchestra. 8.30—Soprano Solos. 8.45—Uilleann Pipes. 8.55—Concert by the Augmented Station Orchestra (contd.). 9.30—Contraalto Solos by Elsie Hayes. 9.45—Piano-forte and Violin Recital by Mary Roughan and Pauline St. John Pike. 10.5—The Augmented Station Orchestra (contd.). 10.30—Time Signal, News, Weather Report and Close Down.

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FÉCAMP (France)

Radio Normandie. 1,345 kc/s (223 m.); 10 kW.
Transmits at intervals from 12 noon. 7.30 p.m.—Radio Gazette. 8.0—News Bulletin. 8.30—Light Music on Gramophone Records. 9.0 (from Le Havre)—Le Havre Review and Concert. 11.0—Concert of Popular Songs. 12 midnight—Dance Music by the Ibcolians.

FLORENCE (Italy)

Ente Italiano Audizioni Radiofoniche. 599 kc/s (500.8 m.); 20 kW.
See Turin.

FRANKFURT-am-MAIN (Germany)

770 kc/s (390 m.); 1.5 kW. Relayed by Cassel, 1,220 kc/s (246 m.). Transmits at intervals from 6.0 a.m. 5.0 p.m.—Orchestral Concert. Adlon-Marsch (Heinecke). Overture, "Marinarella" (Fucik). Waltz, Lustige Brüder (Vollstedt). Negro Cradle Song (Clutsam). Flotow Potpourri (Urbach). Siamesische Wachtparade (Lincke). Overture, "Edelweiss" (Komzak). Valse romantique (Heinecke). Selection from "The Bird Fancier" (Zeller). March, Vater Rhein (Lincke).
6.15—Time and Economic Notes. 6.25—Talk: Aerial Safety. 6.50—See Stuttgart. 7.15—Time, Programme Announcements, Exchange Quotations and Weather. 7.30—10.20—See Stuttgart. 10.20—Time, News, Weather and Sports Notes. 10.45—See Stuttgart. 12 midnight (approx.)—Close Down.

HAMBURG (Germany)

Norag (ha, in Morse). 806 kc/s (372 m.); 1.5 kW. Relayed by Bremen, 1,112 kc/s (270 m.); Flensburg, 1,319 kc/s (227.4 m.); Hanover, 530 kc/s (566 m.); and Kiel, 1,292 kc/s (232.2 m.).
Transmits at intervals from 5.45 a.m. 5.30 p.m.—Talk: The Mentality of the Youth of To-day. 5.55—Book Review. 6.30—Talk: The German Colony in China. 6.55—Exchange Quotations. 7.0—Topical Talk. 7.15—Weather Forecast.
7.20—Concert by the Small Station Orchestra. Overture, "Zampa" (Herold). Valse fantastique (Heinecke). Suite, Luxustelegramme (Hollaender). Negertanz (Niemann). The Forge in the Forest (Michaelis). Pizzicato-Ständchen (Krome). Karneval der Zwerge (Raasch). Modern Ballet Suite (Armandola). Champagner-Walzer (Blon). Overture, "Die Irrfahrt ums Glück" (Suppé).
9.0—Weber Concert by the Station Orchestra and Choir. Soloists: Eva Schlee (Soprano), Gerh. Maass (Pianoforte), Bernhard Jakschat (Baritone) and others. Commentary by Siegfried Scheffer. Overture, "Turandot". Rondo ungarese— for Bassoon and Orchestra. Three Songs from "Leier und Schwert": (a) Gebet während der Schlacht, for Baritone and Pianoforte, (b) Sword Song for Four-Part Male Voice Choir, (c) Lützows wilde Jagd, for Four-Part Male Choir. Two Pianoforte Duets from Huit-pièces a quatre mains. Three Soprano Solos: (a) Reigen, (b) Unbefangenheit, (c) Wiegenglied. Overture, "Oberon". 10.0—Time, Weather, Sports Notes and Announcements. 10.20 (from Hanover)—Instrumental Cabaret Concert. Schützenzug in Krähwinkel (Bokorni). Clarinet Solo: Waltz Air (Schreiner). Die Schildbürger kommen (Köhler). A Humorous String Quartet (Karbe). Minuet (Schäfer). Two Piccolo Flutes: Die beiden kleinen Finken (Kling). Clarinet Solo: Polka, Sorgenfrei (Vollstedt). Vibraphone Solo: Waltz Intermezzo, Feenreigen (Schmidt). Saxophone Solo: Gioconda (Elbe). Waltz Intermezzo, Püppchens erste Liebe (Meisel). Potpourri, Im siebenten Himmel (Fétras). Humoresque Familie Gänselein (Köhler). Piccolo Solo: Concert Idyll, Tirili (Ganglberger). Krähwinkler Landsturm-Wachtparade (Hefner).

HEILSBURG (Germany)

1,085 kc/s (276.5 m.); 60 kW. Relayed by Danzig, 662 kc/s (453.2 m.). Transmits at intervals from 6.0 a.m. 1.30 p.m.—Gramophone Concert. Part I. The Bird's Concert. Song of the Forest Birds. Nightingale and Song Thrush. Nightingale and Blackbird. Nightingale and Hedge-Sparrow. A Summer Evening—Nightingales and Church Bells. Nightingales' Song with "Cello Accompaniment." Part II. Light Music. Oft hab' ich vom Glück geträumt (Kálmán). Du bist das Liebste (Kálmán). Oriental Suite (Popy). Ufatonbomben (Borehert). So küsst man nur in Wien (Abraham). Musik muss sein (May). Gitana March (Piefke).
2.30—Sponsored Programme with Gramophone Records. 4.0—Musical Improvisations for Children. 4.30—Concert by the Police Band, relayed from the Kurgarten, Zoppot. Erzherzog Albrecht March (Komzak). Overture, "Hunyady Laszlo" (Erkel). Adagio from the "Sonata Pathétique" (Beethoven). Pastorale and Gavotte from "Auf hohen Befehl" (Reinecke). Melodies from "L'Africaine" (Meyerbeer). Wedding Serenade (Klose). Fantasia on Four German Songs (Schmidt). Waltz, Dorfkind (Kálmán). Potpourri of Strauss, Millöcker and Suppé Melodies (Ziehner). Deutsche Marschperlen—Potpourri of German Marches (Blankenburg).
6.15—Agricultural Prices. 6.30—Talk: A Walk through Königsberg in 1800. 7.0—Talk for Workers: The Operative and his Machine. 7.25—Weather Forecast. 7.30—See Leipzig.
8.30—See Langenberg. 10.15—Weather Forecast, News Bulletin and Sports Report.

HILVERSUM (Holland)

(transmitted from Huizen). 160 kc/s (1,875 m.); 8.5 kW.
6.25—9.40 a.m.—Programme of the Workers' Radio Society (V.A.R.A.). 6.25—6.40 and 7.10—7.25—Physical Culture. 7.40—Gramophone Records of Variety Music. 9.40—Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55 till Close Down—V.A.R.A. Programme. 9.55—Concert for Workers. 11.40—Sextet Concert of Light Music. 1.25—1.55 p.m.—Interval. 1.55—Culinary Talk. 2.40—Organ Recital by Joh. Jong. Overture, "The Thieving Magpie" (Rossini). Minuet (Beethoven). Vision de Salomé (Joyce). Sweethearts on Parade (Lombardo). Selection from "Lilac Time" (Schubert-Berté).
3.0—A One Act Comedy (Kalf-Hermans). 3.40—Gramophone Records of Variety Music.
4.10—Septet Concert. Potpourri of Waltzes, Was die Donau erzählt (Kronbrecht). Buddhas Liebesfeier (Kronberger). Overture, "The Caliph of Bagdad" (Boieldieu). Waltz, Réve (d'Ambrosio). Es war einmal ein Walzer (Lehar). Es gibt noch Märchen (Lehar). Serenade (Widor). Selection from "Carmen" (Bizet). Natascha (Margulies). 5.10—Programme for Children. 6.10—Programme by the People's Radio University (R.V.U.). 6.40—Orchestral Concert conducted by Hugo de Groot. Songs by Albert de Booy.
7.10—"The Knuddeman Family goes Camping"—Sketch (Huppeldy). 7.40—Organ Recital by Reginald Foort. Overture, "Poet and Peasant" (Suppé). Grasshopper's Dance (Bucalossi). Medley of Dutch Folk Songs (arr. Fallá). Humoresque (Dvorak). Etude (Rubinstein). 8.10—Topical Dialogue. 8.25—Organ Recital (contd.). 8.55—Play in One Act.
9.5—Orchestral Concert conducted by Hugo de Groot. Overture, "The Black Domino" (Auber). Norwegian Artists' Carnival (Svendsen). Melody (Schmalstich). Hungarian Dances Nos. 15 and 18 (Brahms). Melody (Paderewsky). March from "Sigurd Jorsalfar" (Grieg).
9.40—News Bulletin. 9.55—String quartet (contd.). Flattergeister (Strauss). Le Pas des fleurs from "Nalla" (Delibes). Valse lente (Popy). Melody (Coates). Waltz from "The Sleeping Beauty" (Tchaikovsky). Valse bluette (Drigo). Très jolie (Waldeufel).
10.40—Gramophone Records of Variety Music. 11.40 (approx.)—Close Down.

HUIZEN (Holland)

(transmitted from Hilversum). 1,013 kc/s (296.1 m.); 20 kW. (7 kW. up to 4.40 p.m.).
Programme of the Catholic Radio Society (K.R.O.). 7.40—8.55 a.m.—Gramophone Records of Light Music. 9.40—Popular Music on Gramophone Records. 11.10—Religious Talk. 11.40—Police Notes. 11.55—Trio Concert. Wenn du gehst (Benatzky). Synopation (Kreislner). The Dolls' Waltz (Bayer). Wiegenglied (Schumann). Selection from "The Little Dutch Girl" (Kálmán). In Gedanken versunken (Schneider-Bobby). Selection from "Phi-Phi" (Christiné). Kann' nicht küssen ohne Liebe (Abraham). Waltz from "Lysistrata" (Lincke). Tambourin (Rameau). Finale.
1.25 p.m.—Gramophone Records of Light Music. 1.40—Programme for Women. 2.40—Gramophone Records of Light Music. 3.10—Interval. 3.40—Cesar Franck Music—Piano-forte Recital by Hans Straesser. Prelude. Air. Finale.
4.40—Concert. Czardas (Kempner). Divoleta capriccio (Lindemann). Liebeswalzer (Moszkowsky). Im

Wandel der Zeiten (Morena). Songs without words (De Micheli). Sweden in Song and Dance (Pagel).
5.40—Educational Talk.
6.10—Concert (continued). Overture, "Titus" (Mozart). Klänge aus Rumanien (Dauber). Anamitische Zauberer (Siede). Ballet Music from "La Gioconda" (Ponchielli). Finale. 6.50—Talk: The History of Wireless in Holland. 7.10—Police Notes. 7.25—Talk.
7.40—The Eve of the Queen's Birthday—Festival Concert, relayed from the Concertgebouw, Amsterdam. Address by Dr. W. G. Harenstein. Fantasia on Dutch Songs (Bouwmeester). Melodies for Choir: (a) Dutch National Anthem, Wilhelmus, (b) Haec Dies. Address by M. J. Schouten. Melody for Choir: Domine Salvam fac. Address by M. Hendrix. Melody for Choir: Groot is de Heer. Song for Choir and Organ. 9.10—News Bulletin. 9.25—Orchestral Concert. 10.40—Recitation. 11.5—Gramophone Records of Light Music. 11.40 (approx.)—Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 7.5 kW.
See Copenhagen.

KATOWICE (Poland)

734 kc/s (408 m.); 16 kW.
Transmits at intervals from 12.5 p.m. 7.10 p.m.—Announcements, News Bulletin and Popular Music on Gramophone Records. 7.45—Gramophone Concert. 10.5—Concert of Dance Music.
LAHTI (Finland)
167 kc/s (1,796 m.); 54 kW. Relayed by Helsinki, 815 kc/s (368.1 m.).
Transmits at intervals from 11.0 a.m. 6.15 p.m.—Talk. 6.40—Musical Programme. 6.55—Song Recital, by Vilho Viikari. 7.50—Recitations. 8.10—Concert by the Station Orchestra. 8.45—News in Finnish. 9.0—News in Swedish. 9.15—Concert of Military Music. 10.0 (approx.)—Close Down.

LANGENBERG (Germany)

Westdeutscher Rundfunk. 635 kc/s (473 m.); 60 kW.
Transmits at intervals from 6.45 a.m. 12 noon—Gramophone Concert. The Symphony Orchestra conducted by Alois Melichar. Overture, "Banditenstreiche" (Suppé). Berlin Orchestra conducted by Alois Melichar: Potpourri of Verdi's Opera Music. The Berlin Philharmonic Orchestra, conducted by Julius Prüwer: Waltz, Frühlingstimmen (Joh. Strauss). Franz Völker (Tenor): (a) Heut' ist ja noch heur' (Schultz-Bach), (b) Mein Lied (Sabatini-Eschelbach). The Berlin Philharmonic Orchestra, conducted by Wilh. Furtwängler: Ballet Music from "Rosamunde" (Schubert). Maria Olszewska (Contralto): Songs (Brahms): (a) Von ewiger Liebe, (b) Die Mainacht. Franz Völker (Tenor): Folk Song Potpourri. The Berlin Orchestra, conducted by Alois Melichar: Concert Waltz, Op. 47 (Glazounov). Franz Baumann (Tenor): (a) Die Post im Walde (Schäffer), (b) Grüsse an die Heimat (Krome). Lillie Claus and Helge Roswaenge and The Berlin Orchestra conducted by Alois Melichar: Melodies from "Die geschiedene Frau" (Fall-Leon). Florentine March (Fucik).
1.15 p.m.—Weather, News and Time. 1.30—See Stuttgart. 2.30—3.30—Interval. 3.30—Economic Notes and Time. 3.50—Programme for Children. 4.20—Talk: "The Brazilian Forests." 4.40—Reading. German Towns—Weimar. 5.0—See Frankfurt. 6.20—Reading of Unpublished Writings (Georg Pijer). 6.45—Weather, Time, Economic Notes and Sports Notes. 7.0—Talk for Women. 7.20—Wireless Notes. 7.30—Book Review. 7.55—News Bulletin. 8.0—Music Talk: From the Flute to the Kettle-drum. 8.30—"Schneider Wibbel"—Comedy (Hans Müller-Schlösser). 10.5—News and Silent Night.

LEIPZIG (Germany)

1,157 kc/s (250 m.); 2 kW. Relayed by Dresden, 941 kc/s (319 m.).
Transmits at intervals from 6.0 a.m. 4.30 p.m.—Concert by the Leipzig Symphony Orchestra conducted by Helmuth Meyer-Radonn. Overture, "The Golden Cross" (Brüll). Eine Serenadenmusik, Op. 40 (Juon). Swedish Dances (Bruch).

TUESDAY
continued

Melodies from "Die indische Witwe" (O. Straus). Melodies from "The Girl of the Golden West" (Puccini).
5.50—Exchange Quotations, Weather Forecast and Time Signal. 6.0—6.30—Talk in connection with the International Dog Show at Dresden on September 3rd and 4th. 6.50—The Leipzig Station informs its listeners... 7.0—Talk: Men of Letters as Politicians.
7.30—Recital of Vocal Duets by Maria Cebotari and Max Hirzel.
8.30—"Coffee"—A Topical Radio Play. 9.30—Economic Notes.
9.40—Gramophone Concert.
10.10—News Bulletin. 10.20 (approx.)—Instrumental Cabaret from Hamburg. 12 midnight—Close Down.

LYONS (France)

La Doua (PTT). 644 kc/s (465.8 m.); 1.5 kW.
Transmits at intervals from 8.0 a.m. 7.0 p.m.—Gramophone Concert. Airs from (a) "A Waltz Dream" (O. Straus), (b) "The Merry Widow" (Lehar), and (c) "Countess Maritza" (Kalman). Serenade (Toselli). Melody from "Les Brigands" (Offenbach). La troublante volupté (Cuvillier). Air from "Les dragons de Villars" (Maillart). Ninon (Tosti). Selection from "Miss Decima" (Audran).
7.30—Radio Gazette for Lyons and the South-East. 8.30—Concert relayed from Paris (Eiffel Tower).

MADRID (Spain)

Aranjuez (EAO). 9,869 kc/s (30.4 m.); 20 kW.
12.30 a.m. (Wednesday)—Light Music. 12.45—Radio Journal. 1.0—Popular Concert. 1.35—Answers to Correspondents. 1.40—Light Music. 2.0 (approx.)—Close Down.

MADRID (Spain)

Union Radio (EAJ7). 707 kc/s (424.3 m.); 2 kW.
Transmits at intervals from 9.0 a.m. 8.0 p.m.—Chimes, Exchange Quotations, and Market Prices, followed by Request Gramophone Concert. In the interval at 8.30—Talk by Joaquin España Cantos. 9.15—News Bulletin and Political Review. 9.30—11.0—Interval. 11.0—Chimes, Time Signal, and Political Review.

11.15 (approx.)—"Madame Butterfly"—Opera (Puccini) on Gramophone Records. 1.15 a.m. (Wednesday)—News Bulletin. 1.30—Chimes and Close Down.

MILAN (Italy)

Ente Italiano Audizioni Radiofoniche. 905 kc/s (331.5 m.); 7 kW. See Turin.

MOSCOW (Russia)

Trades Union. 230.1 kc/s (1,304 m.); 100 kW.
Transmits at intervals from 12 noon. 6.30 p.m.—Young Communists' Radio Journal. 7.10—Popular Music. 9.0—Talk in French: Heard in the Law Courts. 9.55—Time Signal.

MUNICH (Germany)

563 kc/s (533 m.); 1.5 kW. Relayed by Augsburg and Kaiserlautern, 536 kc/s (560 m.); and Nürnberg, 1,256 kc/s (239 m.).
Transmits at intervals from 6.45 a.m. 6.35—Talk on Brewing. 6.55—Time, Weather and Agricultural Report. 7.5—Talk: Munich Beer. 7.25 (from Nürnberg)—Folk Music by a Mandoline Quartet. Soloist: K. Korn (Zither).
8.25—Symphony Concert by the Station Orchestra conducted by Hans Winter. Soloist: Frieda Stahl (Pianoforte). Overture, Die Geschöpfe des Prometheus (Beethoven). Concerto in C Minor for Pianoforte and Orchestra (Mozart). Symphony in D (Haydn). 9.25—A Dialogue. 10.20—Time and News.

OSLO (Norway)

Kringkastingsselskapet, 277 kc/s (1,033 m.); 60 kW. Relayed by Fredrikstad, 816 kc/s (367.6 m.); Hamar, 536 kc/s (560 m.); Notodden, 671 kc/s (447.1 m.); Porsgrund, 662 kc/s (453.2 m.); and Rykhan, 671 kc/s (447.1 m.).
Transmits at intervals from 11.5 a.m. 6.0 p.m.—Dialogue: Children and their Games. 6.45—Accordion Recital. 7.0—Announcements, News and Weather. 7.30—Theatre Review. 8.0—Time Signal. 8.2—Talk: Words and Music, with Illustrations by the Station Orchestra. 9.0—Concert by the Halden Choir, on the Thirtieth Anniversary of its

Foundation. Soloists: Karl Pettersen (Baritone) and G. Eriksen (Tenor). Spring (Lie). Clouds (Brolin). Barcarolle (Heraldstvedt). Baritone Solo: Evening Voices (Borg). Memories, for Tenor, Choir and Orchestra.
9.30—Agricultural Report. 9.40—Weather and News. 10.0—Topical Talk. 10.15—Concert of Light Music.

PALERMO (Italy)

Ente Italiano Audizioni Radiofoniche. 554 kc/s (542 m.); 3 kW. Transmits at intervals from 12.45 p.m. 5.40 p.m.—Sextet Concert. Pablo (Rossi). Réverie (Scassola). Selection from "The Dollar Princess" (Fall). Song, Mignotise (Montanano). Selection from "Madame Sans Gêne" (Giordano). Mio caro (Consiglio). La canzone del perché (Mariotti).
8.0—Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20—Popular Music on Gramophone Records. In the interval at 8.30—Time Signal and News Bulletin.
8.45—"Poluto"—Opera in Three Acts (Donizetti). In the intervals Talk and Art Notes. After the Programme: News Bulletin.

PARIS (France)

Eiffel Tower (FLE). 207.5 kc/s (1,445.7 m.); 13 kW.
Time Signals (on 2,650 m.) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).
Transmits at intervals from 1.0 p.m. 6.45 p.m.—Talk on the Theatre. 7.0—Le Journal Parlé. 8.20—Weather Forecast.
8.30—Symphony Concert, conducted by M. Flament. Soloists: Mme. Manassevitch (Songs) and M. Cantrelle (Violin). Symphony in E Flat (Mozart-Lotter). Three Songs (Schubert). Violin Solo: Prelude to "Le Déluge" (Saint-Saëns). Two Songs (Brahms). Three Scenes from "Gitanerias" (Infante). Song: Ständchen (R. Strauss).
10.0 (approx.)—Close Down.

PARIS (France)

Poste Parisien. 914 kc/s (328.2 m.); 60 kW.
12 noon—2.0 p.m.—News and Light Music on Gramophone Records. In the intervals at 1.0—Press Review, and at 1.30—Exchange and News. 7.0—News and Press Review. 7.5—Popular Music on Gramophone Records. 7.30—Sponsored Gramophone Concert. 8.0—Popular Music on Gramophone Records (contd.). 8.30—Radio Journal and News. 8.45—Concert. Soloist: Mme. Marie Tissier (Songs). Three Songs: (a) Les Trois Princesses (Marguerite Canal), (b) Pastourelle (Barraine), (c) Ariette (Vidal). Pieces from the Sonata for Voice and Pianoforte: (a) Sur un étang, (b) Les oies en file, (c) Les Poules (Thiriet). Overture (Filippucci). Waltz Suite from "The Count of Luxembourg" (Lehar). Melody from "The Merry Peasant" (Fall). Trio Serenade for Violin, Viola and Cello (Beethoven). Melody for Strings: The Virtuous Wife (Purcell). Suite, Fêtes de charité (Lecocq). La Fenêtre d'Amour (de Séverac). Melody from "L'Œil crevé" (Hervé). Pirot joyeux (Levadé). Melody from "Mam'zelle Vendémiaire" (Gillet). Farandole provençale (B. de Fontbelle). Polka, Les Marionnettes (Métral). Polish Dance (Léopold). Marche des amoureux (Ganne).
10.45—News Bulletin.

PARIS (France)

Radio-Paris (CFR). 174 kc/s (1,725 m.); 75 kW.
6.45 a.m.—Physical Culture. 7.30—Weather and Physical Culture (continued).
7.45—Gramophone Concert. La Clochette (Paganini). Habanera (Saracate). Scottish Lullaby (Schwab). Second Serenade (Toselli).
8.0—News and Weather.
12 noon—Gramophone Concert. Overture, "Zampa" (Hérold). Duet from the First Act of "Le Pré aux Clercs" (Hérold). Duet from "Le Roi d'Ys" (Lalo). Entr'acte from "Carmen" (Bizet).
12.30 p.m.—Ambroise Thomas Festival (Born, August 30, 1811). Melodies from "Mignon": (a) Overture, (b) I am Titania, (c) Remance: In her simplicity, (d)

Duet of the Swallows. Overture, "Raymond." Melodies from "Hamlet": (a) Vain Regrets, (b) Duet, (c) Recitative, (d) Holy Spirit, dreadful form avenging, (e) Ophelia's Song, (f) Oh wine, dispel the heavy sorrow, (g) Ballet Suite. In the interval at 1.0 p.m.—Exchange Quotations, News and Weather Forecast, and at 1.30—Exchange Quotations. 2.0 Exchange Quotations, News and Announcements. 3.45—Exchange Quotations and Market Prices. 6.30—Market Prices, Weather, Agricultural Notes, Talk and Racing Results.
7.0—Gramophone Concert. Ballet Music from "Le Cid" (Massenet). Sicilienne from "Cavalleria rusticana" (Mascagni). Midnight on Maundy Thursday, from "Sevilla" (Turina). Erikönig (Schubert). Valse romantique (Chabrier). Serenade (Saint-Saëns). 'Tis there, all hail, O Tomb! from "Romeo and Juliet" (Gounod). Third Etude for Pianoforte (Chopin). Triste est le Steppe (Gretchaninov). Barcarolle from "The Tales of Hoffmann" (Offenbach). Waltz in A (Brahms). Trio for Violin, Oboe and Bassoon (Poulenc).
7.45—Commercial Prices and News. 8.0—"Aida"—Opera (Verdi), on Gramophone Records by the Cast of the Scala, Milan. In the interval at 8.38—News and Weather Forecast, and at 8.48—Review by Pierre Scize. In the interval at 9.37—Press Review and News.

PITTSBURGH (U.S.A.)

Westinghouse Electric (KDKA). 980 kc/s (306 m.); 25 kW. Relayed by W8XK on 48.86 m. and 25.27 m. (See Short Wave List).
Transmits at intervals from 12 noon. 9.0 p.m.—Teaberry Baseball Scores. 9.5—Business News. 9.15—Programme to be announced. 9.30—Weather Report. 9.32—Market Reports. 9.45—Programme to be announced. 10.0—Teaberry Baseball Scores. 10.5—David Lawrence Dispatch. 10.10—KDKA Artist Booking Service. 10.12—Programme Announcements. 10.15—"Tangee Musical Dreams, from New York. 10.30—The Singing Lady, from New

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TUESDAY continued

York. 10.45—Little Orphan Annie. 11.0—Time Signal. 11.1—Temperature Report. 11.2—Who's News To-day. 11.6—Teaberry Sport Review. 11.11—Press News-Reeler. 11.14—Weather Report. 11.15—KDKA Kiddies' Klub. 11.30—Sheer Romance. 11.45—To-day's News by Lowell Thomas. 12 midnight—Pepodent Amos 'n' Andy, from New York. 12.15 a.m. (Wednesday)—Industrial Pittsburgh. 12.30—The Stebbins Boys, from New York. 12.45—Gener Austin (Tenor) with Orchestra, from New York. 1.0—Time Signal and Thunder Death, from New York. 1.30—Samuel Di Primio (Tenor). 1.45—3.0—New York Relay. 1.45—Rosa Low Song Recital. 2.0—Household Finance Programme. 2.30—National Oratorio Society. 3.0—The Country Doctor. 3.15—Westinghouse Pioneers. 3.30—Fish, from New York. 3.45—Florence Fisher Parry Drops In. 4.0—Time Signal. 4.1—Teaberry Sport Review. 4.11—Temperature Report. 4.12—Weather Report. 4.15—Press Last Minute News Flashes. 4.20—Louise Frayne (Soprano). 4.30—Jack Pettis and his Orchestra. 5.0—Heinie and his Grenadiers, from New York. 5.30—Time Signal and Good Night.

PRAGUE (Czechoslovakia) 614 kc/s (488.6 m.); 120 kW. Transmits at intervals from 6.15 a.m. 3.55 p.m.—Market Prices. 5.45—Talk: The Production of Colour Films. 5.55—Talk: Music. 6.5—Agricultural Report. 6.15—Topical Talk for Workers. 6.25—German Transmission: News Bulletin, followed by Concert of German Operetta Music. 7.0—Talk on Medicine. 7.20—Introductory Talk to the following Transmission. 7.30—"Aida"—Opera in Four Acts (Verdi), relayed from the National Theatre. In the interval at 9.0—Time Signal and News Bulletin. 10.0—Time Signal and News Bulletin. 10.15—Miscellaneous Items, Theatre Notes and Programme Announcements. 10.20—Light Music on Gramophone Records.

RADIO-SUISSE ROMANDE (SOTTENS) (Switzerland) 743 kc/s (403 m.); 25 kW.; Lausanne, 442 kc/s (680 m.); and Geneva, 395 kc/s (760 m.). 12.30 p.m.—Time Signal from Neuchâtel Observatory. 12.31—News Bulletin and Weather Forecast. 12.40 (from Lausanne)—Light Music on Gramophone Records. 1.0—Financial Notes. 1.5 (from Lausanne)—Popular Music on Gramophone Records. 1.45—5.0—Interval. 5.0—Time Signal from Neuchâtel Observatory. 5.1 (from Lausanne)—Programme for Women. 5.30—Concert relayed from the Ungaria Restaurant, Montreux. 6.0 (from Lausanne)—Popular Music on Gramophone Records. 6.40 (from Lausanne)—Talk on Chiroprapy. 7.0—Weather Forecast. 7.1 (from Geneva)—Concert of New Gramophone Records. 7.30 (from Geneva)—Sponsored Talk. 7.55—News Bulletin. 8.0 (from Lausanne)—Variety Concert by a Village Orchestra, conducted by E. Moser. Soloists: Pierre Delys (Tyrolean Songs) and I. Rossi (Accordion). 9.0 (from Geneva)—Variety Item. 9.15 (from Geneva)—Ravel Concert on Gramophone Records. 10.0—News Bulletin and Weather Forecast. 10.15 (approx.)—Close Down.

REYKJAVIK (Iceland) 250 kc/s (1,200 m.); 21 kW. 11.0 a.m.—Weather Report. 5.0 p.m.—Weather Report. 8.30—Weather Forecast. 8.40—Pianoforte Recital. 9.0—Chimes and Gramophone Records of Music by Beethoven. 9.30—News Bulletin.

ROME (Italy) Ente Italiano Audizioni Radiofoniche (IRO). 680 kc/s (441 m.); 50 kW. Relayed by Naples, 941 kc/s (319 m.); and 2RO, 3,750 kc/s (80 kW.). 8.15—8.30 a.m.—Giornale Radio and Announcements. 12.30 p.m.—Weather and Gramophone Records of Light Music. 1.0—2.15—Sextet Concert. Overture, Giovinetta ardente (Cortopassi). Suite on Popular Russian Melodies (Cabella). Pavane from "Le Maschere" (Mascagni). Danza diabolica (Zanella). Dances from "The Demon" (Rubinstein). Tango. Un bicchiere di Porto (Travaglia). One Step, Suzur (Petralia). 5.0—Exchange, Children's Radio Review. Giornale Radio and Announcements. 5.30—Vocal and Instrumental Concert. 7.10 (Nables)

Shipping and Sports Notes. 7.15—Atmospheric Signals, Agricultural Notes, Announcements and Giornale Radio. 8.0—Time, Announcements and Gramophone Records of Light Music. 8.30—Sports Notes, Announcements and Tourist Report. 8.45—Concert. Part I—Chamber Music. Soloists: Luigi Biondi (Violin) and Margherita Cossa (Soprano). Violin Solos: (a) Romance in F (Beethoven), (b) Rondo (Kreisler). Three Arias for Soprano (Pasquini); (a) Con tranquillo riposo, (b) Filli, Filli, (c) Giran pure in ciel maggiore. Soprano Solos: (a) Canto amoroso (Sammartini), (b) The Spheres (Mozart). Violin Solo: Caprice No. 13 (Paganini). Soprano Solos (Richard Strauss): (a) Morgens, (b) Cécilie. "Four Years After"—Comedy in One Act (Marco Praga). Part II. Programme of Japanese Music. The Festival of Edo—Popular Songs of Old Japan for Tenor (Edo Matsuri). Ring the Bell—Love Song from the Mountains, for Tenor (Kane Ga Nari Massu). The Song of the Island of Kiusciù—Song with Flute, Triangle and Pianoforte accompaniment (Cinzei Coutá). The Fishermen's Return—for Flute, Bassoon, Violins, Viola, Cello and Double Bass. After the Concert: News Bulletin, followed by Dance Music from the Pincio. 12 midnight—Close Down.

SCHENECTADY (U.S.A.) General Electric Company (WGY). 790 kc/s (379.5 m.); 50 kW. Relayed at intervals by W2XAF and by W2XAD. (See Short Wave List). Transmits at intervals from 11.45 a.m. 9.0 p.m.—Bridge Lesson. 9.15—Studio Ensemble. 9.35—News Items. 9.45—Stock Reports and Police Notices. 10.0—Garden Melodies, from New York. 11.0—Joe and Eddie. 11.15—Ollie Yettru (Pianist). 11.25—Baseball Scores. 11.30—With Gray McClintock in the Canadian Northwest. 11.45—Back of the News in Washington, by William Hard, from New York. 12 midnight (WGY only)—General Electric Programme. 12 midnight (W2XAF only)—Stock Reports. 12.15 a.m. (Wednesday)—Chandu, the Magician. 12.30 till Close Down—New York Relay. 12.30—Ray Perkins (Baritone soloist). 12.45—The Goldbergs. 1.0—Blackstone Plantation. 1.30—Walter Smith and his Band. 2.0—National Civic Artists. 2.30—Ed Wynn and the Fire Chief Band. 3.0—Lucky Strike Dance Hour. 4.0—Art Jarrett and his Orchestra. 4.30—Jack Denny and his Orchestra. 5.0—Ralph Kirbery (Dream Singer). 5.5—Paul Whiteman and his Orchestra. 5.30 (approx.)—Close Down.

SCHWEIZERISCHER LANDESSENDER (BEROMÜNSTER) (Switzerland) 653 kc/s (459 m.); 60 kW.; Basle, 1,220 kc/s (244.1 m.); and Berne, 1,220 kc/s (246 m.). 12.28 p.m.—Time Signal from Neuchâtel Observatory. 12.30—Weather Forecast and News Bulletin. 12.40—Concert by the Station Orchestra. 1.35—Weather Forecast and Exchange Quotations. 1.45—3.30—Interval. 3.30—Dance Music with Humorous Interludes on Gramophone Records. 4.30—Concert by the Station Orchestra. 5.0—Weather Forecast. 5.2—6.30—Interval. 6.30 (from Zürich)—Educational Talk. 7.0—Time Signal and Weather Forecast. 7.5 (from Zürich)—Talk: Swiss Tourist Traffic. 7.30 (from Zürich)—Talk for Women. 8.0 (from Berne)—Interlude by the Station Orchestra. 8.10—Edward (Carl Loewe) sung by Ernst Schläfli. 8.20—"Guilty?"—A detective Play (H. Rosenwald and J. Kaul). 9.30—Weather Forecast and News Bulletin. 9.45 (from Berne)—Concert of Operetta Music by the Station Orchestra. Soloist: Walter Schar (Tenor). 10.30 (approx.)—Close Down.

STOCKHOLM (Sweden) Radiotjänst (SASA). 689 kc/s (436 m.); 55 kW. Relayed by Baden, 932 kc/s (322 m.); Göteborg, 932 kc/s (322 m.); Hörby, 1,166 kc/s (257 m.); Motala, 222.5 kc/s (1,348 m.); Östersund, 389 kc/s (770 m.); and Sundsvall, 554 kc/s (542 m.). Transmits at intervals from 8.0 a.m. (Divine Service). 5.5 p.m.—Programme of Songs and Accordion Music. 5.45—Popular

Music on Gramophone Records. 6.45—Talk on Listening In. 7.15—Weather and News. 7.30 (from Östersund)—Talk. 8.0—Songs by C. J. L. Almquist—a Recital by Sonia Estelle. 8.15—"The Deluge"—Play (Henning Berger). 9.45—Weather and News. 10.0—Concert. Overture, "Mariana" (Wallace). Ballet Music from "Henry VIII" (Saint-Saëns). Berceuse de Jocelyn (Godard). Serenade (Moszkovsky). Waltz, A toi (Waldteufel). Potpourri, Fortissimo (Kalman-Feigel). 11.0 (approx.)—Close Down.

STRASBOURG (France) Radio-Strasbourg (PTT). 869 kc/s (345 m.); 11.5 kW. 11.30 a.m.—Gramophone Concert of Variety Music. 12.45 p.m.—News in French and German. 1.0—Time Signal and Exchange Quotations. 1.10—Gramophone Records of Variety Music. 1.30—2.15—Concert from Toulouse (PTT), 1,175 kc/s (255 m.). 4.45—Talk in German: Through France. 5.0—Orchestral Concert conducted by Roskam. March, Hollywood (Leopold). Waltz, Reflets du passé (Delmas). Der Rosenhochzeit (Jessel). Overture, "Lysistrata" (Lincke). Selection from "Der Frauenfresser" (Eysler). Aubade printanière (Lacombe). Ballet Suite (Popy). March (Blankenburg). 6.0—Talk in German: Fischart—An Alsatian Writer. 6.15—Topical Talk in French. 6.30—Orchestral Concert conducted by Roskam. Ballet Music from "Alceste" (Glück). Minuet from "Le Bourgeois Gentilhomme" (Lully). Gavotte en rondeau (Lully). Song from "Céphale et Procris" (Grétry). Overture, "The Barber of Seville" (Rossini). Rosina's Aria from "The Barber of Seville" (Rossini). Selection from "Les Dragons de Villars" (Maillart). Two Songs (Koechlin): (a) Si tu le veux, (b) Les Fées. Waltz, Flattergeister (Joseph Strauss). March, Piccadilly (Benoit). 7.30—Time and News in French and German. 7.45—Orchestral Concert conducted by Roskam. Three Dances (Edward German). Overture, "Les Cloches de Corneville" (Planquette). Waltz, Pluie de diamants (Waldteufel). Selection from "Eva" (Lehar). 8.30—Concert relayed from Paris. 10.30 (approx.)—Close Down.

STUTTGART (MÜHLACKER) (Germany) Süddeutscher Rundfunk. 832 kc/s (360.5 m.); 60 kW. Relayed by Freiburg, 527 kc/s (570 m.). Transmits at intervals from 6.0 a.m. 10.0 a.m.—Pianoforte Recital of Haydn Music. Caprice, Flötenuhrstücke (transcribed by Ernst Fritz Schmid). Sonata in E Flat. 10.30 (from Mannheim)—Recital of Songs by Schubert, Abt and Gellert, by the Schubert Quartet. 11.0—Time, News and Weather. 11.15—11.30—Sponsored Gramophone Concert. 11.55—Weather. 12 noon—Gramophone Concert. The Milan Symphony Orchestra, conducted by G. Neri: Overture, "The Barber of Seville" (Rossini). Two Songs: (a) The Two Grenadiers (Schumann), (b) Nachtliche Heerschau. The Berlin Municipal Opera House Orchestra, conducted by Meyrowitz: (a) A Wedding Day on Troidhaugen (Grieg), (b) The Rustle of Spring (Sinding). The Livschakov Orchestra: (a) Serenade (Moszkovsky), (b) Narcissus (Nevin). Two Songs from The Song of Love (Johann Strauss-Korngold). The Roesz Orchestra: Lehar Potpourri (Hrudy). Trumpet Solos: (a) Sei gegrüsst du, mein schönes Sorrent (Waldmann), (b) Noch sind die Tage der Rosen (Baumgartner). Potpourri of Students' Airs by a Wind Instrument Quartet. Songs: (a) So ein Dalles geht über alles, (b) Die Mädels von Montparnasse (Wachsmann and Gilbert). Accordion Duets: (a) Old Norwegian Hunters' March, (b) March (Johansen). 1.15 p.m.—Time, Weather and News. 1.30 (from Freiburg)—Pictures of the Orient—Concert by the Freiburg Concert Orchestra, conducted by Richard Fried. Turkish March (Mozart). Oriental Ballet Suite (Popy). Indian Suite (Luling). Egyptian March (Strauss). Waltz,

Pictures from the Orient (Strauss). Reminiscences of Cairo (Armandola). 2.30—2.45—Sponsored Gramophone Concert. 4.0—Talk on Flowers. 4.30—Talk for Women: Happy Hours for the Children. 5.0—See Frankfurt. 6.15—Time and Weather. 6.25—Talk: Eleanora Duse and Sarah Bernhardt. 6.50—Talk: How Criminals are made. 7.15—Time, Weather and Agricultural Notes. 7.30—Recital of Melodies by Lehar's Operettas, by Elizabeth Jentsch (Soprano) and Karl Jantz (Tenor). Songs from "The Land of Smiles," "The Czarevitch," and "Frasquita." 7.50—Symphony Concert by the Stuttgart Philharmonic Orchestra, conducted by Emil Kahn. Soloist: Alexander Vorovsky (Pianoforte). March in C (Mozart). Concerto for Pianoforte and Orchestra in C (Mozart). Entr'acte Music from "Rosamunde" (Schubert). Concert Piece for Pianoforte and Orchestra (Weber). The Scottish Symphony in A Minor (Mendelssohn). 9.20—Variety Programme. 10.20—Time, Weather, News and Programme Announcements. 10.45—Concert by the Dance Ensemble of the Stuttgart Philharmonic Orchestra. Selection from "Der Tenor der Herzogin" (Nikisch). Jazz Fantasia, Cuban Love Song (Savino). Bacchanale (Mitja-Nikisch). Rhapsody, By the River Sainte Marie (Savino). Selection from "Zur gold'nen Liebe" (Benatzky). 12 midnight (approx.)—Close Down.

TOULOUSE (France) Radiophonie du Midi. 779 kc/s (385 m.); 8 kW. Transmits at intervals from 12.30 p.m. 5.0 p.m.—Transmission of Pictures. 5.15—Exchange Quotations. 5.30—Concert. Coronation March from "The Prophet" (Meyerbeer). Overture, "Semiramis" (Rossini). Ballet Music from "Hérodiade" (Massenet). L'Automne (Fauré). Ariettes oubliées (Debussy). L'invitation au voyage (Duparc). My Friend, Pierrot (Zimmermann). 6.0—Dance Music. 6.15—Vocal Tangos. 6.30—Exchange Quotations and Horse Racing Results. 6.45—Concert. Dolores (Waldteufel). Plaisir d'amour (Martini). Suzanne (Monteux). Dans ma péniche (Borel-Clerc). Liebesleid (Kreisler). Melody from "La Dame blanche" (Boieldieu). Two Airs from "Figaro" (Mozart). 7.15—Accordion Solos. 7.30—Programme Announcements and News. 7.45—Military Music. 8.0—Concert. Air from "The Barber of Seville" (Rossini). Prologue to "I Pagliacci" (Leoncavallo). Air from "Il Trovatore" (Verdi). Selection from "The Daughter of the Regiment" (Donizetti). Selection from "Les Noces de Jeannette" (Masse). Introduction, Waltz and Mazurka from "Coppélia" (Delibes). Ballet Music from "La Poupée d'Arlequin" (Darcy). 8.45—Light Music. 9.0—Popular Sound Film Music. 10.0—Concert. Bigre (Leikens). Paquita (Charlys). Tango mystérieux. Vers le chemin du bonheur (Baudoin). La valse des cols bleus (Maraffiti). Selection from "Tosca" (Puccini). Prelude to "Cavalleria rusticana" (Mascagni). Preludetto "Werther" (Massenet). 10.30—North African News. 10.45—Concert (continued). Two Airs from "Le Jongleur de Notre Dame" (Massenet). Melody from "La Juive" (Halévy). Melody from "Samson and Delilah" (Saint-Saëns). 11.0—Violin Recital. Serenade (Drda). La ronde des lutins (Bazzini). Cavatina (Raff). Spanish Dance No. 5 (Granados). Andantino (Kreisler). 11.15—Recitations. 11.30—Quintet in A Minor (Schubert).

TRIESTE (Italy) Ente Italiano Audizioni Radiofoniche. 1,211 kc/s (247.7 m.); 10 kW. Transmits at intervals from 8.15 a.m. 7.0 p.m.—Quintet Concert. Siambrò (Solazzi). Consuelita (Bazan). Musetta qui danza (Fiaccone). Carnival Suite (Kostal). Charnes des Alpes (Cortopassi). Selection from "Girandola" (Allegra). Melody (Berger). Stra... Stra... Stra... (Mariotti). 8.0 till Close Down—See Turin.

TURIN (Italy) Ente Italiano Audizioni Radiofoniche. 1,096 kc/s (273.7 m.);

7 kW. Relayed by Milan, 905 kc/s (331.5 m.); Genoa, 959 kc/s (312.8 m.); and Florence, 599 kc/s (500.8 m.). Transmits at intervals from 8.15 a.m. 6.35 p.m.—Giornale Radio, Agricultural Notes and Announcements. 7.0—Musical Programme. Waltz from "Faust" (Gounod). Barcarolle from "Silvano" (Mascagni). Dance (Ketelbey). 7.25—Tourist Report. 7.30—Time and Announcements, followed by Gramophone Records of Variety Music. 8.0—Giornale Radio, Weather and Gramophone Records of Light Music. 8.30—"Haschisch"—Operetta in Three Acts (Delli Ponti and De Gregori). In the intervals, Talk: Astronomical Observations of the Month, and Notes on Art. Giornale Radio after the Programme.

VATICAN CITY (Italy) 15,123 kc/s (19.84 m.) (Morning), and 5,069 kc/s (50.26 m.) (Evening); 10 kW. 11.0—11.15 a.m.—Religious Information in Spanish. 8.0—8.15 p.m.—Religious Information in Italian.

VIENNA (Austria) Radio-Wien. 581 kc/s (517 m.); 15 kW. Relayed by Graz, 852 kc/s (352.1 m.); Innsbruck, 1,058 kc/s (283 m.); Klagenfurt, 662 kc/s (453.2 m.); Linz, 1,220 kc/s (246 m.); and Salzburg, 1,373 kc/s (218 m.). Transmits at intervals from 9.20 a.m. 6.10 p.m.—Talk: Aborigines at Home. 6.35—Talk: Poisonous Fungi. 6.45—Agricultural Talk. 7.10—Gymnastics. 7.30—Time, Weather, and Programme Announcements. 7.40—Humorous Programme by Sigi Hofer. 8.10—Concert by the Vienna Symphony Orchestra. The Scottish Symphony in A Minor (Mendelssohn). Song of the Nightingale (Stravinsky). Second Leonora Overture (Beethoven). 9.30—News, Weather and Announcements. 9.45—Dance Music by the Blue Boys Band, relayed from the Grabencafé. Egon Grosz (Songs).

WARSAW (Poland) Polskie Radio. 212.5 kc/s (1,411 m.); 120 kW. 11.58 a.m.—Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m.—Programme Announcements. 12.10—Polish Press Review. 12.20—Interval. 12.40—Weather Forecast. 12.45—Light Music on Gramophone Records. 1.25—Interval/1.35—Gramophone Records (contd.). 2.10—Interval. 3.0—Economic Report. 3.10—Popular Music on Gramophone Records. 3.30—Aviation Report. 3.35—Announcements. 3.40—Variety Music on Gramophone Records. 4.35—Miscellaneous Announcements. 4.40—Sports Talk. 5.0—Symphony Concert by the Warsaw Philharmonic Orchestra. Conductor: Z. Dymmek. Soloist: Mme. Feltns (Pianoforte). Nocturne and Scherzo from "A Midsummer Night's Dream" (Mendelssohn). Pianoforte Concerto in E Flat (Liszt). Symphony in C Minor (Haydn). 6.0—Talk: The Atlantic. 6.20—Concert of Light Music. 7.15—Miscellaneous Announcements. 7.35—Radio Journal. 7.45—Agricultural Notes. 7.55—Programme Announcements. 8.0—Popular Concert by the Philharmonic Orchestra. Conductor: L. Oziminski. Soloists: M. Fliederman (Violin) and A. Bronke (Trumpet). March from "Carmen" (Bizet). Selection from "Hansel and Gretel" (Humperdinck). Gipsy Dance (Moniuszko). Trumpet Solo: The Raftsmen (Münchheimer). Waltz from "The Sleeping Beauty" (Tchaikovsky). Ballet Music from "La Gioconda" (Ponchielli). Violin Concerto (Mendelssohn). Overture, "Rosamunde" (Schubert). In the interval at 8.45—Literary Talk. 9.50—Radio Journal. 9.55—Aviation Weather Forecast. 10.0—Dance Music. 10.40—Sports Notes. 10.50—Dance Music (contd.).

WILNO (Poland) 533 kc/s (563 m.); 16 kW. Transmits at intervals from 11.58 a.m. 3.40 p.m.—Variety Music on Gramophone Records. 4.40—See Warsaw. 7.10—Talk by M. W. Zimmick. 7.30—Programme Announcements. 7.35—See Warsaw. 7.45—Lithuanian Review. 8.0—Talk with Illustrations on Gramophone Records: Mussorgsky as a Composer. 8.45 till Close Down—See Warsaw. 11.30 (approx.)—Close Down.

WEDNESDAY (August 31)

PRINCIPAL EVENTS

SYMPHONY CONCERT

- 8.0 p.m. Brussels No. 2.
CONCERTS (Vocal and Instrumental)
 8.10 a.m. Hilversum: The Queen's Birthday Aubade.
 2.40 p.m. Copenhagen: Wind Instruments.
 4.30 " Hamburg: From Bad Pyrmont.
 5.0 " Warsaw: Ballet Music.
 5.10 " Hilversum: Military Band.
 6.10 " Huizen: Choral Concert.
 7.45 " Budapest: Light Orchestral.
 7.55 " Hilversum: From Scheveningen.
 8.0 " Langenberg: Military Band.
 8.0 " Oslo: The Station Orchestra.
 8.30 " Strasbourg: From Plombières Casino.
 9.0 " Brussels No. 1: From Knocke Casino.
 9.45 " Schweizerischer Landessender: The Station Orchestra. Schubert.
 10.10 " Vienna, Königs Wusterhausen.

OPERAS

- 6.40 p.m. Bucharest: "Il Trovatore" (Verdi) (gram.).
 7.0 " Vienna and many European Stations: "Fidelio" (Beethoven), from Salzburg.
 8.0 " Stockholm: "I Pagliacci" (Leoncavallo).
 8.45 " Rome: "I Vespri Siciliani" (Verdi).

CHAMBER MUSIC

- 8.45 p.m. Radio-Paris: Mozart, Schubert, etc.
 9.15 " Munich.

RECITALS

- 7.0 p.m. Prague: Violin-Guitar Duets.
 7.30 " Munich: Bavarian Folk-Song.
 7.30 " Prague: Pianoforte.

PLAYS AND TALK

- 8.0 p.m. Radio-Paris: "Leconte de Lisle."
 9.0 " Radio-Suisse Romande: Plays.

DANCE MUSIC

- 5.0 p.m. Brussels No. 1; 9.0 p.m., Langenberg; 10.5 p.m., Warsaw; 10.10 p.m., Hamburg; 10.30 p.m., Strasbourg; 10.40 p.m., Copenhagen.

Fidelio from Salzburg

The Salzburg Festival comes to an end for this year, with a gala performance of Beethoven's only opera. The cast is as strong a one as could well be gathered together to-day: Lotte Lehmann is to sing the name-part, and that of itself is enough to raise the performance to a very high level. Richard Strauss will conduct, and the opera will be relayed



Lotte Lehmann

by VIENNA and many European stations. Not always "a parfit gentil Knight" in outward bearing or in word, Beethoven was at heart a very Galahad of chivalry, and Leonora was far more to him than merely the heroine of his one opera, Fidelio: she was the embodiment of his own lofty ideal of womanhood, of splendid courage and devoted fidelity. No wonder that he counted her the dearest of all his children, specially dear because she had suffered more than any of the others. The mutilation which the opera had to endure at his own hands was to him a dreadful thing, and, it was only with infinite difficulty that good friends kept him from destroying it wholly rather than alter it in accordance with the needs of the stage. Its first appearance, with the temperature of the theatre far below freezing point, and with Vienna in the hands of a conquering enemy, had been a bitter disappointment. Nor was the amended form any more successful; it had only two performances, and Beethoven, hard hit by financial loss, was wounded still more grievously in spirit. Only some years later did the opera come into its own: now, as for generations past, it is counted among the world's greatest treasures in its own sphere.

A Royal Birthday

The popularity of Queen Wilhelmina of the Netherlands, who to-day celebrates her fifty-second birthday, among all classes of her subjects is reflected in the fact that the whole of the HILVERSUM programmes to-day are made to fall into line with the day. Starting at 8.10 (8.30 Dutch time) with a huge Aubade, or morning greeting, from the city of Rotterdam, Dutch songs and pieces selected with a view to the natural rejoicings follow each other the day through. Mr. D. Hans, who is a well-known journalist and official biographer to the Royal Family, will speak about the Queen herself, and another address is to be broadcast on "The Dutch National Anthem," otherwise the Wilhelmuslied, which is an old tribute to the House of Orange-Nassau. Incidentally not everybody will recognise in the composer "Alterego" a Dutch musician, but he is none other than Mr. Nicco Treep, the popular A.V.R.O. conductor, who has arranged Dutch folk-songs for his orchestra.

NATIONAL

- | | kc/s. | m. | kW. |
|---|-------|---------|-----|
| London: | 1,148 | 261.3 | 50 |
| Daventry: | 193 | 1,554.4 | 30 |
| Northern: | 995 | 301.5 | 50 |
| 10.15 a.m. (Daventry)—The Daily Service. | | | |
| 10.30—10.45 (Daventry)—Time Signal (Greenwich); Weather Forecast for Farmers and Shipping. | | | |
| 12 noon—Quentin Maclean at The Organ. | | | |
| 12.45 p.m.—Gramophone Records. | | | |
| 1.0—Time Signal (Greenwich). | | | |
| 1.35—2.35—Jack Martin's Majestic Orchestra. | | | |
| 3.30 (Daventry)—The Bournemouth Municipal Orchestra. Conductors: Sir Dan Godfrey and Gerald Crawford. Esther Fisher (Pianoforte). | | | |
| 4.45—Time Signal (Greenwich). | | | |
| 4.45 (Daventry)—Norah Milne at The Organ. | | | |
| 5.15 (Daventry)—Children's Hour. | | | |
| 5.15 (London and Northern)—The Scottish Studio Orchestra. | | | |
| 6.0—Time Signal (Big Ben). | | | |
| 6.0—"The First News." | | | |
| 6.35—Time Signal (Greenwich). | | | |
| 6.35—Foundations of Music. Bach's Preludes and Fugues, played by Victor Hely-Hutchinson. | | | |
| 6.55—"The Cinema." Mr. Cedric Belgrave. | | | |
| 7.15—Talk on Farming. Sir Daniel Hall, K.C.B., F.R.S. | | | |
| 7.30—The Wireless Military Band, conducted by Joseph Lewis. Tapia Caballero (Pianoforte). March, Namur (Richards); Overture, Oberon (Weber). Impromptu in F Sharp, Study in F Minor (Chopin). Præliudium (Jännefelt); Dance of the Hours (La Gioconda) (Ponchielli). Tango in D (Albeniz, arr. Godowsky); Navarra (Albeniz). Introduction, Act III, Lohengrin (Wagner); Selection, A Country Girl (Monckton). | | | |
| 8.40—White Coons Concert Party. | | | |
| 9.0—Time Signal (Greenwich). | | | |
| 9.45—"The Second News." | | | |
| 9.55 (Daventry)—Shipping Forecast. | | | |
| 10.0—The B.B.C. Orchestra (Section C), conducted by Victor Hely-Hutchinson. | | | |
| 11.0—12 midnight (Daventry)—Dance Music. | | | |
| 11.30—Time Signal (Greenwich). | | | |

REGIONAL

- | | kc/s | m. | kW. |
|--|------|-------|-----|
| London: | 842 | 356.3 | 50 |
| Midland: | 752 | 398.9 | 25 |
| Northern: | 626 | 479.2 | 50 |
| Scottish: | 797 | 376.4 | 50 |
| 10.15 a.m. (except Midland)—The Daily Service. | | | |
| 10.30—10.45 (except Midland)—Daventry National Programme. | | | |
| 12 noon (except Scottish)—Emanuel Starkey and his Orchestra. | | | |
| 12 noon (Scottish)—Daventry. | | | |
| 12.45 (Scottish)—Mary McNivan (Soprano) and Malcolm Burnside (Tenor). | | | |
| 1.0 (except Scottish)—An Organ Recital by Gilbert Mills. | | | |
| 1.15 (Scottish)—Gramophone. | | | |
| 1.45—3.0 (except Scottish)—The Northern Studio Orchestra. | | | |
| 3.0—3.45 (Scottish)—Speeches at the Ceremony of the Naming of the New Arbroath Life-boat. | | | |
| 3.30 (London and Northern)—Daventry National Programme. | | | |
| 4.0 (Scottish)—The Studio Orchestra. Emily Russell (Contralto). | | | |
| 4.45 (except Midland)—Norah Milne (Organ). | | | |
| 5.15—The Children's Hour. | | | |
| 6.0—"The First News." | | | |
| 6.30 (London)—John Johnson and his Orchestra. | | | |
| 6.30 (Midland)—The Midland Studio Orchestra. | | | |
| 6.30—7.55 (Northern)—The Northern Studio Orchestra. | | | |
| 6.30 (Scottish)—Daventry National. | | | |
| 7.15 (Scottish)—Miss Janet Adam-Smith: "Scotland out of Doors—VI." | | | |
| 7.30 (Scottish)—Dance Music. | | | |
| 8.0 (except Scottish)—Promenade Concert. Brahms. Muriel Brunskill. Lamond. Wireless Male Voice Chorus. The B.B.C. Symphony Orchestra. Conducted by Sir Henry Wood. | | | |
| 8.0 (Scottish)—"Cute McCheyne, by Joseph Laing Waugh. | | | |
| 8.40 (Scottish)—Daventry National. | | | |
| 9.40—"The Second News." | | | |
| 10.0 (Scottish)—Daventry National. | | | |
| 10.0—11.0 (Midland)—As London. | | | |
| 10.0—12 midnight (London and Northern)—Dance Music. | | | |
| 11.0 p.m.—12 midnight (Scottish)—The Heather Quintet. | | | |

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO BRITISH SUMMER TIME

ALGIERS (N. Africa)

825.3 kc/s (363.3 m.); 13 kW. Transmits at intervals from 12.30 p.m. 7.0 p.m.—Exchange Quotations and Market Prices. 7.10—Shipping Notes and Weather Forecast. 7.15—Songs from Sound Films. 7.30—Debussy Pianoforte Recital by Alfred Cortot. 7.45—Songs from Operettas. 7.55—News Bulletin and Time Signal. 8.0—"Les Esperances"—Comedy (Paul Bilhaud). 8.30—Relay of an Open-Air Concert. In an interval at 9.30—News Bulletin. 10.30 (approx.)—Close Down.

BARCELONA (Spain)

Radio-Barcelona. (E.A.J.I.) 860 kc/s (349 m.); 8 kW. Transmits at intervals from 8.15 a.m. 8.0 p.m.—Trio Concert. Selection from "Faust" (Gounod). Ich liebe dich (Grieg). Aria from "Louise" (Charpentier). Hungarian Dance (Brahms). 8.30—Exchange Quotations, Request Gramophone Records and News Bulletin. 10.0—Chimes, Weather Forecast and Exchange Quotations. 10.10—Orchestral Music. Moorish March (Ribalta). Waltz (Worsley). Celtibéricas (Sancho Marraco). Serenade (Heurnann). 10.30—Concert of Sardanias. 11.15—Quintet Concert relayed from the Café de la Rambla. 1.0 a.m. (Thursday)—Close Down.

BERLIN (Germany)

Königs Wusterhausen. 183.5 kc/s (1,635 m.); 60 kW. Transmits at intervals from 5.45 a.m. 12 noon—Weather for Farmers, followed by Gramophone Concert and Weather for Farmers. 12.55 p.m.—Nauen Time Signal. 1.35—News Bulletin. 2.0—Ballad Concert on Gramophone Records, relayed from Berlin (Witzleben). 3.0—Talk: In Little-known Mauritania. 3.30—Weather and Exchange. 3.45—Talk for Women. 4.0—Educational Talk. 4.30—5.30—See Hamburg. 5.30—Talk on Languages. 6.0—Illustrated Talk: Songs, Good and Bad. 6.30—Talk. 6.55—Weather for Farmers.

7.0—10.0—See Vienna. 8.20 (in an interval)—Topical Talk. 10.0—See Berlin (Witzleben). 10.20—Concert from Vienna. 12 midnight (approx.)—Close Down.

BERLIN (Germany)

Witzleben. 715 kc/s (419.5 m.); 1.5 kW. Transmits at intervals from 6.0 a.m. 5.50 p.m.—Concert of New Music with Introductory Talk. The Station Choir, conducted by Maximilian Albrecht. Soloists: Marcella Röseler (Soprano), Nicolo Draber (Flute) and Heinz Fischer (Pianoforte). Sonata No. 3 for Pianoforte (Jemnitz). Soprano Solos: Songs (Pauels). Sonata or Flute and Pianoforte (Finke). Melody from Gesänge des späten Jahres (Krenek). Hungarian Folk Songs (Kodaly). Melody from the Cantata, Ich selbst muss Sonne sein (Hoffer). 6.35—Talk: Civic Administration in Three Continents. 6.55—The Witzleben Station informs its Listeners. 7.0—Topical Talk. 7.10—Technical Talk. 7.25—Talk on Criminal Law. 7.55—Labour Market Report. 8.0—Variety Concert. 10.0—Weather, News and Sports Notes. 10.20—Concert from Vienna. 12 midnight—Close Down.

BORDEAUX-LAFAYETTE (France)

(PTT). 986 kc/s (304 m.); 13 kW. Transmits at intervals from 12.45 p.m. 7.30 p.m.—News Bulletin and Market Prices. 7.40—Lottery Results. 7.45—Popular Music on Gramophone Records. 8.15—News and Weather Forecast. 8.30—Gala Concert. Soloist: J. Vieuille (Baritone). Overture, "Light Cavalry" (Suppé). Songs. Spanish Suite, La Feria (Lacombe). Scenes from "Les noces de Jeannette"—One-Act Operetta (Massé). Ballet Music from "Isoline" (Messenger-Auvray).

BRATISLAVA (Czechoslovakia)

1,076 kc/s (279 m.); 14 kW. Transmits at intervals from 10.0 a.m. 6.0 p.m.—Market Prices, Talk, followed by Duet for Violin and Pianoforte (Rozsa). 7.0—"September"—a Radio Drama. 7.55—Pianoforte Recital. 8.20—See Brno. 9.0—See Prague. 10.15—Programme Announcements.

BRESLAU (Germany)

923 kc/s (325 m.); 1.5 kW. Relay by Gliwicz, 1,184 kc/s (253 m.). Transmits at intervals from 6.0 a.m. 6.20 p.m.—Talk on Factory Councils. 6.45—Legal Talk. 7.5—Talk: Goethe's Journey through Upper Silesia. 7.30—Weather for Farmers. 7.32—Orchestral Concert. Overture, "Paragraph 3" (Suppé). Gavotte, Contes villageois (Gilet). Ländliches Hochzeitsfest (Czibulka). Polka, Im Kahlenberger Dorf (Fahrbach). Potpourri, Neue Wiener Volksmusik (Kozzani). Cranz-Czardas (Michiels). 8.30—Variety Programme. 10.30—Time and News. 11.0—Dance Music. 12 midnight—Close Down.

BRNO (Czechoslovakia)

878 kc/s (342 m.); 35 kW. Transmits at intervals from 10.0 a.m. 6.0 p.m.—Talk for Young People. 6.15—Popular Music on Gramophone Records. 6.25—German transmission: News, and Two Talks: (a) Importance of Sports and Gymnastics, (b) Good and Bad German. 7.0—See Prague. 7.50—Light Music on Gramophone Records. 8.20—A Comedy (Raimund-Kroupa). 9.0—See Prague. 10.15—News Bulletin.

BRUSSELS (Belgium) (No. 1)

I.N.R. 590 kc/s (509 m.); 15 kW. 12 noon—Concert by the Max Alexys Band. 1.0 p.m.—Le Journal Parlé. 1.10—Concert (cont'd.). 5.0—Dance Music from the St. Sauveur Palais de Danse. 6.15—Talk on Fishing. 6.30—Gramophone Concert. Moorish Rhapsody and Evening Reverie from The Algerian Suite (Saint-Saëns). Tamo (Mágnanelli). Eglogue (Rabaud). Liebesbotschaft (Schubert). Madrigale (Simonetti). Symphonie Poem, Till Eulenspiegel (Richard Strauss). 7.15—Talk: Round Belgium—Huy. 7.30—Medical Review. 8.0—"L'heure Fantaisiste"—Programme of Monologues, Sketches and Music. 9.0—Concert relayed from the Casino, Knocke. Soloist: Mme. Germaine Feugels (Songs). Leonora Overture, No. 3 (Beethoven). Symphonie Poem, Night on the Bare Mountain (Musorgsky). Cava-

WEDNESDAY continued

tinga from "The Pearl Fishers" (Bizet). The Festival at Bagdad from "Scheherazade" (Rimsky-Korsakov). Jewel Song from "Faust" (Gounod). Overture, "Char:tte Corday" (Benoit). After the Concert: Journal Parle and Dance Music from the Casino, *Knoche*. 11.0 (approx.)—Close Down.

BRUSSELS (Belgium) (No. 2)
N.I.R. 887 kc/s (338.2 m.); 15 kW. Programme in Flemish. 12 noon—Orchestral Concert. 1.0 p.m.—Le Journal Parle. 1.10—Concert (continued).

5.0—Orchestral Concert, conducted by Kumps. Overture, "Princesse Carnaval" (Blasius). Selection from "Faust" (Gounod). Aubade fleurie (Ganne). Serenade (De Tave). Selection from "Rigoletto" (Verdi). Three Pieces (Godard). Ballet Music from "Lakmé" (Delibes). Marche joyeuse (Chabrier).

6.0—Gramophone Concert. Overture, "Monte-Cristo" (Gabutti). Finnish Cavalry March. Auvergne Melody (Cayla-Canteloube). March Björnsborganes. 6.15—Reading (H. Löffing). 6.30—Gramophone Concert (continued). Overture, Egmont (Beethoven). Concerto in E Flat (Liszt). Ave verum corpus (Mozart). Fantaisie italienne (Delmas). Melody from "The Magic Flute" (Mozart).

7.15—Talk: English Literature. 7.30—Review of International Events.

8.0—Symphony Concert, conducted by Kumps. Symphony in B Flat (Schubert). Nocturne and Scherzo from "A Midsummer Night's Dream" (Mendelssohn). Two Dances (Brahms).

8.30—Extracts from De Wyze Kater (H. Heyermans).

9.0—Concert relayed from the Kursaal, Ostend. After the Programme, Le Journal Parle and Dance Music from the Kursaal, Ostend. 11.0 (approx.)—Close Down.

BUCHAREST (Romania)

Radio-Bucarest. 761 kc/s (394 m.); 12 kW.

Transmits at intervals from 11.0 a.m. 4.0 p.m.—Concert of Variety Music by the Station Orchestra. 5.0—News and Time Signal. 5.10—Concert of Variety Music (contd.). 6.0—Educational Talk. 6.40—"Il Trovatore"—Opera Verdi on Gramophone Records. In the intervals, News.

BUDAPEST (Hungary)

545 kc/s (550 m.); 18.5 kW.

Transmits at intervals from 9.15 a.m. Programme also relayed on 210 m. from 7.45-12 midnight. 5.0 p.m.—Concert by the Vincez Ferics Cigany Orchestra. 6.15—Reading. 6.45—Pianoforte Recital of Hungarian Folk Melodies by Margareta Timko. 7.15—Programme by Nikolaus Suranyi.

7.45—Concert by the Mandits Orchestra. Selection from "La belle Helene" (Offenbach). Melody (Rachmaninoff). Rocooco Idyll (Stephanides). Waltz, Alice (Siklos). Symphony: Im Garten (Goldmark). Tango, Es war einmal (Bachmann).

8.45—Racing Results. 8.50—Recitations. 9.45—News Bulletin and Announcements, followed by Dance Music from the Ritz Hotel. 11.0—Concert of Light Music by the Imre Magyar Cigany Orchestra.

COPENHAGEN (Denmark)

1,067 kc/s (281 m.); 0.75 kW. Relayed by Kalundborg, 260 kc/s (1,153 m.).

Transmits at intervals from 7.27 a.m. 12 noon—Time and Chimes from the Town Hall. 12.5 p.m.—Weather Forecast. 12.7—String Ensemble Concert relayed from the Bellevue Strand Hotel. 2.0—2.40—Interval. 2.40—Wind Instrument Concert. March, Den raske Dragon (Sonderby). Overture, "Martha" (Flotow). Madrigal from "Romeo and Juliet" (Gounod). Waltz (Ganne). Selection from "The Huguenots" (Meyerbeer). Spanish Dance No. 2 (Moszkowsky). Litanie (Schubert). Military March (Schubert). March (Siede). Overture, "La dame blanche" (Boieldieu). Spanish Dances Nos 2 and 5 (Moszkowsky). Selection from "Auccassin et Nicolette" (Enna). La petite mignonne (Gaman). Lagunen-Walzer (Joh. Strauss). March, Vive Bologne (Bohlmann). In the interval at 3.25—Programme for Children. 4.40—Gramophone Concert. Germaine Martinelli: Song from "The Damnation of Faust" (Berlioz). Beniamino Gigli: Cavatina from Act Three of "Faust" (Gounod).

Riccardi Stracciari: Toreador's Song from "Carmen" (Bizet). Pablo Casals: Song without Words (Mendelssohn). Josephine Baker: Pardon si je l'importune (Celani). Jules Bloedoe: Ol' man river (Kern). Dan Donovan: The Wooden Soldier and the China Doll (Newman-Jones). The Wiggers Quartet: Foxtrot, Nar djungeln yaknar (Munthe).

5.10—Talk with Gramophone Illustrations: Salzburg. 5.40—Exchange and Fish Market Prices. 5.50—French Lesson for Beginners. 6.20—Weather Report. 6.30—News Bulletin. 6.50—Introductory Talk to the following Transmission. 7.0—See Vienna. 8.20—Introductory Talk to the following Transmission and Weather Report. 8.50—See Vienna. 9.55—News Bulletin. 10.10—Mandoline Concert by the Alberto Bracony Trio. Chemin faisant (Monti). Mazurka (Sartori). Waltz, Te souzo sempre (Zardo). Concert-Capriccio (Arizno). Cancion d'amore (Albeniz). Spanish Folk Dances: (a) Habanero, (b) Andalusian Jota, (c) Bolero.

10.40—Dance Music from the Nimb Restaurant. In the interval at 12 midnight—Time and Chimes from the Town Hall. 12.30 a.m. (Thursday)—Close Down.

CRACOW (Poland)

959 kc/s (312.8 m.); 1.5 kW.

Transmits at intervals from 11.58 a.m. 7.10 p.m.—Miscellaneous Items, News Bulletin and Programme Announcements. 7.35—Radio Journal. 7.45—Answers to Correspondents. 8.0—See Warsaw. 10.25—Topical Talk. 10.40—Sports Notes. 10.50—Dance Music from Warsaw. 11.30 (approx.)—Close Down.

DUBLIN (Ireland)

(2RN). 725 kc/s (413 m.); 1.2 kW. Relayed by Cork, 1,337 kc/s (224.4 m.).

1.30—2.0 p.m.—Time Signal, Weather Forecast, Stock Report and Popular Music on Gramophone Records. 6.0—Light Music on Gramophone Records. 6.15—Programme for Children. 7.0—Variety Music on Gramophone Records. 7.20—News Bulletin. 7.30—Time Signal. 7.31—Gaelic Talk. 7.45—German Lesson. 8.0—Bizet and Gounod Concert by the Station Sextet. 8.30—Tenor Solos by Gerard Crofts. 8.45—Uilleann Pipes by Sean Dempsey. 8.55—Selections by the Station String Orchestra. 9.15—Soprano Solos by Violet G. Burne. 9.30—A Play by L. Elyan and Company. 10.5—German Folk Songs by Erni Ritter. 10.15—Station Sextet. 10.30—Time Signal, News, Weather Report and Close Down.

FÉCAMP (France)

Radio Normandie. 1,345 kc/s (223 m.); 10 kW.

Transmits at intervals from 12 noon. 7.30 p.m.—Radio-Gazette. 8.0—News Bulletin. 8.30—Concert of Variety Music. 10.0—Concert of Light Music. 11.0—Concert of Popular Songs. 12 midnight—Dance Music by the Ibcolians.

FLORENCE (Italy)

Ente Italiano Audizioni Radiofoniche. 599 kc/s (500.8 m.); 20 kW. See Turin.

FRANKFURT-am-MAIN (Germany)

770 kc/s (390 m.); 1.5 kW. Relayed by Cassel, 1,220 kc/s (246 m.).

Transmits at intervals from 6.0 a.m. 5.0 p.m.—Concert from Wiesbaden. 6.15—Time and Exchange Quotations. 6.25—Talk: An Evening on the Mösenker See. 6.50—Time, Programme Announcements, Weather and Exchange Quotations. 7.0—See Vienna. 10.0—The Werra Valley—A Radio Picture. 10.20—Time, News, Weather and Sports Notes. 10.45—Concert from Vienna. 12 midnight—Close Down.

HAMBURG (Germany)

Norag (ha, in Morse). 806 kc/s (372 m.); 1.5 kW. Relayed by Bremen, 1,112 kc/s (270 m.); Flensburg, 1,319 kc/s (227.4 m.); Hanover, 530 kc/s (566 m.); and Kiel, 1,292 kc/s (232.2 m.).

Transmits at intervals from 5.45 a.m. 4.30 p.m. (from Hanover)—Concert by the Dresden Philharmonic Orchestra, conducted by Walter Stöver, relayed from Bad Pyrmont. Soloist: Szardahelyi. Overture, "Ruy Blas" (Mendelssohn). Violin Solo with Orchestral Accompaniment: Heyre Kati (Hubay). Suite No. 2 from

"L'Arlesienne" (Bizet). Selection from "Faust" (Gounod). Waltz, Roses from the South (Joh. Strauss). 5.30—Talk: The Development of Stage-Craft and Stage Scenery. 5.55 (from Kiel)—Variety Programme. 6.25—Talk: The Importance of German Motor Traffic. 6.50—Exchange and Meat Market Prices. 6.55—Weather Report. 7.0—See Vienna. In the interval at 8.50—News Bulletin. 10.0—Time and News.

10.10—Dance Music by the Hamburg Philharmonic Orchestra, conducted by Fritz Gartz. March Potpourri (Robrecht). Waltz, Nordseebilder (Joh. Strauss). Maxixe brésilienne (Salabert). Rheinländer, Die schöne Winzerin (Zikoff). Quadrille from "The Geisha" (Jones). Champagne Galop (Lunby). Tango, Expressions (Brase). Waltz, Seid umschlungen Millionen (Joh. Strauss). French Polka, Immer galant (Fabrbach). Offenbach-Quadrille (Fetras). March from "The Merry Widow" (Lehar).

HEILSBURG (Germany)

1,085 kc/s (276.5 m.); 60 kW. Relayed by Danzig, 662 kc/s (453.2 m.).

Transmits at intervals from 6.0 a.m. 1.5 p.m.—Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture, "Czar and Carpenter" (Lortzing). Fantasia on Airs from "Rigoletto" (Verdi). Waltz, Die Werber (Lanner). Friedemann-Bach Suite (Leuschner). Romanza (Lühr). Manchuan Sketches (Glan). Overture, Die geschiedene Frau (Fall). Debreczen (Meisel). Der verliebte Harlekin (Meyer-Heilmund). Selection from "La fille de Madame Angot" (Lecocq). Deuma-Marsch (Wittenberg). 5.45—Talk: East-German Handicrafts: Yellow Amber Ornaments. 6.15—Agricultural Prices. 6.25—Talk: East Prussia from 1807 to 1813—The Napoleonic Menace. 6.55—Weather Forecast. 7.0—See Vienna. 10.10 (approx.)—Weather, News and Sports Report, followed by Light Concert from Vienna. 12.0 midnight—Close Down.

HILVERSUM (Holland)

(transmitted from Huizen). 160 kc/s (1,875 m.); 8.5 kW.

Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 7.40 a.m.—Time Signal and Chimes from St. John's Cathedral, Hertogenbosch. 8.10—Aubade in honour of the 52nd Birthday of H.M. The Queen of Holland, relayed from Rotterdam. Choir of 2,500 performers and Orchestra. Address by the Lord Mayor. 8.55—Light Music on Gramophone Records. 9.10—Concert by the Station Orchestra, conducted by Nico Treep. Cortège (Razigade). Fantasia on a Dutch Folk Song (Alterege). Festival Overture (Leutner). Paraphrase on a Limburg Folk Song (Alterege). Parade-marsch der langen Kerls (Roland).

9.40—Time Signal and Daily Service. 9.55—Popular Music on Gramophone Records. 10.10—Concert by the Station Orchestra, conducted by Nico Treep. Overture, "Oberon" (Weber). Ballet Music from "Rosamunde" (Schubert). Aria (Mendelssohn). Invitation to the Waltz (Weber). Address by D. Hans: H. M. Queen Wilhelmina. Dance of the Hours from "La Gioconda" (Ponchielli). Songs: (a) La Cloche (Saint-Saëns), (b) Invitation au voyage (Duparc). Prelude and Clair de lune (Massenet). March from "Athalie" (Mendelssohn). Selection from "Hansel und Gretel" (Humperdinck). Marche solennelle (Tchaikovsky).

12.10 p.m.—Popular Music on Gramophone Records.

1.10—Organ Recital by Frans Hasselaar. Soloist: Willem Ravelli (Baritone). Prelude and Fugue (Kersbergen). Songs: (a) Arioso, Dank sei Dir Herr (Handel), (b) Aria from "Joshua" (Handel), (c) Aria from "St. Paul" (Mendelssohn). Pastorale No. 1, Op. 56 (Sam. de Lange). Carillon in F (Sam. de Lange). Dutch Songs. Improvisation on Dutch Folk Songs (Hasselaar).

2.10—Programme for Children, relayed from the Kurhaus, Scheveningen. 3.10—Dance Music from the Grand Hotel, Scheveningen. 4.10—Popular Programme.

5.10—Military Band Concert, conducted by Captain Boer. National Anthem. March (Boer). Overture, "Zampa" (Hérold). Waltz, Dorfschwalben aus Österreich (Joh. Strauss). Selection from "The Barber of Seville" (Rossini). Hungarian Rhapsody, No. 2 (Liszt, arr. Dunkler). Selection from "Faust" (Gounod, arr. Dunkler). In the interval, Light Music on Gramophone Records.

6.40—Talk: The Dutch National Anthem. 7.10—Popular Music on Gramophone Records.

7.55—Concert relayed from the Kurhaus, Scheveningen. The Residence Orchestra, conducted by Carl Schuricht. Soloist: Nathan Milstein (Violin). Piet Hein Rhapsody (van Anfooy). Concerto in E Minor, Op. 64 (Mendelssohn).

8.50—Variety Programme. 9.10—Concert by Kovacs Lajos and his Band. 9.40—Weather Forecast and News Bulletin. 9.50—Concert (continued). 10.40—Popular Music on Gramophone Records. 11.40—Close Down.

HUIZEN (Holland)

(transmitted from Hilversum). 1,013 kc/s (296.1 m.); 20 kW. (7 kW. up to 4.40 p.m.).

Programme by the Christian Radio Society (N.C.R.V.). Programme in Celebration of Her Majesty the Queen of Holland. 7.40 a.m.—Bible Reading. 7.55—Gramophone Records of Variety Music. 8.40—Topical Programme. 9.10—Choral Music. 9.40—Programme for Hospitals. 10.10—Choral and Mouth Organ Concert. 11.10—Light Music on Gramophone Records. 11.40—Police Notes.

11.55—Vocal and Instrumental Concert. Overture, "The Crown Diamonds" (Auber). Waltz, Tales from the Vienna Woods (Strauss). Selection from "The Bartered Bride" (Smetana). Potpourri, Dur und Moll (Morena). Selection from "I Pagliacci" (Leoncavallo). Slav Lullaby (Neruda). Selection from "Rigoletto" (Verdi). Overture, "The Caliph of Bagdad" (Boieldieu). Serenade (Widor). Selection from "The Pearl Fishers" (Bizet). Entr'acte Music from "Rosamunde" (Schubert). Selection from "Lilac Time" (Schubert-Berté).

1.40 p.m.—Carillon Recital from the Royal Palace of Amsterdam. 2.40—Orchestral Concert from Hilversum.

March, Queen Wilhelmina (Bouman). Potpourri of Dutch Songs (Schweinsberg). Feestklanken (Kessels). Wilhelmus van Nassouwe. Potpourri of Sacred Songs (Ruh). Paraphrase on "Harre meine Seele," schönster Herr Jesu. Overture, "Raymond" (Thomas). Waltz, Estudiantina (Waldeufel). Ballet Music from "Faust" (Gounod). De Fremersberg (Koeneman).

4.40—Programme for Children. 5.40—Variety Music on Gramophone Records.

6.10—Choral and Orchestral Concert. Psalm 68, Verses 10 and 16. Wild heden nu treden. Song, Gelukkig Vaderland. Song (Caro). 'k Hou van Holland (Bute). Hymn 169, Verses 2, 7 and 8. Eendracht (Stuntz). Hollands Vlag (Wierts). Oranje-Liedje (Viotta). In 't Voorhout (Heye). Wilhelmus. Psalm 72, Verses 1 and 11.

7.10—Police Notes. 7.25—Religious Information. 7.40—Organ Recital by M. de Lange, with Orchestral Music. Prelude in E Flat (Bach). Hallelujah (Handel-Gottschlag). Concerto grosso (Handel). Suite gothique (Boëllmann). Selection from "Les petits riens" (Mozart). Choral, Op. 18 (Guilmant). Variations on Wilhelmus (Hendriks). 8.40—Orchestral Music. De Hollandsche Leeuw. Waltz, Dorfschwalben aus Oesterreich (Josef Strauss). 8.55—Accordion Duets. 9.5—Recitations. 9.20—Gramophone Records of Light Music. 9.40—Accordion Solos. I found you (Noble). Wien bleibt Wien (Schrammel). 9.50—Recitations. 10.0—News Bulletin.

10.10—Orchestral Concert. Pizzicato Polka (Strauss). Invitation to the Waltz (Berlioz-Weber). Potpourri (Sluiter and Hoogeborn). March, Folies bergères (Lincke). 10.40—Gramophone Records of Variety Music. 11.10 (approx.)—Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 7.5 kW. See Copenhagen.

KATOWICE (Poland)

734 kc/s (408 m.); 16 kW. Transmits at intervals from 12.5 p.m.

7.10 p.m.—Announcements, News Bulletin and Popular Music on Gramophone Records. 7.45—Talk. 10.10—Concert of Dance Music. 11.0—Answers to Correspondents in French.

KAUNAS (Lithuania)

155 kc/s (1,935 m.); 7 kW.

Transmits at intervals from 12 noon. 7.0 p.m.—Talk: The Wilno District. 7.30—Weather Forecast and News Bulletin. 8.0—Light Music on Gramophone Records. 8.30—Health Talk. 8.50—Talk: Drink and Crime. 9.10—Concert. Soloist: E. Kaleseviene. Lyric Suite (Tchaikovsky). Ballet des Parfums (Poppy). Bal costumé (Rubinistein). Sirenenzauber (Waldeufel). Romantic Overture (Keler-Bela). 11.0 (approx.)—Close Down.

LAHTI (Finland)

167 kc/s (1,796 m.); 54 kW. Relayed by Helsinki, 815 kc/s (368.1 m.).

Transmits at intervals from 11.0 a.m. 6.15 p.m.—Programme for Children. 7.0—Sports Notes. 7.20—Talk, followed by a Violin Recital. 7.50—Dance Music by the Amarillo Orchestra. 8.10—Song Recital by Oiva Taimi. 8.25—Dance Music (contd.). 8.45—News in Finnish. 9.0—News in Swedish. 9.15—Concert of Military Music. 10.0 (approx.)—Close Down.

LANGENBERG (Germany)

Westdeutscher Rundfunk. 635 kc/s (473 m.); 60 kW.

Transmits at intervals from 6.45 a.m. 11.15 a.m.—Gramophone Concert. The Berlin Municipal Opera House Orchestra, conducted by Max von Schillings: (a) Du und Du—Waltz from "Die Fledermaus," (b) Polka, Tritsch-Tratsch (Johann Strauss). Franz Baumann (Tenor): (a) Die alten Strassen noch (Redl), (b) La Paloma (de Yradier). Michael Schulgalité and his Orchestra: (a) Selection from "Countess Maritza" (Kalman), (b) Valse Song from "The Czarevitch" (Lehar). Tango, Fabelhaft (Meisel). 11.40—A Visit to a Children's Holiday Camp at Cologne. 12 noon—Concert from Munich. 1.15 p.m.—Weather, News and Time Signal.

1.30—Orchestral Concert conducted by Heinz Ecarium, relayed from Duisburg. March from "Aida" (Verdi). Overture, "Oberon" (Weber). Songs (Grieg): (a) Herzwunden, (b) Letzter Frühling, Selection from "Fra Diavolo" (Auber). Arabian Serenade (Langy). Die Musik kommt (Strauss). Overture, "The Hermit's Bell" (Mallart). March, Deutschlands Ruhm (Schröder). 2.30—Sponsored Gramophone Concert. 3.30—Economic Notes and Time Signal. 4.20—Programme for Children. 4.20—Review of Books. 4.40—Reading from Unpublished Literature: The Shepherd Boy (Edith von Walter). 5.0—Concert. 6.20—Talk: Social Politics. 6.45—Weather, Time, Economic and Sports Notes. 7.0—Talk: Health before Everything—The Hardening Process during Childhood. 7.15—Topical Talk. 7.30—Legal Talk. 7.55—First General News.

8.0—Concert by the Westphalian Military Band, conducted by Georg Reincke. Zepelin-marsch (Teike). Overture, "Poet and Peasant" (Suppe). Waltz, Golden Rain (Waldeufel). March, Old Comrades (Teike). Selection from "Czar and Carpenter" (Lortzing). March Potpourri, Alte Deutsche Treue (Franzen). Freiheitsmarsch (Lauken). Two Military Marches (Frist). 9.0—In Praise of "Dancing"—Programme by Franz Konrad Häfner. 10.5—News and Sports Notes. 10.30—Concert and Dance Music conducted by Eysoldt.

LEIPZIG (Germany)

1,157 kc/s (259 m.); 2 kW. Relayed by Dresden, 941 kc/s (319 m.).

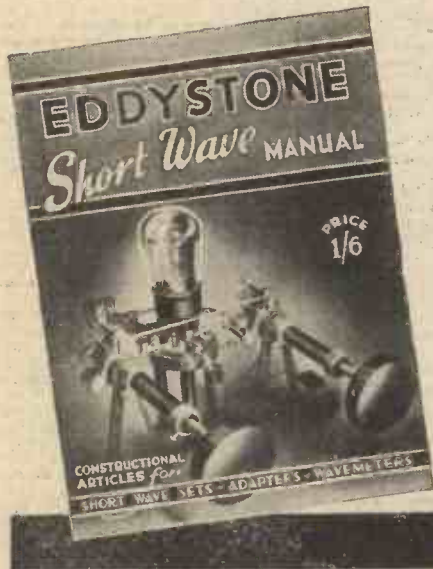
Transmits at intervals from 6.0 a.m. 5.0 p.m.—Children's Concert by the Endé Orchestra. Overture, "The Nuremberg Doll." Waltz from "Die Puppenfee" (Bayer). Doll and Goblin (Armandola). Plaudereien aus der Kinderstube (Mannfred). Berceuse in B Minor, Op. 50, No. 5 (Cui). Träumerei (Schumann). Der kleine Reiter (Schumke). Das treue deutsche Herz (Weninger). Waltz Intermezzo, Was Blumen träumen (Translatour). March, Tiroler Holzhackerbaum (Franz Wagner). 5.50—Exchange Quotations, Weather Forecast and Time Signal. 6.10—Talk: The Operetta of To-day.

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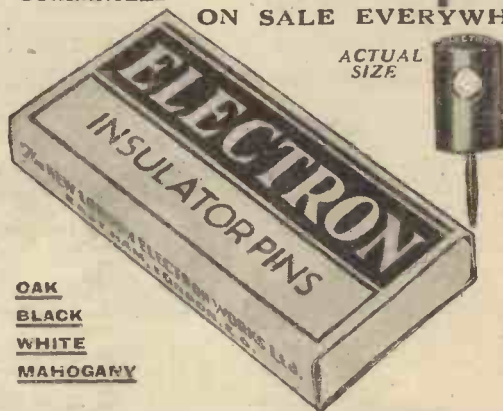
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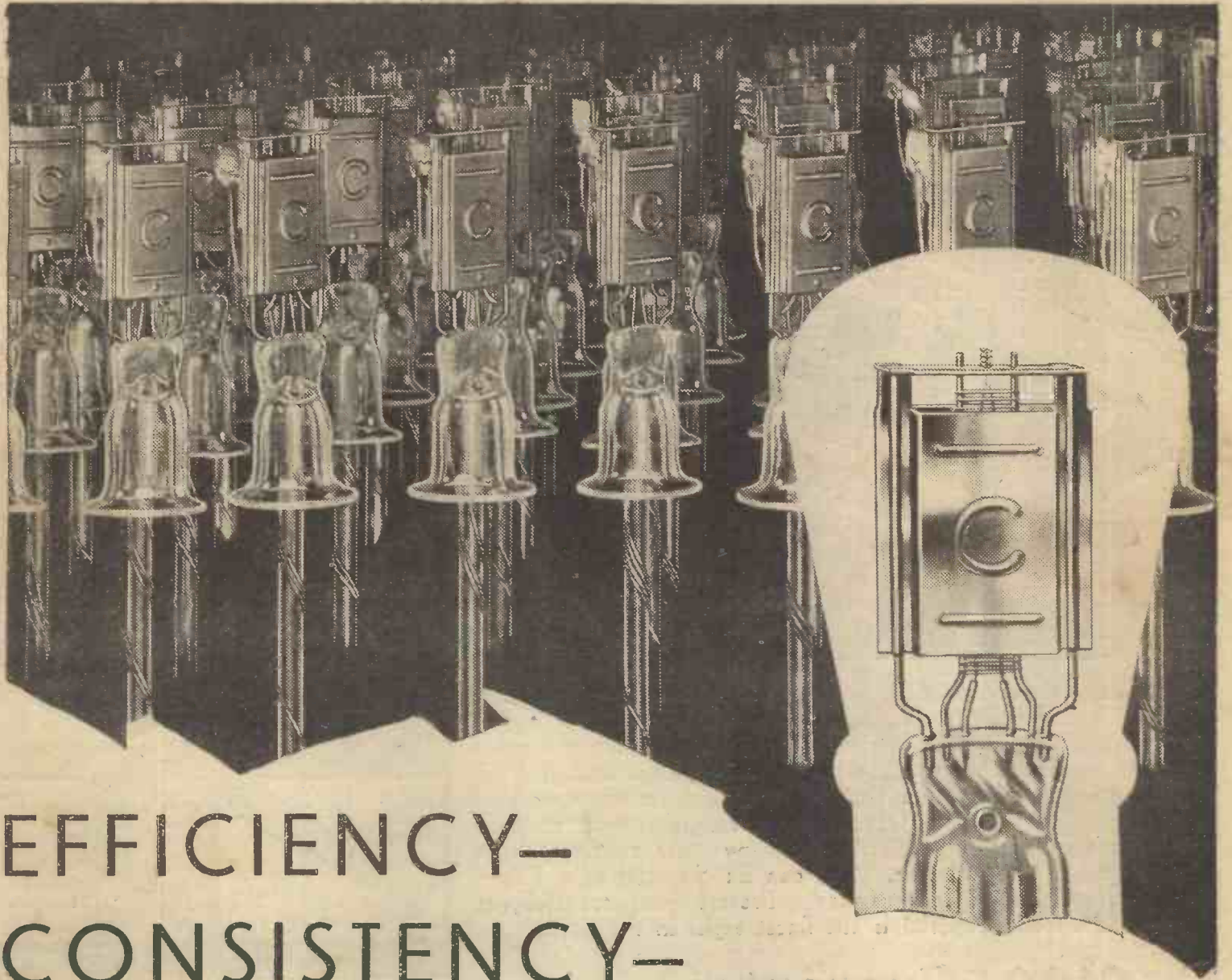
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